CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

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ORDER NO. R5-2010-XXXX
NPDES NO. CA0079731

WASTE DISCHARGE REQUIREMENTS FOR THE CITY OF REDDING CLEAR CREEK WASTEWATER TREATMENT PLANT 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	Clear Creek Wastewater Treatment Plant
Facility Address	2220 Metz 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	40° N 29' 57.5"	122° W 38' 28"	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 expiration date**

IT IS HEREBY ORDERED, that Order No. **R5-2003-0130** is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code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 Clean Water Act (CWA) and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

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>**.

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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	Clear Creek Wastewater Treatment Plant
Facility Address	2220 Metz Road
	Anderson, CA 96007
	Shasta County
Facility Contact, Title, and Phone	Troy Mitchell, Chief Plant Operator, (530) 225-4157 Dennis McBride, Wastewater Utility Manager, (530) 224-6063
Mailing Address	2220 Metz Road
	Anderson, CA 96007
Type of Facility	Publicly Owned Treatment Works
Facility Design Flow	8.8 million gallons per day (MGD) average dry weather flow

II. FINDINGS

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

A. Background. The City of Redding (hereinafter Discharger) is currently discharging pursuant to Order No. R5-2003-0130 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0079731. The Discharger submitted a Report of Waste Discharge, dated 29 February 2008, and applied for a NPDES permit renewal to discharge up to an average monthly dry weather flow of 8.8 mgd of treated domestic wastewater (advanced secondary treatment) from the Clear Creek Wastewater Treatment Plant, hereinafter Facility. The application was deemed complete on 29 March 2008.

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. The treatment system consists of screening for removal of large solids, grit removal, primary clarification, activated sludge treatment with secondary clarification, filtration, chlorination/dechlorination, flow equalization, and emergency storage. Primary sludge is treated by anaerobic digestion followed by dewatering using a plate and frame filter press and then disposed at a sanitary landfill. Waste activated sludge is stabilized in facultative sludge lagoons and air dried to generate Class B biosolids. Biosolids from the secondary treatment process are land applied on property owned by the Discharger. Wastewater is discharged through a diffuser from Discharge D-001 (see table on cover

page) to the Sacramento River, a water of the United States, within the Sacramento River Watershed. Attachment B provides a map of the Facility and its surroundings.

C. Legal Authorities. This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and Chapter 5.5, Division 7 of the California Water Code (commencing with Section 13370). It shall serve as an 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 Regional 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 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 Title 40 of the Code of Federal Regulations (CFR), Part 122.44 (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 (Attachment F).

G. Water Quality-based Effluent Limitations. 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, that are necessary to achieve water quality standards. The Regional Water Board has considered the factors listed in CWC 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,

water quality-based effluent limitations (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).

H. Water Quality Control Plans. The Regional Water Board adopted a *Water Quality Control Plan, Fourth Edition (Revised September 2009), for the Sacramento and San Joaquin River Basins* (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. 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 the Sacramento River (from Shasta Dam to Colusa Basin Drain) are as follows: municipal and domestic supply; agricultural supply, including stock watering; industrial service supply; hydropower generation; water contact recreation, including canoeing and rafting; non-contact water recreation, including aesthetic enjoyment; commercial and sport fishing; warm freshwater habitat; cold freshwater habitat; warm migration of aquatic organisms; cold migration of aquatic organisms; warm spawning, reproduction, and/or early development; cold spawning, reproduction, and /or early development; wildlife habitat; and navigation.

Table 5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Sacramento River (from Shasta Dam to Colusa Basin Drain)	Existing: Municipal and domestic water supply (MUN), agricultural supply and stock watering (AGR), industrial service supply and power (IND), contact (REC-1) and non-contact (REC-2) water recreation, warm freshwater habitat (WARM); cold freshwater habitat (COLD); migration (MGR); spawning (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 has been listed as an impaired waterbody pursuant to Section 303(d) of the Clean Water Act for unknown toxicity. The listing for unknown toxicity has a proposed TMDL (Total Maximum Daily Load) completion date of 2019.

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 forty 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 the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plan. The SIP became effective on 18 May 2000 with respect to the priority pollutant criteria promulgated by the 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 Clean Water Act 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. The 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.

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 includes compliance schedule and interim effluent limitations. A detailed discussion of the basis for the compliance schedule(s) and interim effluent limitation(s) and/or discharge specifications is included in the Fact Sheet.

L. Alaska Rule. On 30 March 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards (WQS) become effective for CWA purposes. (40 CFR 131.21; 65 Fed. Reg. 24641 (April 27, 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 5-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), pH. The WQBELs consist of restrictions on pathogens, aluminum, ammonia, pH, and priority toxic pollutants. This Order's technology-based pollutant restrictions implement the minimum applicable federal technology-based requirements. In addition, this Order includes effluent limitations to meet numeric objectives or protect beneficial uses.

WQBELs have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR 131.38. The scientific procedures for calculating the individual WQBELs are based on the CTR-SIP, which was approved by USEPA on 1 May 2001. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to 30 May 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to 30 May 2000, but not approved by USEPA before that date, are nonetheless "*applicable water quality standards for purposes of the [Clean Water] Act*" pursuant to 40 CFR 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the technology-based requirements of the CWA and the applicable water quality standards for purposes of the CWA.

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 is consistent with 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 justified based on specific findings. The Regional 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 provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16.

O. Anti-Backsliding Requirements. Sections 402(o)(2) and 303(d)(4) 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 where limitations may be relaxed. All effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order, except as discussed in Fact Sheet IV.D.3.

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 applicable requirements of the Endangered Species Act.

Q. 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 authorizes the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. This Monitoring and Reporting Program is provided in Attachment E.

R. 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 Regional Water Board has also included in this Order special provisions applicable to the Discharger. A rationale for the special provisions contained in this Order is provided in the attached Fact Sheet.

S. Provisions and Requirements Implementing State Law. The provisions/requirements in subsections V.B, VI.A.2.v, VI.C.4.a, and VI.C.4.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.

T. Notification of Interested Parties. The Regional 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. Details of notification are provided in the Fact Sheet of this Order.

U. Consideration of Public Comment. The Regional 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 of 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 California Water Code.

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

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point No. 001

1. Final Effluent Limitations – Discharge Point No. 001

a. 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 attached MRP (Attachment E):

Table 6. Effluent Limitations – Discharge Point No. 001

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand, 5-day @ 20°C	mg/L	10	15	30	--	--
	lbs/day[1]	734	1101	2202	--	--
Total Suspended Solids	mg/L	10	15	30	--	--
	lbs/day[1]	734	1101	2202	--	--
pH	standard units	--	--	--	6.0	8.5
Priority Pollutants						
Copper, Total Recoverable	µg/L	17	--	26	--	--
Chlorodibromomethane	µg/L	3.5	--	10.3	--	--
Dichlorobromomethane	µg/L	12.2	--	29.3	--	--
Zinc, Total Recoverable	µg/L	57	--	86	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	0.7	--	2.15	--	--

[1] Based on a design flow of 8.8 MGD.

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

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

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

d. **Chronic Whole Effluent Toxicity.** There shall be no chronic whole effluent toxicity in the effluent discharge.

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

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

f. **Total Coliform Organisms.** From the effective date of this Order and for three years thereafter, the effluent total coliform organisms shall not exceed:

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

g. **Total Coliform Organisms.** Beginning on the first day of the fourth year following the effective date of this Order, and thereafter, effluent total coliform organisms shall not exceed:

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

h. **Average Dry Weather Flow.** The average dry weather flow shall not exceed 8.8 MGD.

i. **Aluminum, Total Recoverable.** For a calendar year, the annual average effluent concentration shall not exceed 200 µg/L.

2. Interim Effluent Limitations

a. During the period beginning the **effective date of this Order** and ending **5 years after the effective date of this Order**, the Discharger shall maintain compliance with the following limitations at D-001, with compliance measured at Monitoring Location EFF-001 as described in the attached MRP. These interim effluent limitations shall apply in lieu of the corresponding final effluent limitations specified for the same parameters during the time period indicated in this provision.

Table 7. Interim Effluent Limitations

Parameter	Units	Effluent Limitations	
		Average Monthly	Maximum Daily
Ammonia, Total	mg/L	--	19.9

The Discharger is required to maintain existing Facility performance such that average monthly effluent concentrations do not exceed their respective concentrations recorded over the prior five years.

B. Land Discharge Specifications – Not Applicable

C. Reclamation Specifications – Not Applicable

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 ten percent of the total number of fecal coliform samples taken during any 30-day period to exceed 400 MPN/100 mL.

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

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

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

5. **Dissolved Oxygen**:

   a. The monthly median of the mean daily dissolved oxygen concentration to fall below 85 percent of saturation in the main water mass;
   b. The 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 concentrations 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 California Code of Regulations, Title 22, Division 4, Chapter 15; and
   g. Thiobencarb to be present in excess of 1.0 µg/L.
   h. Diazinon concentrations in excess of 0.080 ug/L (1-hour average) or 0.050 ug/L (4-day average) to occur more than once every three years on average.

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 specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations.

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

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

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

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

15. **Temperature.** The 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.

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**. The turbidity to increase as follows:

    a. Where natural turbidity is less than 1 Nephelometric Turbidity Unit (NTU), controllable factors shall not cause downstream turbidity to exceed 2 NTU.
    b. More than 1 NTU where natural turbidity is between 1 and 5 NTUs.
    c. More than 20 percent where natural turbidity is between 5 and 50 NTUs.
    d. More than 10 NTU where natural turbidity is between 50 and 100 NTUs.
    e. More than 10 percent where natural turbidity is greater than 100 NTUs.

B. Groundwater Limitations

1. Release of waste constituents from any storage, treatment, or disposal component associated with the Facility shall not cause or contribute to, in combination with other sources of the 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; and

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

        i. total coliform organisms shall not exceed 2.2 MPN/100 mL over any 7-day period.

VI. PROVISIONS

A. Standard Provisions

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

   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 Clean Water Act, 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 Regional Water Board may review and revise this Order at any time upon application of any affected person or the Regional 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 Regional Water Board will revise or modify this Order in accordance with such toxic effluent standard or prohibition.

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

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

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

   ii. controls any pollutant limited in the Order.

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

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

f. The Discharger shall take all reasonable steps to minimize any adverse effects to waters of the State or users of those waters resulting from any discharge or sludge use or disposal in violation of this Order. Reasonable steps shall include such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge or sludge use or disposal.

g. The Discharger shall ensure compliance with any existing or future pretreatment standard promulgated by USEPA under Section 307 of the CWA, or amendment thereto, for any discharge to the municipal system.

h. The discharge of any radiological, chemical or biological warfare agent or high-level, radiological waste is prohibited.

i. 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.

j. 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 Regional 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 Regional Water Board.

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

k. The Discharger, upon written request of the Regional 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 Regional Water Board Standard Provision VI.A.2.m.

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 Regional 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.

l. A publicly owned treatment works (POTW) whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment and disposal facilities. The projections shall be made in January, based on the last 3 years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in 4 years, the Discharger shall notify the Regional 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 Regional Water Board may extend the time for submitting the report.

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

n. Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Regional Water Board and USEPA.

o. 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.

p. 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.

q. All monitoring and analysis instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary, at least yearly, to ensure their continued accuracy.

r. The Discharger shall file with the Regional Water Board technical reports on self-monitoring performed according to the detailed specifications contained in the Monitoring and Reporting Program attached to this Order.

s. The results of all monitoring required by this Order shall be reported to the Regional 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.

t. The Regional Water Board is authorized to enforce the terms of this permit under several provisions of the CWC, including, but not limited to, sections 13385, 13386, and 13387.

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

v. 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 Regional 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 Regional Water Board waives confirmation. The written notification shall include the information required by Attachment D, Section V.E.1 [40 CFR 122.41(l)(6)(i)].

B. Monitoring and Reporting Program (MRP) Requirements

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

C. Special Provisions

1. Reopener Provisions

a. 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.

b. Conditions that necessitate a major modification of a permit are described in 40 CFR 122.62, including:

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, including approved process changes or an updated mixing zone/dilution study. For example, modifications to the Chronic Whole Effluent Toxicity Accelerated Monitoring Trigger, or the effluent limitations for chlorine disinfection byproducts or ammonia, may be appropriate, as described in the Fact Sheet.

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 may be reopened and an effluent concentration limitation imposed. If the Regional Water Board determines that a mercury offset program is feasible for Dischargers

subject to a NPDES permit, then this Order may be reopened to evaluate the need for a mercury offset program for the Discharger.

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

e. **Water Effects Ratios (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating criteria for applicable constituents. In addition, except for the aquatic life criteria for copper and zinc, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations for inorganic constituents. An acceptable WER can be used to adjust aquatic life-based water quality standards. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators and submits an approved report, this Order may be reopened to modify the effluent limitations for the applicable constituents.

f. **Salinity Evaluation and Minimization Plan.** This Order requires the Discharger to prepare a Salinity Evaluation and Minimization Plan (SEMP). This reopener provision allows the Central Valley Water Board to reopen this Order for addition and/or modification of effluent limitations and requirements for salinity based on review and implementation of the SEMP.

g. **Total Maximum Daily Loads (TMDL).** This Order may be reopened and modified as necessary to implement any TMDLs that are adopted or modified and are applicable to the receiving water.

h. **Bis (2-Ethylhexyl) Phthalate**. This Order may be reopened and modified as necessary if monitoring results indicate that the discharge has a reasonable potential to cause or contribute to an exceedance of a water quality standard.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. **Annual Performance Evaluation.** As discussed in the Fact Sheet, dilution and corresponding mixing zones have been granted for copper, zinc, chlorodibromomethane, and dichlorobromomethane. In order to assure, at a minimum, current facility performance is maintained for these constituents, the Discharger is required to conduct an Annual Performance Evaluation on the removal efficiency of these constituents. In conducting this evaluation, Discharger shall determine, using appropriate statistical methods and a 99% confidence level, whether pollutant concentrations are increasing, decreasing, or exhibits no change in concentration. The intent of this requirement is to detect increasing trends in pollutant concentrations during normal operation of the

treatment processes and to ensure that the increases are not due to relaxed efforts on the part of the Discharger. Discharger shall submit a work plan outlining the proposed methodology and statistical analysis to the Central Valley Water Board for approval no later than **6 months after date of adoption of this Order**. The Annual Performance Evaluation Report shall be submitted to the Central Valley Water Board **by 1 February, each year beginning in 2012**.

b. **Annual Best Practicable Treatment or Control (BPTC) Review.** In order to ensure that BPTC is fully and optimally implemented to ensure that mixing zones are as small as practicable, the Discharger shall conduct an annual review of the treatment and control measures currently used to implement BPTC for pollutants that receive dilution credits and mixing zones, to determine if any modifications, maintenance, or improvements are required to maintain BPTC performance. Such modifications, maintenance, or improvements may include maintenance of filters, effluent diffuser, or other treatment processes, calibration or fine-tuning of the chlorination/dechlorination system or nitrification and denitrification processes, or modification of the source control program. A report that includes the findings of the review, and any modifications, maintenance, or improvements that are required to fully implement BPTC shall be submitted to the Central Valley Water Board **by 1 February, each year starting in 2012**. The Discharger shall fully, and optimally implement BPTC at all times.

c. **Salinity Evaluation and Minimization Plan (SEMP).** The Discharger shall prepare a Salinity Evaluation and Minimization Plan (SEMP) to identify sources of salinity in effluent from the Facility, and measures available to minimize the concentration and mass loading of salinity. The plan, including a proposed schedule to implement the identified minimization measures, shall be completed and submitted to the Regional Water Board within **1 year of the effective date of this Order** for approval by the Executive Officer. Following SEMP approval, the Discharger shall implement the applicable minimization measures according to the approved schedule.

d. **Mixing Zone/Dilution Study.** The Discharger conducted a mixing zone/dilution study prior to the installation of two new diffusers in 2009. The Central Valley Water Board finds that the Study results are applicable up to effluent flows of 16 mgd. Therefore, this Order requires the Discharger to conduct a mixing zone/dilution study following construction of treatment processes that enable the Discharger to exceed wet weather effluent flows of 16 mgd. A work plan and schedule for conducting the study shall be submitted to the Central Valley Water Board within **60 days after capacity upgrades have been made at the Facility**. The mixing zone/dilution study shall be completed and submitted to the Central Valley Water Board within **one year of approval of the work plan and schedule**.

