CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

CENTRAL VALLEY REGION

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ORDER R5-2012-XXXX
NPDES NO. CA0082589

WASTE DISCHARGE REQUIREMENTS FOR THE CITY OF REDDING STILLWATER WASTEWATER TREATMENT FACILITY SHASTA COUNTY

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 1. Discharger Information

Discharger	**City of Redding**
Name of Facility	**Stillwater Wastewater Treatment Facility**
Facility Address	**6475 Airport Road**
	Anderson, CA 96007
	Shasta County
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a **major** discharge.	

The discharge by the City of Redding from the discharge points identified below is subject to waste discharge requirements as set forth in this Order:

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	**Advanced Secondary Treated Wastewater**	**40º 28’ 26.8 N**	**122º 16’ 07.5” W**	**Sacramento River**

Table 3. Administrative Information

This Order was adopted by the Regional Water Quality Control Board on:	**<Adoption Date>**
This Order shall become effective on:	**<Effective Date>**
This Order shall expire on:	**<Expiration Date>**
The Discharger shall file a Report of Waste Discharge in accordance with title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than:	**180 days prior to the Order expiration date**

I, **PAMELA C. CREEDON**, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on **<Adoption Date>**.

_____

PAMELA C. CREEDON, Executive Officer

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I. FACILITY INFORMATION

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 4. Facility Information

Discharger	City of Redding
Name of Facility	Stillwater Wastewater Treatment Facility
Facility Address	6475 Airport Road
	Anderson, CA 96007
	Shasta County
Facility Contact, Title, and Phone	John Szychulda, Plant Supervisor, (530) 378-6702
Mailing Address	P.O. Box 917, Anderson, CA 96007
Type of Facility	Publicly Owned Treatment Works
Facility Design Flow	3.4 million gallons per day (mgd) (Average Dry Weather Flow) 14.4 mgd (Peak Wet Weather Flow)

II. FINDINGS

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

A. Background. The City of Redding (hereinafter Discharger) is currently discharging pursuant to Order R5-2007-0058 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0082589. The Discharger submitted a Report of Waste Discharge, dated 1 December 2011, and applied for a NPDES permit renewal to discharge up to an average monthly dry weather flow of 3.4 mgd of treated wastewater (advanced secondary treatment) from the Stillwater Wastewater Treatment Facility, hereinafter Facility. The application was deemed complete on 29 December 2011.

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. Facility Description. The Discharger owns and operates a Publicly-Owned Treatment Works (POTW). The treatment system consists of screening for removal of coarse and fine solids, conventional activated sludge treatment with fine bubble aeration and secondary clarification, filtration, and chlorination/dechlorination. Waste activated sludge is treated by aerobic digestion followed by a belt-filter press dewatering. Biosolids are disposed at a sanitary landfill and/or land applied on property owned by the Discharger. Wastewater is discharged through a diffuser from Discharge Point No. 001 (see table on cover page) to the Sacramento River, a water of the United States, within Sacramento River Watershed. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

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C. Legal Authorities. This Order is issued pursuant to section 402 of the Clean Water Act (CWA) and implementing regulations adopted by USEPA and chapter 5.5, division 7 of the California Water Code (Water Code; commencing with section 13370). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

D. 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 Order requirements, is hereby incorporated into this Order and constitutes part of the Findings for this Order. Attachments A through E and G through J are also incorporated into this Order.

E. California Environmental Quality Act (CEQA). Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 21100-21177.

F. Technology-based Effluent Limitations. Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations (40 CFR 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 CFR Part 133. A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet.

G. Water Quality-based Effluent Limitations (WQBELs). Section 301(b) of the CWA and 40 CFR 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. This Order contains requirements, expressed as technology equivalence requirements, which are necessary to achieve water quality standards. The Central Valley Water Board has considered the factors listed in Water Code section 13241 in establishing these requirements. The rationale for these requirements, which consist of advanced-secondary treatment or equivalent requirements, is discussed in the Fact Sheet.

40 CFR 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established using: (1) USEPA 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

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state's narrative criterion, supplemented with other relevant information, as provided in 40 CFR 122.44(d)(1)(vi).

H. Water Quality Control Plans. 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) on 1 September 1998 that designates beneficial uses in Section II, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Table II-1 of the Basin Plan identifies the beneficial uses of certain specific water bodies. The Sacramento River (Shasta Dam to Colusa Basin Drain) is listed in Table II-1. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Beneficial uses applicable to Sacramento River (Shasta Dam to Colusa Basin Drain) are as follows:

Table 5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	**Sacramento River (Shasta Dam to Colusa Basin Drain)**	Existing uses from Table II-1 of the Basin Plan: Municipal and domestic supply (MUN); Agricultural supply, including irrigation and stock watering (AGR); Industrial service supply (IND); Hydropower generation (POW); Water contact recreation, including canoeing and rafting (REC-1); Non-contact water recreation (REC-2); Warm freshwater habitat (WARM); cold freshwater habitat (COLD); Migration of aquatic organisms, warm and cold (MIGR); Spawning, reproduction, and/or early development, warm and cold (SPWN); Wildlife habitat (WILD); and Navigation (NAV).

The Basin Plan includes a 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 130, et seq.)*." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to WQLSs. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment*." The Sacramento River from Keswick Dam to Cottonwood Creek is listed as a WQLS for unknown toxicity in the 303(d) list of impaired water bodies. In 2007, the Central Valley Water Board adopted an amendment to the Basin Plan that addressed impairments within the Sacramento River and Feather River Basins by promulgating a water quality objective for diazinon and chlorpyrifos as well as an implementation program designed to ensure compliance with the new water quality objective. Per this implementation program, all

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NPDES permits for discharges (both direct and indirect) to the Sacramento or Feather Rivers must contain an effluent limit equivalent to the diazinon and chlorpyrifos water quality objective. This Order requires the Discharger to monitor the effluent for diazinon and chlorpyrifos, and includes effluent limitations for diazinon and chlorpyrifos.

Requirements of this Order implement the Basin Plan.

I. National Toxics Rule (NTR) and California Toxics Rule (CTR). USEPA adopted the NTR on 22 December 1992, and later amended it on 4 May 1995 and 9 November 1999. About 40 criteria in the NTR applied in California. On 18 May 2000, USEPA 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 water quality criteria for priority pollutants.

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

K. Compliance Schedules and Interim Requirements. In general, an NPDES permit must include final effluent limitations that are consistent with CWA section 301 and with 40 CFR 122.44(d). There are exceptions to this general rule. The State Water Board's *Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits* (Compliance Schedule Policy) allows compliance schedules for new, revised, or newly interpreted water quality objectives or criteria, or in accordance with a TMDL. All compliance schedules must be as short as possible, and may not exceed ten years from the effective date of the adoption, revision, or new interpretation of the applicable water quality objective or criterion, unless a TMDL allows a longer schedule. A Regional Water Board, however, is not required to include a compliance schedule, but may issue a Time Schedule Order pursuant to Water Code section 13300 or a Cease and Desist Order pursuant to Water Code section 13301 where it finds that the discharger is violating or threatening to violate the permit. The Regional Water Board will consider the merits of each case in determining whether it is appropriate to include a compliance schedule in a permit, and, consistent with the Compliance Schedule Policy, should consider feasibility of achieving compliance, and must impose a schedule that is as short as possible to achieve compliance with the effluent limit based on the objective or criteria.

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The Compliance Schedule Policy and the SIP do not allow compliance schedules for priority pollutants beyond 18 May 2010, except for new or more stringent priority pollutant criteria adopted by USEPA after 17 December 2008.

Where a compliance schedule for a final effluent limitation exceeds one year, the Order must include interim numeric limitations for that constituent or parameter, interim milestones and compliance reporting within 14 days after each interim milestone. The permit may also include interim requirements to control the pollutant, such as pollutant minimization and source control measures. This Order does not include compliance schedules and interim effluent limitations and discharge specifications.

L. Alaska Rule. On 30 March 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards become effective for CWA purposes. (40 CFR 131.21 and 65 FR 24641 (27 April 2000).) Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after 30 May 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by 30 May 2000 may be used for CWA purposes, whether or not approved by USEPA.

M. Stringency of Requirements for Individual Pollutants. This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on flow and percent removal requirements for 5-day biological oxygen demand (BOD_5), total suspended solids (TSS). The WQBELs consist of restrictions on acute toxicity, ammonia, beta-BHC, carbon tetrachloride, chlorodibromomethane, copper, cyanide, dichlorobromomethane, nitrate plus nitrite, total coliform organisms, total residual chlorine, and zinc. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. In addition, this Order includes WQBELs for BOD_5, pH, and TSS to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in the Fact Sheet. In addition, the Central Valley Water Board has considered the factors in Water Code section 13241 in establishing these requirements.

This Order contains pollutant restrictions that are more stringent than applicable federal requirements and standards. Specifically, this Order includes effluent limitations for BOD_5, TSS, 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 the Fact Sheet (Attachment F section IV.C.3).

N. Antidegradation Policy. 40 CFR 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is

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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. As discussed in detail in the Fact Sheet, the permitted discharge is consistent with the antidegradation provision of 40 CFR 131.12 and Resolution No. 68-16.

O. Anti-Backsliding Requirements. Sections 303(d)(4) and 402(o)(2) of the CWA and federal regulations at 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions. Some effluent limitations in this Order are less stringent that those in Order No. R5-2007-0058. As discussed in detail in the Fact Sheet, this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

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

Q. Safe, Clean, Affordable, and Accessible Water. In accordance with CWC 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.

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

The technical and monitoring reports in this Order are required in accordance with Water Code section 13267, which states the following in subsection (b)(1), "*In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged 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 that 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*

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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.

S. Standard and Special Provisions. Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under 40 CFR 122.42. The Central Valley Water Board has also included in this Order special provisions applicable to the Discharger. Some special provisions require submittal of technical reports. All technical reports are required in accordance with Water Code section 13267. The rationale for the special provisions and need for technical reports required in this Order is provided in the Fact Sheet.

T. Provisions and Requirements Implementing State Law. The provisions/requirements in sections IV.B, IV.C, and V.B of this Order 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.

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

V. 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.

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THEREFORE, IT IS HEREBY ORDERED, that Order No. R5-2007-0058 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 federal CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

III. DISCHARGE PROHIBITIONS

A. Discharge of wastewater at a location or in a manner different from that described in the Findings is prohibited.

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

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

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

E. The discharge of waste that causes violation of any narrative water quality objective contained in the Basin Plan is prohibited**.**

F. The discharge of waste that causes violation of any numeric water quality objective contained in the Basin Plan is prohibited.

G. Where any numeric or narrative water quality objective contained in the Basin Plan is already being violated, the discharge of waste that causes further degradation or pollution is prohibited.

H. The Discharger shall not cause pollution as defined in Section 13050 of the California Water Code.

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IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point No. 001

1. Final Effluent Limitations – Discharge Point No. 001

e. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point No. 001, with compliance measured at Monitoring Location EFF-001 as described in the Monitoring and Reporting Program:

Table 6. Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	15	30	--	--
	lbs/day[1]	284	425	851	--	--
Total Suspended Solids	mg/L	10	15	30	--	--
	lbs/day[1]	284	425	851	--	--
pH	standard units	--	--	--	6.0	8.5
Priority Pollutants						
Beta-BHC	µg/L	0.014	--	0.028	--	--
Carbon Tetrachloride	µg/L	1.3	--	3.8	--	--
Chlorodibromomethane	µg/L	3.7	--	8.6	--	--
Copper, Total Recoverable	µg/L	25.2	--	38.2	--	--
Cyanide	µg/L	12.2	--	24.0	--	--
Dichlorobromomethane	µg/L	22.2	--	46.2	--	--
Zinc, Total Recoverable	µg/L	100.5	--	150.7	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	0.94	--	2.14	--	--
Nitrate plus Nitrite (as N)	mg/L	30	--	--	--	--

[1] Based on an ADWF of 3.4 MGD.

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

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

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

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

iii. 0.011 mg/L, as a 4-day average; and
iv. 0.019 mg/L, as a 1-hour average.

e. Total Coliform Organisms. Effluent total coliform organisms shall not exceed:

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

f. Average Dry Weather Flow. The average dry weather discharge flow shall not exceed 3.4 mgd.

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

i. Average Monthly Effluent Limitation

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

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

ii. Maximum Daily Effluent Limitation

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

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

2. Interim Effluent Limitations – Not Applicable

B. Land Discharge Specifications – Emergency Storage Ponds

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

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

3. As a means of discerning compliance with Land Discharge Specification B.2, the dissolved oxygen content in upper zone (1 foot) or wastewater in ponds shall not be less than 1.0 mg/L.

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4. The emergency overflow ponds shall be managed to prevent the breeding of mosquitoes. In particular:

   a. Weeds shall be minimized.
   b. Dead algae, vegetation, and debris shall not accumulate on the water surface.

5. Public contact with the wastewater shall be precluded through such means as fences, signs, or other acceptable alternatives.

C. Reclamation Specifications – Discharge Point No. REC-001

1. The delivery or use of reclaimed water shall be in conformance with the criteria contained in Chapter 3, Division 4, Title 22, California Code of Regulation s (CCR) (Section 60301, et seq.), or amendments thereto.

2. The discharge shall not exceed 23 most probable number (MPN) per 100 mL, as a 7-day median.

3. The discharge shall be distributed uniformly on adequate acreage in compliance with Water Reclamation Requirements Order 98-016 or its update. All tail water must be returned to the spray fields or treatment facilities.

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

Receiving water limitations are based on water quality objectives contained in the Basin Plan and are a required part of this Order. The discharge shall not cause the following in the Sacramento River:

1. **Bacteria.** The fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period, to exceed a geometric mean of 200 MPN/100 mL, nor more than 10 percent of the total number of fecal coliform samples taken during any 30-day period to exceed 400 MPN/100 mL.

2. **Biostimulatory Substances.** Water to contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.

3. **Chemical Constituents.** Chemical constituents to be present in concentrations that adversely affect beneficial uses.

4. **Color.** Discoloration that causes nuisance or adversely affects beneficial uses.

5. **Dissolved Oxygen:**

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a. The monthly median of the mean daily dissolved oxygen concentration to fall below 85 percent of saturation in the main water mass;

b. The 95 percentile dissolved oxygen concentration to fall below 75 percent of saturation; nor

c. The dissolved oxygen concentration to be reduced below 7.0 mg/L at any time.

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

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

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

8. **pH.** The pH to be depressed below 6.5, raised above 8.5, nor changed by more than 0.5 units.

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 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.

h. Diazinon concentrations in excess of 0.080 µg/L (1-hour average) or 0.050 µg/L (4-day average) to occur more than once every three years on average.

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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. **Salinity.** Electrical conductivity shall not exceed 230 µmhos/cm (50 percentile) or 235 µmhos/cm (90 percentile) at Knights Landing above Colusa Basin Drain, based upon previous 10 years of record.

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

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

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

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

15. **Temperature.** The natural temperature to be increased by more than 5°F, or to higher than 56°F when such an increase will be detrimental to the fishery, which is more restrictive. Compliance to be determined based on the difference in temperature at RSW-001 and RSW-002.

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

17. **Turbidity.**

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

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

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

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

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

B. Groundwater Limitations

1. Release of waste constituents from any portion of the Facility shall not cause or contribute to, in combination with other sources of waste constituents, groundwater within influence of the Facility to contain:

a. Taste or odor-producing constituents, toxic substances, or any other constituents, in concentrations that cause nuisance or adversely affect beneficial uses;

b. Waste constituent concentrations in excess of water quality objectives or background water quality, whichever is greater;

c. Waste constituents in excess of the concentrations specified below or background water quality, whichever is greater:

i. Total coliform organisms over any 7-day period shall be less than 2.2 MPN/100 mL.
ii. Nitrate plus nitrite (as N) shall not exceed 10 mg/L.

VI. PROVISIONS

A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions (federal NPDES standard conditions from 40 CFR Part 122) included in Attachment D of this Order.

2. The Discharger shall comply with the following provisions:

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;

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

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

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

The causes for modification include:

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

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

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

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

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

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

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

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

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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

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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

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California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

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

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

o. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, maximum daily effluent limitation, 1-hour average effluent limitation, or receiving water limitation contained in this Order, the Discharger shall notify the Central Valley Water Board by telephone (916) 464-3291 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within 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. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from this facility, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.

q. In the event 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

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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.

B. Monitoring and Reporting Program Requirements

The Discharger shall comply with the Monitoring and Reporting Program, and future revisions thereto, in Attachment E of this Order.

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 the interim mass effluent limitation modified (higher or lower) or an effluent concentration limitation imposed. If the Central Valley Water Board determines that a mercury offset program is feasible for Dischargers subject to a NPDES permit, then this Order may be reopened to reevaluate the interim mercury mass loading limitation(s) and the need for a mercury offset program for the Discharger.

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

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toxicity effluent limitations, this Order may be reopened to include a numeric chronic toxicity effluent limitation based on the new provisions.

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

g. **Constituent Study.** If after review of the study results it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective this Order may be reopened and effluent limitations added for bis-2(ethylhexyl) phthalate.

h. **Disinfection Byproducts.** This Order allows dilution credits for chlorodibromomethane and dichlorobromomethane for development of water quality-based effluent limitations. The Facility's past performance to control these pollutants was used in determining the dilution credits granted to the Discharger. If the Discharger submits new monitoring results that justify different performance-based effluent limits for chlorodibromomethane and/or dichlorobromomethane, this Order may be reopened to modify the final effluent limits of chlorodibromomethane and/or dichlorobromomethane.

i. **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.

j. **Dilution Credits.** The Central Valley Water Board may reopen this Order, as appropriate; to modify dilution credits should the facility performance, treatment or characteristics of the discharge or receiving water change. Modification of the dilution credit may include increasing the allowed dilution credit, if necessary.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity.** For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct chronic whole effluent toxicity (WET) testing, as specified in the Monitoring and Reporting Program (Attachment E, 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 exhibits toxicity,

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as described in subsection ii below, the Discharger is required to initiate a TRE in accordance with an approved TRE Workplan, 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 effluent toxicity, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. This Provision includes requirements for the Discharger to develop and submit a TRE Workplan and includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

i. Initial Investigative TRE Workplan. Within 90 days of the effective date of this Order, the Discharger shall submit to the Central Valley Water Board an Initial Investigative TRE Workplan for approval by the Executive Officer. This should be a one to two page document including, at a minimum:

(a) A description of the investigation and evaluation techniques that will be used to identify potential causes and sources of effluent toxicity, effluent variability, and treatment system efficiency;

(b) A description of the facility's methods of maximizing in-house treatment efficiency and good housekeeping practices, and a list of all chemicals used in operation of the facility; and

(c) A discussion of who will conduct the Toxicity Identification Evaluation (TIE), if necessary (e.g., an in-house expert or outside contractor).

ii. Accelerated Monitoring and TRE Initiation. When the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity monitoring, 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.

iii. Numeric Toxicity Monitoring Trigger. The numeric toxicity monitoring trigger to initiate a TRE is > **2 TU_C** (where TU_C = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE when the effluent exhibits toxicity.

iv. 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 (4) chronic toxicity tests conducted once every 2 weeks using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:

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(a) If the results of four (4) 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 evidence 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 (4) 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.

Within sixty (60) days of notification by the laboratory of the test results, the Discharger shall submit to the Central Valley Water Board a TRE Workplan for approval by the Executive Officer. The TRE Workplan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Workplan must be developed in accordance with USEPA guidance[1].

b. Constituent Study. There are indications that the discharge may contain constituents that have a reasonable potential to cause or contribute to an exceedance of water quality objectives and/or criteria for bis-2(ethylhexyl) phthalate. The Discharger shall conduct a study to evaluate the source of bis-2(ethylhexyl) phthalate and conduct quarterly monitoring of bis-2(ethylhexyl) phthalate in the effluent and the receiving water during the first 2 years of the

[1] See the Fact Sheet (Attachment F section VII.B.2.a.) for a list of USEPA guidance documents that must be considered in development of the TRE Workplan.

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permit (8 consecutive sampling events). A study report, evaluating the results of the monitoring and the constituent's potential effect to surface water, must be submitted **within 6 months following the completion of the final monitoring event**.

3. Best Management Practices and Pollution Prevention – Not Applicable

4. Construction, Operation and Maintenance Specifications

a. Storage Pond Operating Requirements.

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

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

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

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

(b) Weeds shall be minimized.

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

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

iv. Ponds shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the non-irrigation season. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns. Freeboard shall never be less than 2 feet (measured vertically to the lowest point of overflow).

v. Prior to the onset of the rainy season of each year, available pond storage capacity shall at least equal the volume necessary to comply with the Land Discharge Specification at section IV.C.4.a.v., above.

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

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

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

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

5. Special Provisions for 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 Part 403. Where Part 403 or subsequent revision places mandatory actions upon the City as Control Authority but does not specify a timetable for completion of the actions, the City shall complete the required actions within six months from the issuance date of this permit or the effective date of the 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 the U.S. Environmental Protection Agency (EPA) or other appropriate parties, as provided in the Act. EPA may initiate enforcement action against a nondomestic user for noncompliance with applicable standards and requirements as provided in the Act.

ii. The Discharger shall enforce the requirements promulgated under sections 307(b), 307(c), 307(d) and 402(b) of the Act 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

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(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:

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(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.

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

iii. 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.

iv. The use, disposal, storage, and transportation of biosolids shall comply with existing federal and state laws and regulations, including permitting requirements and technical standards included in 40 CFR Part 503. If the State Water Board and the Central Valley Water Board are given the authority to implement regulations contained in 40 CFR Part 503, this Order may be reopened to incorporate appropriate time schedules and technical standards. The Discharger must comply with the standards and time schedules contained in 40 CFR Part 503 whether or not they have been incorporated into this Order.

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

vi. 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.

vii. **Within 180 days of the permit effective date,** the Discharger shall review and update its existing biosolids use or disposal plan, and submit it to the Central Valley Water Board. The updated plan shall describe at a minimum:

(a) Sources and amounts of biosolids generated annually.

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

(c) Plans for ultimate disposal. For landfill disposal, include the Central Valley Water Board's waste discharge requirement numbers that regulate the particular landfill; the present classification of the landfill; and the name and location of the landfill.

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

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

c. Biosolids Storage and Transportation Specifications

Biosolids shall be considered to be "stored" if they are placed on the ground or in non-mobile containers (i.e. not in a truck or trailer) at an intermediate storage location away from the generator/processing for more than 48 hours. Biosolids shall be considered to be "staged" if placed on the ground for brief periods of time solely to facilitate transfer of the biosolids between transportation and application vehicles.

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i. Biosolids shall not be stored directly on the ground at any one location for more than seven (7) consecutive days.

ii. Facilities for the storage of Class B biosolids shall be located, designed and maintained to restrict public access to biosolids.

iii. Biosolids storage facilities shall be designed and maintained to prevent washout or inundation from a storm or flood with a return frequency of 100 years.

iv. Biosolids storage facilities, which contain biosolids, shall be designed and maintained to contain all storm water falling on the biosolids storage area during a rainfall year with a return frequency of 100 years.

v. Biosolids placed on site for more than 24 hours shall be covered.

vi. Biosolids storage facilities shall be designed, maintained and operated to minimize the generation of leachate and the effects of erosion.

vii. If biosolids are to be stored at the site, a plan describing the storage program and means of complying with the specifications contained in sections VI.C.5.b and c of this Order shall be submitted for the Central Valley Water Board's staff approval. The storage plan shall also include an adverse weather plan.

viii. The Discharger shall operate the biosolids storage facilities in accordance with the approved biosolids storage plan.

ix. The Discharger shall immediately remove and relocate any biosolids stored on site in violation of this General Order.

x. All biosolids shall be transported in covered vehicles capable of containing the designated load.

xi. All biosolids having a water content that is capable of leaching liquids shall be transported in leak proof vehicles.

xii. Each biosolids transport driver shall be trained as to the nature of its load and the proper response to accidents or spill events and shall carry a copy of an approved spill response plan.

xiii. The Discharger shall avoid the use of haul routes near residential land uses to the extent possible. If the use of haul routes near residential land uses cannot be avoided, the Discharger shall limit project-related truck traffic to daylight hours.

d. Collection System. On 2 May 2006, the State Water Board adopted State Water Resources Control Board Order No. 2006-0003-DWQ, Statewide General Waste Discharge Requirements (WDRs) for Sanitary Sewer Systems.