e. **Annual Inflow and Infiltration (I&I) Reduction Progress Report.** The Discharger shall submit a report that summarizes the I&I reduction efforts conducted by the Discharger during the prior year and provide an estimate of the

I&I reduction achieved during the prior year. The I&I Reduction Progress Report shall be submitted to the Central Valley Water Board **by 1 February, each year.**

f. **Site-Specific Metals Translator Study Update.** The Discharger shall submit to the Central Valley Water Board a site-specific metals translator study update, performed in accordance with Section 1.4.1 of the SIP, by no later than **1 year prior to the expiration date of this Order** if the Discharger wishes to have site-specific metals translators considered during the next permit renewal.

g. **Groundwater Monitoring Plan**. The Discharger shall submit a workplan to implement a groundwater monitoring program sufficient to identify and quantify any groundwater impacts from operation of the Facility ponds. The workplan shall include an implementation schedule that is as short as practicable. The workplan shall include the parameters to be monitored in groundwater, and the frequency of monitoring. The workplan shall be submitted to the Central Valley Water Board for approval within **1 year after the effective date of this Order**. The workplan shall be fully implemented within **3 years after the effective date of this Order**.

h. **Annual Mixing Zones and Dilution Verification Study.** In order to ensure that the mixing zones and dilutions described in this Order continue to be available, the Discharger shall conduct an annual verification study. A work plan for such studies shall be submitted to the Regional Water Board **within 1 year of the effective date of this Order** for approval by the Executive Officer. For example, such studies may include aerial measurements of dye releases to verify expected mixing and dilution conditions, or direct measurement of tracers or pollutant concentrations at the edge of the defined mixing zones. The results of the annual study shall be submitted by 1 February each year, starting in 2013.

i. **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 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 exceeds the toxicity numeric monitoring trigger established in this Provision, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE), in accordance with an approved TRE Work Plan, and take actions to mitigate the impact of the discharge and prevent reoccurrence of toxicity. A TRE is a site-specific study conducted in a stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TREs are designed to identify the causative agents and sources of whole effluent toxicity, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. This Provision includes requirements for the Discharger to develop and submit a TRE Work Plan and includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

i. **Toxicity Reduction Evaluation (TRE) Work Plan. Within 90 days of the effective date of this Order,** the Discharger shall submit to the Regional Water Board a TRE Work Plan for approval by the Executive Officer. The TRE Work Plan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Work Plan must be developed in accordance with USEPA guidance[1] and be of adequate detail to allow the Discharger to immediately initiate a TRE as required in this Provision.

ii. **Accelerated Monitoring and TRE Initiation.** When the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity monitoring, and the testing meets all test acceptability criteria, the Discharger shall initiate accelerated monitoring as required in the Accelerated Monitoring Specifications. WET testing results exceeding the monitoring trigger during accelerated monitoring demonstrates a pattern of toxicity and requires the Discharger to initiate a TRE to address the effluent toxicity.

iii. **Numeric Monitoring Trigger.** The numeric toxicity monitoring trigger is > **1 TUc** (where TUc = 100/NOEC). As provided in Section C.1.b.ii above, the Discharger may propose an alternate monitoring trigger, for approval by the Executive Officer, based on collection of additional data that demonstrates an alternate monitoring trigger is appropriate. 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.

iv. **Accelerated Monitoring Specifications.** If the monitoring trigger is exceeded during regular chronic toxicity testing, within 14 days of notification by the laboratory of the test results, the Discharger shall initiate accelerated monitoring. Accelerated monitoring shall consist of four (4) chronic toxicity tests in a 6-week period (i.e., one test every 2 weeks) using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:

a) If the results of four (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 adequate evidence of a pattern of effluent toxicity, the Executive Officer may require that the Discharger initiate a TRE.

b) If the source(s) of the toxicity is easily identified (i.e., 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

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

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 initiate 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 the test results exceeding the monitoring trigger during accelerated monitoring, the Discharger shall submit a TRE Action Plan to the Regional Water Board including, at minimum:

1) Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including 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.

d) If the Discharger demonstrates that chronic effluent toxicity is due to elevated ammonia concentrations, and the Discharger is in compliance with the compliance schedule and interim effluent limits for ammonia, the Discharger may proceed directly to a TRE without conducting accelerated monitoring to confirm the presence of effluent toxicity. In such case, the TRE Action Plan shall be consistent with the compliance schedule for ammonia, and shall include any other interim actions necessary to mitigate the impact of the discharge and prevent the recurrence of toxicity.

3. Best Management Practices and Pollution Prevention – Not Applicable

4. Construction, Operation and Maintenance Specifications

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

b. **Emergency Storage Basin Operating Requirements.** When discharges to the emergency storage basin occur, the Discharger shall ensure compliance with the following operation and maintenance requirements:

i. Objectionable odors originating at the Facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas.

ii. As a means of discerning compliance with the operating requirement contained in section VI.C.4.b.i of this Order, the dissolved oxygen content in the upper zone (1 foot) of wastewater in emergency storage basin shall not be less than 1.0 mg/L.

iii. The emergency storage basin shall not have a pH less than 6.5 or greater than 8.5 for periods of greater than 72 hours.

iv. The emergency storage basin 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; and

c) Vegetation, debris, and dead algae shall not accumulate on the water surface.

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

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

5. Special Provisions for Municipal Facilities (POTWs Only)

a. **Pretreatment Requirements**

i. The Discharger shall implement its approved pretreatment program and the program shall be an enforceable condition of this Order. If the Discharger fails to perform the pretreatment functions, the Regional Water Board, the State Water Board or the U.S. Environmental Protection Agency (USEPA) may take enforcement actions against the Discharger as authorized by the CWA.

ii. The Discharger shall enforce the Pretreatment Standards promulgated under sections 307(b), 307(c), and 307(d) of the Clean Water Act. The Discharger shall perform the pretreatment functions required by 40 CFR Part 403 including, but not limited to:

a) Adopting the legal authority required by 40 CFR 403.8(f)(1);

b) Enforcing the Pretreatment Standards of 40 CFR 403.5 and 403.6;

c) Implementing procedures to ensure compliance as required by 40 CFR 403.8(f)(2); and

d) Providing funding and personnel for implementation and enforcement of the pretreatment program as required by 40 CFR 403.8(f)(3).

iii. 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 Regional 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.

iv. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the legal authorities, programs, and controls necessary to ensure that indirect discharges do not introduce pollutants into the sewerage system that, either alone or in conjunction with a discharge or discharges from other sources:

a) Flow through the system to the receiving water in quantities or concentrations that cause a violation of this Order, or:

b) Inhibit or disrupt treatment processes, treatment system operations, or sludge processes, use, or disposal and either cause a violation of this Order or prevent sludge use or disposal in accordance with this Order.

b. **Sludge/Biosolids Discharge Specifications**

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, disposal, or reuse at sites (i.e., 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 V.B. 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 V.B.

iv. The use and disposal 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 Regional 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.

c. **Biosolids Disposal Requirements**

i. The Discharger shall comply with the Monitoring and Reporting Program for biosolids disposal contained in Attachment E.

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

iii. 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.

d. **Biosolids Storage Requirements**

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

ii. 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.

iii. 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.

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

e. **Collection System.** On 2 May 2006, the State Water Board adopted State Water Board Order 2006-0003, a Statewide General WDR for Sanitary Sewer Systems. The Discharger shall be subject to the requirements of Order 2006-0003 and any future revisions thereto. Order 2006-0003 requires that all public agencies that currently own or operate sanitary sewer systems apply for coverage under the General WDR.

Regardless of the coverage obtained under Order 2006-0003, the Discharger's collection system is part of the treatment system that is subject to this Order. As such, pursuant to federal regulations, the Discharger must properly operate and maintain its collection system [40 CFR 122.41(e)], report any non-compliance [40 CFR 122.41(l)(6) and (7)], and mitigate any discharge from the collection system in violation of this Order [40 CFR 122.41(d)].

6. Other Special Provisions

a. 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 Regional 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 Regional Water Board and a statement. The statement shall comply with the signatory and certification requirements in the Federal Standard Provisions (Attachment D, Section V.B.) and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without

requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

7. **Compliance Schedules**

a. **Compliance Schedule for Final Effluent Limitations for Ammonia.** The Discharger shall comply with the following time schedule to ensure compliance with the final effluent limitations for ammonia[2]:

Task	Compliance Date
1. Corrective Action Plan/Implementation Schedule. The Discharger shall submit to the Regional Water Board a corrective action plan and implementation schedule to assure compliance with the final effluent limitation for ammonia.	6 months after the effective date of the Order.
2. Pollution Prevention Plan. The Discharger shall prepare and implement a pollution prevention plan for ammonia, in accordance with CWC section 13263.3(d)(3).	
i. A work plan and time schedule for preparation of a pollution prevention plan submitted for approval by the Executive Officer.	6 months after the effective date of the Order.
ii. The Pollution Prevention Plan shall be completed and submitted to the Regional Water Board for approval by the Executive Officer.	2 years following work plan approval by the Executive Officer.
iii. Progress reports[1] shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1).	1 June, annually until final compliance
3. Treatment Feasibility Study. The Discharger is required to perform an engineering treatment feasibility study examining the feasibility, costs, and benefits of different treatment options that may be required to remove ammonia from the discharge. A work plan and time schedule for preparation of the treatment feasibility study submitted for approval by the Executive Officer.	
i. A work plan and time schedule for preparation of the treatment feasibility study submitted for approval by the Executive Officer.	6 months after the effective date of the Order.

[2] In addition, see compliance reporting requirements in Standard Provisions – Reporting, Section V.D.

Task	Compliance Date
ii. If studies to be conducted by the Discharger do not result in justifying alternate effluent limitations that can be met by current treatment facilities, then the treatment feasibility study shall be completed and submitted to the Regional Water Board for approval by the Executive Officer.	2 years following work plan approval by the Executive Officer.
iii. Progress reports[1] shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1).	1 June, annually until final compliance
4. Full Compliance. Implement selected operational measures and/or treatment upgrades. Final effluent limitation becomes effective, unless new or different limitations are adopted prior to expiration of this Order.	5 years after the effective date of this Order.
[1] The progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, including studies, construction progress, evaluation of measures implemented, and recommendation for additional measures as necessary to achieve full compliance by the final compliance date.	

VII. COMPLIANCE DETERMINATION

Compliance with the effluent limitations contained in section IV of this Order will be determined as specified below:

A. **BOD_5 and TSS Effluent Limitations**. Compliance with the final effluent limitations for BOD_5 and TSS required in sections IV.A.1.a shall be ascertained by 24-hour composite samples. Compliance with effluent limitations 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. **Aluminum Effluent Limitations**. Compliance with the final effluent limitations for aluminum can be demonstrated using either total or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by USEPA's Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.

C. **Average Dry Weather Flow Effluent Limitations**. The average dry weather flow is intended to represent 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 3 consecutive dry weather months (i.e., July, August, and September).

D. **Total Coliform Organisms Effluent Limitations.**
<u>For a 7-day median</u>: 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 6 days that samples were collected and analyzed. 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. If multiple samples are collected and analyzed on a single day, the arithmetic mean of those samples shall be used to represent the result for that day.

For a monthly median: For each calendar month, the median value of all the effluent samples collected and analyzed for total coliform organisms during that month shall be compared to the monthly median effluent limit. If the median value of the effluent samples exceeds the monthly median effluent limit, then the discharge will be considered out of compliance for that month with respect to the monthly median limit. If multiple samples are collected and analyzed on a single day, the arithmetic mean of those samples shall be used to represent the result for that day.

E. **Total Residual Chlorine Effluent Limitations.** 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.

F. **Chronic Whole Effluent Toxicity Effluent Limitation.** Compliance with the accelerated monitoring and TRE/TIE provisions of Provision VI.C.2.a shall constitute compliance with effluent limitations contained in sections IV.A.1.d and IV.B.1.d of this Order for chronic whole effluent toxicity.

G. **Annual Average Effluent Limitations.** Annual average effluent constituent concentrations for determining compliance with the annual average effluent limitations for aluminum shall be performed as the average value of each averaging period required in the Monitoring and Reporting Program. For example, if quarterly effluent monitoring is required, the annual average is the average of the four quarterly averages. Each quarterly average is the average of the verified results during that calendar quarter.

H. **Exceedances of Effluent Limitations During WWTP Modifications Activities.** The Discharger is in the process of modifying WWTP processes for the purposes of upgrading

or expanding the WWTP. It is the Regional Water Board's intention not to take enforcement action or assess penalties for exceedances of effluent limitations or other conditions of this Order due to such activities if the Discharger has taken feasible measures to avoid or mitigate such exceedances. Specifically, the provisions of CWC Section 13385(j)(1)(D) will be applied.

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.

Best Practicable Treatment or Control (BPTC): BPTC is a requirement of State Water Resources Control Board Resolution 68-16 – "Statement of Policy with Respect to Maintaining High Quality of Waters in California" (referred to as the "Antidegradation Policy"). BPTC is the treatment or control of a 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."* Pollution is defined in CWC Section 13050(l). In general, an exceedance of a water quality objective in the Basin Plan constitutes "pollution".

Bioaccumulative pollutants are 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.

Biosolids is sewage sludge that has been treated and tested and shown to be capable of being beneficially and legally used as a soil amendment for agriculture, silviculture, horticulture, and land reclamation activities as specified under 40 CFR Part 503.

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

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

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

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

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

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

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

Enclosed Bays 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 is the estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

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 include~~d~~, 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 are all surface waters of the State that do not include the ocean,

enclosed bays, or estuaries.

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

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

Maximum Daily Effluent Limitation (MDEL) means 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 is 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) 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 title 40 of the Code of Federal Regulations, Part 136, Attachment B, revised as of July 3, 1999.

Minimum Level (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 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) are those sample results less than the laboratory's MDL.

Ocean Waters are 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 are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program (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 Regional 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 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) is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Regional Water Board either from Appendix 4 of the SIP in accordance with section 2.4.2 of the SIP or established in accordance with section 2.4.3 of the SIP. The ML 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 ML 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 to the ML in the computation of the RL.

Satellite Collection System is 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 is any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan.

Sewage Sludge is the solid, semisolid, or liquid residue generated during the treatment of domestic sewage in a municipal wastewater treatment facility. Sewage sludge includes solids removed or used during primary, secondary, or advanced wastewater treatment processes. Sewage sludge does not include grit or screening material generated during preliminary treatment of domestic sewage at a municipal wastewater treatment facility.