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The Discharger shall be subject to the requirements of Order No. 2006-0003-DWQ and any future revisions thereto. Order No. 2006-0003-DWQ requires that all public agencies that currently own or operate sanitary sewer systems apply for coverage under the general WDRs. The Discharger has applied for and has been approved for coverage under Order 2006-0003-DWQ for operation of its wastewater collection system**.**

e. Limited portions of the wastewater collection system may be outside the service area of the Discharger. In order to assure compliance with Discharge Prohibitions against overflows and bypasses, and to assure protection of the entire collection system and treatment works from industrial discharges, it is necessary that the Discharger control discharges into the system. To control discharges into the entire collection system, the Discharger shall establish interagency agreements with the collection system users. The interagency agreements shall contain, at a minimum, requirements for reporting of unauthorized releases of wastewater, maintenance of the collection system, backup power or adequate wet well capacity at all pump stations to prevent overflows during power outages and pump failures, and pump station high water alarm notification systems. The agreements shall also require implementation of an industrial pretreatment program that meets the minimum requirements of this permit. The Discharger shall comply with the following time schedule:

Task	Compliance Date
i. Submit interagency agreements for existing connections	**Within 60 days of permit adoption**
ii. Submit interagency agreements for new connections	**30 days prior to connection**

f. This Order, and the Monitoring and Reporting Program which is a part of this Order, requires that certain parameters be monitored on a continuous basis. The wastewater treatment plant is not staffed on a full time basis. Permit violations or system upsets can go undetected during this period. The Discharger shall establish an electronic system for operator notification for continuous recording device alarms. For existing continuous monitoring systems, the electronic notification system shall be installed within 6 months of adoption of this permit. For systems installed following permit adoption, the notification system shall be installed simultaneously.

6. Other Special Provisions

a. Ownership Change. The Discharger shall notify the succeeding owner or operator of the existence of this Order by letter if, and when, there is any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger.

7. Compliance Schedules – Not Applicable

TENTATIVE

VII. COMPLIANCE DETERMINATION

A. BOD_5 and TSS Effluent Limitations (Section IV.A.1.). Compliance with the final effluent limitations for BOD_5 and TSS required in Limitations and Discharge Requirements section IV.A.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 for percent removal shall be calculated using the arithmetic mean of BOD_5 and TSS in effluent samples collected over a monthly period as a percentage of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period.

B. Average Dry Weather Flow Effluent Limitations (Section IV.A.1.f). The average dry weather discharge flow represents the daily average flow when groundwater is at or near normal and runoff is not occurring. Compliance with the average dry weather flow 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.e). For each day that an effluent sample is collected and analyzed for total coliform organisms, the 7-day median shall be determined by calculating the median concentration of total coliform bacteria in the effluent utilizing the bacteriological results of the last 7 days. For example, if a sample is collected on a Wednesday, the result from that sampling event and all results from the previous 6 days (i.e., Tuesday, Monday, Sunday, Saturday, Friday, and Thursday) are used to calculate the 7-day median. If the 7-day median of total coliform organisms exceeds a most probable number (MPN) of 23 per 100 milliliters, the Discharger will be considered out of compliance.

D. Total Residual Chlorine Effluent Limitations (Section IV.A.1.d). Continuous monitoring analyzers for chlorine residual or for dechlorination agent residual in the effluent are appropriate methods for compliance determination. A positive residual dechlorination agent in the effluent indicates that chlorine is not present in the discharge, which demonstrates compliance with the effluent limitations. This type of monitoring can also be used to prove that some chlorine residual exceedances are false positives. Continuous monitoring data showing either a positive dechlorination agent residual or a chlorine residual at or below the prescribed limit are sufficient to show compliance with the total residual chlorine effluent limitations, as long as the instruments are maintained and calibrated in accordance with the manufacturer's recommendations.

Any excursion above the 1-hour average or 4-day average total residual chlorine effluent limitations is a violation. If the Discharger conducts continuous monitoring and the Discharger can demonstrate, through data collected from a back-up monitoring system, that a chlorine spike recorded by the continuous monitor was not actually due to chlorine, then any excursion resulting from the recorded spike will not be considered an exceedance, but rather reported as a false positive. Records supporting validation of false positives shall be maintained in accordance with Section IV Standard Provisions (Attachment D).

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E. Mass Effluent Limitations. The mass effluent limitations contained in the Final Effluent Limitations IV.A.1.a. are based on the permitted average dry weather flow and calculated as follows:.

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

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

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

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

H. Priority Pollutant Effluent Limitations. Compliance with effluent limitations for priority pollutants shall be determined in accordance with Section 2.4.5 of the *State Water Board Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California Policy*, using sample reporting protocols defined in Attachment A and Attachment E of this Order, as follows:

1. Dischargers shall be deemed out of compliance with an effluent limitation, if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

2. Dischargers shall be required to conduct a Pollutant Minimization Program (PMP) in accordance with section 2.4.5.1 of the SIP when there is evidence that the priority pollutant is present in the effluent above an effluent limitaitons.

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).

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3. When determining compliance with an average monthly effluent limitation (AMEL) and more than one sample result is available in a month, the discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of DNQ or ND. In those cases, the discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

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

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

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

TENTATIVE

ATTACHMENT A – DEFINITIONS

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

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

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

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

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

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

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

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

The daily discharge may be determined by the analytical results of a composite sample taken over the course of 1 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.

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

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 USEPA 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).

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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 CFR Part 136, Attachment B, revised as of 3 July 1999.

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

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

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

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

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

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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 or Regional Water Board.

Reporting Level (RL)
The RL is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the RL depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied in the computation of the RL.

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 Regional Water Board Basin Plan.

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

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

where:

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

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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.

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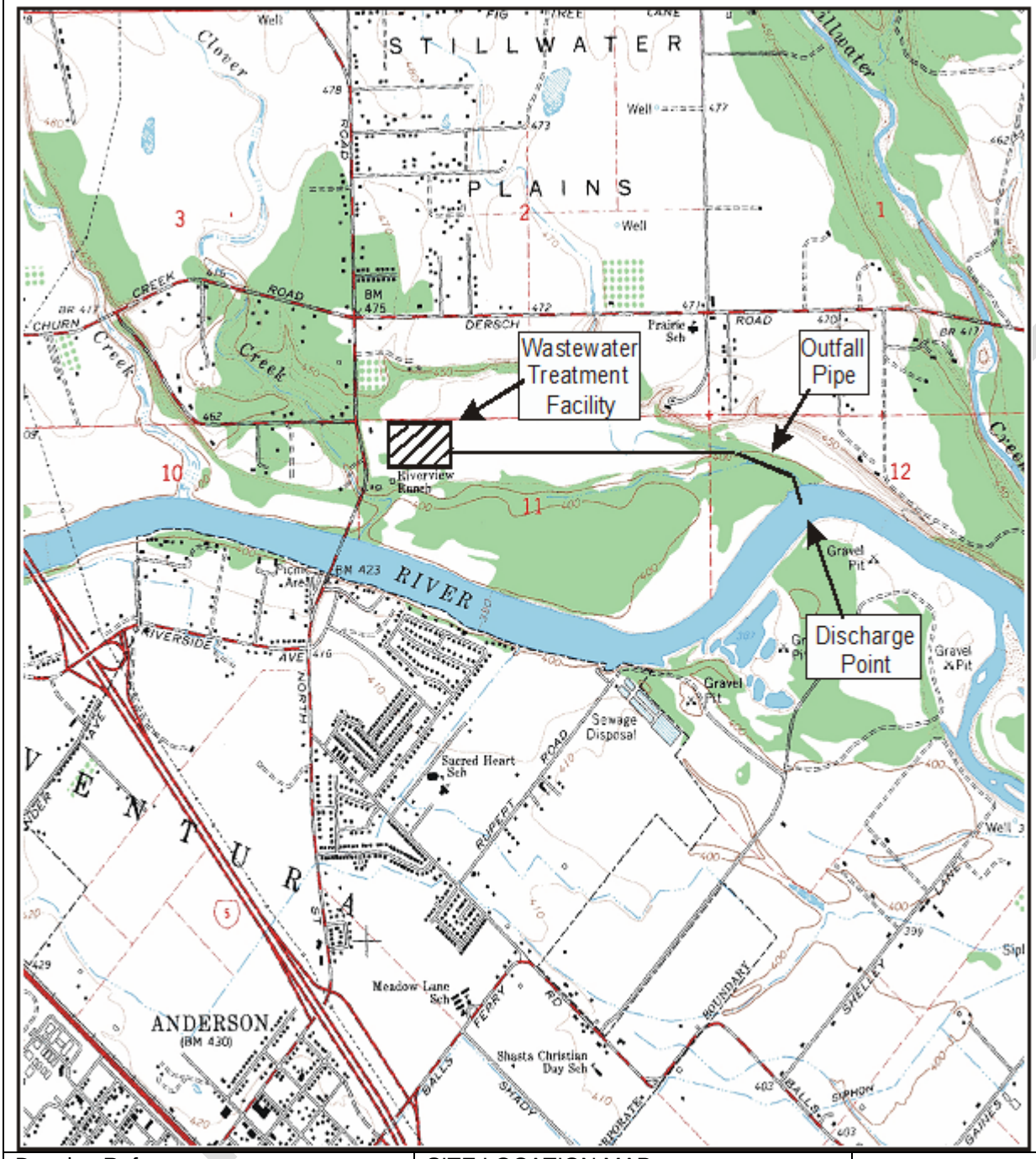
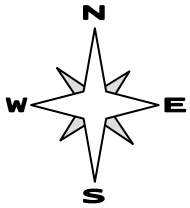
ATTACHMENT B – MAP



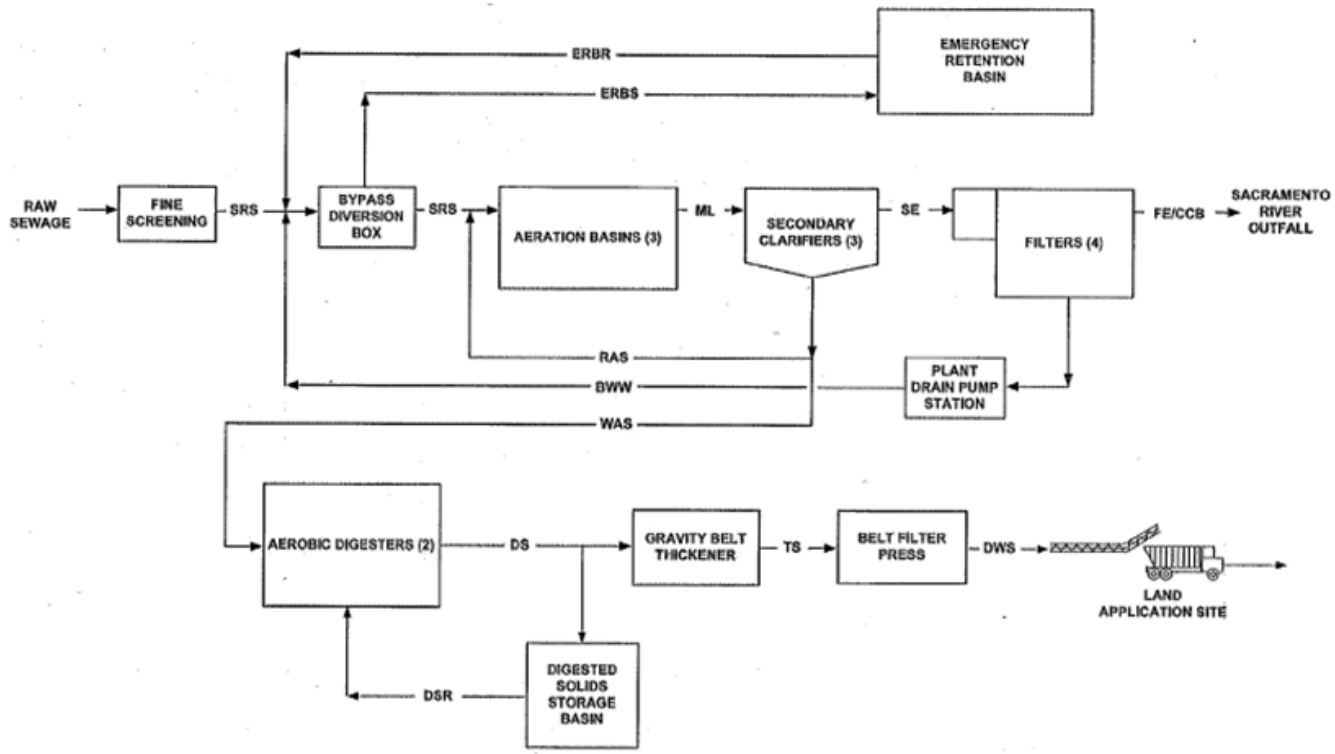
Drawing Reference: Section 11 & 12 T30N, R4W, MDB&M U.S.G.S MAP 7.5 MINUTE QUADRANGLE **SCALE: 1" = 2000'**	SITE LOCATION MAP **CITY OF REDDING** **STILLWATER WWTF** **SHASTA COUNTY**	

ATTACHMENT C – AERIAL PHOTOGRAPH

FACILITY SITE MAP (Note: Areas filled in blue indicate locations for planned additions, upgrades, and/or improvements.)	**CITY OF REDDING** **Stillwater Wastewater Treatment Facility** **SHASTA COUNTY**

TEN

ATTACHMENT C – FLOW SCHEMATIC



BWW	BACKWASH WASTE	ML	MIXED LIQUOR
DS	DIGESTED SLUDGE	RAS	RETURN ACTIVATED SLUDGE
DSR	DIGESTED SLUDGE RETURN	SE	SECONDARY EFFLUENT
DWS	DEWATERED SLUDGE	SRS	SCREENED RAW SEWAGE
ERBR	EMERGENCY RETENTION BASIN RETURN	TS	THICKENED SLUDGE
ERBS	EMERGENCY RETENTION BASIN SUPPLY	WAS	WASTE ACTIVATED SLUDGE
FE/CCB	FILTER EFFLUENT / CHLORINE CONTACT BASIN		

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 (Water Code) and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 CFR 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 CFR 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 CFR 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 CFR 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 CFR 122.41(e).)

E. Property Rights

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

TENTATIVE

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 CFR 122.5(c))

F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, United States Environmental Protection Agency (USEPA), 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 CFR 122.41(i); Water Code section 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 CFR 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 CFR 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 CFR 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 CFR 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 CFR 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 CFR 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 CFR 122.41(m)(2))

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3. Prohibition of bypass. Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless (40 CFR 122.41(m)(4)(i)):

a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 CFR 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 CFR 122.41(m)(4)(i)(B)); and

c. The Discharger submitted notice to the Regional Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 CFR 122.41(m)(4)(i)(C))

4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 CFR 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 CFR 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 CFR 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 CFR 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

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was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 CFR 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 CFR 122.41(n)(3)):

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

b. The permitted facility was, at the time, being properly operated (40 CFR 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 CFR 122.41(n)(3)(iii)); and

d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 CFR 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 CFR 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 CFR 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 CFR 122.41(b))

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional 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 CFR 122.41(l)(3) and 122.61)

TENTATIVE

III. STANDARD PROVISIONS – MONITORING

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

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

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 CFR 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 Regional Water Board Executive Officer at any time. (40 CFR 122.41(j)(2))

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 CFR 122.41(j)(3)(i));

2. The individual(s) who performed the sampling or measurements (40 CFR 122.41(j)(3)(ii));

3. The date(s) analyses were performed (40 CFR 122.41(j)(3)(iii));

4. The individual(s) who performed the analyses (40 CFR 122.41(j)(3)(iv));

5. The analytical techniques or methods used (40 CFR 122.41(j)(3)(v)); and

6. The results of such analyses. (40 CFR 122.41(j)(3)(vi))

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

1. The name and address of any permit applicant or Discharger (40 CFR 122.7(b)(1)); and

2. Permit applications and attachments, permits and effluent data. (40 CFR 122.7(b)(2))

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V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, State Water Board, or USEPA within a reasonable time, any information which the Regional Water Board, State Water Board, or USEPA 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 Regional Water Board, State Water Board, or USEPA copies of records required to be kept by this Order. (40 CFR 122.41(h); Wat. Code, § 13267)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA 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 CFR 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 USEPA). (40 CFR 122.22(a)(3))

3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or USEPA 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 CFR 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 CFR 122.22(b)(2)); and

c. The written authorization is submitted to the Regional Water Board and State Water Board. (40 CFR 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

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Standard Provisions – Reporting V.B.3 above must be submitted to the Regional Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 CFR 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 CFR 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 or as specified elsewhere in this Order (e.g., Special Provisions). (40 CFR 122.22(l)(4))

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 CFR 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 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board. (40 CFR 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 CFR 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 CFR 122.41(l)(5))

E. Twenty-Four Hour Reporting

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1. The Discharger shall notify the Office of Emergency Services of any noncompliance that may endanger health or the environment within two (2) hours from the time the Discharger becomes aware of the circumstances. The Discharger shall notify the Central Valley Water Board of the noncompliance by telephone or fax within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided to the Central Valley Water Board 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 CFR 122.41(l)(6)(i))

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

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

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

3. The Regional 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 CFR 122.41(l)(6)(iii))

F. Planned Changes

The Discharger shall give notice to the Regional 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 CFR 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 40 CFR 122.29(b) (40 CFR 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 CFR 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 40 CFR 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1). (40 CFR 122.41(l)(1)(ii))

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the

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application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 CFR 122.41(l)(1)(iii))

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements. (40 CFR 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 CFR 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 Regional Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 CFR 122.41(l)(8))

VI. STANDARD PROVISIONS – ENFORCEMENT

A. The Regional 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 Regional Water Board of the following (40 CFR 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 CFR 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 CFR 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

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quantity or quality of effluent to be discharged from the POTW. (40 CFR 122.42(b)(3))

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM

Title 40 of the Code of Federal Regulations (CFR), section 122.48 (40 CFR 122.48) requires that all NPDES permits specify monitoring and reporting requirements. California Water Code (Water Code) sections 13267 and 13383 also authorize the Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) to require technical and monitoring reports. This Monitoring and Reporting Program establishes monitoring and reporting requirements, which implement the 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

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continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.

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

F. Laboratories analyzing monitoring samples shall be certified by DPH, in accordance with the provision of CWC 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 to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
--	INF-001	Treatment plant headworks. 40 28’ 39.6” N, 122 17’ 28.2” W
D-001	EFF-001	Downstream from last connection through which wastes can be admitted into the outfall. 40° 28’ 23.48” N, 122° 16’ 10.5” W
D-001	EFF-002	Downstream from EFF-001, at the bubble trap.
	LND-001	Primary Emergency Retention Basin (East pond).
	LND-002	Secondary Emergency Retention Basin/ Digested Solids Storage Basin (West pond).
REC-001	REC-001	Reclamation Water Flow Measurement Location
--	RSW-001	Sacramento River – 100 feet upstream from point of discharge
--	RSW-002	Sacramento River – 1,000 feet downstream from point of discharge.
--	BIO-001	Biosolids Storage Area
--	SPL-001	Water Supply

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III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

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

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
Conventional Pollutants				
Biological Oxygen Demand (BOD 5-day @ 20°C)	mg/L	24-hr Composite [3]	1/Week	[1]
	lbs/day	Calculate	1/Week	[1]
pH	Standard Units	Grab [2]	1/Day	[1]
Total Suspended Solids	mg/L	24-hr Composite [3]	1/Week	[1]
	lbs/day	Calculate	1/Week	[1]
Priority Pollutants				
Total Recoverable Metals[4]	µg/L	24-Hr Composite [3]	1/Year	[1]

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136; or by methods approved by the Central Valley Water Board or the State Water Board.
[2] Grab samples shall <u>not</u> be collected at the same time each day to get a complete representation of variations in the influent.
[3] 24-hour flow proportional composite.
[4] Cadmium, copper, lead, nickel, silver, and zinc. Influent hardness and pH shall be determined at the same time. Sample shall be collected at the same time effluent sample is obtained for priority pollutant analysis.

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IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

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

Table E-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
Conventional Pollutants				
Biochemical Oxygen Demand (BOD) (5-day @ 20 Deg. C)	mg/L	24-hr Composite [3]	1/Week	[1]
	lbs/day	Calculate	1/Week	--
pH	Standard Units	Meter	Continuous	[1]
Total Suspended Solids	mg/L	24-hr Composite [3]	1/Week	[1]
	lbs/day	Calculate	1/Week	--
Priority Pollutants				
Beta-BHC	µg/L	Grab	1/Month	[1, 2]
Carbon Tetrachloride	µg/L	Grab	1/Month	[1, 2]
Chlorodibromomethane	µg/L	Grab	1/Month	[1, 2]
Chlorpyrifos	µg/L	Grab	1/Year	[2, 11]
Copper, Total Recoverable	µg/L	24-hr Composite[3]	1/Month	[1, 2]
Cyanide, Total (as CN)	µg/L	Grab	1/Month	[1, 2]
Diazinon	µg/L	Grab	1/Year	[2, 11]
Dichlorobromomethane	µg/L	Grab	1/Month	[1, 2]
Zinc, Total Recoverable	µg/L	24-hr Composite[3]	1/Month	[1, 2]
Non-Conventional Pollutants				
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Month [4, 6]	[1]
Ammonia, Un-ionized	mg/L	Grab	1/Month [4, 6]	[1]
Chlorine, Total Residual	mg/L	Meter	Continuous	[1, 5]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month	[1]
Hardness (as $CaCO_3$)	mg/L	Grab	1/Month [7]	[1]
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Month [8]	[1]
Nitrite Nitrogen, Total (as N)	mg/L	Grab	1/Month [8]	[1]
Nitrate + Nitrite (as N)	mg/L	Calculate	1/Month	--

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Standard Minerals [9]	mg/L	Grab	1/Year	[1]
Temperature	°F (°C)	Grab	1/Week	[1]
Total Coliform Organisms	MPN/100 mL	Grab	1/Week	[1]
Total Dissolved Solids	mg/L	Grab	1/Month[10]	[1]
Other				
Whole Effluent Toxicity (see Section V. below)	--	--	--	--
Priority Pollutants and Other Constituents of Concern	--	See Attachment I	See Attachment I	See Attachment I

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
[2] The Reporting Level shall be below the effluent limitations. If the lowest ML published in Appendix 4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Plan or SIP) is not below the effluent limitation, the Reporting Level shall be the lowest ML.
[3] 24-hour flow proportional composite.
[4] pH and temperature shall be recorded at the time of ammonia sample collection.
[5] Total chlorine residual must be monitored with a method sensitive to and accurate at the permitted level of 0.01 mg/L.
[6] Concurrent with whole effluent toxicity monitoring.
[7] Hardness samples shall be collected concurrently with metals samples.
[8] Monitoring for nitrite and nitrate shall be conducted concurrently.
[9] Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).
[10] Concurrent with electrical conductivity monitoring.
[11] USEPA Method 625M, Method 8141, or equivalent. Minimum reporting limits: <100 ng/L diazinon; <15 ng/L chlorpyrifos.

2. If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record data the constituents listed in Table E-3, except for priority pollutants, after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge. In no event shall the Discharger be required to monitor and record data more often than twice the frequencies listed in the schedule.

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

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

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

2. *Sample Types* – The Discharger may use flow-through or static renewal testing. For static renewal testing, the samples shall be flow proportional 24-hour

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composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location EFF-001.