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

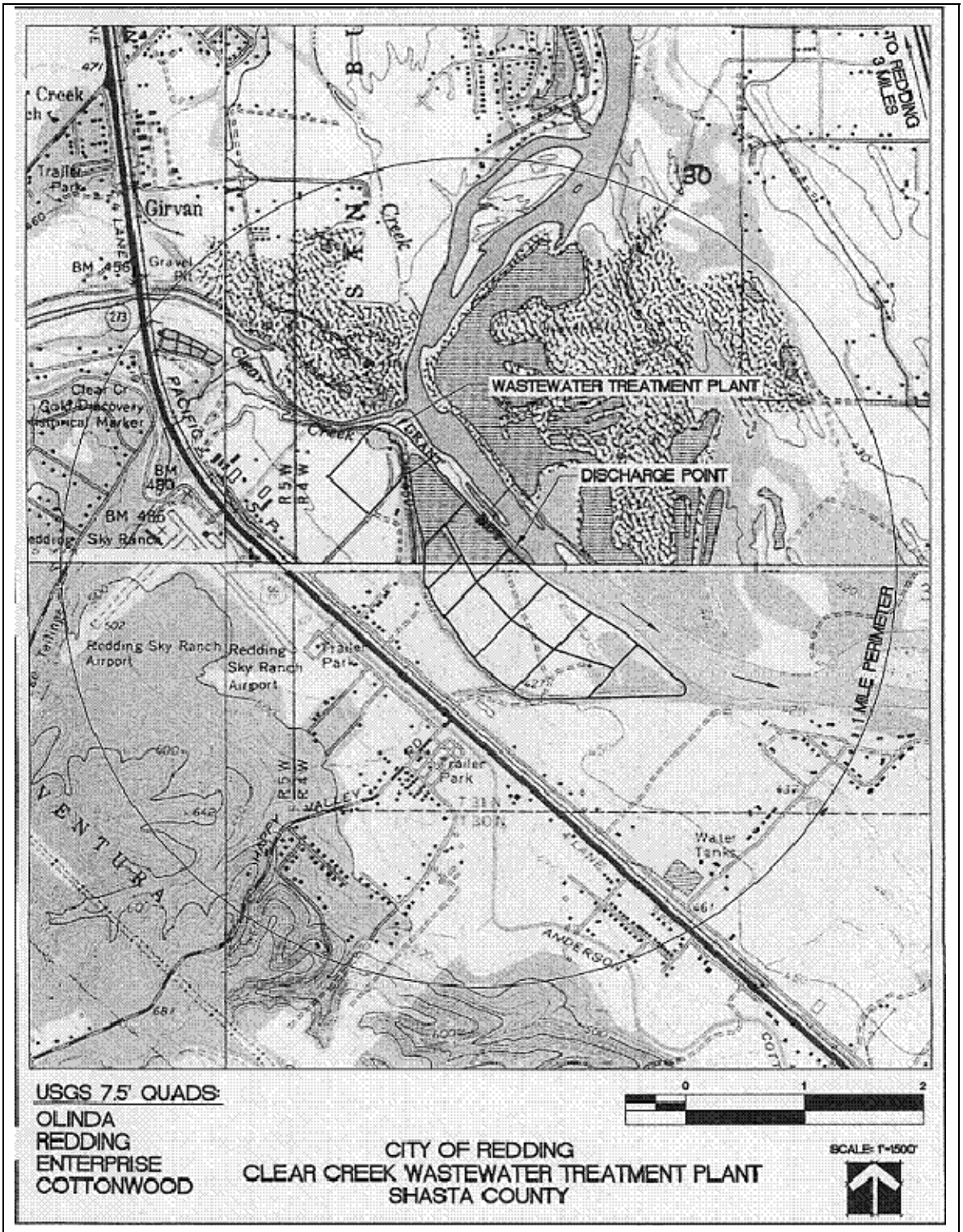
$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

where:

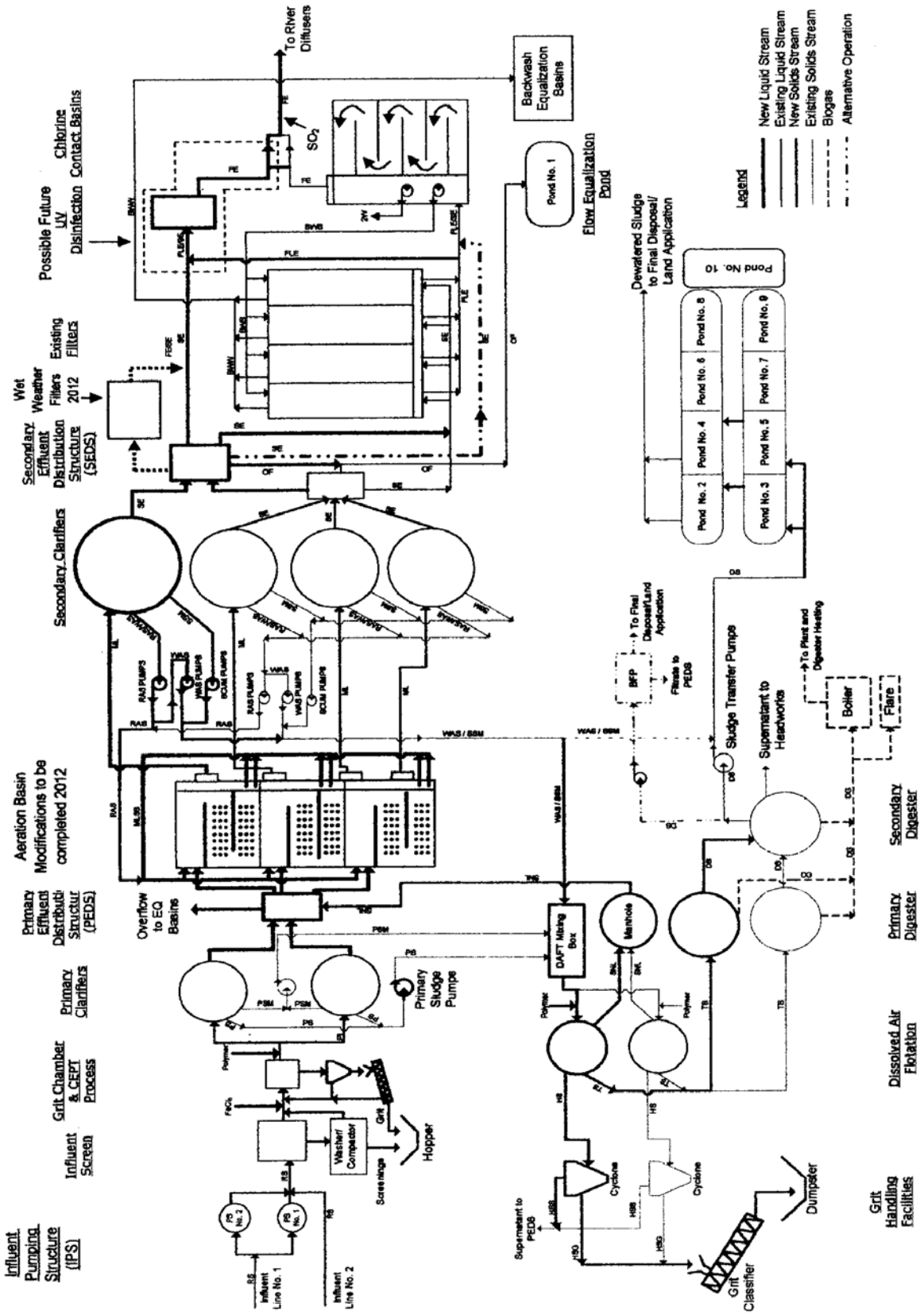
x is the observed value;
μ is the arithmetic mean of the observed values; and
n is the number of samples.

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

ATTACHMENT B – MAP



ATTACHMENT C – FLOW SCHEMATIC



ATTACHMENT D –STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

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

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); Wat. Code, § 13383):

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

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 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); 122.61.)

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); 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).)

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 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. (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

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 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 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 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 quantity or quality of effluent to be discharged from the POTW. (40 CFR 122.42(b)(3).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

Title 40 of the Code of Federal Regulations section 122.48 (40 CFR 122.48) requires that all NPDES permits specify monitoring and reporting requirements. Water Code Sections 13267 and 13383 also authorize the Regional Water Quality Control Board (Regional Water Board) to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements, which implement the federal and state 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 this Regional Water Board.

B. Chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services. In the event a certified laboratory is not available to the Discharger, 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 must be kept in the laboratory and shall be available for inspection by Regional Water Board staff. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the Regional Water Board.

C. All analyses shall be performed in a laboratory certified to perform such analyses by the California Department of Health Services. Laboratories that perform sample analyses shall be identified in all monitoring reports.

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

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

II. MONITORING LOCATIONS

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

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
--	INF-001	A location where a representative sample of the influent into the Facility can be collected.
001	EFF-001	A location where a representative sample of the effluent from the Facility can be collected after all treatment processes and prior to commingling with other waste streams or being discharged into the Sacramento River.
--	LND-003a	A location where a representative sample of the wastewater in facultative sludge lagoon 3a can be collected.
--	LND-003b	A location where a representative sample of the wastewater in facultative sludge lagoon 3b can be collected.
--	LND-005a	A location where a representative sample of the wastewater in facultative sludge lagoon 5a can be collected.
--	LND-005b	A location where a representative sample of the wastewater in facultative sludge lagoon 5b can be collected.
--	LND-006	A location where a representative sample of wastewater in Emergency Storage Basin 006 can be collected.
--	LND-007	A location where a representative sample of wastewater in Emergency Storage Basin 007 can be collected.
--	LND-008	A location where a representative sample of wastewater in Emergency Storage Basin 008 can be collected.
--	LND-009	A location where a representative sample of wastewater in Emergency Storage Basin 009 can be collected.
--	LND-010	A location where a representative sample of wastewater in Emergency Storage Basin 0010 can be collected.
--	RSW-001	Sacramento River 100 feet upstream from the point of discharge.
--	RSW-002	Sacramento River 300 feet downstream from the point of discharge.
--	BIO-001	A location where a representative sample of the plate and frame press biosolids can be collected.
	BIO-002	A location where a representative sample of the pond biosolids can be collected.
	BIO-003	A location where a representative sample of the Stillwater WWTP biosolids can be collected.
--	SPL-001	A location where a representative sample location for the municipal water supply can be collected. If the water supply is from more than one source, a weighted average shall be calculated.

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

1. 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				
Biochemical Oxygen Demand (BOD) (5-day @ 20 Deg. C)	mg/L	24-hr Composite[1]	1/week	[2]
	lbs/day	Calculate	1/week	[2]
pH	standard units	Grab	1/Day	[2]
Total Suspended Solids	mg/L	24-hr Composite[1]	1/week	[2]
	lbs/day	Calculate	1/week	[2]
Priority Pollutants				
Priority Pollutants[5]	µg/L	24-hr Composite[1,3]	1/Year[4]	[2]

[1] Composite samples shall be flow proportional.
[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136.
[3] Volatile constituents shall be sampled in accordance with 40 CFR Part 136.
[4] Additional monitoring is required at a frequency of 1/quarter during the 3rd year of the permit. Monitoring shall be concurrent with priority pollutant effluent monitoring.
[5] Influent hardness and pH shall be determined at the same time influent samples are taken.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Locations EFF-001

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

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[1]	1/week	[2]
	lbs/day	Calculate	1/week	[2]
pH	standard units	Grab	1/Day	[2]
Total Suspended Solids	mg/L	24-hr Composite[1]	1/week	[2]
	lbs/day	Calculate	1/week	[2]
Priority Pollutants				
Bis (2-Ethylhexyl) Phthalate [3]	µg/L	Grab	1/Year	[2, 4]
Chlorodibromomethane	µg/L	Grab	1/Month	[2,4]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Copper, Total Recoverable	µg/L	24-hr Composite[1]	1/Month	[2,4]
Dichlorobromomethane	µg/L	Grab	1/Month	[2,4]
Zinc, Total Recoverable	µg/L	24-hr Composite[1]	1/Month	[2,4]
Priority Pollutants[12]	µg/L	24-hr Composite[1,6]	1/Year[7]	[2,4]
Non-Conventional Pollutants				
Aluminum, Total Recoverable	µg/L	24-hr Composite[1]	1/Month	[2,8]
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Week[9,10]	[2]
Ammonia, Un-ionized	mg/L	Grab	1/Week[9,10]	[2]
Chlorine, Total Residual	mg/L	Meter	Continuous	[2,11]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Week	[2]
Hardness (as $CaCO_3$)	mg/L	Grab	1/Month	[2]
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Month	[2]
Nitrite (as N)	mg/L	Grab	1/Month	[2]
Standard Minerals[5]	mg/L	Grab	1/Quarter	[2]
Sulfate	mg/L	Grab	1/Month	[2]
Temperature	°F	Grab	1/Day	[2]
Total Coliform Organisms	MPN/100 mL	Grab	2/Week	[2]
Total Dissolved Solids	mg/L	Grab	1/Month	[2]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method

[1] Composite samples shall be flow proportional.

[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136.

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

[4] For priority pollutant constituents with effluent limitations, detection limits shall be below the effluent limitations. If the lowest minimum level (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 detection limit shall be the lowest ML. For priority pollutant constituents without effluent limitations, the detection limits shall be equal to or less than the lowest ML published in Appendix 4 of the SIP.

[5] 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).

[6] Volatile constituents shall be sampled in accordance with 40 CFR Part 136.

[7] Additional monitoring is required at a frequency of 1/quarter ONLY during the 3rd year of the permit term. Monitoring shall be concurrent with receiving surface water sampling. The Discharger is not required to conduct effluent monitoring for priority pollutants that have already been sampled in a given month, as required in this Table.

[8] Compliance with the final effluent limitations for aluminum can be demonstrated using either total or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by USEPA's Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.

[9] Concurrent with whole effluent toxicity monitoring.

[10] pH and temperature shall be recorded at the time of ammonia sample collection.

[11] Total chlorine residual must be monitored with a method sensitive to and accurate at the permitted level of 0.01 mg/L. Report peak 1-hour average for each day and peak 4-day average for the month.

[12] Effluent and receiving water (R-1 and R-2) hardness and pH shall be determined at the same time as effluent samples are taken.

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 for 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 monthly acute toxicity testing, concurrent with effluent ammonia sampling.

2. *Sample Types* – For static non-renewal and static renewal testing, the samples shall be grab samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at 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 semi-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 specified in the Monitoring and Reporting Program. The receiving water control shall be a grab sample obtained from the RSW-001 sampling location, as identified in the Monitoring and Reporting Program.

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

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

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

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

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

7. *Dilutions* – The chronic toxicity testing shall be performed using the dilution series identified in Table E-4, below. If no toxicity is observed at 100% effluent, then the full dilution series is not required. The receiving water control shall be used as the diluent (unless the receiving water is toxic).

   If the receiving water is toxic, laboratory control water may be used as the diluent, in which case, the receiving water should still be sampled and tested to provide evidence of its toxicity.

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 Special Provisions VI. 2.a.iii.)

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

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

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

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

   b. The statistical methods used to calculate endpoints;

   c. The statistical output page, which includes the calculation of the 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 TRE.

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

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

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

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

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

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

VI. LAND DISCHARGE MONITORING REQUIREMENTS

A. Monitoring Location LND-003a, LND-003b, LND-005a, LND-005b, LND-006, LND-007, LND-008, LND-009, and LND-010

1. The Discharger shall monitor the emergency storage basin and sludge lagoons (when in use) at LND-003a, LND-003b, LND-005a, LND-005b, LND-006, LND-007, LND-008, LND-009, and LND-010 as follows:

Table E-5. Land Discharge Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Dissolved Oxygen	mg/L	Grab	1/Week	[1]
Freeboard	feet	Measure	1/Day	--
Levee Condition	--	Observation	1/Week	--
Odors	--	Observation	1/Week	--

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136.

VII. RECLAMATION MONITORING REQUIREMENTS – NOT APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER AND GROUNDWATER

A. Monitoring Locations RSW-001 and RSW-002

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

Table E-6. Receiving Water Monitoring Requirements – Monitoring Location RSW-001 and RSW-002

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow[1]	cfs	Stream Gauge[5]	1/Day	--
Conventional Pollutants				
pH	standard units	Grab	1/Week	[2]
Priority Pollutants				
Copper, Total Recoverable[1]	µg/L	Grab	1/Month	[2]
Copper, Dissolved[1]	µg/L	Grab	1/Year	[2]
Zinc, Total Recoverable[1]	µg/L	Grab	1/Month	[2]
Zinc, Dissolved[1]	µg/L	Grab	1/Year	[2]
Priority Pollutants[1]	µg/L	Grab	1/Year	[2]
Non-Conventional Pollutants				
Ammonia Nitrogen, Total (as N)	mg/L	Grab[3]	1/Month	[2]
Dissolved Oxygen	mg/L	Grab	1/Week	[2]
Electrical Conductivity@ 25°C	µmhos/cm	Grab	1/Week	[2]
Hardness (as $CaCO_3$)	mg/L	Grab	1/Month	[2]
Standard Minerals[1, 4]	mg/L	Grab	1/Quarter	[2]
Sulfate[1]	mg/L	Grab	1/Quarter	[2]
Temperature	°F	Grab	1/Week	[2]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Total Dissolved Solids[1]	mg/L	Grab	1/Quarter	[2]
Turbidity	NTU	Grab	1/Week	[2]

[1] Monitoring required at RSW-001 only.
[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136.
[3] Temperature and pH shall be collected at the same time as the ammonia sample.
[4] Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).
[5] The location and/or source of the gauge(s) must be approved by the Executive Officer.