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

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

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

B. Chronic Toxicity Testing. The Discharger shall conduct 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 annual three species chronic toxicity testing.

2. *Sample Types* – Effluent samples shall be flow proportional 24-hour composite samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location EFF-002. The receiving water control shall be a grab sample obtained from the RSW-001 sampling location, as identified in this Monitoring and Reporting Program.

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

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

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

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

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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 regular 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 two controls. For TRE monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-4, below, unless use of an alternative diluent is detailed in the submitted TRE Action Plan, or when the receiving water is toxic.

Table E-4. Chronic Toxicity Testing Dilution Series

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

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

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

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

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

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

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1. **Chronic WET Reporting.** Regular chronic toxicity monitoring results shall be reported to the Central Valley Water Board with the self-monitoring reports that are required to be submitted on the first day of the second calendar month following month of sampling, 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).

   Items a through c, above, are only required when testing is performed using the full dilution series.

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

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

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

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

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

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

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VI. LAND DISCHARGE MONITORING REQUIREMENTS

A. Monitoring Location LND-001 and LND-002

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

Table E-5. Land Discharge Monitoring Requirements for LND-001 and LND-002

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

VII. RECLAMATION MONITORING REQUIREMENTS

A. Monitoring Location REC-001

1. The Discharger shall monitor reclaimed water flow at REC-001 as follows:

Table E-6. Reclamation Monitoring Requirements

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

1 When reclaimed water is being used for crop irrigation.
2 Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER

A. Monitoring Location RSW-001 and RSW-002

1. The Discharger shall monitor the Sacramento River at RSW-001 and RSW-002 when discharging at Discharge Point No. 001, as follows

Table E-7. Receiving Water Monitoring Requirements for RSW-001 and RSW-002

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	cfs	Gauge[5]	1/Day	--
Conventional Pollutants				
pH	Standard Units	Grab	1/Week	[1]
Priority Pollutants				
Beta-BHC	µg/L	Grab	1/Year[6]	[1, 3]
Chlorodibromomethane	µg/L	Grab	1/Year[6]	[1, 3]
Copper, Total Recoverable	µg/L	Grab	1/Month[2,6]	[1, 3]
Copper, Dissolved	µg/L	Grab	1/Month[2,6]	[1, 3]
Cyanide, Total (as CN)	µg/L	Grab	1/Month[6]	[1, 3]

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Dichlorobromomethane	µg/L	Grab	1/Year[6]	[1, 3]
Zinc, Total Recoverable	µg/L	Grab	1/Month [2,6]	[1, 3]
Zinc, Dissolved	µg/L	Grab	1/Month [2,6]	[1, 3]
Non-Conventional Pollutants				
Dissolved Oxygen	mg/L	Grab	1/Week	[1]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Week	[1]
Hardness ($CaCO_3$)	mg/L	Grab	1/Month	[1]
Standard Minerals [4]	mg/L	Grab	1/Year [2]	[1]
Temperature	°F (°C)	Grab	1/Week	[1]
Turbidity	NTU	Grab	1/Week	[1]
Other				
Priority Pollutants and Other Constituents of Concern	µg/L	See Attachment I	See Attachment I	See Attachment I

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
[2] Receiving water hardness and pH required at time of sampling.
[3] See Attachment I for Reporting Level requirements.
[4] Standard minerals shall include the following: boron, calcium, iron, magnesium, manganese, potassium, sodium, chloride, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).
[5] The location and/or source of the gauge(s) must be approved by the Executive Officer.
[6] Monitoring Required at RSW-001 only.

2. In conducting the receiving water sampling when discharging to the Sacramento River at Discharge Point No. 001, a log shall be kept of the receiving water conditions throughout the reach bounded by monitoring locations RSW-001 and RSW-002. Attention shall be given to the presence or absence of:

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

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

IX. OTHER MONITORING REQUIREMENTS

A. Biosolids

1. Monitoring Location BIO-001

a. A composite sample of sludge shall be collected annually at Monitoring Location BIO-001 in accordance with EPA's *POTW Sludge Sampling and Analysis Guidance Document*, August 1989, and tested for priority pollutants

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listed in 40 CFR Part 122, Appendix D, Tables II and III (excluding total phenols).

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

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.

d. Upon removal of sludge, the Discharger shall submit characterization of sludge quality; including sludge percent solids and the most recent quantitative results of chemical analysis for the priority pollutants listed in 40 CFR 122 Appendix D, Tables II and III (excluding total phenols). Suggested methods for analysis of sludge are provided in USEPA publications titled "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods" and "Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater". Recommended analytical holding times for biosolids samples should reflect those specified in 40 CFR 136.3(e). Other guidance is available.

B. Municipal Water Supply

1. Monitoring Location SPL-001

The Discharger shall monitor the municipal water supply at SPL-001 as follows. A sampling station shall be established where a representative sample of the municipal water supply can be obtained. Municipal water supply samples shall be collected at approximately the same time as effluent samples.

Table E-8. Municipal Water Supply Monitoring Requirements

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

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

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

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

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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 submit eSMRs using the State Water Board's CIWQS Program Web site (http:www.waterboards.ca.gov/ciwqs/index.html). The Discharger shall maintain sufficient staffing and resources to ensure it submits eSMRs during the effective duration of this Order. This includes provision of training and supervision of individuals (e.g., Discharger personnel or consultant) on how to prepare and submit eSMRs.

2. The Discharger shall report in the SMR the results for all monitoring specified in this Monitoring and Reporting Program under sections III through IX. The Discharger shall submit monthly, quarterly, semiannual, and annual SMRs including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.

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

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Table E-9. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	Permit effective date	Continuous	Submit with monthly SMR
1/Hour	Permit effective date	Hourly	Submit with monthly SMR
1/Day	Permit effective date	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	Submit with monthly SMR
1/Week	Permit effective date	Sunday through Saturday	Submit with monthly SMR
1/Month	Permit effective date	First day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1/Quarter	Permit effective date	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	1 May 1 August 1 November 1 February
2/Year	Permit effective date	1 January through 30 June 1 July through 31 December	1 August 1 February
1/Year	Permit effective date	1 January through 31 December	1 February

4. **Reporting Protocols.** The Discharger shall report with each sample result the applicable Reporting Level (RL) and the current Method Detection Limit (MDL), as determined by the procedure in 40 CFR 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 reported 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 as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (+ a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

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

d. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

5. **Multiple Sample Data.** When determining compliance with an AMEL, 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. Reports must clearly show when discharging to EFF-001 or other permitted discharge locations. Reports must show the date and time 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 following shall be calculated and reported in the SMRs:

   a. Annual Average Limitations. For constituents with effluent limitations specified as "annual average" (aluminum, electrical conductivity, iron, and

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manganese) the Discharger shall report the annual average in the June SMR. The annual average shall be calculated as the average of the samples gathered for the calendar year.

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

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

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

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

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

e. 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.

f. Turbidity Receiving Water Limitations. The Discharger shall calculate and report the turbidity increase in the receiving water applicable to the natural turbidity condition specified in Section V.A.17.a-e. of the Limitations and Discharge Requirements.

g. Temperature Receiving Water Limitations. The Discharger shall calculate and report the temperature increase in the receiving water based on the difference in temperature at RSW-001 and RSW-002.

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

a. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS.

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

c. SMRs must be submitted to the Central Valley Water Board, signed and certified as required by the Standard Provisions (Attachment D), to the address listed below:

Regional Water Quality Control Board
Central Valley Region
NPDES Compliance and Enforcement Unit
364 Knollcrest Drive., Suite #205
Redding, CA 96002

C. Discharge Monitoring Reports (DMRs)

1. As described in section X.B.1 above, at any time during the term of this permit, the State Water Board or Central Valley Water Board may notify the Discharger to electronically submit SMRs that will satisfy federal requirements for submittal of Discharge Monitoring Reports (DMRs). Until such notification is given, the Discharger shall submit DMRs in accordance with the requirements described below.

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

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

3. All discharge monitoring results must be reported on the official USEPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated will not be accepted unless they follow the exact same format of EPA Form 3320-1.

D. Other Reports

1. The Discharger shall report the results of any special studies, acute and chronic testing, and TRE/TIE required by Special Provisions VI.C.2 of this Order. The Discharger shall submit reports within the timeframes described or by the specified due dates.

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2. Within 60 days of permit adoption, the Discharger shall submit a report outlining reporting levels (RLs), method detection limits, and analytical methods for approval. The Discharger shall comply with the monitoring and reporting requirements for CTR constituents as outlined in section 2.3 and 2.4 of the SIP. The maximum required reporting levels for priority pollutant constituents shall be based on the minimum levels (MLs) contained in Appendix 4 of the SIP, determined in accordance with Section 2.4.2 and 2.4.3 of the SIP. In accordance with Section 2.4.2 of the SIP, when there is more than one ML value for a given substance, the Central Valley Water Board shall include as RLs, in the permit, all ML values, and their associated analytical methods, listed in Appendix 4 that are below the calculated effluent limitation. The Discharger may select any one of those cited analytical methods for compliance determination. If no ML value is below the effluent limitation, then the Central Valley Water Board shall select as the RL, the lowest ML value, and its associated analytical method, listed in Appendix 4 for inclusion in the permit. Table I-1 (Attachment I) provides required maximum reporting levels in accordance with the SIP.

3. **Effluent and Receiving Water Characterization Study.** An effluent and receiving water monitoring study is required to ensure adequate information is available for the next permit renewal. During the third year of this permit term, the Discharger shall conduct quarterly monitoring of the effluent at EFF-001 and of the receiving water at RSW-001 for all priority pollutants and other constituents of concern as described in Attachment I. Dioxin and Furan sampling shall be performed only twice during the year, as described in Attachment J.

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

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

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

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

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

   e. The Discharger may also be requested to submit an annual report to the Central Valley Water Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations

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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.

5. **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 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 Board's CIWQS Program Website.

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

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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:

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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 the 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;

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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

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ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described in the Findings in section II 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	**5A450103004**
Discharger	City of Redding
Name of Facility	Stillwater Wastewater Treatment Facility, Anderson
Facility Address	6475 Airport Road
	Anderson, CA 96007
	Shasta County
Facility Contact, Title and Phone	John Szychulda, Plant Supervisor, (530) 378-6702
Authorized Person to Sign and Submit Reports	John Szychulda, Plant Supervisor, (530) 378-6702 Jon McClain, Assistant Public Works Director, (530) 224-6029
Mailing Address	P.O. Box 917, Anderson, CA 96007
Billing Address	P.O. Box 496071, Redding, CA 96007
Type of Facility	POTW
Major or Minor Facility	Major
Threat to Water Quality	1
Complexity	A
Pretreatment Program	Y
Reclamation Requirements	Producer (offsite fodder crop and onsite irrigation) Water Reclamation Requirements Order No. 98-016
Facility Permitted Flow	3.4 million gallons per day (mgd)
Facility Design Flow	3.4 mgd (ADWF), 14.4 (PWWF)
Watershed	Sacramento River
Receiving Water	Sacramento River
Receiving Water Type	Inland surface water

A. The City of Redding (hereinafter Discharger) is the owner and operator of the Stillwater Wastewater Treatment Facility (hereinafter Facility), a publicly–owned treatment works.

For the purposes of this Order, references to the "discharger" or "permittee" in

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applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. The Facility discharges wastewater to the Sacramento River, a water of the United States, and was regulated by Order R5-2007-0058 which was adopted on 21 June 2007 and expired on 1 June 2012. The terms and conditions of Order R5-2007-0058 were automatically continued and remained in effect until new Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit are adopted pursuant to this Order.

C. The Discharger filed a report of waste discharge and submitted an application for renewal of its WDRs and NPDES permit on 2 December 2011. Supplemental information was requested on 29 December 2011 and received by 24 January 2012.

II. FACILITY DESCRIPTION

The Discharger provides sewerage service for the community of Redding, CA and serves approximately 9,850 household equivalents. The design daily average flow capacity of the Facility is 3.4 million gallons per day (mgd).

The Discharger is the owner and operated of the collection system, which is regulated under the State Water Board General Order, Water Quality Order No. 2006-0003, effective November 2006

A. Description of Wastewater and Biosolids Treatment or Controls

The treatment system at the Facility consists of influent screening for removal of large solids, activated sludge treatment with secondary clarification, filtration, and chlorination/dechlorination. Waste activated sludge is treated by aerobic digestion followed by belt-filter-press dewatering. Biosolids are disposed at a sanitary landfill and land applied on property owned by the Discharger. The Facility design average dry weather flow is 3.4 MGD. The Report of Waste Discharge described observed flows during the past permit cycle as follows: annual average daily flow rate: 3.52 MGD and maximum reported daily flow: 11.39 MGD.

B. Discharge Points and Receiving Waters

1. The Facility (Assessor's Parcel No. 056-400-07) is located in Section 11 & 12, T30N, R4W, MDB&M, as shown in Attachment B, a part of this Order.

2. Treated municipal wastewater is discharged at Discharge Point No. 001 to the Sacramento River, a water of the United States at a point latitude 40° 28' 26.8" N and longitude 122° 16' 07.5" W.

3. Discharge Point 001 is located within the Enterprise Flat Hydrologic Area (508.10) of the Redding Hydrologic Unit as defined by the interagency hydrologic map for the Sacramento Hydrologic Basin prepared by the Department of Water Resources (1986).

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

Effluent limitations and Discharge Specifications contained in Order No. R5-2007-0058 for discharges from Discharge Point No. D-001 (Monitoring Location EFF-001) and representative monitoring data from the term of Order No. R5-2007-0058 are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (October 2008 through June 2012)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
BOD 5-day @ 20°C	mg/L	10	15	30	3.08	6.53	6.53
	lbs/day[a]	334	500	1,001	140.1	180.8	260.9
Total Suspended Solids	mg/L	10	15	30	4.1	6	6
	lbs/day[a]	334	500	1,001	204.7	404.5	412.3
pH	pH units	pH shall remain within the range of 6.0 and 9.0 at all times			4.1 - 7.34[g]		
Copper, Total Recoverable	µg/L	13.7[b]	--	27.4[b]	18	--	18
Zinc, Total Recoverable	µg/L	57.8[c]	--	115.9[c]	70.7	--	70.7
Cyanide, Total (as CN)	µg/L L	31.8	--	63.7	10	--	10
Chlorodibromomethane	µg/L	12.1	--	24.2	3	--	3
Dichlorobromomethane	µg/L	18.1	--	36.2	22	--	22
alpha-BHC	µg/L	0.11	--	0.21	0.006 DNQ	--	0.006 DNQ
beta-BHC	µg/L	0.15	--	0.30	0.013	--	0.013
gamma-BHC	µg/L	0.81	--	1.62	<0.002	--	<0.002
Total Chlorine Residual	mg/L	--	0.01[d]	0.02[e]	<0.02	--	0.015[d] 1.46[e]
Total Coliform Organisms	MPN/100 mL	23[f]	--	500	5.5[f]	--	80
Flow	mgd	Monthly average daily dry weather discharge flow shall not exceed 4.0 mgd (May through September)			7.39	--	11.01

[a] Based upon a dry weather treatment design flow of 4.0 mgd.
[b] Interim effluent limits for Copper, Total Recoverable set at 22.5 µg/L.
[c] Interim effluent limits for Zinc, Total Recoverable set at 85.6 µg/L.
[d] 4-day average.
[e] 1-hour average.
[f] Monthly median.
[e] 1-hour average.
[g] Range of effluent discharge values for pH.

D. Compliance Summary

The following is a summary of violations noted during the monthly monitoring and reporting review during the term of the previous permit:

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Time Period	Effluent Violation Description
2012	Monthly average total recoverable copper (17.1 µg/L), 12 October 2012. Monthly average total recoverable copper (14.8 µg/L), 9 July 2012. Minimum daily pH (4.12 standard units), 12/13 January 2012.
2011	Bypass, overflow, and discharge location prohibitions, 26/27/28 March 2011. Maximum daily chlorine residual (1.46 mg/L), 23 January 2012. Maximum daily chlorine residual (0.015 mg/L), 23 January 2012.
2010	None.
2009	Monthly average dichlorobromomethane (22 µg/L), 31 August 2009. Minimum daily pH (4.1 standard units), 11 June 2009.
2008	Monthly average total suspended solids (10.1 mg/L), 30 June 2008
2007	None.

E. Planned Changes

The Discharger is in the process of Facility upgrades and an expansion to be completed throughout a series of project sub-phases (1A, 1B, 1C, 1D) outlined in Phase 1 of the Discharger's Facility Plan, dated November 2008. Portions of sub-phases 1A and 1B have been completed during the term of the previous permit and remaining projects of sub-phases 1A and 1B are planned for completion during the term of this Order. The following is a summary and status of those projects included in sub-phases 1A and 1B:

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Sub-phase	Upgrade Description	Status
1A	Tertiary Treatment: Addition of 2 new travelling bridge filters increasing total filtration capacity from 9.0 mgd to 18.0 mgd.	Complete
1A	Emergency Retention Basins (ERBs): Conversion of the 2 existing ERBs to a Digested Sludge Storage Basin (DSSB) and an ERB for increased emergency flow control and stabilized solids management. Conversion includes installation of a double liner system (60 mil HDPE primary liner and secondary clay liner) with leak detection and a new digested solids return pump station.	Complete
1A/1B	Headworks: Expansion, upgrades, and improvements of influent screening, flow channelization, screenings conveyance and deposition, Parshall Flume, and influent flow metering to increase screened influent capacity from 10 mgd to 20 mgd.	In-progress
1B	Secondary Treatment: Construction of two additional secondary clarifiers, an additional scum pump station, and expansion of the existing mixed liquor flow splitting structure to increase secondary treatment capacity of the plant from 12.8 mgd to 18.2 mgd.	In-progress
1B	Plant Drain Pump Station (PDPS): PDPS upgrade and expansion to meet increased capacity requirement for filter backwash resulting from increased tertiary treatment capacity.	In-progress
1B	Mixed Liquor Recycling: Upgrade of existing mixed liquor recycling pumps to increase the denitrification rate in the anoxic zones of the aeration basins for improved management over total nitrogen in the effluent.	In-progress
1B	Return Activated Sludge (RAS) / Waste-activated Sludge (WAS) Pump Station: Addition of 3 new RAS pumps and WAS suction header expansion to meet secondary treatment expansion requirements.	In-progress
1B	W3 System: Upgrade of 4 new vertical turbine W3 pumps to meet increased reclaimed water demands after Facility upgrades and to provide higher operating pressure for improved influent screen, DSSB, and ERB washdown.	In-progress
1B	Plant SCADA and PLC upgrades corresponding to Facility improvements for increased operational control and systems analysis.	In-progress

The Discharger plans to complete the remainder of Phase 1 Facility improvements as outlined in sub-phases 1C and 1D after the term of this Order. Those future improvements include the following: additional influent screening and deposition upgrades; a new grit removal process; conversion of existing aerobic digesters into additional aeration basins; installation of a WAS holding tank, WAS pump station, and WAS force main; expansion of existing chlorine contact basin and outfall (i.e., outfall pipeline and diffuser); and ancillary upgrades (e.g., SCADA system, chemical feed, and etc.).

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the applicable plans, policies, and regulations identified in the Findings in section II of this Order. The applicable plans, policies, and regulations relevant to the discharge include the following:

A. Legal Authorities

This Order is issued pursuant to regulations in the Clean Water Act (CWA) and the California Water Code (Water Code) as specified in the Finding contained at section II.C of this Order.

B. California Environmental Quality Act (CEQA)

This Order meets the requirements of CEQA as specified in the Finding contained at section II.E of this Order.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans.** This Order implements the following water quality control plans as specified in the Finding contained at section II.H of this Order.

   a. *Water Quality Control Plan, Fourth Edition (Revised October 2011), for the Sacramento and San Joaquin River Basins* (Basin Plan).

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** This Order implements the NTR and CTR as specified in the Finding contained at section II.I of this Order.

3. **State Implementation Policy (SIP).** This Order implements the SIP as specified in the Finding contained at section II.I of this Order.

4. **Alaska Rule.** This Order is consistent with the Alaska Rule as specified in the Finding contained at section II.L of this Order.

5. **Antidegradation Policy.** As specified in the Finding contained at section II.N of this Order and as discussed in detail in the Fact Sheet (Attachment F, Section IV.D.4.), the discharge is consistent with the antidegradation provisions of 40 CFR section 131.12 and State Water Resources Control Board (State Water Board) Resolution 68-16.

6. **Anti-Backsliding Requirements.** This Order is consistent with anti-backsliding policies as specified in the Finding contained at section II.M of this Order. Compliance with the anti-backsliding requirements is discussed in the Fact Sheet (Attachment F, Section IV.D.3).

7. **Emergency Planning and Community Right to Know Act**

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

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

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

8. 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.

9. Endangered Species Act. This Order is consistent with the Endangered Species Act as specified in the Finding contained at section II.P of this Order.

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

1. Under section 303(d) of the 1972 CWA, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 30 November 2006 USEPA gave final approval to California's 2006 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*

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imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment." The Sacramento River has been identified on the 303(d) list as an impaired water body due to elevated concentrations of diazinon and chlorpyrifos. In addition, the Sacramento River, from Keswick Dam to Cottonwood Creek, is listed as a WQLS for unknown toxicity in the 303(d) list of impaired water bodies.

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. The listing for unknown toxicity has a proposed TMDL completion date of 2019. In 2007, the Central Valley Water Board adopted an amendment to the Basin Plan that addressed impairments within the Sacramento River and Feather River Basins by promulgating a water quality objective for diazinon and chlorpyrifos as well as an implementation program designed to ensure compliance with the new water quality objective. Per this implementation program, all NPDES permits for discharges (both direct and indirect) to the Sacramento or Feather Rivers must contain an effluent limit equivalent to the diazinon and chlorpyrifos water quality objective. This Order requires the Discharger to monitor the effluent for diazinon and chlorpyrifos, and includes effluent limitations for diazinon and chlorpyrifos.

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

E. Other Plans, Policies and Regulations

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

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

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

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

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304

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(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-17.0 contains an implementation policy, "*Policy for Application of Water Quality Objectives*" that specifies that the Central Valley Water Board "*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives*." This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) 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 constituents objective states that waters shall not contain chemical constituents in concentrations that adversely affect

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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 Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the federal regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.

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

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

B. Technology-Based Effluent Limitations

1. Scope and Authority

Section 301(b) of the CWA and implementing USEPA permit regulations at 40 CFR 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

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authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at 40 CFR Part 133.

Regulations promulgated in 40 CFR 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 USEPA Administrator.

Based on this statutory requirement, USEPA developed secondary treatment regulations, which are specified in 40 CFR 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 5-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

2. Applicable Technology-Based Effluent Limitations

a. BOD_5 and TSS. Federal regulations, 40 CFR Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD_5 and TSS. Advanced-secondary treatment is necessary to protect the beneficial uses of the receiving stream and the final effluent limitations for BOD_5 and TSS are water-quality-based limitations and the limitations are based on the technical capability of the advanced secondary treatment process. BOD_5 is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The secondary and advanced-secondary treatment standards for BOD_5 and TSS are indicators of the effectiveness of the treatment processes. The principal design parameter for wastewater treatment plants is the daily BOD_5 and TSS loading rates and the corresponding removal rate of the system. In applying 40 CFR Part 133 for weekly and monthly average BOD_5 and TSS limitations, the application of an advanced-secondary treatment processes results in the ability to achieve lower levels for BOD_5 and TSS, therefore the BOD_5 and TSS limitations are 10 mg/L, which is technically based on the capability of an advanced-secondary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD_5 and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities. 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_5 and TSS must be achieved by a secondary treatment plant, it must also be achieved by an advanced-secondary (i.e., treatment beyond secondary level) treatment plant. This Order contains a limitation requiring an average of 85 percent removal of BOD_5 and TSS over each calendar month.

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b. Flow. The Facility was designed to provide an advanced-secondary level of treatment for up to an average dry weather design flow of 3.4 mgd. Therefore, this Order contains an average dry weather discharge flow effluent limitation of 3.4 mgd.

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

Summary of Technology-based Effluent Limitations
Discharge Point No. 001

Table F-3. Summary of Technology-based Effluent Limitations[1]

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	--	--	--
	lbs/day[2]	851	1,276	--	--	--
	Percent Removal (%)	85	--		--	--
Total Suspended Solids (TSS)	mg/L	30	45	--	--	--
	lbs/day[2]	851	1,276	--	--	--
	Percent Removal (%)	85	--	--	--	--
pH	standard units				6.0	9.0
Flow	MGD	3.4[3]	--	--	--	--

1 Final effluent limitations for pH, BOD_5, and TSS (with the exception of percent removal) are water quality-based effluent limitations and not technology-based effluent limitations.
2 Based on design ADWF of 3.4 mgd.
3 Average dry weather design flow.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

Section 301(b) of the CWA and 40 CFR 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. This Order contains requirements, expressed as a technology equivalence requirement, more stringent than secondary treatment requirements that are necessary to meet applicable water quality standards. The rationale for these requirements, which consist of advanced-secondary treatment or equivalent requirements or other provisions, is discussed in section IV.C.3 of this Fact Sheet.

40 CFR 122.44(d)(1)(i) mandates 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

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potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in 40 CFR 122.44(d)(1)(vi).

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

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

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

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

The federal CWA section 101(a)(2), states: "*it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983.*" Federal Regulations, developed to implement the requirements of the CWA, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal Regulations, 40 CFR sections 131.2 and 131.10, require that all waters of the State 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.

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a. Receiving Water and Beneficial Uses. Beneficial uses from Table II-1 of the Basin Plan applicable to Sacramento River (Shasta Dam to Colusa Basin Drain) are as follows:

Table F-4. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	**Sacramento River (Shasta Dam to Colusa Basin Drain)**	Existing uses from Table II-1 of the Basin Plan: Municipal and domestic supply (MUN); Agricultural supply, including irrigation and stock watering (AGR); Industrial service supply (IND); Hydropower generation (POW); Water contact recreation, including canoeing and rafting (REC-1); Non-contact water recreation (REC-2); Warm freshwater habitat (WARM); cold freshwater habitat (COLD); Migration of aquatic organisms, warm and cold (MIGR); Spawning, reproduction, and/or early development, warm and cold (SPWN); Wildlife habitat (WILD); and Navigation (NAV).

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 September 2007 through June 2012, which includes effluent and ambient background data submitted in SMRs and the Report of Waste Discharge (ROWD). The reasonable potential analysis for copper and zinc utilized receiving water dissolved concentrations.

c. Assimilative Capacity/Mixing Zones.

i. Regulatory Guidance for Dilution Credits and Mixing Zones. The Discharger has requested mixing zones and dilution credits for compliance with aquatic life and human health water quality criteria. The Central Valley Water Board has the discretion to accept or deny mixing zones and dilution credits. The CWA directs states to adopt water quality standards to protect the quality of its waters. USEPA's current water quality standards regulation authorizes states to adopt general policies, such as mixing zones, to implement state water quality standards (40 CFR section 122.44 and section 122.45). The USEPA allows states to have broad flexibility in designing its mixing zone policies. Primary policy and guidance on determining mixing zone and dilution credits is provided by the SIP and the Basin Plan. If no procedure applies in the SIP or the Basin Plan, then the Central Valley Water Board may use the USEPA Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001) (TSD).

The TSD defines a mixing zone as follows, "…*a mixing zone is an area where an effluent discharge undergoes initial dilution and is extended to*

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cover the secondary mixing in the ambient waterbody. A mixing zone is an allocated impact zone where water quality criteria can be exceeded as long as acutely toxic conditions are prevented."[2] The SIP provides guidance on mixing zones and dilution credits in establishing water quality-based effluent limitations. Water quality criteria and objectives must be met throughout a water body except within a mixing zone. All mixing zones shall be as small as practicable and must meet specific conditions. The allowance of mixing zones by the Central Valley Water Board is discretionary and can be granted parameter-by-parameter and/or type of criteria (e.g., acute or chronic aquatic life criteria).

For non-Priority Pollutant constituents the allowance of mixing zones by the Central Valley Water Board is discussed in the Basin Plan, *Policy for Application of Water Quality Objectives*, which states in part, "*In conjunction with the issuance of NPDES and storm water permits, the Regional Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Board that the mixing zone will not adversely impact beneficial uses. If allowed, different mixing zones may be designated for different types of objectives, including, but not limited to, acute aquatic life objectives, chronic aquatic life objectives, human health objectives, and acute and chronic whole effluent toxicity objectives, depending in part on the averaging period over which the objectives apply. In determining the size of such mixing zones, the Regional Board will consider the applicable procedures and guidelines in the EPA's Water Quality Standards Handbook and the [TSD]. Pursuant to EPA guidelines, mixing zones designated for acute aquatic life objectives will generally be limited to a small zone of initial dilution in the immediate vicinity of the discharge.*"[3]

For priority pollutants, the SIP supersedes the Basin Plan mixing zone provisions. Section 1.4.2 of the SIP states, in part, "…*with the exception of effluent limitations derived from TMDLs, in establishing and determining compliance with effluent limitations for applicable human health, acute aquatic life, or chronic aquatic life priority pollutant criteria/objectives or the toxicity objective for aquatic life protection in a basin plan, the Regional Board may grant mixing zones and dilution credits to dischargers…The applicable priority pollutant criteria and objectives are to be met through a water body except within any mixing zone granted by the Regional Board.* ***<u>The allowance of mixing zones is discretionary and shall be determined on a discharge-by-discharge basis.</u>*** *The Regional Board may consider allowing mixing zones and dilution credits only for discharges with a physically identifiable point of discharge that is regulated through an NPDES permit issued by the Regional Board*." [emphasis added]

[2] TSD, Glossary
[3] Basin Plan, page IV-16.00

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For completely-mixed discharges, the Central Valley Water Board may grant a mixing zone and apply a dilution credit in accordance with Section 1.4.2.1 of the SIP. For incompletely-mixed discharges, the Discharger must complete an independent mixing zone study to demonstrate to the Central Valley Water Board that a dilution credit is appropriate. In granting a mixing zone, Section 1.4.2.2 of the SIP requires the following to be met:

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

A: A mixing zone shall not:

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

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

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

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

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critical conditions, thus protecting the beneficial uses at the concentration and for the duration and frequency required.

ii. **Dilution/Mixing Zone from Order R5-2007-0058.** Order R5-2007-0058 granted dilution credits for copper, zinc, cyanide, chlorodibromomethane, dichlorobromomethane, alpha-BHC, beta-BHC, and gamma-BHC. The dilution credits were based on SIP-defined critical receiving water to effluent dilution ratios[4] for each of the criterion-type (acute aquatic-life, chronic aquatic-life, and human health) and an estimate that the effluent mixed with 25 percent of the receiving water. The calculated dilution credits for each criterion were further reduced by a "river allocation factor" of 1/6 to account for other point-source and nonpoint-source discharges in the local area. The resulting "effective" dilution credits granted were 6.2, 6.5, and 44.8 for acute-aquatic life, chronic-aquatic life, and human health criteria, respectively. Order R5-2007-0058 required the Discharger to repair the outfall diffuser (the 80-foot diffuser was partially buried) and perform a Mixing Zone/Dilution Study to determine the mixing conditions in the receiving water after repairs were made to the outfall. During the last permit term, the Discharger implemented corrective actions to repair the outfall diffuser and subsequently performed a Mixing Zone/Dilution Study in September 2010.

iii. **Sacramento River and Facility Effluent Flows**. Upstream of the discharge, flows in the Sacramento River are largely dependent on releases from upstream reservoirs. The reservoirs are operated such that minimum receiving water flows may occur during peak wet weather effluent flows at the Facility. Critical flow-based dilution ratios (once the receiving water and effluent become fully mixed downstream) were provided by the Discharger in the September 2010 Mixing Zone/Dilution Study Report and are presented below (the approximate distances downstream where complete mixing occurs for each criterion was not provided):

Criterion	Critical Receiving Water Flow (cfs)	Discharge Effluent Flow (MGD)	Dilution Ratio (completely-mixed)
Acute	3,298[1]	12[4]	178:1
Chronic	3,299[2]	11[5]	194:1
Human Health	6,994[3]	3.6[6]	1256:1

(1) 1Q10 (2) 7Q10 (3) Harmonic mean river flow
(4) Maximum daily flow (5) 4-day average of daily maximum flows (6) Long-term arithmetic mean flow

iv. **Diffuser Configuration.** The Facility effluent outfall multi-port diffuser extends under the surface water, approximately 220 feet south from the north bank of the Sacramento River. The river channel width at the outfall location is not less than 438 feet at any receiving water flow level. The diffuser has 20 diffuser ports; however by design only the last 10 diffuser

[4] SIP 1.4.2.1, Table 3.

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ports (ports 11-20) are open. The ports consist of 6-in rubber risers with 4-inch flapped openings that are submerged at approximately 1 foot below the river surface during low receiving water flow conditions. The width of the outfall, between port 11 and 20, is 36 feet.

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

- Visual Plumes for the near field (acute) mixing, because this model most accurately represents jet plume mixing from multiple ports.
- Dye study results, linearly extrapolated to critical conditions for the far field (chronic) mixing, because the dye study most accurately reflects actual channel conditions under shallow low receiving water conditions.
- CORMIX for far field human health based conditions, because under high receiving water flows, the river channel more closely resembles an ideal schematized channel.

The results of the Discharger's Mixing Zone/Dilution Study are summarized in the table below:

Table F-5. Mixing Zone/Dilution Study Results

Distance Downstream (ft.)	***Dilution Factor***		
	Acute[1]	Chronic[2]	Human Health[3]
1	2	--	--
2	3	--	--
3	4	--	--
4	5	--	--
5	5	--	--
30	5	6	137
45	--	3[4]	147
100	--	10	176
300	--	16	249
500	--	18	306
700	--	22	355
1000	--	26	--
1200	--	26	453

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

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vi. Evaluation of Available Dilution for Specific Constituents (Pollutant-by-Pollutant Evaluation). When determining appropriate dilution credits for a specific pollutant, several factors must be considered, such as, available assimilative capacity, facility performance, and the resulting mixing zone size. The following table summarizes statistical information for each parameter under consideration for dilution credits and includes projected maximum effluent concentrations. Average monthly effluent limitations (AMELs) and maximum daily effluent limitations (MDEL) for each parameter, calculated with no dilution credit, have been provided for the purpose of comparison to the projected maximum effluent concentration. [As discussed in (ii) above, Order No. R5-2007-0058 established water quality-based effluent limitations using dilution credits for parameters listed in Table F-6 below, with the exception of carbon tetrachloride, nitrate, and pH]

Table F-6. Effluent Data and Projected Maximum Effluent Concentrations

Parameter	Units	MEC	Mean	Std. Dev.	No. of Detect/ Total Sample Set	Projected Maximum Effluent Concentration[1]	No Dilution Effluent Limits
Priority Pollutants							
Beta-BHC	µg/L	0.013	<0.002	<0.003	1/21	0.013	AMEL: ND MDEL: ND
Carbon Tetrachloride	µg/L	1.0	0.01	0.18	8/37	1.0	AMEL: 0.25 MDEL: 0.75
CDBM	µg/L	3.0	0.88	0.72	43/46	3.3	AMEL: 0.41 MDEL: 0.95
Copper	µg/L	18.0	11.8	3.7	44/44	24.1	AMEL: 7.3 MDEL: 11.1
Cyanide	µg/L	10.0	3.52	2.03	20/44	10.22	AMEL: 4.3 MDEL: 8.5
DCBM	µg/L	22.0	6.92	4.5	46/46	22.0	AMEL: 0.56 MDEL: 1.17
Zinc	µg/L	70.7	44.9	13.6	44/44	89.8	AMEL: 20.4 MDEL: 30.6
Non-Priority Pollutants							
Nitrate	mg/L	21.7	13.2	3.98	16/16	26.3	AMEL: 10
pH	s.u.	5.6[2]	6.8	0.27	1279/1279	5.9 – 7.7	6.5 – 8.5

Metals are expressed as total recoverable.
MEC: Maximum Effluent Concentration. CDBM: Chlorodibromomethane, DCBM: Dichlorobromomethane.
[1] Based on normally distributed data where 99.9% of the data will lie within 3.3 standard deviations of the mean (when there are ten sampling data points or more). If the maximum observed effluent concentration (MEC) was greater, then the MEC is listed.
[2] pH value is observed minimum value.

Based on existing effluent data, it appears the Facility cannot meet the end-of-pipe (no dilution) water quality-based effluent limitations (WQBELs) for beta-BHC, carbon tetrachloride, chlorodibromomethane, copper, cyanide, dichlorobromomethane, zinc, nitrate, and pH. As discussed in Fact Sheet section IV.C.3, assimilative capacity is available in the receiving water for these parameters.

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The Central Valley Water Board considered the projected maximum effluent concentration and the receiving water's assimilative capacity for each individual pollutant in the determination of appropriately sized mixing zones. The consideration of these factors is necessary to avoid allocating an unnecessarily large portion of the receiving water's assimilative capacity for each pollutant and possibly violate the Antidegradation Policy. Table F-7 below summarizes the dilution credits and associated mixing zones that have been evaluated for each parameter. The numeric value of these dilution credits were developed to minimize the size of the mixing zone while taking into consideration the projected maximum effluent concentration and the assimilative capacity of the receiving water for each pollutant. The projected maximum effluent concentration for each parameter, provided in Table F-6 above, has been repeated in Table F-7 for comparison to the resulting effluent limitations based on the dilution credits provided.

Table F-7. Dilution Credits and Resulting Effluent Limits Comparison

Parameter	Dilution Credit	Mixing Zone (distance downstream)	Resulting AMEL[1] (µg/L)	Resulting MDEL[1] (µg/L)	Projected Maximum Effluent Concentration
Beta-BHC	3:1 (Human Health)	<2 ft.	0.014	0.028	0.013
Carbon Tetrachloride (µg/L)	5:1 (Human Health)	<2 ft.	1.3	3.8	1.0
CDBM (µg/L)	10:1 (Human Health)	2 ft.	3.7	8.6	3.3
Copper (µg/L)	10:1 (Acute) 14:1 (Chronic)	130 ft. (Acute) 230 ft. (Chronic)	25.2	38.2	24.1
Cyanide (µg/L)	2:1 (Acute) 5:1 (Chronic)	1 ft. (Acute) 25 ft. (Chronic)	12.2	24.0	10.22
DCBM (µg/L)	47:1 (Human Health)	<10 ft.	22.2	46.2	22.0
Zinc (µg/L)	10:1 (Acute) 1:1 (Chronic)	130 ft. (Acute) <5 ft. (Chronic)	100.5	150.7	89.8
Nitrate (mg/L)	2:1 (Human Health)	<2 ft.	30	--	26.3
pH (s.u.)	13:1 (Chronic)	200 ft. (Chronic)	6.0 – 8.5		5.9 – 7.7

Section 1.4.2.2 of the SIP provides specific conditions for mixing zones and those conditions are discussed in further detail in (vii) below.

vii. Evaluation of Available Dilution for Acute and Chronic Aquatic Life Criteria. USEPA Region VIII, in its "EPA Region VIII Mixing Zones and Dilution Policy", recommends no dilution for acute aquatic life criteria, stating the following, *"In incomplete mix situations, discharge limitations to*

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implement acute chemical-specific aquatic life criteria and narrative (no acute toxicity) criteria shall be based on achieving such acute criteria at the end-of-pipe (i.e., without an allowance for dilution). This approach is intended to implement the narrative requirement prohibiting acutely toxic conditions in the mixing zone." The Discharger requested acute and chronic mixing zones for compliance with acute and chronic aquatic-life water quality criteria for copper, cyanide, and zinc. The Discharger has also requested a chronic aquatic-life mixing zone for pH. Based on the results of the Mixing Zone/Dilution Study, the largest acute aquatic-life mixing zone under evaluation is 130 feet and the largest chronic aquatic-life mixing zone is 230 feet (see Table F-7 above).

The acute and chronic aquatic-life mixing zones of 130 feet and 230 feet, respectively, downstream of the diffuser meet the requirements of the SIP as follows:

(1) *Shall not compromise the integrity of the entire waterbody* - The TSD states that, "*If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats.*" The Sacramento River is approximately 438 feet wide at the diffuser. The largest aquatic-life mixing zone of 230 feet is 36 feet wide near the diffuser outfall and is estimated to be less than 150 feet wide at the furthest downstream edge of the mixing zone. The mixing zones are small and approximately one-quarter of the observed minimum stream width. The mixing zones do not compromise the integrity of the entire waterbody.

(2) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* – The SIP requires that the acute mixing zone be appropriately sized to prevent lethality to organisms passing through the mixing zone. USEPA recommends that float times through a mixing zone less than 15 minutes ensures that there will not be lethality to passing organisms. The acute mixing zone allowed in this Order extends 130 feet downstream from the diffuser. The float time at critical low receiving water flow conditions is approximately 2.7 minutes[5]. In addition, this Order includes an acute toxicity effluent limitation that requires compliance to be determined based on acute bioassays using 100% effluent. Compliance with these requirements ensures that acutely toxic conditions to aquatic life passing through the acute and chronic mixing zones do not occur.

(3) *Shall not restrict the passage of aquatic life* – The Discharger conducted a mixing zone study to evaluate the near-field effects of the discharge. The Discharger evaluated the zone of passage around the

[5] Assuming uniform flow across a rectangular cross-section (438 feet wide by 6 feet depth) to obtain velocity at critical low flow conditions (3298 cfs). [Average depth of 6 feet provided in Mixing Zone Study]

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mixing zone where water quality objectives are met. The result of the mixing zone study indicates there is an adequate zone of passage for aquatic life that is at least 75 percent of the width (approximately 330 feet) of the Sacramento River.

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

(5) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – The current discharge has not been shown to result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance. This Order requires the discharge meets advanced-secondary treatment standards, which will ensure continued compliance with these mixing zone requirements. With these requirements the acute and chronic mixing zones will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance.

(6) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls* – The acute and chronic mixing zones are small relative to the water body, so it will not dominate the water body. The outfall is located less than one mile downstream of the City of Anderson's wastewater treatment plant effluent outfall diffuser; however, the proposed mixing zones do not overlap with the mixing zones from the upstream outfall. There are no other outfalls or mixing zones in the vicinity of the discharge.

(7) *Shall not be allowed at or near any drinking water intake* – The acute and chronic mixing zones are not near a drinking water intake.

viii. Evaluation of Available Dilution for Human Health Criteria. Section 1.4.2.2 of the SIP, provides that mixing zones should not be allowed at or near drinking water intakes. Furthermore, regarding the application of a mixing zone for protection of human health, the TSD states that,*" …the presence of mixing zones should not result in significant health risks, when evaluated using reasonable assumptions about exposure pathways. Thus, where drinking water contaminants are a concern, mixing zones should not encroach on drinking water intakes."* There are no drinking water intakes in the human health mixing zone. The Discharger has requested a human health mixing zone for compliance with human health

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water quality criteria for beta-BHC, carbon tetrachloride, chlorodibromomethane, dichlorobromomethane, and nitrate.

Based on the results of the Mixing Zone/Dilution Study, the largest human health mixing zone is approximately 10 feet (see Table F-7 above). The width of the each human health mixing zone is 36 feet. The human health criteria mixing zone meets the requirements of the SIP as follows:

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

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

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

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

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

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

(7) *Shall not be allowed at or near any drinking water intake* – There are no drinking water intakes within the human health mixing zone.

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ix. Final Dilution Credits – The final dilution credits and associated mixing zones lengths for each pollutant receiving dilution credit(s) are summarized below in Table F-8. The dilution credits allowed in this Order are in accordance with Section 1.4.2.2 of the SIP and are a discretionary act by the Central Valley Water Board.

Table F-8. Final Dilution Credits

Pollutant	Units	Dilution Credit			Mixing Zone/ Distance Downstream (ft.)		
		Acute	Chronic	HH	Acute	Chronic	HH
Beta-BHC	µg/L	--	--	3	--	--	<2
Carbon Tetrachloride	µg/L	--	--	5	--	--	<2
Chlorodibromomethane	µg/L	--	--	10	--	--	2
Copper	µg/L	10	14	--	130	230	--
Cyanide	µg/L	2	5	--	1	25	--
Dichlorobromomethane	µg/L	--	--	47	--	--	<10
Zinc	µg/L	10	1	--	130	<5	--
Nitrate	mg/L	--	--	2	--	--	<2
pH	s.u.	--	13	--	--	200	--

HH: Human Health.

The distance downstream of the mixing zones have been estimated using a linear interpolation of the dilution credits provided in the Mixing Zone Study. The widths of all of the human health mixing zones are 36 feet, as they are equal the distance between the ports that are open for discharge (ports 11 through 20). The width of the largest aquatic-life mixing zone, at the furthest downstream edge, has been estimated at one-quarter the width of the river at low receiving flow conditions (i.e., 120 feet).

x. Regulatory Compliance for Dilution Credits and Mixing Zones. To fully comply with all applicable laws, regulations and policies of the State, Central Valley Water Board approved a mixing zone and the associated dilution credits shown in Table F-8 based on the following:

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

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

- In accordance with Section 1.4.2.2 of the SIP, the Board has determined the mixing zone is as small as practicable, will not compromise the integrity of the entire water body, restrict the passage of aquatic life, dominate the water body or overlap existing mixing zones from different outfalls. The mixing zones are small relative to the large size of the receiving water, are

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not at or near a drinking water intake, and do not overlap a mixing zone from a different outfall.

- The Central Valley Water Board is allowing a mixing zone for acute aquatic-life, chronic aquatic-life, and human health constituents and has determined allowing such mixing zones will not cause acutely toxic conditions to aquatic life passing through the mixing zone.

- The Central Valley Water Board has determined the discharge will not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under the federal or State endangered species laws. The discharge will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum, produce objectionable odor, taste, or turbidity, cause objectionable bottom deposits, or cause nuisance, because the proposed Order establishes end-of-pipe effluent limitations (e.g., for BOD_5 and TSS) and discharge prohibitions to prevent these conditions from occurring.

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

- The Central Valley Water Board has determined the mixing zones comply with the SIP for priority pollutants.

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

- The Central Valley Water Board has determined based on the current facility, discharge and receiving water data and characteristics considered for this Order that allowing dilution factors that exceed those proposed by this Order would not comply with the State Anti-degradation Policy for receiving waters outside the allowable mixing zone for beta-BHC, carbon tetrachloride, chlorodibromomethane copper, cyanide, dichlorobromomethane, zinc, nitrate, and pH. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal

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antidegradation policy and requires that existing quality of waters be maintained unless degradation is justified based on specific findings. Item 2 of Resolution 68-16 states:

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

If the facility performance, treatment or characteristics of the discharge or receiving water should change this Order provides a reopener to allow the Board to reconsider and revise the dilution factors granted, including increasing the allowed dilution credit if necessary.

The effluent limitations established in the Order for beta-BHC, carbon tetrachloride, chlorodibromomethane copper, cyanide, dichlorobromomethane, zinc, nitrate, and pH**,** that have been adjusted for dilution credits provided in Table F-8, were developed based on performance of the Discharger's current wastewater treatment capabilities. Therefore, the Central Valley Water Board determined the effluent limitations required by this Order will result in the Discharger implementing best practicable treatment or control of the discharge necessary to assure that pollution or nuisance will not occur and the highest water quality consistent with maximum benefit to the people of the State will be maintained. The Central Valley Water Board also determined the Discharger will be in immediate compliance with the effluent limitations.