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, BIO-002, and BIO-003

a. A composite sample of biosolids shall be collected annually at Monitoring Locations BIO-001, BIO-002, and BIO-003 in accordance with EPA's *POTW Sludge Sampling and Analysis Guidance Document*, August 1989, and tested for priority pollutants listed in 40 CFR Part 122, Appendix D, Tables II and III (excluding total phenols).

b. Sampling records shall be retained for a minimum of **5 years**. A log shall be maintained of biosolids 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.

c. Upon removal of biosolids, the Discharger shall submit characterization of biosolids quality, including sludge percent solids and the most recent quantitative

results of chemical analysis for the priority pollutants listed in 40 CFR Part 122, Appendix D, Tables II and III (excluding total phenols). In addition to USEPA's POTW *Sludge Sampling and Analysis Guidance Document*, August 1989, suggested methods for analysis of biosolids 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 136.6.3(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-7. Municipal Water Supply Monitoring Requirements

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

[1] If the water supply is from more than one source, the results shall be reported as a weighted average and include copies of supporting calculations. Alternatively, the Discharger may composite individual grab samples on a flow-weighted basis from multiple locations to represent the water supply within the service area. Composited samples must taken in accordance with the sample handling and preservation requirements specified in 40 CFR Part 136.

[2] 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).

[3] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136.

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. The Discharger shall submit an annual 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 Regional 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 Regional Water Board by letter when it returns to compliance with the compliance time schedule.

4. The Discharger shall report to the Regional 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.

5. **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 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.

   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.

6. **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.

B. Self Monitoring Reports (SMRs)

1. At any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). Until such notification is given, the Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.

2. Monitoring results shall be submitted to the Regional Water Board by the **first day** of the second month following sample collection. Quarterly and annual monitoring results shall be submitted by the **first day of the second month following each calendar quarter, semi-annual period, and year**, respectively.

3. 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. The data shall be summarized in such a manner to illustrate clearly whether the discharge complies with waste discharge requirements. The highest daily maximum for the month, monthly and weekly averages, and medians, and removal efficiencies (%) for BOD and Total Suspended Solids, shall be determined and recorded as needed to demonstrate compliance.

4. With the exception of flow, all constituents monitored on a continuous basis (metered), shall be reported as daily maximums, daily minimums, and daily averages; flow shall be reported as the total volume discharged per day for each day of discharge.

5. If the Discharger monitors any pollutant at the locations designated herein more frequently than is required by this Order, the results of such monitoring shall be included in the calculation and reporting of the values required in the discharge monitoring report form. Such increased frequency shall be indicated on the discharge monitoring report form.

6. A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions.

7. SMRs must be submitted to the Regional 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
   415 Knollcrest Drive, Suite 100
   Redding, CA 96002

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

Table E-8. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	Permit effective date	All	First day of second calendar month following month of sampling
1/Day	Permit effective date	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	First day of second calendar month following month of sampling
1/Week	Sunday following permit effective date or on permit effective date if on a Sunday	Sunday through Saturday	First day of second calendar month following month of sampling
2/Week	Sunday following permit effective date or on permit effective date if on a Sunday	Sunday through Saturday	First day of second calendar month following month of sampling
3/Week	Sunday following permit effective date or on permit effective date if on a Sunday	Sunday through Saturday	First day of second calendar month following month of sampling
2/Month	First day of calendar month following permit effective date or on permit effective date if that date is first day of the month	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
1/Month	First day of calendar month following permit effective date or on permit effective date if that date is first day of the month	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1/Quarter	Closest of 1 January, 1 April, 1 July, or 1 October following (or on) 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	Closest of 1 January or 1 July following (or on) permit effective date	1 January through 30 June 1 July through 31 December	1 August 1 February
1/Year	1 January following (or on) permit effective date	January 1 through December 31	1 February

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 or Regional 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 cannot be accepted unless they follow the exact same format as EPA form 3320-1.

D. Other Reports

1. **Progress Reports.** Progress reports shall be submitted in accordance with the following reporting requirements: At minimum, the progress reports shall include a discussion of the status of final compliance, whether the Discharger is on schedule to meet the final compliance date, and the remaining tasks to meet the final compliance date.

2. Within **60 days** of permit adoption, the Discharger shall submit a report outlining minimum levels, method detection limits, and analytical methods for approval, with a goal to achieve detection levels below applicable water quality criteria. At a minimum, the Discharger shall comply with the monitoring requirements for CTR constituents as outlined in Section 2.3 and 2.4 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*, adopted 2 March 2000 by the State Water Resources Control Board. All peaks identified by analytical methods shall be reported.

3. The Discharger's sanitary sewer system collects wastewater using sewers, pipes, pumps, and/or other conveyance systems and directs the raw sewage to the wastewater treatment plant. A "sanitary sewer overflow" is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the wastewater treatment plant. Sanitary sewer overflows are prohibited by this Order. All violations must be reported as required in Standard Provisions. Facilities (such as wet wells, regulated impoundments, tanks, highlines, *etc*.) may be part of a sanitary sewer system and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage facilities.

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 must submit an annual report to the Regional Water Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

5. **Annual Pretreatment Reporting Requirements.** The Discharger shall submit annually a report to the Regional Water Board, with copies to USEPA Region 9 and the State Water Board, describing the Discharger's pretreatment activities over the

previous 12 months. 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 industrial users.

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

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

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

only to local discharge limitations. The Discharger shall characterize the compliance status through the year of record of each industrial user 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.

A report describing the compliance status of each industrial user 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 each calendar quarter**. The report shall identify the specific compliance status of each such industrial user 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. This quarterly reporting requirement shall commence upon issuance of this Order.

e. A summary of the inspection and sampling activities conducted by the Discharger during the past year to gather information and data regarding the industrial users. The summary shall include:

i. the names and addresses of the industrial users 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.

f. A summary of the compliance and enforcement activities during the past year. The summary shall include the names and addresses of the industrial users affected by the following actions:

i. Warning letters or notices of violation regarding the industrial users' apparent noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the apparent violation concerned the federal categorical standards or local discharge limitations.
ii. Administrative orders regarding the industrial users noncompliance with federal categorical standards or local discharge limitations. For each industrial

user, identify whether the violation concerned the federal categorical standards or local discharge limitations.

iii. Civil actions regarding the industrial users' noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.

iv. Criminal actions regarding the industrial users noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.

v. Assessment of monetary penalties. For each industrial user identify the amount of the penalties.

vi. Restriction of flow to the POTW.

vii. Disconnection from discharge to the POTW.

g. A description of any significant changes in operating the pretreatment program which differ from the information in the Discharger's approved Pretreatment Program including, but not limited to, changes concerning: the program's administrative structure, local industrial discharge limitations, monitoring program or monitoring frequencies, legal authority or enforcement policy, funding mechanisms, resource requirements, or staffing levels.

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

Duplicate signed copies of these Pretreatment Program reports shall be submitted to the Regional 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 W-5
75 Hawthorne Street
San Francisco, CA 94105

ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described 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	5A450103001
Discharger	City of Redding
Name of Facility	Clear Creek Wastewater Treatment Plant
Facility Address	2220 Metz Road Anderson, CA 96007 Shasta County
Facility Contact, Title and Phone	Troy Mitchell, Chief Plant Operator, (530) 225-4157 Dennis McBride, Wastewater Utility Manager, (530) 224-6063
Authorized Person to Sign and Submit Reports	Dennis McBride, Wastewater Utility Manager, (530) 224-6063 Troy Mitchell, Chief Plant Operator, (530) 225-4157 John Szychulda, Chief Plant Operator, (530) 378-6702
Mailing Address	2220 Metz Road, Anderson, CA 96007
Billing Address	P.O. Box 496071, Redding, CA 96049
Type of Facility	Publicly Owned Treatment Works (POTW)
Major or Minor Facility	Major
Threat to Water Quality	1
Complexity	A
Pretreatment Program	Y
Reclamation Requirements	N
Facility Permitted Flow	8.8 million gallons per day (MGD)
Facility Design Flow	8.8 MGD (Average Dry Weather Flow)
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 Clear Creek Wastewater Treatment Plant (hereinafter Facility), a POTW.

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

B. The Facility discharges wastewater to the Sacramento River, a water of the United States, and is currently regulated by Order No. R5-2003-0130 which was adopted on 5 September 2003 and expired on 1 September 2008. The terms and conditions of the current Order have been automatically continued and remain in effect until new Waste Discharge Requirements and 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 Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit on 29 February 2008. A site visit was conducted on 24 June 2008, to observe operations and collect additional data to develop permit limitations and conditions.

D. Supplemental application information was requested on 22 July 2008 and was received on 29 August 2008. The application was deemed complete on 29 September 2008.

II. FACILITY DESCRIPTION

The Discharger provides sewerage service for the City of Redding, CA and serves a population of approximately 61,500. The Discharger also provides service to Shasta County (population served 100) and the Redding Rancheria (population served 200), and four significant industrial users (SIUs). The WWTP design dry weather average flow capacity is 8.8 mgd.

A. Description of Wastewater and Biosolids Treatment or Controls

The treatment system consists of screening for removal of large solids, grit removal, primary clarification, activated sludge treatment with secondary clarification, filtration, chlorination/dechlorination, flow equalization, and emergency storage. Primary sludge is treated by anaerobic digestion followed by dewatering using a plate and frame filter press and then disposed at a sanitary landfill. Waste activated sludge is stabilized in facultative sludge lagoons and air dried to generate Class B biosolids. Biosolids from the secondary treatment process are land applied on property owned by the Discharger.

The Facility has 12 ponds located adjacent to the Sacramento River covering a total area of approximately 93 acres. These ponds are discussed in more detail in Fact Sheet, Section III.E.

B. Discharge Points and Receiving Waters

1. The Facility (Assessor's Parcel No. 050-030-12) is located in Section 31, T31N, R4W, MDB&M, as shown in Attachment B, a part of this Order.

2. Treated municipal wastewater is discharged at Discharge Point 001 to the Sacramento River, a water of the United States at a point latitude 40° N 29' 57.5" and longitude 122° W 38' 28".

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

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

Effluent limitations contained in Order No. R5-2003-0130 for discharges from Discharge Point No. 001 (Monitoring Location EFF-001) and representative monitoring data from the term of Order No. R5-2003-0130 are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitations				Monitoring Data Jan. 2004 – Dec. 2008	
		Average Monthly	Average Weekly	Max Daily	4-day Average	Average Monthly Discharge	Maximum Daily Discharge
BOD[1]	mg/L lbs/day[2]	10 734	15 1101	30 2202	--	3.4 218	34.5 2014
Total Suspended Solids	mg/L lbs/day[2]	10 734	15 1101	30 2202	--	1.7 112	17.6 1174
Chlorine Residual	mg/L	--	--	0.02[3]	0.01	<0.01	0.16
Total Coliform Organisms	MPN/ 100mL	23[4]	--	500	--	<19[5]	1600
pH	pH units			9.0[6]		6.7	7.6
Total Recoverable Copper	µg/L lbs/day[2]	12 0.88		17 1.2		6.5 0.4	12.1 0.8
Total Recoverable Zinc	µg/L lbs/day[2]	81 5.9		120 8.8		26.9 1.8	60.5 3.2
Dichlorobromomethane	µg/L lbs/day[2]	21 1.5		42 3.1		3.5 0.22	15 0.7
Chlorodibromomethane	µg/L lbs/day[2]	14 1.0		29 2.1		7.3 <0.7	7.3 0.4
Tetrachloroethylene	µg/L lbs/day[2]	30 2.2		59 4.3		0.34 <0.01	0.34 0.017

[1] 5-day, 20°C Biochemical Oxygen Demand.
[2] Based upon a design dry weather average treatment capacity of 8.8 mgd.
[3] 1-hour average.
[4] Monthly median.
[5] Average monthly median
[6] pH shall be between 6.0 and 9.0

D. Compliance Summary

1. The following is a summary of violations noted during the monthly monitoring and reporting review since the last permit cycle:

Table F-3. Summary of Effluent Limitation Violations

2004	Discharge of partially treated effluent to receiving water, 18,000 gallons, 18 February 2004. Maximum daily BOD_5 (34.5 mg/L), 28 December 2004.
2005	March total coliform monthly median (30 MPN/100 mL). December total coliform monthly median (60 MPN/100 mL).
2006	Discharge of partially treated effluent to receiving water, 15,000,000 gallons, 3 January – 6 January 2006.
2007	Maximum daily chlorine residual (0.0286 mg/L), 28 January 2007. Maximum daily chlorine residual (0.0283 mg/L), 29 January 2007. Maximum daily chlorine residual (0.055 mg/L), 28 February 2007. Maximum daily total coliform (1600 MPN/100 mL), 15 February 2007. Maximum daily total coliform (1600 MPN/100 mL), 20 February 2007. February total coliform monthly median (240 MPN/100 mL). Maximum daily chlorine residual (0.16 mg/L), 8 March 2007.
2008	March total coliform monthly median (130 MPN/100 mL). Monthly average total recoverable copper (12.1 ug/L) 15 May 2008. Minimum daily pH (5.89 units) 8 June 2008. 96-hour acute toxicity (Rainbow trout – 0% survival) 17 December 2008.

E. Planned Changes

The Discharger is in the process of Facility upgrades and an expansion. Construction began in 2007 and tentative completion is December 2013. The upgrades and expansion will increase the design average dry weather flow from 8.8 mgd to 9.4 mgd (this Order maintains an ADWF limit of 8.8 mgd). The peak wet weather flow capacity will increase from 12.5 mgd to 40 mgd.

New effluent diffusers have been constructed (in 2009) to replace the original diffuser. One diffuser is utilized continuously and can handle effluent flows up to 30 MGD. The other diffuser will be utilized for peak wet weather events and discharge flow rates from 30 mgd to 60 mgd. The original diffuser has been abandoned and the new diffusers are in operation. The coordinate for the new diffusers are 40° N 29' 57.5" and 122° W 38' 28".

The Discharger plans to expand filter capacity from the current 16 mgd to 40 mgd by 2013. Additional mechanical solids dewatering equipment and an increase in and improvement to the Facility's solids digestion capabilities, including a new sludge digester are also planned for 2013.

The Discharger is developing a plan to regionalize its biosolids handling. Biosolids from the Discharger's Stillwater Wastewater Treatment Plant would be processed at the Clear Creek WWTP.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the applicable plans, policies, and regulations identified in section II of the Limitations and Discharge Requirements (Findings). This section provides supplemental information, where appropriate, for the plans, policies, and regulations relevant to the discharge.

A. Legal Authority

See Limitations and Discharge Requirements - Findings, Section II.C.

B. California Environmental Quality Act (CEQA)

See Limitations and Discharge Requirements - Findings, Section II.E.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans**. The Regional Water Board adopted a *Water Quality Control Plan, Fourth Edition (Revised September 2009), for the Sacramento and San Joaquin River Basins* that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, State Water Board Resolution No. 88-63 requires that, with certain exceptions, the Regional Water Board assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in the Basin Plan.

   The beneficial uses of the Sacramento River downstream of the discharge are municipal and domestic supply; agricultural supply, including stock watering; industrial service supply; hydropower generation; water contact recreation, including canoeing and rafting; non-contact water recreation, including aesthetic enjoyment; commercial and sport fishing; warm freshwater habitat; cold freshwater habitat; warm migration of aquatic organisms; cold migration of aquatic organisms; warm spawning, reproduction, and/or early development; cold spawning, reproduction, and /or early development; wildlife habitat; and navigation.

   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 at title 40, Code of Federal Regulations section 131.2 (40 CFR 131.2) and 40 CFR 131.10, require that all waters of the State regulated to protect the beneficial uses of public water supply, protection and propagation of fish, shell fish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation. 40 CFR 131.3(e) defines existing beneficial uses as those uses actually attained after 28 November 1975, whether or not they are included in the water quality standards. Federal Regulation, 40 CFR 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.

This Order contains effluent limitations requiring an advanced secondary level of treatment, or equivalent, which is necessary to protect the beneficial uses of the receiving water. The Regional Water Board has considered the factors listed in CWC section 13241 in establishing these requirements, as discussed in more detail in the Fact Sheet, Attachment F, IV.C.3.v.

2. **Bay-Delta Plan. Not Applicable**.

3. **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 water quality be maintained unless degradation is justified based on specific findings. The Regional 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 (Attachment F, Section IV.D.4.) the discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16.

4. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. Compliance with the anti-backsliding requirements is discussed in Section IV.D.3.

5. **Emergency Planning and Community Right to Know Act**. Section 13263.6(a), California 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 CWC 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.

6. **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.

7. **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 applicable requirements of the Endangered Species Act.

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

1. Under Section 303(d) of the 1972 Clean Water Act, 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 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 has been listed as an impaired waterbody pursuant to Section 303(d) of the Clean Water Act for unknown toxicity. The listing for unknown toxicity has a proposed TMDL (Total Maximum Daily Load) completion date of 2019.

2. **Total Maximum Daily Loads (TMDL).** USEPA requires the Regional Water Board to develop total maximum daily loads (TMDLs) for each 303(d) listed pollutant and water body combination. The listing for unknown toxicity has a proposed TMDL completion date of 2019. This Order contains a reopener provision to modify permit requirements, as necessary, to implement a TMDL.

E. Other Plans, Polices and Regulations

1. The following discharges are to treatment or storage facilities associated with a municipal wastewater treatment plant and, 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 the unconditional sewage exemption in Title 27 CCR section 20090(a), is based on the following:

   The Facility has 12 ponds located adjacent to the Sacramento River with a total area of approximately 93 acres. The Discharger's May 2005 Facilities Plan states the total volume of the ponds to be 183 million gallons (MG), of which 126 MG may be used for wet weather storage. The ponds consist of four types/uses: flow equalization; facultative sludge lagoons; sludge drying; and temporary wet weather storage. One of the ponds was modified in 2008 from a wet weather storage basin to two facultative sludge lagoons.

   <u>Flow Equalization Pond</u>
   Pond 1 is used for flow equalization and is currently unlined. The pond is scheduled to be concrete-lined in 2013. Pond 1 receives a variety of waste flows from the Facility, including raw, primary, and secondary effluent. Pond 1 effluent is treated further in the treatment system at the Facility. Thus, this pond is a component of the treatment train, and therefore, is exempt from the requirements of Title 27 CCR, pursuant to Title 27 CCR section 20090(a).

   <u>Facultative Sludge Lagoons (FSLs)</u>
   Pond 3a, 3b, 5a, and 5b. In 1990, Pond 3 was modified from a 10-acre flow equalization basin into two 4.5-acre sludge storage basins (Pond 3a and 3b). Pond 3a and 3b have a compacted clay liner engineered to a permeability of 10^{-6} cm/sec. In 2008, Pond 5 was modified from a wet weather storage basin into two FSLs, Pond 5a and 5b. Pond 5a and 5b have a synthetic liner on the slopes and an asphalt bottom. The ponds were also deepened.

As of 26 January 2010, the Discharger is proposing no changes (i.e. size, liner) to Pond 3a and 3b. The Pond will continue to be used as a FSL. In 2013, the Discharger plans to use Pond 3a, 3b, 5a, and 5b as wet weather storage for solids. Solids would be sent back to the Facility for further treatment.

The FSLs are aerated ponds that provide biological and physical treatment to sludge produced during the secondary treatment processes. Thus, this pond is a component of the treatment train, and therefore, is exempt from the requirements of Title 27 CCR, pursuant to Title 27 CCR section 20090(a).

Solids Drying Beds

Pond 2 and 4. Ponds are unlined. Solids removed from the adjacent facultative sludge lagoons (FSL) are placed in Pond 2 and 4 for drying. Typically, solids are removed from the FSLs in the spring, dried in either Pond 2 and 4 during the summer, and hauled off site in early fall. Planned changes for 2013: wet weather storage only.

The sludge drying beds are a sludge treatment process that dewaters the sludge prior to final disposal. Thus, these ponds are a component of the treatment train, and therefore, are exempt from the requirements of Title 27 CCR, pursuant to Title 27 CCR section 20090(a).

Temporary Wet Weather Storage

Pond 6, 7, 8, 9, 10. Ponds are unlined. Solids from the City of Redding's Stillwater Wastewater Treatment Facility are currently dried in Pond 8.

Wet weather flows are temporary and all wastes from the ponds will be treated further in the Facility treatment system. Pond use as temporary storage of waste awaiting further treatment is exempt from the requirements of Title 27 CCR, pursuant to Title 27 CCR section 20090(a).

2. The State Water Board adopted the *Water Quality Control Policy for the Enclosed Bays and Estuaries of California*. The requirements within this Order are consistent with the Policy.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

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

The Federal 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 discharges 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: 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 water quality-based effluent limitations (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 Regional Water Board's Basin Plan, IV-21, contains an implementation policy ("Policy for Application of Water Quality Objectives") that specifies that the Regional 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 Regional 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 Regional 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 contains a narrative objective requiring that: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*" (narrative toxicity objective). The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, discoloration, toxic substances, radionuclides, or taste and odor producing substances that adversely affect beneficial uses. 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 Basin Plan also limits chemical constituents in concentrations that adversely affect surface water beneficial uses. For waters designated as municipal, the Basin Plan specifies that, at a minimum, waters shall not contain concentrations of constituents that exceed Maximum Contaminant Levels (MCL) of CCR Title 22. The Basin Plan further states that, to protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

A. Discharge Prohibitions

1. 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.

B. Technology-Based Effluent Limitations

1. Scope and Authority

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 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-level treatment is necessary to protect the beneficial uses of the receiving stream and minimize degradation. Therefore, the final effluent limitations for BOD_5 and TSS are based on the technical capability of the advanced secondary processes. BOD_5 is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The 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 advanced secondary treatment processes results in the ability to achieve lower

levels for BOD_5 and TSS than the secondary standards currently prescribed; therefore, consistent with Order No. R5-2003-0130, this Order includes 30-day average BOD_5 and TSS limitations of 10 mg/L, which are 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. See Table F-4 for final technology-based effluent limitations required by this Order. 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.

b. **pH.** Federal Regulations, 40 CFR Part 133, also establish technology-based effluent limitations for pH. The secondary treatment standards require the pH of the effluent to be no lower than 6.0 and no greater than 9.0 standard units.

c. **Flow.** The Facility is designed to provide an advanced secondary level of treatment for up to an average daily dry weather design flow of 8.8 MGD. Therefore, this Order contains an average dry weather flow effluent limit of 8.8 MGD.

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

Table F-4. Summary of Technology-based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand (5-day @ 20°C)	mg/l	10	15	30	--	--
	lbs/day[1]	734	1101	2202	--	--
	% Removal	85	--	--	--	--
Total Suspended Solids	mg/l	10	15	30	--	--
	lbs/day[1]	734	1101	2202	--	--
	% Removal	85	--	--	--	--
pH	standard units	--	--	--	6.0	9.0
Flow	MGD	8.8[2]	--	--	--	--

[1] Based on a design flow of 8.8 MGD.
[2] Average daily dry weather design flow.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

As specified in 40 CFR 122.44(d)(1)(i), permits are required to include WQBELs for pollutants (including toxicity) that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an in-stream excursion above any state water quality standard. 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

a. **Receiving Water.** Treated municipal and industrial wastewater is discharged from Discharge Point No. 001 to the Sacramento River. The beneficial uses of the Sacramento River (from Shasta Dam to Colusa Drain Basin) are described above in Section III.C.1 of this Fact Sheet.

b. **Hardness-Dependent CTR Metals Criteria**

The *California Toxics Rule*, the *National Toxics Rule*, and the Basin Plan contain water quality criteria and objectives for seven metals that vary as a function of hardness. The lower the hardness the lower the water quality criteria/objective. The metals with hardness-dependent criteria and objectives include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

This Order has established the criteria/objective for hardness-dependent metals based on the reasonable worst-case ambient hardness as required by the SIP[1], the CTR[2] and State Water Board Order No. WQO 2008-0008 (City of Davis). The SIP and the CTR require the use of “receiving water” or “actual ambient” hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(4), Table 4, note 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. In some cases, the hardness of effluent discharges changes the hardness of the ambient receiving water. Therefore, where reliable, representative data are available, the hardness value for calculating criteria/objectives can be the downstream receiving water hardness, after mixing with the effluent (Order WQO

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

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

2008-0008, p. 11). The Regional Water Board thus has considerable discretion in determining ambient hardness (*Id.*, p.10.).

The hardness values must also be protective under all flow conditions (*Id.*, pp. 10-11). As discussed below, scientific literature provides a reliable method for calculating protective hardness-dependent CTR criteria and Basin Plan objectives, considering all discharge conditions. This methodology produces criteria and objectives that ensure these metals do not cause receiving water toxicity, while avoiding criteria and objectives that are unnecessarily stringent.

i. **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 and objectives that have been properly adjusted for hardness. Unless otherwise noted, for the hardness-dependent CTR metals criteria and Basin Plan objectives the following procedures were followed for properly adjusting the criterion and objective for hardness when conducting the RPA.

- For comparing the MEC to the applicable criterion/objectives, in accordance with the SIP, CTR, and Order WQO 2008-0008, the reasonable worst-case downstream hardness was used to adjust the criterion/objective. In this evaluation the portion of the receiving water affected by the discharge is analyzed. For hardness-dependent criteria and objectives, the hardness of the effluent has an impact on the determination of the applicable criterion/objective in areas in the receiving water affected by the discharge. Therefore, for this situation it is necessary to consider the hardness of the effluent in determining the applicable hardness to adjust the criterion/objective. The procedures for determining the applicable criterion/objective after proper adjustment using the reasonable worst-case downstream hardness is outlined in subsection ii. below.

- For comparing the Maximum Ambient Background Concentration to the applicable criterion/objective, in accordance with the SIP, CTR, and Order WQO 2008-0008, the reasonable worst-case upstream hardness was used to adjust the criterion/objective. In this evaluation the area outside the influence of the discharge is analyzed. For this situation, the discharge does not impact the upstream hardness. Therefore, the effect of the effluent hardness was not included in this evaluation.

a) **Discharge Point No. 001 (Sacramento River).** The upstream receiving water hardness in the Sacramento River ranged from 44.2 mg/L to 50.0 mg/L, based on 18 samples from June 2007 to December 2008. Thus, a minimum upstream receiving water hardness of 44.2 mg/L (as $CaCO_3$) represents the reasonable worst-case upstream hardness and was used to adjust the criterion/objective when comparing the Maximum Background Ambient Concentration to the criterion/objective for the discharge to the Sacramento River at Discharge Point No. 001. For comparing the MEC to the applicable criterion and objective, in accordance with the SIP, CTR, and Order WQO 2008-0008, the reasonable worst-case downstream hardness was used to adjust the criterion and objective. The procedures for determining the applicable criterion and objective after proper adjustment using the reasonable worst-case downstream hardness is outlined in subsection ii. below.

ii. **Effluent Concentration Allowance (ECA) Calculations.** A 2006 Study[3] developed procedures for calculating the effluent concentration allowance (ECA)[4] for CTR and Basin Plan 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. Simply using the lowest recorded upstream receiving water hardness to calculate the ECA may result in over or under protective WQBELs.

The equation describing the total recoverable regulatory criterion/objective, as established in the CTR and the Basin Plan, is as follows:

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

Where:

H = hardness (as $CaCO_3$)
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, and in the Basin Plan.

[3] 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.

[4] 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

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

$$ECA = C \quad (\text{when } C \leq B)^{5} \qquad \text{(Equation 2)}$$

Where

C = the priority pollutant criterion/objective, adjusted for hardness (see Equation 1, above)

B = the ambient background concentration

The 2006 Study demonstrated that the relationship between hardness and the calculated criteria/objective 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 or Basin Plan objective 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".

<u>ECA for Concave Down Metals</u> – 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 criteria/objective and the upstream receiving water is in compliance with the criteria/objective, any mixture of the effluent and receiving water will always be in compliance with the criteria/objective. Therefore, based on any observed ambient background hardness, no receiving water assimilative capacity for metals (i.e., ambient background metals concentrations are at their respective criterion/objective) and the minimum effluent hardness, the ECA calculated using Equation 1 with a hardness equivalent to the minimum effluent hardness is protective under all discharge conditions (i.e., high and low dilution conditions and under all mixtures of effluent and receiving water as the effluent mixes with the receiving water). This is applicable whether the effluent hardness is less than or greater than the ambient background receiving water hardness.

The effluent hardness ranged from 71.6 mg/L to 93.0 mg/L (as $CaCO_3$), based on 16 samples from June 2007 to December 2008. The upstream receiving water hardness in the Sacramento River varied from 44.2 mg/L to 50.0 mg/L (as $CaCO_3$), based on 18 samples from June 2007 to December 2008. Using a hardness of 71.6 mg/L (as $CaCO_3$) to calculate the

[5] The 2006 Study assumes the ambient background metals concentration is equal to the CTR criterion (i.e. C ≤ B)

ECA for all Concave Down Metals will result in WQBELs that are protective under all potential effluent/receiving water mixing scenarios and under all known hardness conditions, as demonstrated in the example using copper for the Sacramento River shown in Table F-5, below. This example assumes the following conservative conditions for the upstream receiving water:

- Upstream receiving water always at the lowest observed upstream receiving water hardness (i.e., 44.2 mg/L as $CaCO_3$)
- Upstream receiving water copper concentration always at the criteria/objective (i.e., no assimilative capacity).

As demonstrated in Table F-5, using a hardness of 71.6 mg/L (as $CaCO_3$) to calculate the ECA for Concave Down Metals ensures the discharge is protective under all discharge and mixing conditions. In this example, the effluent is in compliance with the criteria/objective and any mixture of the effluent and receiving water is in compliance with the criteria/objective. An ECA based on a lower hardness (e.g., lowest upstream receiving water hardness) would also be protective, but would result in unreasonably stringent effluent limits considering the known conditions. Therefore, in this Order the ECA for all Concave Down Metals has been calculated using Equation 1 with a hardness of 71.6 mg/L (as $CaCO_3$).

Table F-5. Copper ECA Evaluation

Minimum Observed Effluent Hardness	**71.6 mg/L (as $CaCO_3$)**
Minimum Observed Upstream Receiving Water Hardness	**44.2 mg/L (as $CaCO_3$)**
Maximum Assumed Upstream Receiving Water Copper Concentration	**5.8 µg/L[1]**
Copper $ECA_{chronic}$[2]	**8.7 µg/L**

Effluent Fraction	Mixed Downstream Ambient Concentration		
	Hardness[3] (mg/L) (as $CaCO_3$)	**CTR Criteria[4] (µg/L)**	**Copper[5] (µg/L)**
1%	44.47	5.8	5.8
5%	45.57	5.9	5.9
15%	48.31	6.2	6.2
25%	51.05	6.5	6.5
50%	57.9	7.3	7.3
75%	64.75	8.0	8.0
100%	71.6	8.7	8.7

1 Maximum assumed upstream receiving water copper concentration calculated using Equation 1 for chronic criterion (and site-specific translator) at a hardness of **44.2 mg/L (as $CaCO_3$)**.

2 ECA calculated using Equation 1 for chronic criterion (and site-specific translator) at a hardness of **71.6 mg/L (as $CaCO_3$)**.

[3] Mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction.

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

[5] Mixed downstream ambient copper concentration is the mixture of the receiving water and effluent copper concentrations at the applicable effluent fraction.

ECA for Concave Up Metals – For Concave Up Metals (i.e., acute cadmium, lead, and acute silver), the 2006 Study demonstrates that due to a different relationship between hardness and the metals criteria, the effluent and upstream receiving water can be in compliance with the criteria/objective, but the resulting mixture may be out of compliance. Therefore, the 2006 Study provides a mathematical approach to calculate the ECA to ensure that any mixture of effluent and receiving water is in compliance with the criteria/objective (see Equation 3, below). The ECA, as calculated using Equation 3, is based on the reasonable worst-case ambient background hardness, no receiving water assimilative capacity for metals (i.e., ambient background metals concentrations are at their respective criterion/objective), and the minimum observed effluent hardness. The reasonable worst-case ambient background hardness depends on whether the effluent hardness is greater than or less than the upstream receiving water hardness. There are circumstances where the conservative ambient background hardness assumption is that the upstream receiving water is at the highest observed hardness concentration. The conservative upstream receiving water condition as used in the Equation 3 below is defined by the term H_{rw}.

$$ECA = \left(\frac{m(H_e - H_{rw})\left(e^{m\{\ln(H_{rw})\}+b}\right)}{H_{rw}} \right) + e^{m\{\ln(H_{rw})\}+b} \qquad \text{(Equation 3)}$$

m, b = criterion specific constants (from CTR or Basin Plan)

H_e = minimum observed effluent hardness

H_{rw} = minimum observed upstream receiving water hardness when the minimum effluent hardness is always greater than observed upstream receiving water hardness ($H_{rw} < H_e$)

-or-

maximum observed upstream receiving water hardness when the minimum effluent hardness is always less than observed upstream receiving water hardness ($H_{rw} > H_e$)[6]

[6] When the minimum effluent hardness falls within the range of observed receiving water hardness concentrations, Equation 3 is used to calculate two ECAs, one based on the minimum observed upstream receiving water hardness and one based on the maximum observed upstream receiving water hardness. The minimum of the two calculated ECAs represents the ECA that ensures any mixture of effluent and receiving water is in compliance with the criteria/objective.