The Central Valley Water Board also determined establishing effluent limitations for beta-BHC, carbon tetrachloride, chlorodibromomethane copper, cyanide, dichlorobromomethane, zinc, nitrate, and pH, that have been adjusted for dilution credits provided in Table F-8, is consistent with Section 1.4.2.2B of the SIP that requires the Central Valley Water Board to shall deny or significantly limit a mixing zone and dilution credits as necessary to comply with other regulatory requirements.

- Therefore, the Central Valley Water Board has determined the effluent limitations established in the Order for beta-BHC, carbon tetrachloride, chlorodibromomethane copper, cyanide, dichlorobromomethane, zinc, nitrate, and pH, that have been adjusted for dilution credits provided in Table F-8, are appropriate and necessary to comply with the Basin Plan, SIP, Federal anti-degradation regulations and Resolution 68-16.

d. Conversion Factors. The CTR contains aquatic life criteria for arsenic, cadmium, chromium III, chromium VI, copper, lead, nickel, silver, and zinc

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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. The USEPA conversion factors were also used to convert the receiving water dissolved copper and zinc concentrations to total recoverable concentrations for the purpose of establishing water-quality-based effluent limits for copper and zinc.

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[6], the CTR[7] and State Water Board Order No. WQO 2008-0008 (City of Davis). The SIP and the CTR require the use of "receiving water" or "actual ambient" hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(4)) The CTR does not define whether the term "ambient," as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions. Therefore, where reliable, representative data are available, the hardness value for calculating criteria can be the downstream receiving water hardness, after mixing with the effluent (Order WQO 2008-0008, p. 11). The Central Valley Water Board thus has considerable discretion in determining ambient hardness (*Id.*, p.10).

As discussed below, scientific literature provides a reliable method for calculating protective hardness-dependent CTR criteria, considering all discharge conditions. This methodology produces hardness-dependent CTR criteria based on the reasonable worst-case downstream ambient hardness that ensure these metals do not cause receiving water toxicity under any downstream receiving water condition. Under this methodology, the Central Valley Water Board considers all hardness conditions that could occur in the ambient downstream receiving water after the effluent has mixed with the water body[8]. 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.

[6] 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.

[7] The CTR requires that, for waters with a hardness of 400 mg/L (as $CaCO_3$), or less, the actual ambient hardness of the surface water must be used. It further requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones.

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

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[9]. For comparing the Maximum Ambient Background Concentration to the applicable criterion, the reasonable worst-case upstream ambient hardness was used to adjust the criteria. This is appropriate, because this area is outside the influence of the discharge. Since the discharge does not impact the upstream hardness, the effect of the effluent hardness was not included in this evaluation.

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

[9] The pollutant must also be detected in the effluent.

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A 2006 Study[10] developed procedures for calculating the effluent concentration allowance (ECA)[11] 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[12], is as follows:

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

Where:

H = hardness (as $CaCO_3$)[13]
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:

$$\text{ECA} = C \qquad (\text{when } C \leq B)^{14} \qquad \text{(Equation 2)}$$

Where:

[10] 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.
[11] 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.
[12] 40 CFR § 131.38(b)(2).
[13] For this discussion, all hardness values are in mg/L as $CaCO_3$.
[14] The 2006 Study assumes the ambient background metals concentration is equal to the CTR criterion (i.e. C ≤ B)

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[15]. 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)[16]. Consequently, for Concave Down Metals, where no dilution credit has been granted, the CTR criteria have been calculated using the downstream ambient hardness under this condition. For Concave Down Metals, where a dilution credit *has* been granted (e.g., copper and zinc), the criteria have been calculated using the hardness at the edge of the allocated mixing zone.

Concave Down Metals- No Dilution Credit. The effluent hardness ranged from 74.6 mg/L to 112 mg/L, based on 56 samples from January 2008 to June 2012. The upstream receiving water (Sacramento River at Caldwell Park) hardness varied from 40 mg/L to 62 mg/L, based on 56 samples from January 2008 to June 2012. Under the effluent dominated condition, the reasonable worst-case downstream ambient hardness is 74.6 mg/L. As demonstrated in the example shown in Table F-9, 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

[15] 2006 Study, p. 5700

[16] 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.

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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., 40 mg/L)
- Upstream receiving water copper concentration always at the CTR criteria (i.e., no assimilative capacity).

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

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

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.[17] [When no dilution credit(s) are allowed for parameter]

Table F-9. Copper ECA Evaluation (No dilution credit)

Lowest Observed Effluent Hardness					**74.6 mg/L (as $CaCO_3$)**
Lowest Observed Upstream Receiving Water Hardness					**40 mg/L (as $CaCO_3$)**
Highest Assumed Upstream Receiving Water Copper Concentration					**4.3 µg/L[1]**
Copper $ECA_{chronic}$[2]					**7.3 µg/L**
Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness[3] (mg/L)	**CTR Criteria[4] (µg/L)**	**Copper[5] (µg/L)**	**Complies with CTR Criteria**
High Flow ↓	1%	40.3	4.3	4.3	**Yes**
	5%	41.7	4.4	4.4	**Yes**
	15%	45.2	4.7	4.7	**Yes**
	25%	48.7	5.0	5.0	**Yes**
	50%	57.3	5.8	5.8	**Yes**

[17] 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-9 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.

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Low Flow	75%	66.0	6.5	6.5	**Yes**
	100%	74.6	7.3	7.3	**Yes**

[1] Total Recoverable. Highest assumed upstream receiving water copper concentration calculated using Equation 1 for chronic criterion at a hardness of 40 mg/L and EPA copper chronic translator of 0.96.

[2] Total Recoverable. ECA calculated using Equation 1 for chronic criterion at a hardness of 74.6 mg/L and EPA copper chronic translator of 0.96.

[3] Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction using Equation 3.

[4] Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.

[5] Fully mixed downstream ambient copper concentration is the mixture of the receiving water and effluent copper concentrations at the applicable effluent fraction using Equation 3.

[6] The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

Concave Down Metals- Dilution Credit Allowed. In this site-specific case and as discussed in Section IV.C.2.c, above, dilution credits for copper and zinc have been allowed in the calculation of water quality-based effluent limits for these hardness-dependent criteria parameters. As discussed in Section IV.C.2.c, above, the allowed copper dilution credit for acute aquatic life criteria is 10, which represents an effluent fraction of 9.1%, while the dilution credit for copper chronic aquatic life criteria is 14, representing an effluent fraction of 6.7%. The allowed zinc dilution credit for acute aquatic life criteria is 10, which represents an effluent fraction of 9.1%, while the dilution credit for zinc chronic aquatic life criteria is 1, representing an effluent fraction of 50%. These values define the points in the receiving water (i.e., edge of mixing zone) that must be in compliance with aquatic life criteria. The effluent hardness ranged from 74.6 mg/L to 112 mg/L (as CaCO3), based on 56 samples from January 2008 to June 2012. The upstream receiving water (Sacramento River at Caldwell Park) hardness varied from 40 mg/L to 62 mg/L (as CaCO3), based on 56 samples from January 2008 to June 2012. When the effluent and receiving water are at their respective minimum observed hardness values (i.e., 74.6 mg/L and 40 mg/L as CaCO3, respectively), and the effluent fraction is 9.1%, the mixed hardness is 43.1 mg/L (as CaCO3). Therefore, a hardness of 43.1 mg/L (as CaCO3) has been used in this Order for calculating hardness-dependent copper acute criteria. Similarly, a hardness of 42.3 mg/L (as CaCO3) has been used for calculating hardness-dependent copper chronic criteria.

Similarly for zinc, when the effluent and receiving water are at their respective minimum observed hardness values and the effluent fraction is 9.1%, the mixed hardness is 43.1 mg/L (as CaCO3). Therefore, a hardness of 43.1 mg/L (as CaCO3) has been used in this Order for calculating hardness-dependent zinc acute criteria. Similarly, a hardness of 57.3 mg/L (as CaCO3) has been used for calculating hardness-dependent zinc chronic criteria. Using the ambient hardness to calculate

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the hardness-dependent metals criteria is consistent with the CTR and the SIP.

Table F-10, below, is an example demonstrating that protective effluent limitations result when using this approach for determining the appropriate hardness. In this example the mixed receiving water copper concentration does not exceed the mixed CTR criteria for copper. The same approach was used for calculating the effluent limitations for zinc.

Table F-10. Copper Hardness Evaluation (Dilution credit present)

Hardness			**42.3 mg/L (as $CaCO_3$)**
CTR Copper Chronic Criterion, Total Recoverable			**4.5 µg/L**
Chronic Aquatic-life Dilution Credit			**14**
Maximum Background Copper			**2.8[5] µg/L**
Chronic Effluent Concentration Allowance (ECA) for Copper[1]			**28.0 µg/L**
Effluent Fraction	**Mixed Downstream Ambient Concentration**		
	Hardness[2] (mg/L) (as $CaCO_3$)	**Criteria[3] (µg/L)**	**Copper[4] (µg/L)**
1%	40.3	4.3	3.05
3%	41.0	4.4	3.56
5%	41.7	4.4	4.06
6.0%	42.1	4.5	4.31
6.7%	42.3	4.5	4.49

1 Effluent Concentration Allowance calculated per Section 1.4 of the SIP.

2 Mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness using the lowest observed hardness values (i.e., 40 mg/L and 74.6 mg/L for the receiving water and effluent, respectively)

3 Mixed downstream ambient criteria is the CTR chronic criteria calculated using the mixed hardness.

4 Mixed downstream ambient copper concentration is the mixture of the receiving water and effluent copper concentrations using the maximum background copper concentration (i.e., 2.8 µg/L) and the effluent copper concentration at the ECA.

5 Total recoverable. Maximum background concentration for dissolved copper is 2.69 µg/L. Dissolved value has been converted to total recoverable using the EPA copper (chronic) metal translator of 0.96.

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

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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.

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

Where:

m, b = criterion specific constants (from CTR)

H_e = lowest observed effluent hardness

H_{rw} = reasonable worst-case upstream receiving water hardness

An example similar to the Concave Down Metals is shown for lead**,** a Concave Up Metal, in Table F-11, below. As previously mentioned, the lowest effluent hardness is 74.6 mg/L, while the upstream receiving water hardness ranged from 40 mg/L to 62 mg/L. In this case, the reasonable worst-case upstream receiving water hardness to use in Equation 4 to calculate the ECA is 40 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-11, for lead.

Table F-11. Lead ECA Evaluation

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Lowest Observed Effluent Hardness	**74.6mg/L**
Reasonable Worst-case Upstream Receiving Water Hardness	**40 mg/L**
Reasonable Worst-case Upstream Receiving Water Lead Concentration	**0.99 µg/L[1]**
Lead $ECA_{chronic}$[2]	**2.1 µg/L**

Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness[3] (mg/L) (as $CaCO_3$)	**CTR Criteria[4] (µg/L)**	**Lead[5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	40.3	1.0	1.0	**Yes**
	5%	41.7	1.0	1.0	**Yes**
	15%	45.2	1.2	1.2	**Yes**
	25%	48.7	1.3	1.3	**Yes**
	50%	57.3	1.6	1.5	**Yes**
	75%	66.0	1.9	1.8	**Yes**
Low Flow	100%	74.6	2.2	2.1	**Yes**

1 Reasonable worst-case upstream receiving water lead concentration calculated using Equation 1 for chronic criterion at a hardness of 40 mg/L.

2 ECA calculated using Equation 4 for chronic criteria.

3 Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction.

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

5 Fully mixed downstream ambient lead concentration is the mixture of the receiving water and effluent lead concentrations at the applicable effluent fraction.

6 The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

Based on the procedures discussed above, Table F-12 lists all the CTR hardness-dependent metals and the associated ECA used in this Order.

Table F-12. Summary of ECA Evaluations for Hardness-dependent Metals

CTR Metals	**ECA (µg/L, total recoverable)**		
	CTR Acute	**CTR Chronic**	**Basin Plan**
Copper[1]	40.7	28.0	40.7
Chromium III	1400	160	--
Cadmium	3.175	1.96	0.46
Lead	53.43	2.08	--
Nickel	--	40.7	--
Silver	2.09	--	12.0
Zinc[2]	606.2	145.5	150.7

[1] Copper dilution credit (D) granted. $D_{acute/BPO}$= 10:1@ Hardness=43.1 mg/L, $D_{chronic}$=14:1@ Hardness=42.3 mg/L

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[2] Zinc (D) granted. $D_{acute/BPO}$=10:1@ hardness=43.1 mg/L, $D_{chronic}$=1:1@Hardness=57.3 mg/L

3. Determining the Need for WQBELs

a. The Central Valley Water Board conducted the reasonable potential analysis (RPA) in accordance with section 1.3 of the SIP. Although the SIP applies directly to the control of CTR priority pollutants, the State Water Board has held that the Regional Water Boards may use the SIP as guidance for water quality-based toxics control.[18] The SIP states in the introduction "*The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency*." Therefore, in this Order the RPA procedures from the SIP were used to evaluate reasonable potential for both CTR and non-CTR constituents based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs.

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. However, the following constituents were found to have no reasonable potential after assessment of the data:

i. Aluminum

(a) WQO. Aluminum is not a CTR constituent. The Basin Plan includes the narrative toxicity objective, which states that, "*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's *Policy for Application of Water Quality Objectives* requires the Central Valley Water Board to consider, "*on a case-by case basis, direct evidence of beneficial use impacts, all material and relevant information submitted by the discharger and other interested parties, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations. In considering such criteria, the Board evaluates whether the specific numerical criteria which are available through these sources and through other information supplied to the Board, are relevant and appropriate to the situation at hand and, therefore, should be used in determining compliance with the narrative objective*." (Basin Plan, p. IV.-17.00; see also, 40 CFR 122.44(d)(vi).).

[18] See Order WQO 2001-16 (Napa) and Order WQO 2004-0013 (Yuba City).

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The Central Valley Water Board considered all available material and relevant information submitted by the Discharger, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations, the USEPA National Recommended Ambient Water Quality Criteria (NAWQC) and supporting studies, National Recommended Water Quality Criteria-Correction and site-specific aluminum studies conducted by other dischargers within the Central Valley Region in evaluating the appropriate criteria for protection of the beneficial uses to comply with the narrative toxicity objective.

USEPA developed National Recommended Ambient Water Quality Criteria (NAWQC) for protection of freshwater aquatic life for aluminum. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for aluminum are 87 µg/L and 750 µg/L, respectively, for waters with a pH of 6.5 to 9.0 standard units (s.u.). Secondary Maximum Contaminant Level - Consumer Acceptance Limit for aluminum is 200 µg/L.

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 s.u.) and low hardness (<10 mg/L as $CaCO_3$).

USEPA advises that a water effects ratio may be more appropriate to better reflect the actual toxicity of aluminum to aquatic organisms. Monitoring data demonstrates that these conditions are not similar to those in the Sacramento River, which consistently has an upstream hardness concentrations ranging from 40 to 62 mg/L and the pH ranging from 7.0 to 8. Thus, it is unlikely that application of the chronic criterion of 87 µg/L is necessary to protect aquatic life in the Sacramento River. For similar reasons, the Utah Department of Environmental Quality (Department) only applies the 87 µg/L chronic criterion for aluminum where the pH is less than 7.0 and the hardness is less than 50 mg/L as CaCO3 in the receiving water after mixing. For conditions where the pH equals or exceeds 7.0 and the hardness is equal to or exceeds 50 mg/L as CaCO3, the Department regulates aluminum based on the 750 µg/L acute criterion. In the case of the Sacramento River the available data indicates that the downstream pH ranges from 7.45 to 8.75 standard units with the median at 7.85 and average at 7.9 standard units. Downstream hardness is unavailable; however, the upstream hardness ranges from 40 to 62 mg/L with a median of 48 mg/L as CaCO3. It is likely that application of the stringent chronic criteria (87µg/L) is overly protective. In the absence of an applicable chronic aquatic life criterion, the most stringent water

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quality criterion is the Secondary MCL - Consumer Acceptance Limit for aluminum of 200 µg/L.

(b) RPA Results. The maximum effluent concentration (MEC) for aluminum was 46.7 µg/L while the maximum annual average effluent concentration was 26.2 µg/L. The maximum observed upstream receiving water concentration was 261 µg/L and the maximum annual upstream receiving water concentration was 125.8 µg/L. Therefore, aluminum in the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above the Secondary MCL - Consumer Acceptance Limit for aluminum of 200 µg/L or to cause or contribute to an in-stream excursion above the 750 µg/L acute criterion. The maximum effluent concentration is also well below the NAWQC chronic criterion of 87 µg/L.

ii. Aldrin

(a) WQO. The Basin Plan requires that no individual pesticides shall be present in concentrations that adversely affect beneficial uses; discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses; total chlorinated hydrocarbon pesticides shall not be present in the water column at detectable concentrations; and pesticide concentrations shall not exceed those allowable by applicable antidegradation policies. The Basin Plan pesticide non-detect objective has been interpreted to be equal to the lowest minimum level value for aldrin contained in Appendix 4 of the SIP (i.e., 0.005 µg/L) for purposes of determination of reasonable potential. In addition, the CTR contains numeric criteria for aldrin of 0.00013 µg/L for freshwaters from which both water and organisms are consumed.

(a) RPA Results. The MEC for aldrin was 0.036 µg/L, based on 21 samples collected from January 2008 through May 2012. Out of the 21 effluent samples collected, <u>20 samples were non-detect</u> (<0.003 µg/L). The laboratory reporting level for these values, 0.005 µg/L, met the SIP minimum level requirement for aldrin of 0.005 µg/L. Aldrin was not detected in the upstream receiving water in the four samples collected from October 2008 through July 2011.

The Discharger has been sampling the effluent for aldrin since 2001. Prior to the January 2008 data set, the Discharger analyzed the effluent for aldrin on ten occasions dating back to 2001. All of the results from these analyses were non-detects. Therefore, in the past 12 years, 31 effluent samples have been analyzed for aldrin and only once did the effluent have a detected concentration (0.036 µg/L on 9 May 2011). Section 1.2 of the SIP states that the Regional Water Board has discretion to consider if any data are inappropriate or insufficient for use in the reasonable potential analysis. An instance

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where such a consideration is warranted is when the data is not representative of the effluent. The Central Valley Water Board finds that the one detected value of 0.036 µg/L is not representative of the effluent and therefore, aldrin in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan objective of non-detect.

iii. Alpha-BHC

(a) WQO. The Basin Plan requires that no individual pesticides shall be present in concentrations that adversely affect beneficial uses; discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses; total chlorinated hydrocarbon pesticides shall not be present in the water column at detectable concentrations; and pesticide concentrations shall not exceed those allowable by applicable antidegradation policies. The Basin Plan pesticide non-detect objective has been interpreted to be equal to the lowest minimum level value for alpha-BHC contained in Appendix 4 of the SIP (i.e., 0.01 µg/L) for purposes of determination of reasonable potential. In addition, the CTR contains numeric criteria for alpha-BHC of 0.0039 µg/L for freshwaters from which both water and organisms are consumed.

(b) RPA. Alpha-BHC was detected in the effluent once out of 21 monitoring events between January 2008 through May 2012. Alpha-BHC was not detected in the upstream receiving water in the four samples collected from October 2008 through July 2011. The laboratory-detected effluent value was estimated to be 0.006 µg/L; however, the result was not quantifiable (i.e., "DNQ"), the date of sample collection was 17 February 2011. The laboratory reporting level was 0.01 µg/L and met the minimum reporting level for alpha-BHC provided in Appendix 4 of the SIP, which is also 0.01 µg/L. The MEC of 0.006 µg/L DNQ does not exceed the Basin Plan objective of non-detect interpreted as the SIP ML of 0.01 µg/L.

Data reported below the laboratory reporting level indicates the data may not be valid due to possible matrix interferences during the analytical procedure. Therefore, data reported below the laboratory reporting level is not considered valid data for use in determining Reasonable Potential. Section 1.2 of the SIP states that the Regional Water Board has discretion to consider if any data are inappropriate or insufficient for use in the reasonable potential analysis. Due to the relatively large data set of 21 samples, with only one sample having a detectable value, and the detected value being "not quantifiable" by the laboratory performing the analysis, the Central Valley Water Board finds that alpha-BHC in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion.

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iv. Gamma-BHC

(a) WQO. The Basin Plan requires that no individual pesticides shall be present in concentrations that adversely affect beneficial uses; discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses; total chlorinated hydrocarbon pesticides shall not be present in the water column at detectable concentrations; and pesticide concentrations shall not exceed those allowable by applicable antidegradation policies. In addition, the CTR contains numeric criteria for gamma-BHC of 0.019 µg/L for freshwaters from which both water and organisms are consumed.

(b) RPA Results. The MEC for gamma-BHC was < 0.002 µg/L (non-detect), based on 21 samples collected from January 2008 through May 2012. Gamma-BHC was not detected in the upstream receiving water in the four samples collected from October 2008 through July 2011. Therefore, gamma-BHC in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan objective or the CTR criterion.

v. Salinity

(a) WQO. The Basin Plan contains a chemical constituent objective that incorporates state MCLs, contains a narrative objective, and contains numeric water quality objectives for certain specified water bodies for electrical conductivity, total dissolved solids, sulfate, and chloride. The USEPA Ambient Water Quality Criteria for Chloride recommends acute and chronic criteria for the protection of aquatic life. There are no USEPA water quality criteria for the protection of aquatic life for electrical conductivity, total dissolved solids, and sulfate. Additionally, there are no USEPA numeric water quality criteria for the protection of agricultural, live stock, and industrial uses. Numeric values for the protection of these uses are typically based on site specific conditions and evaluations to determine the appropriate constituent threshold necessary to interpret the narrative chemical constituent Basin Plan objective. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply. The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use.

Table F-13. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Objective[1]	Secondary MCL[3]	USEPA NAWQC	Effluent	
				Average	Maximum

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EC (µmhos/cm)	Varies[2]	900, 1600, 2200	N/A	401	652
TDS (mg/L)	Varies	500, 1000, 1500	N/A	269	347
Sulfate (mg/L)	Varies	250, 500, 600	N/A	N/A	N/A
Chloride (mg/L)	Varies	250, 500, 600	860 1-hr 230 4-day	48.2	68.8

[1] Narrative chemical constituent objective of the Basin Plan. Procedures for establishing the applicable numeric limitation to implement the narrative objective can be found in the Policy for Application of Water Quality, Chapter IV, Section 8 of the Basin Plan. However, the Basin Plan does not require improvement over naturally occurring background concentrations. In cases where the natural background concentration of a particular constituent exceeds an applicable water quality objective, the natural background concentration will be considered to comply with the objective.

[2] Maximum calendar annual average.

[3] The secondary MCLs are stated as a recommended level, upper level, and a short-term maximum level.

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

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

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

(4) Total Dissolved Solids. The Secondary MCL for TDS is 500 mg/L as a recommended level, 1000 mg/L as an upper level, and 1500 mg/L as a short-term maximum.

(b) RPA Results.

(1) Chloride. Chloride concentrations in the effluent ranged from 29.1 mg/L to 68.8 mg/L, with an average of 48.2 mg/L. These levels do not exceed the Secondary MCL. Background concentrations in the Sacramento River ranged from 1.69 mg/L to 2.03 mg/L, with an average of 1.9 mg/L.

(2) Electrical Conductivity. A review of the Discharger's monitoring reports shows an average effluent EC of 401 µmhos/cm, with a range from 200 µmhos/cm to 652 µmhos/cm. These levels do not exceed the Secondary MCL. The background receiving water EC averaged 118 µmhos/cm.

(3) Sulfate. The previous Order did not require the Discharger to monitor for sulfate in the effluent, therefore sulfate effluent data is

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unavailable. However, background concentrations in the Sacramento River ranged from 2.87 mg/L to 12.9 mg/L, with an average of 4.8 mg/L. Reasonable potential cannot not be determined at this time due to the lack of effluent data. This Order establishes monitoring for sulfate in the effluent and receiving water.