A similar example as was done for the Concave Down Metals is shown for lead, a Concave Up Metal, in Tables F-6 below. As previously mentioned, the minimum effluent hardness is 71.6 mg/L (as $CaCO_3$), while the upstream receiving water hardness ranged from 44.2 mg/L to 50.0 mg/L (as $CaCO_3$). In this case, the minimum effluent hardness is always greater than the observed upstream receiving water hardness ($H_{rw} < H_e$). Therefore, Equation 3 was used to calculate only one ECA (i.e., 2.01 µg/L, see Table F-6), based on the minimum observed upstream receiving water hardness.

Using Equation 3 to calculate the ECA for all Concave Up Metals, based on the minimum observed upstream receiving water hardness, will result in WQBELs that are protective under all potential effluent/receiving water mixing scenarios and under all known hardness conditions, as demonstrated in Table F-6, for lead. In this example, the effluent is in compliance with the criteria/objective and any mixture of the effluent and receiving water is in compliance with the criteria/objective.

Table F-6. Lead ECA Evaluation

Minimum Observed Effluent Hardness			**71.6 mg/L (as $CaCO_3$)**
Minimum Observed Upstream Receiving Water Hardness			**44.2 mg/L (as $CaCO_3$)**
Maximum Assumed Upstream Receiving Water Lead Concentration			**1.125 µg/L[1]**
Lead $ECA_{chronic}$[2]			**2.01 µg/L**
Effluent Fraction	**Mixed Downstream Ambient Concentration**		
	Hardness[3] (mg/L) (as $CaCO_3$)	**CTR Criteria[4] (µg/L)**	**Lead[5] (µg/L)**
1%	44.5	1.1	1.1
5%	45.6	1.2	1.2
15%	48.3	1.3	1.3
25%	51.1	1.4	1.3
50%	57.9	1.6	1.6
75%	64.8	1.8	1.8
100%	71.6	2.1	2.0

1 Minimum assumed upstream receiving water lead concentration calculated using Equation 1 for chronic criterion at a hardness of **44.2 mg/L (as $CaCO_3$)**.

2 ECA calculated using Equation 3 for chronic criteria.

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

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

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

c. **Assimilative Capacity and Mixing Zone.** Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will

cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. In determining whether a discharge has the reasonable potential to contribute to an in-stream excursion, the dilution of the effluent in the receiving water may be considered where areas of dilution are defined. The available dilution may also be used to calculate protective effluent limitations by applying water quality criteria at the edge of the defined mixing zone. These calculations include receiving water pollutant concentrations that are typically based on worst-case conditions for flow and concentration.

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 122.44 and 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 *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California* (State Implementation Policy or SIP) and the Basin Plan. If no procedure applies in the SIP or the Basin Plan, then the Regional Water Board may use the USEPA Technical Support Document for Water Quality-Baaed Toxics control (EPA/505/2-90-001)(TSD).

The allowance of mixing zones by the Regional 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 if initial dilution in the immediate vicinity of the discharge."*

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 throughout a water body except within any mixing zone granted by a Regional Board. The allowance of mixing zones is discretionary*

and shall be determined on a discharge-by-discharge basis. The Regional Board may consider allowing mixing zones and dilution credits only for discharges with a physically identifiable point of discharge that is regulated through an NPDES permit issued by the Regional Board."

i. **Background.** Order No. R5-2003-0130 granted dilution credits for copper, zinc, chlorodibromomethane, dichlorobromomethane, and tetrachloroethene. The dilution credit was based on the extreme critical low river flow and high treatment facility flow (160:1 dilution) and the estimate that the discharge mixed with 25% of the river, thereby equating to a 40:1 dilution credit. Taking into consideration the location of the upstream receiving water monitoring location and the four NPDES dischargers located within approximately 15 river miles downstream of the subject receiving water station and multiple municipal stormwater discharge points, an "allocation factor" of 1/5 was applied to the assimilative capacity value ("C-B") such that 20% of the assimilative capacity of the river was granted to the Discharger and used to calculate the effluent limits for copper and zinc; effectively, reducing the dilution credit for copper and zinc from 40:1 to 8:1. The dilution credit for chlorodibromomethane, dichlorobromomethane, and tetrachloroethene remained at 40:1. A Mixing Zone Study was subsequently performed in 2005.

ii. **Sacramento River.** 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) at the Facility are presented below:

Criterion	Critical Receiving Water Flow (cfs)	Discharge Effluent Flow (MGD)	Dilution Ratio
Acute	**3,288**[1]	**15.5**[4]	**137:1**
Chronic	**3,288**[2]	**15.4**[5]	**138:1**
Human Health	**7,549**[3]	**8.2**[6]	**595:1**

1 Minimum river flow allowed by 1993 NOAA Biological Opinion at Keswick Dam + 1Q10 of Clear Creek at Igo USGS Station.
2 Minimum river flow allowed by 1993 NOAA Biological Opinion at Keswick Dam + 7Q10 of Clear Creek at Igo USGS Station.
3 Harmonic mean river flow, USGS Station 11370500 Sacramento River at Keswick and 11372000 Clear Creek at Igo.
4 Maximum daily flow: 1/1/03 – 8/14/08.
5 4-day average of daily maximum flows 1/1/03 – 8/14/08.
6 Long-term arithmetic mean flow 1/1/03 – 8/14/08.

The Discharger provided a dilution/mixing dye zone study prepared by Brown and Caldwell on 13 May 2005 and supplemental information on 29 August 2008. The primary objective of the dye study was to define the distribution and dilution of the effluent plume in relationship to the distance downstream. Results of the field studies were compared with and used to test the output from two mathematical plume models, CORMIX and PLUME.

Neither of these two models were able to handle the unique physical features of the river, particularly shallow water depth, and they could not be used for modeling dilution and plume behavior. A mass balance model was constructed instead to simulate dilutions under varying conditions of river flow, effluent discharge, and diffuser configuration. The Study results for critical concentration-based dilution ratios provided by the Discharger in 2008 are provided below:

	Concentration-Based Dilution Ratios		
Distance Downstream (ft.)	**Acute**	**Chronic**	**Human Health**
50	10	10	42
100	19	19	79
200	29	29	126
400	39	40	173
600	45	46	193
800	48	49	208

Outfall Changes. The Discharger performed the Mixing Zone/Dilution Study in 2005. Since then, the outfall design and location have changed. In 2009 the Discharger installed two new outfall diffusers and abandoned the use of the original diffuser. The new high flow and low flow diffusers are designed to accommodate both the dry weather and wet weather discharge flows from the Facility. The dry weather diffuser runs all of the time and can accomodate flows between 0 and 30 mgd, while the wet weather diffuser will only discharge flows greater than 30 mgd and up to 60 mgd. The new diffusers are approximately 70 feet downstream from the original diffuser. The wet weather diffuser is located immediately downstream of the dry weather diffuser. The new dry weather diffuser is roughly twice the length of the original, with approximately double the number of ports.

The Discharger performed a qualitative dye release study on the dry weather diffuser on 8 March 2010. Field observations gathered from the observation event have been considered. The Central Valley Water Board has determined that the information obtained from the 2005 Mixing Zone/Dilution Study is applicable up to an effluent flow of 16 mgd. Effluent flows beyond 16 mgd will require a new Mixing Zone/Dilution Study to be performed by the Discharger (see Fact Sheet VII.B.2)

iii. **Dilution Credits and Mixing Zone.** The receiving water is a relatively high flow river, with a minimum (acute) receiving water to effluent ratio of 137:1. The Facility needs no more than a 2:1 dilution credit to meet both acute and chronic aquatic life criterion. As determined in the 2005 Study, a 10:1 dilution credit for aquatic life criterion exists at 50 feet downstream. Assuming a linear relationship of concentrations downstream, a 2:1 dilution credit can be achieved within approximately 10 feet downstream of the diffuser. The Facility needs no more than a 12:1 dilution credit to meet

chlorodibromomethane criterion and a 30:1 dilution credit to meet dichlorobromomethane criterion. As determined in the 2005 Study, a 42:1 dilution credit for human health criterion exists at 50 feet downstream. Assuming a linear relationship of concentrations downstream, a 12:1 dilution credit can be achieved within approximately 14.3 feet downstream of the diffuser and a 30:1 dilution credit can be achieved within 36 feet downstream of the diffuser. The Discharger has requested dilution credits for copper, zinc, chlorodibromomethane, and dichlorobromomethane.

iv. **Consistency with Mixing Zone Requirements.** This Order allows a mixing zone for aquatic toxicity criteria and human health criteria. As described in Section VI.C.2.e and Fact Sheet Section VII.B.2.e, the Discharger completed a Mixing Zone / Dilution Study that demonstrates adequate dilution is available for flows up to 16 mgd. 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 waterbody or overlap existing mixing zones from different outfalls.

According to Section 1.4.2.2 of the SIP (Mixing Zone Conditions), a mixing zone shall not cause the following conditions:

(1) Compromise the integrity of the entire water body – The proposed aquatic toxicity mixing zone is approximately 10 feet long and 200 feet wide, constituting a small fraction of the total river reach. The proposed human health mixing zones are approximately 14 feet long and 200 feet wide and 36 feet long and 200 feet wide, constituting a small fraction of the total river reach. The width of the river at the outfall is approximately 500 feet.

(2) Cause acutely toxic conditions to aquatic life passing through the mixing zone –This Order requires compliance with an acute toxicity effluent limitation that requires acute bioassays to be conducted using 100% effluent (i.e., no dilution). Compliance with the acute toxicity effluent limitation assures the effluent is not acutely toxic. Exceedance of an aquatic life acute criterion, or objective, does not mean acute toxicity will actually occur.

(3) Restrict the passage of aquatic life – As described above, the plume is in the western half of the Sacramento River. The mixing zones are approximately 200 feet wide, where the river is approximately 500 feet wide. Therefore granting the mixing zone should not 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 – This Order requires compliance with an acute toxicity effluent limitation that requires acute bioassays to be conducted using

100% effluent (i.e., no dilution). The Discharger must meet stringent end-of-pipe effluent limitations for other constituents that demonstrated reasonable potential to exceed aquatic toxicity criteria (i.e., ammonia and total residual chlorine).

(5) Produce undesirable or nuisance aquatic life –This Order requires end-of-pipe effluent limitations (e.g. for biochemical oxygen demand and total suspended solids) and discharge prohibitions to prevent these conditions from occurring. Receiving water monitoring is included to detect any problems.

(6) Result in floating debris, oil, or scum –This Order requires end-of-pipe effluent limitations (e.g., for BOD_5 and TSS) and discharge prohibitions to prevent these conditions from occurring. Receiving water monitoring is included to detect any problems.

(7) Produce objectionable color, odor, taste, or turbidity –This Order requires end-of-pipe effluent limitations (e.g., for BOD_5 and TSS) and discharge prohibitions to prevent these conditions from occurring. Receiving water monitoring is included to detect any problems.

(8) Cause objectionable bottom deposits –The granting of the mixing zone should not affect operations at the Facility, and should not produce objectionable bottom deposits. Receiving water monitoring is included to detect any problems.

(9) Cause nuisance – The mixing zone request was for select aquatic toxicity and human health criteria and objectives, none of which should cause a nuisance within or outside the mixing zone. Receiving water monitoring is included to detect any problems.

(10) Dominate the receiving water body or overlap a mixing zone from different outfalls – Sierra Pacific Industries has an intermittent seasonal discharge point, with no mixing zone, at approximately 2.4 miles downstream of the diffuser outfall to the Sacramento River. In addition, the City of Anderson discharge is located approximately 3.3 miles downstream from the diffuser outfall to the Sacramento River. The edge of the largest mixing zone is approximately 36 feet downstream; therefore an overlap of mixing zones does not occur.

(11) Be allowed at or near any drinking water intake –The largest human health criteria mixing zone extends 36 feet downstream of the discharge. There is significant dilution, much more than that is allowed in this Order, prior to any drinking water intake within the Sacramento River. There are no known drinking water intakes within the mixing zone.

As suggested by the SIP, in determining the extent of or whether to allow a mixing zone and dilution credit, the Regional 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 mixing zone therefore complies with the SIP. The mixing zone also complies with the Basin Plan, which requires that the mixing zone not adversely impact beneficial uses. Beneficial uses will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Regional Water Board has considered the procedures and guidelines in the EPA's Water Quality Standards Handbook, 2nd Edition (updated July 2007), Section 5.1, and Section 2.2.2 of the Technical Support Document for Water Quality-based Toxics Control (TSD). The SIP incorporates the same guidelines.

d. **Metal Translators.** The Discharger has obtained Sacramento River data for low level metals in samples collected at Caldwell Park boat launch in Redding since January 1998 to more thoroughly investigate background concentrations of constituents where historical data show levels are at or near water quality criteria/objectives. The Caldwell Park boat launch is approximately 8 miles upstream of the outfall. Receiving water data indicate that the EPA standard conversion factors (translators) may not be representative of the dissolved fraction of copper and zinc in this reach of the Sacramento River. On 6 February 2007 the Discharger submitted a metal translator report based on receiving water data collected since the May 2004 completion of the Slickrock Creek Dam. The installation of the Slickrock Creek Dam was part of the remedial efforts occurring at Iron Mountain Mine and significantly lowered cadmium, copper, and zinc concentrations in the Sacramento River. The Discharger's previous site-specific metal translators for this reach of river have been updated and the following site-specific translators have been used in the Order to reflect current conditions:

	Chronic	**Acute**
Copper	0.771	0.811
Zinc	0.705	0.766

3. Determining the Need for WQBELs

a. CWA section 301 (b)(1) requires NPDES permits to include effluent limitations that achieve technology-based standards and any more stringent limitations necessary to meet water quality standards. Water quality standards include Regional Water Board Basin Plan beneficial uses and narrative and numeric

water quality objectives, State Water Board-adopted standards, and federal standards, including the CTR and NTR. The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, 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.) With regards to the narrative chemical constituents objective, the Basin Plan states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At a 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 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.*"

b. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs, the Regional Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard from Discharge Point No. 001 to the Sacramento River for ammonia, chlorine residual, chlorodibromomethane, copper, dichlorobromomethane, pH, pathogens, and zinc. WQBELs for these constituents are included in this Order. A summary of the reasonable potential analysis (RPA) is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

c. The Regional Water Board conducted the 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 Board may use the SIP as guidance for water quality-based toxics control.[7] 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.

d. WQBELs were calculated in accordance with section 1.4 of the SIP, as described in Attachment F, Section IV.C.4.

e. Effluent and receiving water data used to conduct the RPA included SMRs and priority pollutant monitoring from the period ranging from January 2004 through

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

December 2008. Data from the Metals Translator Report is from the period of May 2004 through December 2006. Aluminum data ranged from November 2006 through September 2009.

f. **Aluminum.** USEPA developed National Recommended Ambient Water Quality Criteria 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. The Secondary Maximum Contaminant Level - Consumer Acceptance Limit for aluminum is 200 µg/L.

The MEC for total recoverable aluminum was 39.3 µg/L, based on 4 samples collected between November 2006 and September 2009. The maximum observed upstream receiving water total aluminum concentration in the Sacramento River was 463 µg/L, based on 23 samples collected between August 2007 and August 2009 (the maximum dissolved concentration during the same time period was 56.7 µg/L). No data exists for acid-soluble aluminum. Although the MEC was less than established criteria, the maximum observed upstream water total aluminum concentration exceeds both the aquatic life 4-day average (chronic) criteria and the Secondary Maximum Contaminant Level. Therefore, reasonable potential to cause or contribute to an in-stream excursion above criteria does exist and an effluent limitation is required.

Footnote L to the National Recommended Ambient Water Quality Criteria summary table for aluminum indicates that the chronic aquatic life criterion is based on studies conducted under specific receiving water conditions with a low pH (6.5 to 6.8 pH units) and low hardness (<10 mg/L as $CaCO_3$). Monitoring data demonstrates that the conditions under which the chronic aquatic life was developed are also not similar to those in the Sacramento River, which has a pH ranging from 6.2 to 8.0 and hardness concentrations ranging from 44.2 mg/L to 50 mg/L as $CaCO_3$. Because the hardness values in the Sacramento River are higher (which decreases the toxic effects to aquatic life) than the water hardness values in which the criterion was developed, USEPA advises that a water effects ratio might be appropriate to better reflect the actual toxicity of aluminum to aquatic organisms.

In the absence of an applicable chronic aquatic life criterion, the most stringent water quality criterion is the Secondary MCL - Consumer Acceptance Limit for aluminum of 200 µg/L. The discharge to the Sacramento River has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary MCL for aluminum due to the elevated background concentrations. Based on input from the Department of Public Health (DPH) and the fact that secondary MCLs are designed to protect consumer acceptance, effluent limitations based on secondary MCLs are applied as an annual average concentration. An annual average effluent limitation of 200 µg/L for aluminum is included in this Order based on protection of the Basin Plan's numeric chemical constituents objective.

The discharge to the Sacramento River does not demonstrate a reasonable

potential to exceed the acute aquatic life criterion for aluminum (750 ug/L). Therefore, this Order does not include any limitation based on USEPA's National Ambient Water Quality Criteria for the protection of freshwater acute aquatic life for discharges to the Sacramento River.

In USEPA's Ambient Water Quality Criteria for Aluminum—1988 [EPA 440/5-86-008], USEPA states that "[a]*cid-soluble aluminum…is probably the best measurement at the present…*"; however, USEPA has not yet approved an acid-soluble test method for aluminum. Replacing the ICP/AES portion of the analytical procedure with ICP/MS would allow lower detection limits to be achieved. Based on USEPA's discussion of aluminum analytical methods, this Order allows the use of the alternate aluminum testing protocol described above to meet monitoring requirements.

Monthly effluent monitoring for aluminum has been included in this Order to establish a better record of data for aluminum concentrations in the effluent. Quarterly receiving water monitoring for aluminum has also been included in this Order.

g. **Ammonia.** 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. The Discharger does not currently use nitrification to remove ammonia from the waste stream. However, upgrades in the aeration process at the Facility are in process. The upgrade, to be completed by the end of 2011, will enable the Facility to nitrify and denitrify. Ammonia is known to cause toxicity to aquatic organisms in surface waters. Discharges of ammonia would violate the Basin Plan narrative toxicity objective. Applying 40 CFR 122.44(d)(1)(vi)(B), it is appropriate to use the NAWQC for the protection of freshwater aquatic life for ammonia.

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.

The maximum permitted effluent pH is 8.5, as the Basin Plan objective for pH in

the receiving stream is the range of 6.5 to 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.

Downstream receiving water temperature and pH data from the Discharger's monthly monitoring reports from January 2006 through December 2008 were used to develop the chronic criteria. Using downstream receiving water data, the 30-day CCC was calculated for each day when temperature and pH were measured. The resulting lowest 99.9% 30-day average CCC is 3.77 mg/L (as N) for the discharge to the Sacramento River. 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 3.77 mg/L (as N), the 4-day average concentration that should not be exceeded is 9.4 mg/L (as N) for the discharge to the Sacramento River.

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

This Order contains a final AMEL and MDEL for ammonia of 0.70 mg/L and 2.15 mg/L, respectively, based on the NAWQC for the protection of freshwater aquatic life for discharges to the Sacramento River (see Attachment F, Table F-8 for WQBEL calculation). Based on monitoring data submitted from January 2006 through December 2008, the limitations appear to put the Discharger in immediate non-compliance for the discharge to the Sacramento River. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for ammonia are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order. Therefore, a time schedule for compliance with the ammonia effluent limitations is established in this Order in accordance with the EPA-approved Compliance Schedule Policy. Preparation and implementation of a pollution prevention plan for ammonia is also required. Interim limitations for ammonia have been established, see section IV.E.1 in this Fact Sheet for further detail.

h. **Bis (2-Ethylhexyl) Phthalate.** Bis (2-ethylhexyl) phthalate, in addition to several other phthalates, is used primarily as one of several plasticizers in polyvinyl chloride (PVC) resins for fabricating flexible vinyl products. According to the Consumer Product Safety Commission, USEPA, and the Food and Drug Administration, these PVC resins are used to manufacture many products, including soft squeeze toys, balls, raincoats, adhesives, polymeric coatings, components of paper and paperboard, defoaming agents, animal glue, surface lubricants, and other products that must stay flexible and non-injurious for the lifetime of their use. The State MCL for bis (2-ethylhexyl) phthalate is 4 µg/L and the USEPA MCL is 6 µg/L. The NTR criterion for human health protection for consumption of water and aquatic organisms is 1.8 µg/L and for consumption of aquatic organisms only is 5.9 µg/L.

Bis (2-ethylhexyl) phthalate was detected in the effluent one time with an MEC of 4.5 µg/L, based on six samples collected between January 2004 and December 2008. Bis (2-ethylhexyl) phthalate was not detected in any of the other five effluent samples. The maximum observed bis (2-ethylhexyl) phthalate concentration in the Sacramento River at Caldwell Park was <0.14 µg/L (non-detect), based on three samples collected between September 2006 and December 2007.

As described above, bis (2-ethylhexyl) phthalate is a commonly used plasticizer. Since bis (2-ethylhexyl) phthalate is a common contaminant of sample containers, sampling apparatus, and analytical equipment, and sources of the detected bis (2-ethylhexyl) phthalate may be from plastics used for sampling or analytical equipment, it is uncertain whether reasonable potential actually exists and therefore effluent limitations for bis (2-ethylhexyl) phthalate are not being established at this time. Instead of limitations, additional monitoring 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.

i. **Chlorine Residual.** 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 Basin Plan's narrative toxicity objective.

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 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.

Average 1-hour and 4-day limitations for chlorine, based on these criteria, are included in this Order. Based on data reported during the term of Order No. R5-2003-0130, it appears as if the Discharger can immediately comply with these new effluent limitations for chlorine residual.

j. **Chlorodibromomethane.** The CTR includes a chlorodibromomethane criterion of 0.41 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. The MEC for chlorodibromomethane was 7.3 µg/L, based on 57 samples collected between January 2004 and December 2008. Chlorodibromomethane was not detected in the upstream receiving water in the Sacramento River at Caldwell Park, based on three samples collected between September 2006 and December 2007. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for chlorodibromomethane.

The ambient monitoring demonstrates the Sacramento River has assimilative capacity for chlorodibromomethane. All target chlorination byproducts concentrations were reported as "not detected" at reporting limitations of 0.15 to 0.17 µg/L. As described in section IV.C.2.c., a dilution credit for chlorodibromomethane of 12 can be granted, based on the available human health dilution. This Order includes an AMEL and MDEL for chlorodibromomethane of 3.5 µg/L and 10.3 µg/L, respectively, based on the CTR criterion for the protection of human health for discharges to the Sacramento River (see Attachment F, Table F-9 for WQBEL calculations).

The mean of the effluent data set was 0.7 ug/L with a standard deviation of 1.1 µg/L, with a second-highest effluent chlorodibromomethane value at 2.4 µg/L. The MEC for chlorodibromomethane of 7.3 falls outside the upper 99.9% upper confidence level for the effluent data set. The Discharger should be able to meet the AMEL and MDEL. This Order implements more stringent effluent limitations for total coliform bacteria. In order to achieve the more stringent limits the Discharger may need to dose the disinfection system at higher chlorine concentrations than in the past. This may result in increased concentrations of chlorine disinfection byproducts such as chlorodibromomethane and dichlorobromomethane. If, due to achieving the more stringent limits for total coliform bacteria, the resulting concentrations of chlorine disinfection byproducts do not comply with the effluent limits on the chlorine disinfection byproducts contained in the Order, the Discharger may request relief, and the Regional Water Board may reopen this Order to establish higher effluent limits for the chlorine disinfection byproducts, if appropriate.

k. **Copper.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. The criteria for copper are presented in dissolved concentrations. USEPA recommends conversion factors to calculate dissolved criteria. The USEPA default conversion factors for copper in freshwater are 0.96 for both the acute and the chronic criteria. Using the

reasonable worst-case representative ambient hardness of 44.2 mg/L as $CaCO_3$, as described in section IV.C.2.b of this Fact Sheet, and the default conversion factors, the applicable chronic criterion (maximum 4-day average concentration) is 4.6 µg/L and the applicable acute criterion (maximum 1-hour average concentration) is 6.5 µg/L, as total concentrations.

As discussed in section IV.C.2.d of this Fact Sheet, the applicable site-specific acute and chronic translators for the discharge to the Sacramento River are 0.811 and 0.771, respectively. Using the site-specific translators and the lowest receiving water hardness of 44.2 mg/L as $CaCO_3$, the applicable acute criterion, is 7.6 µg/L and the applicable chronic criterion is 5.8 µg/L, as total recoverable. Using the site-specific translators and the lowest effluent hardness of 71.6 mg/L as $CaCO_3$, the applicable acute criterion, is 12.1 µg/L and the applicable chronic criterion is 8.7 µg/L, as total recoverable

The MEC for total copper was 12.1 µg/L, as total recoverable, based on 64 samples collected between January 2004 and December 2008 and reported in the Discharger's SMRs. The maximum observed upstream receiving water total copper concentration in the Sacramento River was 3.65 µg/L, based on 18 samples collected immediately upstream of the discharge between June 2007 and December 2008. The ambient monitoring demonstrates the receiving water has assimilative capacity for copper.

Because total copper in the effluent exceeds the total chronic criterion for the discharge to the Sacramento River the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for copper for discharges to the Sacramento River.

As described in section IV.C.2.b of the Fact Sheet, the ECA_{acute} and $ECA_{chronic}$ for discharges to the Sacramento River were determined using a hardness of 71.6 mg/L (as $CaCO_3$), which is protective under all discharge and mixing conditions. As also described in section IV.C.2.d of this Fact Sheet, the Regional Water Board has applied site-specific translators for copper. A dilution credit for copper of 2:1 can be granted for both acute and chronic aquatic life criteria, as described in section IV.C.2.c of this Fact Sheet. This results in an ECA_{acute} and an $ECA_{chronic}$ for copper of 27.9 µg/L and 18.9 µg/L, respectively. Using the procedures for calculating WQBELs in section 1.4 of the SIP, an AMEL and MDEL for total copper of 17.0 µg/L and 26.0 µg/L, respectively, are included in this Order based on CTR criteria for the protection of freshwater aquatic life for discharges to the Sacramento River (see Attachment F, Table F-10 for WQBEL calculations). The Discharger should be able to meet the AMEL and MDEL.

I. **Dichlorobromomethane***.* The CTR includes a dichlorobromomethane criterion of 0.56 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. The MEC for dichlorobromomethane was 15 µg/L, based on 57 samples collected

between January 2004 and December 2008. Dichlorobromomethane was not detected in the upstream receiving water in the Sacramento River at Caldwell Park, based on three samples collected between September 2006 and December 2007. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for dichlorobromomethane.

The ambient monitoring demonstrates the Sacramento River has assimilative capacity for dichlorobromomethane. All target chlorination byproducts concentrations were reported as "not detected" at reporting limitations of 0.15 µg/L to 0.17 µg/L. As described in section IV.C.2.c., a dilution credit for dichlorobromomethane of 30:1 can be granted, based on the available human health dilution. This Order includes an AMEL and MDEL for dichlorobromomethane of 12.2 µg/L and 29.3 µg/L, respectively, based on the CTR criterion for the protection of human health for discharges to the Sacramento River (see Attachment F, Table F-11 for WQBEL calculations).

The mean of the effluent data set was 3.5 µg/L with a standard deviation of 3 µg/L, with a second-highest effluent dichlorobromomethane value at 11 µg/L. The MEC for dichlorobromomethane of 15 µg/L falls outside the upper 99.9% confidence level for the effluent data set. The Discharger should be able to meet the AMEL and MDEL. This Order implements more stringent effluent limitations for total coliform bacteria. In order to achieve the more stringent limits the Discharger may need to dose the disinfection system at higher chlorine concentrations than in the past. This may result in increased concentrations of chlorine disinfection byproducts such as chlorodibromomethane and dichlorobromomethane. If, due to achieving the more stringent limits for total coliform bacteria, the resulting concentrations of chlorine disinfection byproducts do not comply with the effluent limits on the chlorine disinfection byproducts contained in the Order, the Discharger may request relief, and the Regional Water Board may reopen this Order to establish higher effluent limits for the chlorine disinfection byproducts, if appropriate.

m. **Dissolved Oxygen.** The Basin Plan contains a water quality objective for dissolved oxygen requiring that the dissolved oxygen concentrations of waters designated as COLD and SPWN shall not be reduced below 7.0 mg/L at any time. In addition, a site-specific Basin Plan water quality objective for the Sacramento River from Keswick Dam to Hamilton City exists from 1 June to 31 August, where dissolved oxygen concentrations of waters shall not be reduced below 9.0 mg/L (when natural conditions lower dissolved oxygen below this level, the concentrations shall be maintained at or above 95 percent of saturation).

From January 2004 through December 2008, the monthly average dissolved oxygen levels in the Sacramento River, both upstream and downstream of the effluent discharge location, was 10.4 mg/L. The Discharger's receiving water

monitoring does not indicate any violation of Basin Plan water quality objectives. This Order includes dissolved oxygen receiving water monitoring.

n. **Iron.** The Basin Plan water quality objectives for chemical constituents requires that 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) specified in Title 22 of the CCR. The Secondary MCL – Consumer Acceptance Limit for iron is 300 µg/L. In addition, a site-specific Basin Plan water quality objective for the Sacramento River from Keswick Dam to the I Street Bridge at the City of Sacramento exists for iron, as a dissolved concentration, of 0.3 mg/L. There is no data at this time to determine whether a reasonable potential to exceed water quality objectives for iron exists. This Order includes both effluent and receiving water monitoring for iron.

o. **Manganese.** The Basin Plan water quality objectives for chemical constituents requires that 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) specified in Title 22 of the CCR. The Secondary MCL – Consumer Acceptance Limit for manganese is 50 µg/L. In addition, a site-specific Basin Plan water quality objective for the Sacramento River from Keswick Dam to the I Street Bridge at the City of Sacramento exists for manganese, as a dissolved concentration, of 0.05 mg/L. There is no data at this time to determine whether a reasonable potential to exceed water quality objectives for manganese exists. This Order includes both effluent and receiving water monitoring for manganese.

p. **Mercury.** The current USEPA National Ambient Water Quality Criteria for protection of freshwater aquatic life, continuous concentration, for mercury is 0.77 µg/L (4-day average, chronic criteria). The CTR contains a human health criterion (based on a threshold dose level causing neurological effects in infants) of 0.050 µg/L for waters from which both water and aquatic organisms are consumed. Both values are controversial and subject to change. In 40 CFR Part 131, USEPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species and that "…*more stringent mercury limits may be determined and implemented through use of the State's narrative criterion.*" In the CTR, USEPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date.

The MEC for mercury was 0.00037 µg/L. The maximum receiving water concentration was 0.00351 µg/L. Neither value exceeds the existing ambient water quality and human health criteria published by USEPA. This Order includes both effluent and receiving water monitoring for mercury.

If the Regional Water Board determines that a mercury offset program is feasible for Dischargers subject to a NPDES permit, this Order may be reopened to

evaluate mercury mass loading limitation(s) and the need for a mercury offset program.

Nitrate. 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. DPH has adopted a Primary MCL at Title 22 CCR, Table 64431-A, for the protection of human health for nitrate equal to 10 mg/L (measured as nitrogen). Title 22 CCR, Table 64431 A, also includes a primary MCL of 10,000 µg/L for the sum of nitrate and nitrite, measured 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.

Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. There is no data at this time to determine whether a reasonable potential for the discharge to cause or contribute to an in-stream excursion above the Primary MCLs for nitrate exists. This Order includes both effluent and receiving water monitoring for nitrate.

q. **Pathogens**. Municipal and domestic supply, agricultural irrigation, and body contact water recreation are beneficial uses of the Sacramento River. Coliform limits are imposed to protect the beneficial uses of the receiving water, including public health through contact recreation and drinking water pathways. In a letter to the Regional Water Board dated 8 April 1999, the California Department of Public Health (DPH) indicated that DPH 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. Beginning in the fourth year following the effective date of this Order, a 240 MPN/100mL daily maximum effluent coliform limit and a 23 MPN/100mL as a 7-day median will be applicable. In order to give the Discharger time to complete the planned modifications to the WWTP and determine and implement any modifications necessary to achieve the more stringent 7-day median limit, a monthly median effluent coliform limit will be applicable for the first three years following the effective date of this Order, as was required in the previous Order.