(4) Total Dissolved Solids. The average TDS effluent concentration was 269 mg/L with concentrations ranging from 164 mg/L to 347 mg/L. These levels do not exceed the Secondary MCL. Background receiving water TDS data in the Sacramento River is not available.

(c) WQBELs. Based on the relatively low reported salinity, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion of water quality objectives for salinity. Additional monitoring for sulfate has been included in this Order.

In order to ensure that the Discharger will continue to control the discharge of salinity, this Order requires water supply monitoring to evaluate the relative contribution of salinity from the source water to the effluent.

c. Constituents with Limited Data. Reasonable potential cannot be determined for the following constituents because effluent data and/or ambient background concentrations are not available or insufficient. The Discharger is required to continue to monitor for these constituents in the effluent using analytical methods that provide the best feasible detection limits.

i. Bis (2-Ethylhexyl) Phthalate

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

(b) RPA Results. Bis(2-ethylhexyl) phthalate was detected in the effluent once out of four monitoring events between July 2009 and May 2011. Bis(2-ethylhexyl) phthalate was not detected in the upstream receiving water collected during the same time period. The laboratory-detected effluent value was estimated at 2 µg/L; however, the result was not quantifiable (i.e., "DNQ"). The laboratory reporting level was 5 µg/L and met the minimum reporting level for bis(2-ethylhexyl) phthalate provided in Appendix 4 of the SIP. Effluent and receiving water bis(2-ethylhexyl) phthalate data is summarized in the table below (all values are expressed in µg/L):

Date	Effluent (µg/L)	Receiving Water	Laboratory Reporting Level	SIP Minimum Level
7/11/2009	<0.8	--	5	5

9/22/2009	<0.8	<0.8	5	5
11/9/2010	2 DNQ	<0.8	5	5
5/9/2011	<0.8	<0.8	5	5

Data reported below the laboratory reporting level indicates the data may not be valid due to possible matrix interferences during the analytical procedure. Therefore, data reported below the laboratory reporting level is not considered valid data for use in determining Reasonable Potential. Section 1.3, Step 8 of the SIP allows the Central Valley Water Board to require additional monitoring for a pollutant in place of an effluent limitation if data are unavailable or insufficient. The data set for bis(2-ethylhexyl) phthalate was relatively small, with only 4 available samples. The Central Valley Water Board is not establishing effluent limitations for bis(2-ethylhexyl) phthalate at this time. Instead of limitations, a constituent study with additional monitoring requirements has been established for bis(2-ethylhexyl) phthalate. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, then this Order may be reopened and modified by adding an appropriate effluent limitation.

d. Constituents with Reasonable Potential. The Central Valley Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for ammonia, beta-BHC, carbon tetrachloride, chlorodibromomethane, copper, cyanide, dichlorobromomethane, nitrate + nitrite, pathogens, pH, toxicity, and zinc. 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. The NAWQC for the protection of freshwater aquatic life for total ammonia, recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average; criteria continuous concentration or CCC) standards based on pH and temperature. USEPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC. USEPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature. Because the Sacramento River has a beneficial use of cold freshwater habitat and the presence of salmonids and early fish life stages in the Sacramento River is well-documented, the recommended criteria for waters where salmonids and early life stages are present were used.

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The maximum permitted effluent limit pH is 8.5. In order to protect against the worst-case short-term exposure of an organism, a pH value of 8.5 was used to derive the acute criterion. The resulting acute criterion is 2.14 mg/L.

Receiving water monitoring for pH and temperature was conducted once per month, resulting in 64 sets of paired pH and temperature data. The maximum observed receiving water temperature and pH occurred on the same day, 13 July 2009, and were 14.6°C and 8.75 standard units, respectively. The maximum ammonia effluent concentration was 0.549 mg/L. In accordance with USEPA's 1999 Ammonia Update of Ambient Water Quality Criteria for Ammonia, the 30-day CCC was determined by calculating the CCC for each paired pH and temperature set and taking the 95th percentile CCC (with criterion ranked from high (less stringent) to low (more stringent)). The resulting 30-day CCC is 1.12 mg/L. The 4-day average concentration is derived in accordance with the USEPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCC of 1.12 mg/L (as N), the 4-day average concentration that should not be exceeded is 2.8 mg/L (as N).

(b) RPA Results. The effluent was sampled for ammonia 75 times from October 2008 through June 2012. The maximum effluent concentration (MEC) was 0.549 mg/L and was collected on 23 September 2009. Therefore the effluent does not exceed the applicable ammonia criteria. However, the Facility treats domestic wastewater. Domestic wastewater inherently contains ammonia. Nitrification is the biological process that converts ammonia to nitrates. Denitrification is a process that converts nitrates to nitrogen gas, which is then released to the atmosphere. The Discharger currently uses nitrification to remove ammonia from the waste stream. Potential 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, so 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. Per Section 1.3, Step 7, of the SIP, the facility type may be used as information to aid in determining if the discharge may cause or contribute to an exceedance of a water quality objective and if a water quality based effluent limitation is required. Due to the facility type and adherent nature of domestic wastewater, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC.

(c) WQBELs. The resulting WQBELs are 0.94 mg/L as an AMEL and 2.14 mg/L as a MDEL.

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(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 0.549 mg/L (as N) is less than the applicable WQBELs. Therefore, the Central Valley Water Board concludes that immediate compliance with these effluent limits is feasible.

ii. Beta-BHC

(a) WQO. The Basin Plan requires that no individual pesticides shall be present in concentrations that adversely affect beneficial uses; discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses; total chlorinated hydrocarbon pesticides shall not be present in the water column at detectable concentrations; and pesticide concentrations shall not exceed those allowable by applicable antidegradation policies. The Basin Plan pesticide non-detect objective has been interpreted to be equal to the lowest minimum level value for beta-BHC contained in Appendix 4 of the SIP (i.e., 0.005 µg/L) for purposes of determination of reasonable potential. In addition, the CTR contains numeric criteria for beta-BHC of 0.014 µg/L for freshwaters from which both water and organisms are consumed.

(b) RPA. Beta-BHC was detected in one sample out of 21 effluent samples collected from January 2008 through May 2012. The beta-BHC effluent concentration was reported at 0.013 µg/L (on 9 May 2011). Beta-BHC was not detected in the four receiving water samples collected in 2008 through 2011. The laboratory reporting level (RL) for beta-BHC was 0.005 µg/L, which met the applicable minimum level (ML) in Appendix 4 of the SIP. In addition, beta-BHC was detected in the effluent previously in 2003 and 2004, at levels above CTR criteria and the Basin Plan objective. The detection of beta-BHC at 0.013 µg/L in the effluent represents a reasonable potential for beta-BHC to exceed the Basin Plan objective for pesticides in the receiving water.

(c) WQBELs. Order R5-2007-0058 contained water quality-based effluent limitations beta-BHC. Order R5-2007-0058 also granted a human health criteria dilution credit for beta-BHC. As discussed in section IV.C.2.c., allowance for a human health criteria mixing zone may be granted. The human health criteria dilution credit for beta-BHC is 3:1. The resulting WQBELs are 0.014 µg/L as an AMEL and 0.028 µg/L as a MDEL.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 0.013 µg/L does not exceed the applicable WQBELs. Therefore, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible.

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

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

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

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

This Order contains Average Monthly Effluent Limitations and Average Weekly Effluent Limitations for BOD_5 and TSS of 10 mg/L and 15 mg/L, respectively, which is technically based on the capability of an advanced-secondary or tertiary system. In addition to the average weekly and average monthly effluent limitations, daily maximum effluent limitations for BOD_5 and TSS at 30 mg/L are included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities.

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

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iv. Carbon Tetrachloride

(a) WQO. The CTR includes criterion of 0.25 ug/L for carbon tetrachloride for protection of human health for waters from which both water and organisms are consumed.

(b) RPA Results. The effluent was sampled for carbon tetrachloride 39 times from April 2008 through May 2012. The maximum effluent concentration (MEC) was 1 µg/L and was collected on 11 July 2011. Carbon tetrachloride was not detected in the upstream receiving water during the same time period. The laboratory method detection limit for the result was reported as 0.05 µg/L. The applicable Minimum Level (ML) contained in Appendix 4 of the SIP for carbon tetrachloride is 0.5 µg/L. Section 1.3, Step 4 of the SIP states that if the maximum effluent concentration is greater than or equal to the applicable criteria, an effluent limitation is required. Therefore, carbon tetrachloride in the discharge has reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion of 0.25 µg/L.

(c) WQBELs. As discussed in Fact Sheet Section IV.C.2.c., an allowance for a human health criteria mixing zone may be granted. The human health criteria dilution credit for carbon tetrachloride is 5:1. The resulting WQBELs are 1.3 µg/L as an AMEL and 3.8 µg/L as a MDEL.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 1.0 µg/L does not exceed the applicable WQBELs. Therefore, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible.

v. Chlorine Residual

(a) 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 µg/L and 0.019 µg/L, respectively. These criteria are protective of the Basin Plan's narrative toxicity objective.

(b) RPA Results. The Discharger uses chlorine for disinfection, which is extremely toxic to aquatic organisms. The Discharger uses a sulfur dioxide process to dechlorinate the effluent prior to discharge to the Sacramento River. Due to the existing chlorine use and the potential for chlorine to be discharged, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC.

(c) WQBELs. The USEPA *Technical Support Document for Water Quality-Based Toxics Control* [EPA/505/2-90-001] contains statistical methods for converting chronic (4-day) and acute (1-hour) aquatic life criteria to average monthly and maximum daily effluent limitations

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based on the variability of the existing data and the expected frequency of monitoring. However, because chlorine is an acutely toxic constituent that can and will be monitored continuously, an average 1-hour limitation is considered more appropriate than an average daily limitation. This Order contains a 4-day average effluent limitation and 1-hour average effluent limitation for chlorine residual of 0.011 µg/L and 0.019 µg/L, respectively, based on USEPA's NAWQC, which implements the Basin Plan's narrative toxicity objective for protection of aquatic life.

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

vi. Chlorodibromomethane

(a) WQO. The CTR includes a criterion of 0.41 µg/L for chlorodibromomethane for the protection of human health for waters from which both water and organisms are consumed.

(b) RPA Results. From October 2008 through June 2012 forty-six effluent samples were collected and analyzed for chlorodibromomethane. The maximum effluent concentration (MEC) for chlorodibromomethane was 3.0 µg/L. The maximum observed upstream receiving water concentration was <0.21 µg/L (non-detect). The applicable Minimum Level (ML) contained in Appendix 4 of the SIP for chlorodibromomethane is 0.5 µg/L. Section 1.3, Step 4 of the SIP states that if the maximum effluent concentration is greater than or equal to the applicable criteria, an effluent limitation is required. Therefore, chlorodibromomethane in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.

(c) WQBELs. The receiving water contains assimilative capacity for chlorodibromomethane, therefore, as discussed in Fact Sheet Section IV.C.2.c, a human health dilution credit of 10:1 was allowed in the development of the WQBELs for chlorodibromomethane. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for chlorodibromomethane of 3.7 µg/L and 8.6 µg/L, respectively, based on the CTR criterion for the protection of human health.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 3.0 µg/L is less than the applicable WQBELs. Therefore, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible.

vii. Copper

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(a) WQO. The Basin Plan and CTR include hardness dependent criteria for the protection of freshwater aquatic life for copper. Using USEPA conversion factors and reasonable worst-case measured hardness, as described in section VI.C.2.e. of this Fact Sheet, the applicable CTR criteria and Basin Plan objective are as follows:

Hardness (mg/L as $CaCo_3$)	**Water Quality Criterion/Objective (Dissolved/Total Recoverable, µg/L)**		
	CTR acute	CTR chronic	Basin Plan Max
40[1]	5.7 / 5.9	4.1 / 4.3	5.6 / 5.9
74.6[2]	10.2 / 10.6	7.0 / 7.3	9.9 / 10.3
43.1[3]	6.1 / 6.4	--	6.0 / 6.3
42.3[4]	--	4.3 / 4.5	--

[1] Minimum receiving water hardness.
[2] Minimum effluent hardness.
[3] Applicable to site-specific conditions of an acute mixing zone of 10:1 only.
[4] Applicable to site-specific conditions of a chronic mixing zone of 14:1 only.

(b) RPA Results. The maximum effluent concentration (MEC) for copper was 18.0 µg/L (as total recoverable) while the maximum observed upstream receiving water concentration was 2.69 µg/L (as dissolved). The applicable Minimum Level (ML) contained in Appendix 4 of the SIP for copper is 2 µg/L. Section 1.3, Step 4 of the SIP states that if the maximum effluent concentration is greater than or equal to the applicable criteria, an effluent limitation is required. Therefore, copper in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of freshwater aquatic life and the Basin Plan Objective.

(c) WQBELs. The receiving water contains assimilative capacity for copper, therefore, as discussed in Fact Sheet Section IV.C.2.c., an acute aquatic-life dilution credit of 10:1 and a chronic aquatic-life dilution credit of 14:1 were allowed in the development of the WQBELs for copper. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) of 25.2 µg/L and 38.2 µg/L, respectively based on the CTR criteria for the protection of freshwater aquatic life and the Basin Plan objective.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 18.0 µg/L is less than the applicable WQBELs. Therefore, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible**.**

viii. Cyanide

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

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the protection of freshwater aquatic life. The Basin Plan contains a maximum concentration water quality objective of 10 µg/L.

(b) RPA Results. The maximum effluent concentration (MEC) for cyanide was 10 µg/L out of 44 effluent samples collected October 2008 through June 2012. The maximum observed upstream receiving water concentration was 3 µg/L. The applicable Minimum Level (ML) contained in Appendix 4 of the SIP for cyanide is 5 µg/L. Section 1.3, Step 4 of the SIP states that if the maximum effluent concentration is greater than or equal to the applicable criteria, an effluent limitation is required. Therefore, cyanide in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of freshwater aquatic life.

(c) WQBELs. The receiving water contains assimilative capacity for cyanide, therefore, as discussed in Fact Sheet Section IV.C.2.c., an acute aquatic-life dilution credit of 2:1 and a chronic aquatic-life dilution credit of 5:1 were allowed in the development of the WQBELs for cyanide. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) of 12.2 µg/L and 24.0 µg/L, respectively, based on the CTR criterion for the protection of freshwater aquatic life and the Basin Plan objective.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 10.0 µg/L is less than the applicable WQBELs. Therefore, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible**.**

ix. Diazinon and Chlorpyrifos

(a) WQO. The Sacramento River has been identified on the 303(d) list as an impaired water body due to elevated concentrations of diazinon and chlorpyrifos. The Central Valley Water Board completed a TMDL for diazinon and chlorpyrifos in the Sacramento River and amended the Basin Plan to include water quality objectives and waste load allocations. The Basin Plan Amendment for the Control of Diazinon and Chlorpyrifos was adopted by the Central Valley Water Board on 21 October 2005 and was approved by the State Water Board on 2 May 2006. The Basin Plan amendment was approved by the Office of Administrative Law on 30 June 2006 and is now State law. The amendment was approved by USEPA and went into effect on 20 December 2006.

The amendment "…modifies the Basin Plan Chapter III (Water Quality Objectives) to establish site specific numeric objectives for chlorpyrifos and diazinon in the Sacramento River, and identifies the requirement to meet the additive toxicity formula already in Basin Plan Chapter IV (Implementation), for the additive toxicity of diazinon and chlorpyrifos."

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The amendment provides that: *"The Waste Load Allocations (WLA) for all NPDES-permitted dischargers… shall not exceed the sum (S) of one (1) ad defined below.*

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

where:

C_D = diazinon concentration in µg/L of the point source discharge…
C_C = chlorpyrifos concentration in µg/L of the point source discharge…
WQO_D = acute or chronic diazinon water quality objective in µg/L.
WQO_C = acute or chronic chlorpyrifos water quality objective in µg/L.

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

(b) RPA Results. Effluent and receiving water data for the Facility is not available. However, the waste load allocation applies to all NPDES discharges. As stated above, chlorpyrifos and diazinon have been identified as constituents of concern in the Sacramento River, to which the discharge is hydraulically connected.

(c) WQBELs. 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 limits for chlorpyrifos and diazinon.

<u>Average Monthly Effluent Limitation</u>

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

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

<u>Maximum Daily Effluent Limitation</u>

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

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

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(d) Plant Performance and Attainability. No data is available from the Facility to indicate the presence or absence of chlorpyrifos and diazinon. It is unlikely that chlorpyrifos and diazinon will be detected at concentrations exceeding applicable water quality objectives as sales of all non-agricultural uses of diazinon were banned on 31 December 2004 and sales of the majority of non-agricultural uses of chlorpyrifos were banned in December 2001. The Discharger does not add chlorpyrifos or diazinon to the treatment process.

x. Dichlorobromomethane

(a) WQO. The CTR includes a criterion of 0.56 µg/L for dichlorobromomethane for the protection of human health for waters from which both water and organisms are consumed.

(b) RPA Results. The maximum effluent concentration (MEC) for dichlorobromomethane was 22.0 µg/L based on 46 samples collected from October 2008 through June 2012. The maximum observed upstream receiving water concentration was <0.21 µg/L (non-detect). The applicable Minimum Level (ML) contained in Appendix 4 of the SIP for dichlorobromomethane is 0.5 µg/L. Section 1.3, Step 4 of the SIP states that if the maximum effluent concentration is greater than or equal to the applicable criteria, an effluent limitation is required. Therefore, dichlorobromomethane in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.

(c) WQBELs. As discussed in Fact Sheet Section IV.C.2.c., an allowance for a human health criteria mixing zone may be granted. The human health criteria dilution credit for dichlorobromomethane is 47:1. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for dichlorobromomethane of 22.2 µg/L and 46.2 µg/L, respectively, based on the CTR criterion for the protection of human health.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 22.0 µg/L is less than or equal to the applicable WQBELs. Therefore, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible**.**

xi. 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 10,000 µg/L for the sum of nitrate and nitrite, measured as nitrogen.

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USEPA has developed a primary MCL and an MCL goal of 1,000 µg/L for nitrite (as nitrogen). For nitrate, USEPA has developed Drinking Water Standards (10,000 µg/L as Primary MCL) and NAWQC for protection of human health (10,000 µg/L for non-cancer health effects). Recent toxicity studies have indicated a possibility that nitrate is toxic to aquatic organisms.

(b) RPA Results. Untreated domestic wastewater contains ammonia. 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. Nitrate and nitrite are known to cause adverse health effects in humans. Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. The conversion of ammonia to nitrites and the conversion of nitrites to nitrates present a reasonable potential for the discharge to cause or contribute to an in-stream excursion above the Primary MCLs for nitrite and nitrate. Furthermore, the maximum effluent concentration (MEC) for nitrate was 21.7 mg/L based on 16 samples collected from September 2008 through June 2012. Nitrite was not detected in the effluent, at a detection limit of 0.01 mg/L, during the sample time period. Upstream receiving water nitrate and nitrite data was not available.

(c) WQBELs. As discussed in Fact Sheet Section IV.C.2.c., an allowance for a human health criteria mixing zone may be granted. The human health criteria dilution credit for nitrate is 2:1. This Order contains a final average monthly effluent limitation (AMEL) for nitrate plus nitrite of 30 mg/L based on the Primary MCL criterion for the protection of human health.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 21.7 mg/L is less than the applicable WQBEL. Therefore, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible**.**

xii. Pathogens

(a) WQO. In a letter to the Central Valley Water Board dated 8 April 1999, DPH indicated it would consider wastewater discharged to water bodies with identified beneficial uses of irrigation or contact recreation and where the wastewater receives dilution of more than 20:1 to be adequately disinfected if the effluent coliform concentration does not exceed 23 MPN/100 mL as a 7-day median and if the effluent coliform concentration does not exceed 240 MPN/100 mL more than once in any 30 day period.

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(b) RPA Results. Municipal and domestic supply, agricultural irrigation, and body contact water recreation are beneficial uses of the Sacramento River. Based on a review of data submitted by the Discharger the river flow to design effluent flow is always greater than 20:1. Therefore, the DPH requirements are applicable to the discharge.

(c) WQBELs. Pursuant to guidance from DPH, this Order includes effluent limitations for total coliform organisms of 23 MPN/100 mL as a 7-day median and 240 MPN/100 mL, not to be exceeded more than once in a 30-day period. These coliform limits are imposed to protect the beneficial uses of the receiving water, including public health through contact recreation and drinking water pathways.

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

xiii. 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. The discharge of treated domestic wastewater has a reasonable potential to cause or contribute to an excursion above the Basin Plan's numeric objectives for pH.

(c) WQBELs. The Discharger utilized a water quality monitoring software package (*WaterPro!*) to determine the dilution necessary for the effluent to not reduce the receiving water pH to less than 6.5 standard units. The model input for background receiving water pH was conservatively valued at the minimum observed upstream pH value of 6.59 standard units. The effluent pH was varied to determine what minimum effluent pH value is necessary to maintain a minimum pH of 6.5 at the edge of the 200 foot mixing zone. The model output was a minimum effluent pH of 6.0 is necessary to maintain a minimum receiving water pH of 6.5 standard units at the edge of the mixing zone. As discussed in Fact Sheet Section IV.C.2.c., an allowance for a pH mixing zone may be granted. The dilution credit for pH is 13:1.

Effluent limitations for pH of 6.0 as an instantaneous minimum and 8.5 as an instantaneous maximum are included in this Order based on protection of the Basin Plan objectives for pH.

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

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xiv. Zinc.

(a) WQO. The Basin Plan and CTR include hardness dependent criteria for the protection of freshwater aquatic life for zinc. Using USEPA conversion factors and reasonable worst-case measured hardness, as described in section VI.C.2.e. of this Fact Sheet, the applicable CTR criteria and Basin Plan objective are as follows:

Hardness (mg/L as $CaCo_3$)	**Water Quality Criterion/Objective (Dissolved/Total Recoverable, µg/L)**		
	CTR acute	CTR chronic	Basin Plan Max
40[1]	54 / 55	54 / 55	16 / 16.4
74.6[2]	91 / 93	92 / 93	26.8 / 27.4
43.1[3]	57.5 / 58.8	--	17 / 17.4
57.3[4]	--	73.7 / 74.8	--

[1] Minimum receiving water hardness.
[2] Minimum effluent hardness.
[3] Applicable to site-specific conditions of an acute mixing zone of 10:1 only.
[4] Applicable to site-specific conditions of a chronic mixing zone of 1:1 only.

(b) RPA Results. The maximum effluent concentration (MEC) for zinc was 70.7 µg/L (as total recoverable) while the maximum observed upstream receiving water concentration was 3.96 µg/L (as dissolved). The applicable Minimum Level (ML) contained in Appendix 4 of the SIP for zinc is 10 µg/L. Section 1.3, Step 4 of the SIP states that if the maximum effluent concentration is greater than or equal to the applicable criteria, an effluent limitation is required. Therefore, zinc in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan Objective.

(c) WQBELs. The receiving water contains assimilative capacity for copper, therefore, as discussed in Fact Sheet Section IV.C.2.c., an acute aquatic-life dilution credit of 10:1 and a chronic aquatic-life dilution credit of 1:1 was allowed in the development of the WQBELs for zinc. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) of 100.5 µg/L and 150.7 µg/L, respectively, based on the CTR criteria and the Basin Plan Objective.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 70.7 µg/L is less than the applicable WQBELs. Therefore, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible**.**

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4. WQBEL Calculations

a. This Order includes WQBELs for ammonia, beta-BHC, BOD_5, TSS, carbon tetrachloride, chlorine residual, chlorodibromomethane, copper, cyanide, dichlorobromomethane, nitrate plus nitrite, pathogens, pH, and zinc. 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. LTAacute and LTAchronic) 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.

LTA_{acute}

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

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

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

where:

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

Summary of Water Quality-Based Effluent Limitations
Discharge Point No. 001

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

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	15	30	--	--
	lbs/day[1]	284	425	851	--	--
Total Suspended Solids	mg/L	10	15	30	--	--
	lbs/day[1]	284	425	851	--	--
pH	standard units	--	--	--	6.0	8.5
Priority Pollutants						
beta-BHC	µg/L	0.014	--	0.028	--	--
Carbon Tetrachloride	µg/L	1.3	--	3.8	--	--
Chlorodibromomethane	µg/L	3.7	--	8.6	--	--
Copper, Total Recoverable	µg/L	25.2	--	38.2	--	--
Cyanide	µg/L	12.2	--	24.0	--	--
Dichlorobromomethane	µg/L	22.2	--	46.2	--	--
Zinc, Total Recoverable	µg/L	100.5	--	150.7	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	0.94	--	2.14	--	--
Chlorine, Total Residual	mg/L	--	0.011[2]	0.019[3]	--	--
Chlorpyrifos	µg/L	See	--	See	--	--

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Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Diazinon	µg/L	footnote 4	--	footnote 5	--	--
Nitrate plus Nitrite (as N)	mg/L	30	--	--	--	--
Total Coliform Organisms	MPN/100 mL	240[6]	23[7]	500	--	--

ND: non detect
[1] Based on an ADWF of 3.4 MGD.
[2] 4-day average limitation.
[3] 1-hour average limitation.
[4] Effluent concentrations of chlorpyrifos and diazinon shall not exceed the sum of one (1.) as defined:

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

, where C_{D-avg} = average monthly diazinon effluent concentration in µg/L and C_{C-avg} = average monthly chlorpyrifos effluent concentration in µg/.L

[5] Effluent concentrations of chlorpyrifos and diazinon shall not exceed the sum of one (1.) as defined:

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

, where C_{D-max} = maximum daily diazinon effluent concentration in µg/L and C_{C-max} = maximum daily chlorpyrifos effluent concentration in µg/L.

[6] No more than once in any 30-day period.
[7] 7-day median limitation.

5. Whole Effluent Toxicity (WET)

For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct whole effluent toxicity testing for acute and chronic toxicity, as specified in the Monitoring and Reporting Program (Attachment E section V.). This Order also contains effluent limitations for acute toxicity and requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

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

For priority pollutants, the SIP dictates the procedures for conducting the RPA. Acute toxicity is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. 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.

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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) Based on chronic WET testing performed by the Discharger from July 2007 through September 2011, 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. As shown in Table F-15 below.

Table F-15. Whole Effluent Chronic Toxicity Testing Results (100% Effluent)

	Fathead Minnow *Pimephales promelas*		**Water Flea** *Ceriodaphnia dubia*		**Green Algae** *Selenastrum capricornutum*
Date	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
07/22/2007	1	1	1	1	1
04/15/2008	1	1	1	1	1

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12/08/2009	1	1	1	1	1
11/16/2010	1	1	1	1	1
09/06/2011	1	1	1	1	1

The Monitoring and Reporting Program of this Order requires annual chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, the Special Provision in section VI.C.2.a of the Order requires the Discharger to submit to the Central Valley Water Board an Initial Investigative TRE Workplan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated. Dilution has been granted for the chronic condition. Therefore, this Order includes a monitoring trigger of 2 TU_c.

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[19] that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water 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 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).

[19] 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)

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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 workplan. The numeric toxicity monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if effluent toxicity has been demonstrated.

D. Final Effluent Limitations

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 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, beta-BHC, carbon tetrachloride, chlorodibromomethane, cyanide, copper, dichlorobromomethane, and zinc as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Furthermore, for BOD_5, TSS, pH, chlorine residual, and total coliform organisms, weekly average

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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 plus 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 alpha-BHC, dichlorobromomethane, copper, zinc, and gamma-BHC. The effluent limitations for these pollutants are less stringent than those in Order No. R5-2007-0058. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations, as explained below.

The following is a comparison of the alpha-BHC, dichlorobromomethane, cooper, zinc, and gamma-BHC effluent limitations in the previous Order to the new final effluent limitations:

Constituent	**Order No. R5-2007-0058 Effluent Limits** (AMEL/MDEL) (µg/L)	**New Final Effluent Limits** (AMEL/MDEL) (µg/L)
Alpha-BHC	0.11 / 0.21	-- / --
Copper, Total Recoverable	13.7 / 27.4	25.2 / 38.2
Dichlorobromomethane	18.1 / 36.2	22.2 / 46.2.0
Gamma-BHC	0.81 / 1.62	-- / --
Zinc, Total Recoverable	57.8 / 115.9	100.5 / 150.7

Order R5-2007-0058 established effluent limitations for alpha-BHC, dichlorobromomethane, copper, zinc, and gamma-BHC with dilution credits. During the term of the past permit cycle the Discharger repaired the Facility

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effluent outfall and conducted a Mixing Zone/Dilution Study. As discussed in section IV.C.2.c of this Fact Sheet, a mixing zone and dilution credits for aquatic-life criteria and human health criteria are appropriate for dichlorobromomethane, copper, and zinc, and assimilative capacity is available, based on updated information that was not available at the time Order R5-2007-0058 was adopted, which supports the calculation of less stringent effluent limitations for dichlorobromomethane, copper, and zinc. Because effluent limitations may only be as high as is justified under State and federal Antidegradation policies, this Order does not allocate all of the available assimilative capacity and establishes effluent limitations based on available dilution and projected maximum effluent concentration for each parameter.

Order No. R5-2007-0058 included effluent limitations on alpha-BHC and gamma-BHC. Based on new information obtained by the effluent and receiving water monitoring data collected during the past permit term, as discussed in section IV.C.3 of this Fact Sheet, the discharge does not indicate reasonable potential to exceed water quality objectives or criteria for alpha-BHC and gamma-BHC.

Relaxation and removal of the WQBELs in the previous permit is in accordance with CWA sections 303(d)(4) and 402(o), which allow for the removal of WQBELs for attainment waters where antidegradation requirements are satisfied. Removal of the WQBELs is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Therefore, the modifications to these effluent limitations do not violate anti-backsliding requirements.

4. Satisfaction of Antidegradation Policy

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 ADWF limitation has been reduced to 3.4 mgd from 4.0 mgd in the previous Order. The effluent flow limitation reduction reflects the results of an updated design analysis of the Facility, which found the current design ADWF of the Facility to be 3.4 mgd. The Discharger may discharge up to 4.0 mgd in the future without the need to perform a new antidegradation analysis, as the historically permitted flow rate and associated loading rates of a 4.0 mgd facility have already been analyzed in the original antidegradation analysis for the Facility, which met the requirements of State Water Board Resolution No. 68-16.

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 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.

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5. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on flow and percent-removal requirements for BOD_5 and total suspended solids. The WQBELs consist of restrictions on acute toxicity, ammonia, beta-BHC, carbon tetrachloride, chlorodibromomethane, cyanide, copper, dichlorobromomethane, nitrate plus nitrite, pH, and zinc. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. In addition, this Order includes new effluent limitations for ammonia, carbon tetrachloride, and nitrate plus nitrite to meet numeric objectives or protect beneficial uses.

This Order contains pollutant restrictions that are more stringent than applicable federal requirements and standards. Specifically, this Order includes effluent limitations for BOD_5 and TSS that are more stringent than applicable federal standards, but that are nonetheless necessary to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in section IV.C.3 of this Fact Sheet.

Table F-15. Summary of Final Effluent Limitations – Discharge Point No. 001

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Average Dry Weather Flow	mgd	--	--	3.4	--	--	DC
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	15	30	--	--	TTC
	lbs/day	284	425	851	--	--	
	% Removal	85	--	--	--	--	CFR
Total Suspended Solids	mg/L	10	15	30	--	--	TTC
	lbs/day	284	425	851	--	--	
	% Removal	85	--	--	--	--	CFR
pH	s.u.	--	--	--	6.0	8.5	BP
beta-BHC	µg/L	0.014	--	0.028	--	--	BP
Carbon Tetrachloride	µg/L	1.3	--	3.8	--	--	CTR
CDBM	µg/L	3.7	--	8.6	--	--	CTR
Copper, Total Recoverable	µg/L	25.2	--	38.2	--	--	CTR
Cyanide	µg/L	12.2	--	24.0	--	--	CTR
DCBM	µg/L	22.2	--	46.2	--	--	CTR
Zinc, Total Recoverable	µg/L	100.5	--	150.7	--	--	BP

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Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Ammonia Nitrogen, Total (as N)	mg/L	0.94	--	2.14	--	--	NAWQC
Chlorine, Total Residual	mg/L	--	0.011[2]	0.019[3]	--	--	NAWQC
Chlorpyrifos	µg/L	See footnote 4	--	See footnote 5	--	--	TMDL
Diazinon	µg/L		--		--	--	TMDL
Nitrate plus Nitrite (as N)	mg/L	30	--	--	--	--	MCL
Total Coliform Organisms	MPN/ 100 mL	240[6]	23[7]	500	--	--	DPH

[1] Based on an ADWF of 3.4 MGD.
[2] 4-day average limitation.
[3] 1-hour average limitation.
[4] Effluent concentrations of chlorpyrifos and diazinon shall not exceed the sum of one (1) as defined:

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

, where C_{D-avg} = average monthly diazinon effluent concentration in µg/L and C_{C-avg} = average monthly chlorpyrifos effluent concentration in µg/.L

[5] Effluent concentrations of chlorpyrifos and diazinon shall not exceed the sum of one (1) as defined:

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

, where C_{D-max} = maximum daily diazinon effluent concentration in µg/L and C_{C-max} = maximum daily chlorpyrifos effluent concentration in µg/L.

[6] No more than once in any 30-day period.
[7] 7-day median limitation.
ND: Non Detect
DC – Based on the design capacity of the Facility.
TTC – Based on tertiary treatment capability. These effluent limitations reflect the capability of a properly operated tertiary treatment plant.
CFR – Based on secondary treatment standards contained in 40 CFR Part 133.
BP – Based on water quality objectives contained in the Basin Plan.
CTR – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.
NAWQC – Based on USEPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life.
TMDL – Based on the TMDL for chlorpyrifos and diazinon in the Sacramento River and Feather River Basins.
MCL – Based on the Primary Maximum Contaminant Level.
DPH – Based on CA Department of Public Health recommendations.

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E. Interim Effluent Limitations – Not Applicable

F. Land Discharge Specifications

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

G. Reclamation Specifications

1. Treated wastewater discharged for reclamation is regulated under Water Reclamation Requirements Order No. 98-016, or its update, and must meet the requirements of CCR, Title 22.

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

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

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B. Groundwater

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

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

3. The Chemical Constituents objective prohibits concentrations of chemical constituents in excess of California MCLs in groundwater that is designated as municipal or domestic supply. The California primary MCL for nitrate is equivalent to 10 mg/L as nitrogen, and groundwater beneath the facility is designated as municipal or domestic supply. It is therefore appropriate to adopt a numerical groundwater limitation of 10 mg/L for nitrate as nitrogen to implement the Chemical Constituents objective to protect the municipal and domestic use of groundwater.

4. Groundwater limitations are required to protect the beneficial uses of the underlying groundwater.

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Regional Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program (Attachment E) of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the Monitoring and Reporting Program for the Facility.

A. Influent Monitoring

1. Influent monitoring is required to collect data on the characteristics of the wastewater and to assess compliance with effluent limitations (e.g., BOD_5 and TSS

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reduction requirements). The influent monitoring for flow, BOD_5, TSS, and total recoverable metals have been retained from Order No. R5-2007-0058, however; the monitoring frequency for flow has been increased from 1/day to continuous and the monitoring frequency for BOD_5 and TSS has been increased from 2/month to 1/week.

2. The monitoring frequencies for total recoverable metals (1/year) have been retained from Order No. R5-2007-0058.

3. Influent monitoring for pH (1/day) is a new requirement for this Order. Monitoring is necessary to collect data on the characteristics of the wastewater.

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, total chlorine residual (continuous), temperature, BOD_5, TSS, total coliform organisms (1/week), electrical conductivity, ammonia, chlorodibromomethane, cyanide, dichlorobromomethane, copper, zinc (1/month), and standard minerals (1/year) have been retained from Order No. R5-2007-0058 to determine compliance with effluent limitations and to assess the impacts of the discharge on the receiving stream for these parameters.

3. Monitoring data collected over the existing permit term for total recoverable cadmium, alpha-BHC, and gamma-BHC 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. R5-2007-0058.

4. Effluent monitoring for pH, beta-BHC, carbon tetrachloride, nitrate, and nitrate have been retained from Order No. R5-2007-0058, however the monitoring frequency for these parameters have been increased to 1/month (pH has been increased from 1/day to continuous) to determine compliance with effluent limitations.

5. Effluent monitoring frequency for total dissolved solids has been increased from 1/quarter to 1/month and the monitoring frequency of hardness has been increased from 1/year to 1/month. Monitoring is necessary to assess the effectiveness of the treatment process and to assess the impacts of the discharge on the receiving stream.

6. Effluent monitoring frequency for priority pollutants has changed from once per year to quarterly during the third year of the Order. In accordance with Section 1.3 of the SIP, periodic monitoring is required for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established. See

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Attachment I for more detailed requirements related to performing priority pollutant monitoring.

7. California Water Code section 13176, subdivision (a), states: "The analysis of any material required by [Water Code sections 13000-16104] shall be performed by a laboratory that has accreditation or certification pursuant to Article 3 (commencing with Section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code." The Department of Public Health certifies laboratories through its Environmental Laboratory Accreditation Program (ELAP).

Section 13176 cannot be interpreted in a manner that would violate federal holding time requirements that apply to NPDES permits pursuant to the Clean Water Act. (Wat. Code §§ 13370, subd. (c), 13372, 13377.) Section 13176 is inapplicable to NPDES permits to the extent it is inconsistent with Clean Water Act requirements. (Wat. Code § 13372, subd. (a).) The holding time requirements are 15 minutes for chlorine residual, dissolved oxygen, and pH, and immediate analysis is required for temperature. (40 C.F.R. § 136.3(e), Table II).

C. Whole Effluent Toxicity Testing Requirements

1. Acute Toxicity. Quarterly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.

2. Chronic Toxicity. Annual chronic whole effluent toxicity testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective.

D. Receiving Water Monitoring

1. Surface Water

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

b. Receiving water monitoring at Caldwell Park boat launch has not been retained from Order No. R5-2007-0058. The Caldwell Park boat launch is located approximately 15 miles upstream of the discharge location. This Order requires upstream receiving water monitoring to be performed immediately upstream of the discharge outfall.

2. Groundwater – Not Applicable

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.6.a. of

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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.

3. Land Discharge Monitoring

Land discharge monitoring is required to ensure that the discharge to the land disposal area complies with the Storage Pond Operating Requirements in section VI.C.4 of this Order.

4. Reclamation Discharge Monitoring

Reclamation discharge monitoring for total coliform organisms is required to evaluate compliance with Water Reclamation Requirements Order No. 98-016, or its update.

5. Effluent and Receiving Water Characterization Study.

An effluent and receiving water monitoring study is required to ensure adequate information is available for the next permit renewal. During the third year of this permit term, the Discharger is required to conduct quarterly monitoring of the effluent at EFF-001 and of the receiving water at RSW-001 for all priority pollutants and other constituents of concern as described in Attachment I. Dioxin and furan sampling shall be performed semi-annually, as described in Attachment J. In determining the number of samples and frequency of monitoring for the Characterization Study, the annual CTR priority pollutant monitoring and reporting requirements in the Discharger's Pretreatment Program were taken consideration.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under 40 CFR 122.42.

40 CFR 122.41(a)(1) and (b) through (n) 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. 40 CFR 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with

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40 CFR 123.25, this Order omits federal conditions that address enforcement authority specified in 40 CFR 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

a. Mercury. This provision allows the Central Valley Water Board to reopen this Order in the event mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted. In addition, this Order may be reopened if the Central Valley Water Board determines that a mercury offset program is feasible for dischargers subject to NPDES permits.

b. Whole Effluent Toxicity. 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 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. 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 total recoverable copper and zinc. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

d. Constituent Study. There are indications that the discharge may contain constituents that have a reasonable potential to cause or contribute to an exceedance of water quality objectives (bis-2(ethylhexyl) phthalate). This Order requires the Discharger to complete a study of bis-2(ethylhexyl) phthalate's potential effect in the receiving water. This reopener provision allows the Central Valley Water Board to reopen this Order for addition of effluent limitations and requirements for bis-2(ethylhexyl) phthalate if after review of the study results it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of the water quality objective/criterion.

e. Disinfection Byproducts. This Order allows dilution credits for chlorodibromomethane and dichlorobromomethane for development of water quality-based effluent limitations. The Facility's past performance to control

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these pollutants was used in determining the dilution credits granted to the Discharger. If the Discharger submits new monitoring results that justify different performance-based effluent limits for chlorodibromomethane and/or dichlorobromomethane, this Order may be reopened to modify the final effluent limits of chlorodibromomethane and/or dichlorobromomethane.

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

g. **Dilution Credits.** This provision allows the Central Valley Water Board to reopen this Order, as appropriate; to modify dilution credits should the facility performance, treatment or characteristics of the discharge or receiving water change. Modification of the dilution credit may include increasing the allowed dilution credit, if necessary.

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 July 2007 through September 2011, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

The Monitoring and Reporting Program of this Order requires chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, this provision requires the Discharger to submit to the Central Valley Water Board an Initial Investigative TRE Workplan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of **> 2** TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does allow dilution for the chronic condition. Therefore, accelerated monitoring and requirements for TRE initiation are triggered when the effluent exhibits toxicity at less than 50% 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

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seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

The provision requires accelerated monitoring consisting of four chronic toxicity tests in a six-week period (i.e., one test every two weeks) using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control,* EPA/505/2-90-001, March 1991 (TSD). The TSD at page 118 states, "*EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required.*" Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of effluent toxicity (i.e. toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

See the WET Accelerated Monitoring Flow Chart (Figure F-1), below, for further clarification of the accelerated monitoring requirements and for the decision points for determining the need for TRE initiation.

TRE Guidance. The Discharger is required to prepare a TRE Workplan in accordance with USEPA guidance. Numerous guidance documents are available, as identified below:

- Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, EPA/833-B-99/002, August 1999.
- Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs), EPA/600/2-88/070, April 1989.
- Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, Second Edition, EPA 600/6-91/003, February 1991.
- Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I, EPA/600/6-91/005F, May 1992.
- Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA/600/R-92/080, September 1993.
- Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA 600/R-92/081, September 1993.

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- Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, EPA-821-R-02-012, October 2002.

- Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA-821-R-02-013, October 2002.

- Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991.

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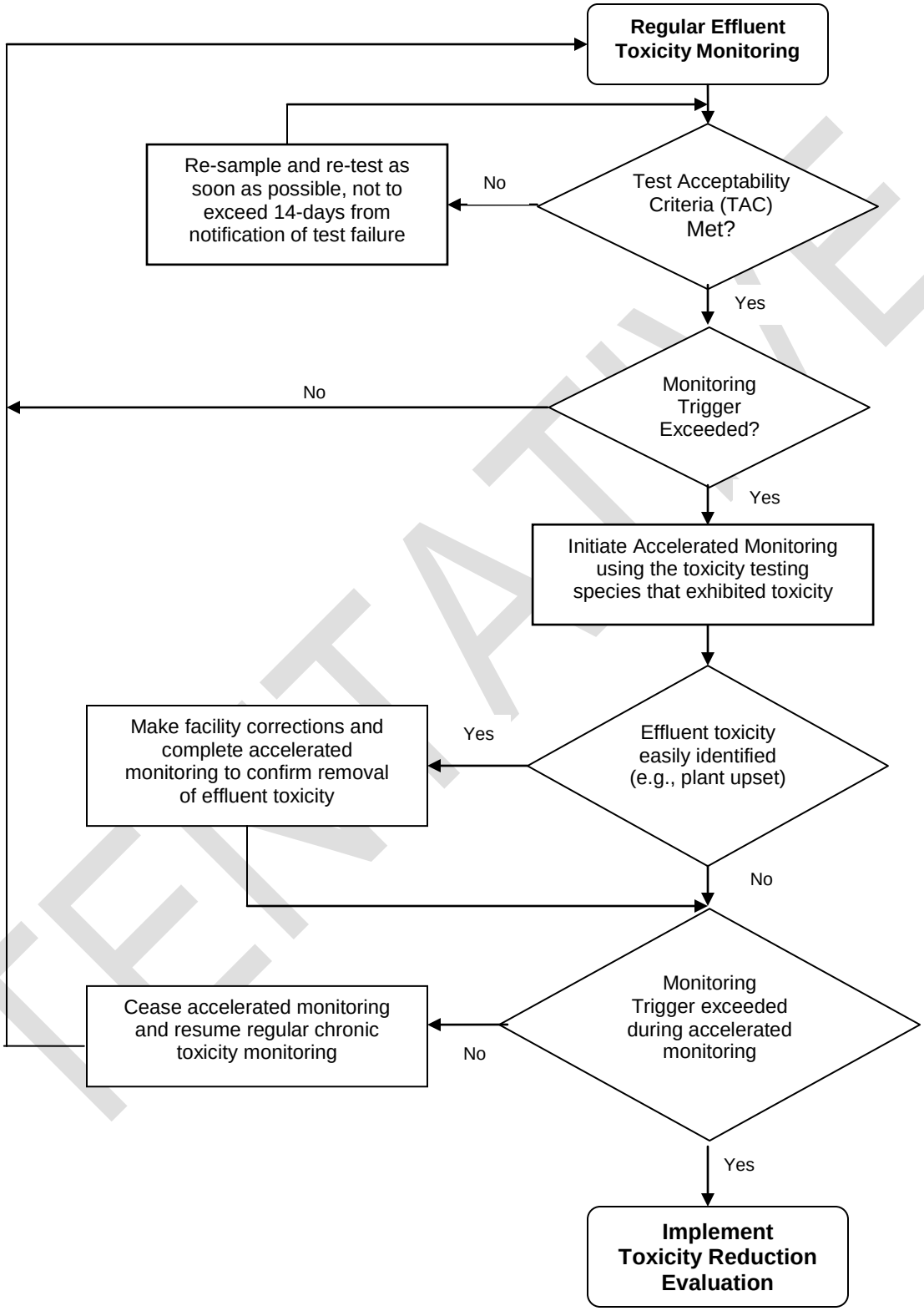
Figure F-1
WET Accelerated Monitoring Flow Chart



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b. Constituent Study. There are indications that the discharge may contain constituents that have a reasonable potential to cause or contribute to an exceedance of water quality objectives for bis-2(ethylhexyl) phthalate. This Order requires the Discharger to complete a study of this constituent's potential effect in the receiving water. If after a review of the study results it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective this Order may be reopened and effluent limitations added for the subject constituents.

3. Best Management Practices and Pollution Prevention – Not Applicable

4. Construction, Operation, and Maintenance Specifications

a. The operation and maintenance specifications for the facility are necessary to protect the beneficial uses of the groundwater. The specifications included in this Order are retained from Order No. R5-2007-0058. In addition, reporting requirements related to use of the storage ponds are required to monitor their use and the potential impact on groundwater.

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

5. Special Provisions for 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 Board or USEPA may take enforcement actions against the Discharger as authorized by the CWA.

b. The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order No. 2006-0003-DWQ (General Order) on 2 May 2006. 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

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report all sanitary sewer overflows (SSOs), among other requirements and prohibitions.

6. Other Special Provisions

a. Ownership Change. To maintain the accountability of the operation of the Facility, the Discharger is required to notify the succeeding owner or operator of the existence of this Order by letter if, and when, there is any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger.

7. Compliance Schedules – Not Applicable

VIII. PUBLIC PARTICIPATION

The Central Valley Water Board is considering the issuance of WDRs that will serve as an NPDES permit for the Facility. As a step in the WDR adoption process, the Central Valley Water Board staff has developed tentative WDRs. The Central Valley Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Central Valley Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through the following **[Describe Notification Process (e.g., newspaper name and date)]**

B. Written Comments

The staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by mail to the Executive Office at the Central Valley Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the Central Valley Water Board, written comments must be received at the Central Valley Water Board offices by 5:00 p.m. on **22 April 2013**.

C. Public Hearing

The Central Valley Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

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Date: 30/31 May 2013
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 are invited to attend. At the public hearing, the Central Valley Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our Web address is www.waterboards.ca.gov/centralvalley where you can access the current agenda for changes in dates and locations.

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Board to review the decision of the Central Valley Water Board regarding the final WDRs. The petition must be received by the State Water Board within 30 days of the Central Valley Water Board's action, and must be submitted to the following address:

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

E. Information and Copying

The Report of Waste Discharge, related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Central Valley Water Board by calling (530) 224-4845.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs 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 Stacy Gotham at (530) 224-4993.

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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	RP	(SIP) ML	(Lab) MDL	(Lab) RL
Aldrin	µg/L	0.036	<0.003	ND	3	--	0.00013	0.00014	ND	--	No	0.005	0.003	0.005
alpha-BHC	µg/L	0.006 DNQ	<0.002	ND	--	--	0.0039	0.013	ND	--	No	0.01	0.002	0.01
Aluminum (aquatic)	µg/L	46.7	261	87	750[5]	87[5]	--	--	--	--	No		0.1	4
Aluminum (HH)	µg/L	26.2[1]	125.8[1]	200	--	--	--	--	--	200[4]	No			
Ammonia	mg/L	0.549	--	1.12	2.14[12]	1.12[9] 2.8[8]	--	--	--	--	Yes		0.1	
Arsenic	µg/L	2.1	1.57	10	340	150	--	--	10	10[3]	No	2	0.04	0.15
beta-BHC	µg/L	0.013	<0.002	ND	--	--	0.014	0.046	ND	--	Yes	0.005	0.002	0.005
Bis(2-Ethylhexyl) Phthalate	µg/L	2 DNQ	<0.8	1.8	--	--	1.8	5.9	--	4	No	5	0.8	5
Cadmium	µg/L	0.078	0.074	0.22[6] 0.46[7]	1.61[6] 3.2[7]	1.20[6] 1.96[7]	--	--	0.22[6] 0.46[7]	5[3]	No	0.25	0.004	0.02
Carbon Tetrachloride	µg/L	1	<0.300	0.25	--	--	0.25	4.4	--	0.5[3]	Yes	0.5	0.05	0.5
Chloride	mg/L	68.8	33.6	106	860	230	--	--	--	250[4]	No		0.02	1
CDBM	µg/L	3	<0.21	0.41	--	--	0.41	34	--	80[11]	Yes	0.5	0.06	0.5
Chromium, Total	µg/L	1.46	0.61	50	--	--	--	--	--	50[3]	No		0.009	0.1
Chromium (III)	µg/L	N/A	N/A	98[6] 160[7]	820[6] 1400[7]	98[6] 160[7]	--	--	--	--	No[13]			
Chromium (VI)	µg/L	<0.11	<0.11	11	16.3	11.4	--	--	--	--	No	10	0.11	
Copper	µg/L	18	2.69[(D)]	4.1[(D)]/4.3[(T) 6] 7.0[(D)]/7.3[(T) 7]	5.7[(D)]/5.9[(T) 6] 10.2[(D)]/10.6[(T) 7]	4.1[(D)]/4.3[(T) 6] 7.0[(D)]/7.3[(T) 7]	1300	--	5.6[(D)]/5.9[(T) 6] 9.9[(D)]/10.3[(T) 7]	1000	Yes	2	0.01	0.1
Cyanide	µg/L	10	3	5.2	22	5.2	700	220,000	10	150	Yes	5	1	5
DCBM	µg/L	22	<0.21	0.56	--	--	0.56	46	--	80[11]	Yes	0.5	0.08	0.5

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Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	RP	(SIP) ML	(Lab) MDL	(Lab) RL
Electrical Conductivity	µmhos/ cm	652	14.4	700	--	--	--	--	--	900[4]	No			
gamma-BHC	µg/L	<0.002	<0.002	ND	0.95	--	0.019	0.063	ND	0.2	No	0.02	0.002	0.01
Iron	µg/L	39	207	300	--	1000	--	--	300	300	No		4	12
Lead	µg/L	0.094	0.044	0.991[6] 2.08[14]	25.43[6] 53.43[14]	0.991[6] 2.08[14]	--	--	--	15	No	0.5	0.003	0.04
Manganese	µg/L	6	11	50	--	--	100	--	50	50	No		0.1	0.6
Nickel	µg/L	2.12	1.53	24[6] 40.7[7]	--	24[6] 40.7[7]	--	--	--	100	No	20	0.008	0.1
Nitrate (as N)	mg/L	21.7	--	10	--	--	10	--	--	10	Yes		0.02	0.01
Nitrite (as N)	mg/L	<0.01	--	1	--	--	--	--	--	1	No		0.01	0.03
Mercury	µg/L	0.00282	.00364	0.05	1.4	0.77	0.05	--	--	--	No	0.2	0.08	0.5
Silver	µg/L	.01	<0.003	0.84	0.84[6] 2.09[14]				12	100[4]	No	0.25	0.003	0.02
Sulfate	mg/L	N/A	12.9	250	--	--	--	--	--	250[4]	No			
Sulfide	mg/L	N/A	0.017	--	--	--	--	--	--	--	No			
Total Dissolved Solids	mg/L	347	N/A	450[10]	--	--	--	--	--	500[3]	No			
Zinc	µg/L	70.7	3.96[D]	16[D]/16.4[T] [6] 26.8[D]/27[T] [7]	54[D]/55[T] [6] 91[D]/93[T] [7]	54[D]/55[T] [6] 92[D]/93[T] [7]	--	--	16[D]/16.4[T] [6] 26.8[D]/27.4[T] [7]	5000[4]	Yes	10	0.014	0.2

General Note: All inorganic concentrations are given as a total recoverable unless otherwise noted.
(Data set from 2008 – 2011)
MEC = Maximum Effluent Concentration
B = Maximum Receiving Water Concentration or lowest detection level, if non-detect.
Background data collected at Sacramento River at Caldwell Park, RSW-001a, with the exception of dissolved copper and zinc data, which was collected at the site-specific upstream monitoring station, RSW-001.
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)

Footnotes:
(1) Maximum annual average
(2) Arithmetic mean
(3) Primary MCL
(4) Secondary MCL
(5) NAWQC
(6) Based on minimum receiving water hardness of 40 mg/L as $CaCO_3$
(7) Based on minimum effluent hardness of 74.6 mg/L as $CaCO_3$
(8) 4-day ammonia criteria
(9) 30-day ammonia criteria
(10) Agricultural Water Quality Goal
(11) California Primary MCL numeric threshold for total trihalomethanes

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Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	RP	(SIP) ML	(Lab) MDL	(Lab) RL

Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective
MCL = Drinking Water Standards Maximum Contaminant Level
RP = Reasonable Potential
NA = Not Available
ND = Non-detect
DNQ = Detected by laboratory, but not quantified.
(Lab) = Discharger's Laboratory reporting value.

(TTHMs).
(12) Determined using Basin Plan maximum allowable pH of 8.5.
(13) See Total Chromium MEC and B data.
(14) Criteria calculated using Emerick/Pedri Concave Up equation using minimum EFF hardness (74.6) and minimum RW hardness (40).
(T) Total recoverable.
(D) Dissolved.

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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_{HH} = $AMEL_{HH}$	AMEL/MDEL $Multiplier_{HH}$	$MDEL_{HH}$	ECA $Multiplier_{acute}$	LTA_{acute}	ECA $Multiplier_{chronic}$	$LTA_{chronic}$	Lowest LTA	AMEL $Multiplier_{95}$	$AMEL_{AL}$	MDEL $Multiplier_{99}$	$MDEL_{AL}$	Lowest AMEL	Lowest MDEL
Ammonia	mg/L	--	2.14	1.12[1]	--	0	0	--	--	--	0.255	0.55	0.726	0.81	0.55	1.73	0.94	3.92	2.14	0.94	2.14
Carbon Tetrachloride	µg/L	0.25	--	--	5	--	--	1.3	3.01	3.8	--	--	--	--	--	--	--	--	--	1.3	3.8
Chlorodibromomethane	µg/L	0.41	--	--	10	--	--	3.7	2.32	8.6	--	--	--	--	--	--	--	--	--	3.7	8.6
Chlorpyrifos[2]	µg/L	--	0.025[2]	0.015[2]	--	--	--	--	--	--	0.321	0.0080	0.527	0.0079	0.0079	1.55	0.012	3.11	0.025	0.012	0.025
Copper, Total Recoverable	µg/L	1000	6.3[3]	4.5[4]	--	10	14	1000	1.52	1518	0.52	21.1	0.71	19.8	19.8	1.27	25.2	1.93	38.2	25.2	38.2
Cyanide	µg/L	150	10[3]	5.2	--	2	5	150	1.97	296.2	0.330	7.9	0.538	8.7	7.9	1.53	12.2	3.03	24.0	12.2	24.0
Diazinon[2]	µg/L	--	0.16[2]	0.10[2]	--	--	--	--	--	--	0.321	0.051	0.527	0.051	0.053	1.55	0.079	3.11	0.016	0.079	0.016
Dichlorobromomethane	µg/L	0.56	--	--	47	--	--	22.2	2.08	46.2	--	--	--	--	--	--	--	--	--	22.2	46.2
Nitrate	mg/L	10	--	--	2	--	--	30	1.5	45	--	--	--	--	--	--	--	--	--	30	--
Zinc, Total Recoverable	µg/L	5000	17.4[5]	74.7[6]	--	10	1	5000	1.5	7500	0.527	79.5	0.715	104	79.5	1.26	100.5	1.9	150.7	100.5	150.7

1 30-day ammonia criteria.
2 The calculated AMEL and MDEL for chlorpyrifos and diazinon were used to determine effluent limitations consistent with the TMDL waste load allocation.
3 Basin Plan water quality objectives. Hardness = 43.1 mg/L at D_{acute}=10:1.
4 Hardness = 42.2 mg/L $CaCO_3$ at $D_{chronic}$=14:1.
5 Basin Plan water quality objectives. Hardness = 43.1 mg/L at D_{acute}=10:1.
6 Hardness = 57.3 mg/L $CaCO_3$ at $D_{chronic}$=1:1.

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ATTACHMENT I – EFFLUENT AND RECEIVING WATER CHARACTERIZATION STUDY

I. Background. Sections 2.4.1 through 2.4.4 of the SIP provide minimum standards for analyses and reporting. (Copies of the SIP may be obtained from the State Water Resources Control Board, or downloaded from http://www.waterboards.ca.gov/iswp/index.html). To implement the SIP, effluent and receiving water data are needed for all priority pollutants. Effluent and receiving water pH and hardness are required to evaluate the toxicity of certain priority pollutants (such as heavy metals) where the toxicity of the constituents varies with pH and/or hardness. Section 3 of the SIP prescribes mandatory monitoring of dioxin congeners. In addition to specific requirements of the SIP, the Central Valley Water Board is requiring the following monitoring:

A. Drinking water constituents. Constituents for which drinking water Maximum Contaminant Levels (MCLs) have been prescribed in the California Code of Regulation are included in the *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (Basin Plan). The Basin Plan defines virtually all surface waters within the Central Valley Region as having existing or potential beneficial uses for municipal and domestic supply. The Basin Plan further requires that, at a minimum, water designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the MCLs contained in the California Code of Regulations.

B. Effluent and receiving water temperature. This is both a concern for application of certain temperature-sensitive constituents, such as fluoride, and for compliance with the Basin Plan's thermal discharge requirements.

C. Effluent and receiving water hardness and pH. These are necessary because several of the CTR constituents are hardness and pH dependent.

D. Dioxin and furan sampling. Section 3 of the SIP has specific requirements for the collection of samples for analysis of dioxin and furan congeners, which are detailed in Attachment J. Pursuant to Section 13267 of the California Water Code, this Order includes a requirement for the Discharger to submit monitoring data for the effluent and receiving water as described in Attachment J.

II. Monitoring Requirements.

A. Quarterly Monitoring. Quarterly samples shall be collected from the effluent and upstream receiving water (EFF-001 and RSW-001) and analyzed for the constituents listed in Table I-1. Quarterly monitoring shall be conducted during the third year of the permit term (i.e., 4 samples, collected every quarter for one year) and the results of such monitoring be submitted to the Central Valley Water Board in accordance with the reporting schedule in Attachment E (Table E-9). Each individual monitoring event shall provide representative sample results for the effluent and upstream receiving water.

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B. Semi-annual Monitoring (dioxins and furans only). Semi-annual monitoring is required for dioxins and furans, as specified in Attachment J. The results of dioxin and furan monitoring shall be submitted to the Central Valley Water Board with the monitoring data discussed in subsection A, above.

C. Concurrent Sampling. Effluent and receiving water sampling shall be performed at approximately the same time, on the same date.

D. Sample type. All effluent samples shall be taken as 24-hour flow proportioned composite samples[1]. All receiving water samples shall be taken as grab samples. Metals shall be analyzed for both dissolved and total recoverable concentrations.

E. Additional Monitoring/Reporting Requirements. The Discharger shall conduct the monitoring and reporting in accordance with the General Monitoring Provisions and Reporting Requirements in Attachment E.

Table I-1. Priority Pollutants and Other Constituents of Concern

CTR #	Constituent	CAS Number	Maximum Reporting Level [1] µg/L or noted
28	1,1-Dichloroethane	75343	1
30	1,1-Dichloroethene	75354	0.5
41	1,1,1-Trichloroethane	71556	2
42	1,1,2-Trichloroethane	79005	0.5
37	1,1,2,2-Tetrachloroethane	79345	0.5
75	1,2-Dichlorobenzene	95501	2
29	1,2-Dichloroethane	107062	0.5
	cis-1,2-Dichloroethene	156592	
31	1,2-Dichloropropane	78875	0.5
101	1,2,4-Trichlorobenzene	120821	1
76	1,3-Dichlorobenzene	541731	2
32	1,3-Dichloropropene	542756	0.5
77	1,4-Dichlorobenzene	106467	2
17	Acrolein	107028	2
18	Acrylonitrile	107131	2
19	Benzene	71432	0.5
20	Bromoform	75252	2
34	Bromomethane	74839	2
21	Carbon tetrachloride	56235	0.5
22	Chlorobenzene (mono	108907	2

[1] 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 Board.

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CTR #	Constituent	CAS Number	Maximum Reporting Level [1] µg/L or noted
	chlorobenzene)		
24	Chloroethane	75003	2
25	2- Chloroethyl vinyl ether	110758	1
26	Chloroform	67663	2
35	Chloromethane	74873	2
23	Dibromochloromethane	124481	0.5
27	Dichlorobromomethane	75274	0.5
36	Dichloromethane	75092	2
33	Ethylbenzene	100414	2
88	Hexachlorobenzene	118741	1
89	Hexachlorobutadiene	87683	1
91	Hexachloroethane	67721	1
94	Naphthalene	91203	10
38	Tetrachloroethene	127184	0.5
39	Toluene	108883	2
40	trans-1,2-Dichloroethylene	156605	1
43	Trichloroethene	79016	2
44	Vinyl chloride	75014	0.5
	Methyl-tert-butyl ether (MTBE)	1634044	
	Trichlorofluoromethane	75694	
	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	
	Styrene	100425	
	Xylenes	1330207	
60	1,2-Benzanthracene	56553	5
85	1,2-Diphenylhydrazine	122667	1
45	2-Chlorophenol	95578	5
46	2,4-Dichlorophenol	120832	5
47	2,4-Dimethylphenol	105679	2
49	2,4-Dinitrophenol	51285	5
82	2,4-Dinitrotoluene	121142	5
55	2,4,6-Trichlorophenol	88062	10
83	2,6-Dinitrotoluene	606202	5
50	2-Nitrophenol	25154557	10
71	2-Chloronaphthalene	91587	10
78	3,3'-Dichlorobenzidine	91941	5
62	3,4-Benzofluoranthene	205992	10

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CTR #	Constituent	CAS Number	Maximum Reporting Level [1] µg/L or noted
52	4-Chloro-3-methylphenol	59507	5
48	4,6-Dinitro-2-methylphenol	534521	10
51	4-Nitrophenol	100027	10
69	4-Bromophenyl phenyl ether	101553	10
72	4-Chlorophenyl phenyl ether	7005723	5
56	Acenaphthene	83329	1
57	Acenaphthylene	208968	10
58	Anthracene	120127	10
59	Benzidine	92875	5
61	Benzo(a)pyrene (3,4-Benzopyrene)	50328	2
63	Benzo(g,h,i)perylene	191242	5
64	Benzo(k)fluoranthene	207089	2
65	Bis(2-chloroethoxy) methane	111911	5
66	Bis(2-chloroethyl) ether	111444	1
67	Bis(2-chloroisopropyl) ether	39638329	10
68	Bis(2-ethylhexyl) phthalate	117817	5
70	Butyl benzyl phthalate	85687	10
73	Chrysene	218019	5
81	Di-n-butylphthalate	84742	10
84	Di-n-octylphthalate	117840	10
74	Dibenzo(a,h)-anthracene	53703	0.1
79	Diethyl phthalate	84662	10
80	Dimethyl phthalate	131113	10
86	Fluoranthene	206440	10
87	Fluorene	86737	10
90	Hexachlorocyclopentadiene	77474	5
92	Indeno(1,2,3-c,d)pyrene	193395	0.05
93	Isophorone	78591	1
98	N-Nitrosodiphenylamine	86306	1
96	N-Nitrosodimethylamine	62759	5
97	N-Nitrosodi-n-propylamine	621647	5
95	Nitrobenzene	98953	10
53	Pentachlorophenol	87865	1
99	Phenanthrene	85018	5
54	Phenol	108952	1
100	Pyrene	129000	10

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CTR #	Constituent	CAS Number	Maximum Reporting Level [1] µg/L or noted
	Aluminum	7429905	
1	Antimony	7440360	5
2	Arsenic	7440382	2
15	Asbestos	1332214	
	Barium	7440393	
3	Beryllium	7440417	2
4	Cadmium	7440439	0.25
5a	Chromium (III)	16065831	50
5b	Chromium (VI)	18540299	10
6	Copper	7440508	2
14	Cyanide	57125	5
	Fluoride	7782414	
	Iron	7439896	
7	Lead	7439921	0.5
8	Mercury	7439976	0.2
	Manganese	7439965	
	Molybdenum	7439987	
9	Nickel	7440020	20
10	Selenium	7782492	2
11	Silver	7440224	0.25
12	Thallium	7440280	1
	Tributyltin	688733	
13	Zinc	7440666	10
110	4,4'-DDD	72548	0.05
109	4,4'-DDE	72559	0.05
108	4,4'-DDT	50293	0.01
112	alpha-Endosulfan	959988	0.02
103	alpha-Hexachlorocyclohexane (BHC)	319846	0.01
	Alachlor	15972608	
102	Aldrin	309002	0.005
113	beta-Endosulfan	33213659	0.01
104	beta-Hexachlorocyclohexane	319857	0.005
107	Chlordane	57749	0.1
106	delta-Hexachlorocyclohexane	319868	0.005
111	Dieldrin	60571	0.01
114	Endosulfan sulfate	1031078	0.05

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CTR #	Constituent	CAS Number	Maximum Reporting Level [1] µg/L or noted
115	Endrin	72208	0.01
116	Endrin Aldehyde	7421934	0.01
117	Heptachlor	76448	0.01
118	Heptachlor Epoxide	1024573	0.01
105	Lindane (gamma-Hexachlorocyclohexane)	58899	0.02
119	PCB-1016	12674112	0.5
120	PCB-1221	11104282	0.5
121	PCB-1232	11141165	0.5
122	PCB-1242	53469219	0.5
123	PCB-1248	12672296	0.5
124	PCB-1254	11097691	0.5
125	PCB-1260	11096825	0.5
126	Toxaphene	8001352	0.5
	Atrazine	1912249	
	Bentazon	25057890	
	Carbofuran	1563662	
	2,4-D	94757	
	Dalapon	75990	
	1,2-Dibromo-3-chloropropane (DBCP)	96128	
	Di(2-ethylhexyl)adipate	103231	
	Dinoseb	88857	
	Diquat	85007	
	Endothal	145733	
	Ethylene Dibromide	106934	
	Glyphosate	1071836	
	Methoxychlor	72435	
	Molinate (Ordram)	2212671	
	Oxamyl	23135220	
	Picloram	1918021	
	Simazine (Princep)	122349	
	Thiobencarb	28249776	
16	2,3,7,8-TCDD (Dioxin)	1746016	
	2,4,5-TP (Silvex)	93765	
	Diazinon	333415	
	Chlorpyrifos	2921882	
	Ammonia (as N)	7664417	

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CTR #	Constituent	CAS Number	Maximum Reporting Level [1] µg/L or noted
	Chloride	16887006	
	Flow		
	Hardness (as $CaCO_3$)		
	Foaming Agents (MBAS)		
	Nitrate (as N)	14797558	
	Nitrite (as N)	14797650	
	pH		
	Phosphorus, Total (as P)	7723140	
	Specific conductance (EC)		
	Sulfate		
	Sulfide (as S)		
	Sulfite (as SO_3)		
	Temperature		
	Total Disolved Solids (TDS)		

[1] The reporting levels required in these tables for priority pollutant constituents are established based on Section 2.4.2 and Appendix 4 of the SIP.

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ATTACHMENT J – DIOXIN AND FURAN SAMPLING

The CTR includes criteria for 2,3,7,8-tetrachlorodibenzo-pdioxin (2,3,7,8-TCDD). In addition to this compound, there are many congeners of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) that exhibit toxic effects similar to those of 2,3,7,8-TCDD. The USEPA has published toxic equivalency factors (TEFs) for 17 of the congeners. The TEFs express the relative toxicities of the congeners compared to 2,3,7,8-TCDD (whose TEF equals 1.0). In June 1997, participants in a World Health Organization (WHO) expert meeting revised TEF values for 1,2,3,7,8-PentaCDD, OctaCDD, and OctaCDF. The current TEFs for the 17 congeners, which include the three revised values, are shown below:

Toxic Equivalency Factors (TEFs) for 2,3,7,8-TCDD Equivalents

Congener	TEF
2,3,7,8-TetraCDD	1
1,2,3,7,8-PentaCDD	1.0
1,2,3,4,7,8-HexaCDD	0.1
1,2,3,6,7,8-HexaCDD	0.1
1,2,3,7,8,9-HexaCDD	0.1
1,2,3,4,6,7,8-HeptaCDD	0.01
OctaCDD	0.0001
2,3,7,8-TetraCDF	0.1
1,2,3,7,8-PentaCDF	0.05
2,3,4,7,8-PentaCDF	0.5
1,2,3,4,7,8-HexaCDF	0.1
1,2,3,6,7,8-HexaCDF	0.1
1,2,3,7,8,9-HexaCDF	0.1
2,3,4,6,7,8-HexaCDF	0.1
1,2,3,4,6,7,8-HeptaCDF	0.01
1,2,3,4,7,8,9-HeptaCDF	0.01
OctaCDF	0.0001

The Discharger shall conduct effluent and receiving water monitoring for the 2,3,7,8-TCDD congeners listed above to assess the presence and amounts of the congeners being discharged and already present in the receiving water. Effluent and upstream receiving water shall be monitored for the presence of the 17 congeners once during dry weather and once during wet weather for 1 year within the term of the study.

The Discharger shall report, for each congener, the analytical results of the effluent and receiving water monitoring, including the quantifiable limit and the method detection limit, and the measured or estimated concentration.

In addition, the Discharger shall multiply each measured or estimated congener concentration by its respective TEF value and report the sum of these values.

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