This Order implements more stringent effluent limitations for total coliform bacteria. In order to achieve the more stringent limits the Discharger may need to dose the disinfection system at higher chlorine concentrations than in the past. This may result in increased concentrations of chlorine disinfection byproducts

such as chlorodibromomethane and dichlorobromomethane. If, due to achieving the more stringent limits for total coliform bacteria, the resulting concentrations of chlorine disinfection byproducts do not comply with the effluent limits on the chlorine disinfection byproducts contained in the Order, the Discharger may request relief, and the Regional Water Board may reopen this Order to establish higher effluent limits for the chlorine disinfection byproducts, if appropriate.

r. **pH.** 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. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses.*" Discharger monitoring reports from January 2006 through December 2008 show a pH range in the receiving water downstream of the discharge of 6.58 to 7.87 (based on 149 data points). Based on the Discharger's data the discharge has not caused the receiving water to exceed the water quality objective for pH. The effluent limitation for pH in this Order has been set at a minimum of 6.0 and a maximum of 8.5. The Discharger should be able to meet the effluent limitation for pH.

s. **Salinity.** The discharge contains total dissolved solids, chloride, sulfate, and electrical conductivity. These are water quality parameters that are indicative of the salinity of the water. Their presence in water can be growth limiting to certain agricultural crops and can affect the taste of water for human consumption. There are no USEPA water quality criteria for the protection of aquatic organisms for these constituents. The Basin Plan contains a chemical constituent objective that incorporates State MCLs, contains a narrative objective, and contains numeric water quality objectives for electrical conductivity, total dissolved solids, sulfate, and chloride.

Table F-7. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Goal[1]	Secondary MCL[3]	Basin Plan	Effluent	
				Average	Maximum
EC (µmhos/cm)	Varies[2]	900; 1,600; 2,200	700 (1 Apr – 31 Aug) 1,000(1 Sep – 31 Mar)[4]	354	573
TDS (mg/L)	Varies	500; 1,000; 1,500	500, 1000, 1500	240	261
Sulfate (mg/L)	Varies	250, 500, 600	250, 500, 600	n/a	n/a
Chloride (mg/L)	Varies	250, 500, 600	250, 500, 600	n/a	n/a

1 Agricultural water quality goals based on *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985)

2 The EC level in irrigation water that harms crop production depends on the crop type, soil type, irrigation methods, rainfall, and other factors. An EC level of 700 umhos/cm is generally considered to present no risk of salinity impacts to crops. However, many crops are grown successfully with higher salinities.

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

4 Applies in the San Joaquin River at Airport Way Bridge near Vernalis.

i. **Chloride**. The secondary MCL for chloride is 250 mg/L, as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. The recommended agricultural water quality goal for chloride, that would apply the narrative chemical constituent objective, is 106 mg/L as a long-term

average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). The 106 mg/L water quality goal is intended to protect against adverse effects on sensitive crops when irrigated via sprinklers.

USEPA developed National Recommended Ambient Water Quality Criteria for protection of freshwater aquatic life for chloride. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for chloride are 230 mg/L and 860 mg/L, respectively. USEPA recommends that the ambient criteria are protective of the aquatic life beneficial uses of receiving waters in lieu of site-specific criteria.

There is no data at this time to determine whether a reasonable potential to exceed the agricultural water quality goal or the USEPA National Recommended Ambient Water Quality Criteria for protection of freshwater aquatic life for chloride. This Order includes both effluent and receiving water monitoring for chloride.

ii. **Electrical Conductivity**. The secondary MCL for electrical conductivity is 900 µmhos/cm as a recommended level; 1,600 µmhos/cm as an upper level; and 2,200 µmhos/cm as a short-term maximum. The agricultural water quality goal, that would apply the narrative chemical constituents objective, is 700 µmhos/cm as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). The 700 µmhos/cm agricultural water quality goal is intended to prevent reduction in crop yield, i.e. a restriction on use of water, for salt-sensitive crops, such as beans, carrots, turnips, and strawberries. Most other crops can tolerate higher EC concentrations without harm, however, as the salinity of the irrigation water increases, more crops are potentially harmed by the EC, or extra measures must be taken by the farmer to minimize or eliminate any harmful impacts.

A review of the Discharger's monitoring reports from January 2004 through December 2008 shows an average effluent electrical conductivity of 354 µmhos/cm, and a one-day maximum observed EC of 573 µmhos/cm, and an average monthly range of 232 µmhos/cm to 516 µmhos/cm for 60 samples. These levels do not exceed the applicable water quality objectives. There are no background receiving water EC sample results. This Order requires effluent and receiving water monitoring for EC.

iii. **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. There is no data at this time to determine whether a reasonable potential to exceed

the secondary MCL. This Order requires effluent and receiving water monitoring for sulfate.

iv. **Total Dissolved Solids.** The secondary MCL for total dissolved solids is 500 mg/L as a recommended level; 1,000 mg/L as an upper level; and 1,500 mg/L as a short-term maximum. The recommended agricultural water quality goal for total dissolved solids, that would apply the narrative chemical constituent objective, is 450 mg/L as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). Water Quality for Agriculture evaluates the impacts of salinity levels on crop tolerance and yield reduction, and establishes water quality goals that are protective of the agricultural uses. The 450 mg/L water quality goal is intended to prevent reduction in crop yield, i.e. a restriction on use of water, for salt-sensitive crops. Only the most salt sensitive crops require irrigation water of 450 mg/L or less to prevent loss of yield. Most other crops can tolerate higher total dissolved solids concentrations without harm, however, as the salinity of the irrigation water increases, more crops are potentially harmed by the total dissolved solids, or extra measures must be taken by the farmer to minimize or eliminate any harmful impacts.

The average total dissolved solids effluent concentration was 240 mg/L; concentrations ranged from 210 mg/L to 261 mg/L for 9 samples collected by the Discharger from January 2004 through December 2008. These levels do not exceed the applicable water quality objectives. There is no background receiving water total dissolved solids sample results. This Order requires effluent and receiving water monitoring for total dissolved solids.

v. **Salinity Effluent Limitations.** The maximum electrical conductivity in the discharge is 573 umhos/cm, which is less than the lowest applicable criteria of 700 umhos/cm (agricultural water quality goal). The maximum total dissolved solids in the discharge is 240 umhos/cm, which is less than the lowest applicable criteria of 450 umhos/cm (agricultural water quality goal). There was no data available for chloride and sulfate. Effluent and receiving water monitoring for these constituents are included in this Order. At this time, no reasonable potential exists, therefore no effluent limitation is necessary. Nonetheless, in an effort to minimize salt loading to the Sacramento River, this Order requires the Discharger to submit a salinity evaluation and minimization plan to address sources of salinity from the Facility.

t. **Settleable Solids.** For inland surface waters, the Basin Plan states that "[w]ater shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses." This Order does not contain average monthly and average daily effluent limitations for settleable solids. With total suspended solids limits in place, the settleable solids

limits can be eliminated and water quality objectives in the receiving water will still be protected.

u. **Toxicity.** See Section IV.C.5. of the Fact Sheet regarding whole effluent toxicity.

v. **Zinc.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for zinc. The criteria for zinc are presented in dissolved concentrations. USEPA recommends conversion factors to calculate dissolved criteria. The USEPA default conversion factors for zinc in freshwater are 0.978 for the acute and 0.986 for the chronic criteria. Using the reasonable worst-case representative ambient hardness of 44.2 mg/L as $CaCO_3$, as described in section IV.C.2.b of this Fact Sheet, and the default conversion factors, the applicable chronic criterion (maximum 4-day average concentration) is 60 µg/L and the applicable acute criterion (maximum 1-hour average concentration) is 60 µg/L, as total concentrations.

As discussed in section IV.C.2.d of this Fact Sheet, the applicable site-specific acute and chronic translators for the discharge to the Sacramento River are 0.766 and 0.705, respectively. Using the site-specific translators and the lowest receiving water hardness of 44.2 mg/L as $CaCO_3$, the applicable acute criterion, is 77 µg/L and the applicable chronic criterion is 83.9 µg/L, as total recoverable. Using the site-specific translators and the lowest effluent hardness of 71.6 mg/L as $CaCO_3$, the applicable acute criterion, is 115 µg/L and the applicable chronic criterion is 126.3 µg/L, as total recoverable.

The Basin Plan includes hardness-dependent criteria for the protection of freshwater aquatic life for zinc. Using the worst-case measured hardness from the receiving water (44.2 mg/L as $CaCO_3$) and the USEPA recommended dissolved-to-total translator, the applicable Basin Plan instantaneous maximum criterion is 17.7 ug/L, as total recoverable. Applying the site-specific translator for zinc of 0.766 for the acute criteria, the applicable acute criterion (maximum one-hour average concentration) is 22.7 ug/L, as total recoverable. Using the site-specific translator and the lowest effluent hardness of 71.6 mg/L as $CaCO_3$, the applicable Basin Plan instantaneous maximum, is 34 µg/L, as total recoverable.

The MEC for total zinc was 60.49 µg/L, as total recoverable, based on 64 samples collected between January 2004 and December 2008 and reported in the Discharger's SMRs. The maximum observed upstream receiving water total zinc concentration in the Sacramento River was 7.78 µg/L, based on 18 samples collected immediately upstream of the discharge between June 2007 and December 2008. The ambient monitoring demonstrates the receiving water has assimilative capacity for zinc.

Because total zinc in the effluent exceeds the total Basin Plan instantaneous maximum water quality objective for the discharge to the Sacramento River the discharge has a reasonable potential to cause or contribute to an in-stream

excursion above the Basin Plan' water quality objective for zinc for discharges to the Sacramento River.

As described in section IV.C.2.b of the Fact Sheet, the ECA_{acute} and $ECA_{chronic}$ for discharges to the Sacramento River were determined using a hardness of 71.6 mg/L (as $CaCO_3$), which is protective under all discharge and mixing conditions. As also described in section IV.C.2.d of this Fact Sheet, the Regional Water Board has applied site-specific translators for zinc. A dilution credit for zinc of up to 2:1 can be granted for both acute and chronic aquatic life criteria, as described in section IV.C.2.c of this Fact Sheet. This results in an ECA_{acute} and an $ECA_{chronic}$ for zinc of 86 µg/L and 363 µg/L, respectively. Using the procedures for calculating WQBELs in section 1.4 of the SIP, an AMEL and MDEL for total zinc of 57 µg/L and 86 µg/L, respectively, are included in this Order based on CTR criteria for the protection of freshwater aquatic life and the Basin Plan objective for discharges to the Sacramento River (see Attachment F, Table F-12 for WQBEL calculations). The Discharger should be able to meet the AMEL and MDEL.

4. WQBEL Calculations

a. As discussed in section IV.C.3. above, WQBELs for chlorine residual and pH were based on Basin Plan objectives and applied directly as effluent limitations. WQBELs for pathogens were based on California DPH recommended criteria. The WQBEL for aluminum is based on the Secondary MCL and established directly as annual average effluent limitation.

b. Effluent limitations for ammonia, chlorodibromomethane, copper, dichlorobromomethane, and zinc were calculated in accordance with section 1.4 of the SIP. The following paragraphs describe the methodology used for calculating effluent limitations.

c. **Effluent Limitation Calculations.** In calculating maximum effluent limitations, the effluent concentration allowances were calculated in accordance with the SIP.

$$ECA = C + D (C – B)$$

where:

ECA_{acute} = effluent concentration allowance for acute (1-hour average) toxicity criterion

$ECA_{chronic}$ = effluent concentration allowance for chronic (4-day average) toxicity criterion

ECA_{HH} = effluent concentration allowance for human health, agriculture, or other long-term criterion/objective

CMC = criteria maximum concentration (1-hour average)

CCC = criteria continuous concentration (4-day average, unless otherwise noted)

HH = human health, agriculture, or other long-term criterion/objective

D = dilution credit

B = maximum receiving water concentration

Acute and chronic toxicity ECAs were then converted to equivalent long-term averages (LTA) using statistical multipliers and the lowest LTA is used. Additional statistical multipliers were then used to calculate the maximum daily effluent limitation (MDEL) and the average monthly effluent limitation (AMEL).

Human health ECAs are set equal to the AMEL and a statistical multiplier is used to calculate the MDEL.

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

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

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

where: $mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL
$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL
M_A = statistical multiplier converting CMC to LTA
M_C = statistical multiplier converting CCC to LTA

WQBELs were calculated for ammonia, chlorodibromomethane, copper, dichlorobromomethane, and zinc as follows in Tables F-8 through F-12, below.

Table F-8. WQBEL Calculations for Ammonia at Discharge Point No. 001

	Acute	Chronic (4-day)	Chronic (30-day)
Criteria (mg/L)[1]	2.14	9.4	3.77
Dilution Credit	No Dilution	No Dilution	No Dilution
ECA	2.14	9.4	3.77
ECA Multiplier	0.121	0.214	0.483
LTA[2]	0.26	2.0	1.8
AMEL Multiplier (95th%)	2.71	[3]	[3]
AMEL (mg/L)	**0.70**	[3]	[3]
MDEL Multiplier (99th%)	8.26	[3]	[3]
MDEL (mg/L)	**2.15**	[3]	[3]

1 USEPA Ambient Water Quality Criteria.
2 LTA developed based on Acute and Chronic ECA Multipliers calculated at 99th percentile level per sections 5.4.1 and 5.5.4 of TSD. Coefficient of variation for data set = 1.90.
3 Limitations based on acute LTA ($LTA_{acute} < LTA_{chronic(4\text{-}day)}$ and $LTA_{acute} < LTA_{chronic(30\text{-}day)}$).

Table F-9. WQBEL Calculations for Chlorodibromomethane at Discharge Point No. 001

	Human Health
Criteria (µg/L)	0.41
Dilution Credit	12:1
ECA	3.5
AMEL (µg/L)[1]	**3.5**
MDEL/AMEL Multiplier[2]	2.94
MDEL (µg/L)	**10.3**

1 AMEL = ECA per section 1.4.B, Step 6 of SIP
2 Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier from Table 2 of SIP. Coefficient of variation for data set = 1.60.

Table F-10. WQBEL Calculations for Copper at Discharge Point No. 001

	Acute	Chronic
Criteria, total recoverable (µg/L) (1)	11.7(1)	8.7(2)
Dilution Credit	2:1	2:1
ECA, total recoverable (3)	27.9	18.9
ECA Multiplier (4)	.527	0.715
LTA	14.7	13.5
AMEL Multiplier (95th%) (5)(6)	(8)	1.26
AMEL (µg/L)	(8)	17
MDEL Multiplier (99th%) (7)	(8)	1.9
MDEL (µg/L)	(8)	26

1 Basin Plan aquatic life criteria, based on a hardness of 71.6 mg/L as $CaCO_3$. The criteria are based on application of a site-specific metals translator.
2 CTR aquatic life criteria, based on a hardness of 71.6 mg/L as $CaCO_3$. The criteria are based on application of a site-specific metals translator.
3 ECA calculated per section 1.4.B, Step 2 of SIP.
4 Acute and Chronic ECA Multiplier calculated at 99th percentile per section 1.4.B, Step 3 of SIP or per sections 5.4.1 and 5.5.4 of the TSD. Coefficient of variation for data set = 0.30.
5 Assumes sampling frequency n<=4.
6 The probability basis for AMEL is 95th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.
7 The probability basis for MDEL is 99th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.
8 Limitations based on chronic LTA (Chronic LTA < Acute LTA).

Table F-11. WQBEL Calculations for Dichlorobromomethane at Discharge Point No. 001

	Human Health
Criteria (µg/L)	0.56
Dilution Credit	30:1
ECA	12.2
AMEL (µg/L)[1]	**12.2**
MDEL/AMEL Multiplier[2]	2.4
MDEL (µg/L)	**29.3**

1 AMEL = ECA per section 1.4.B, Step 6 of SIP

2 Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier from Table 2 of SIP. Coefficient of variation for data set = 0.90.

Table F-12. WQBEL Calculations for Zinc at Discharge Point No. 001

	Acute	Chronic
Criteria, total recoverable (µg/L)	34.0 (1)	126.3(2)
Dilution Credit	2:1	2:1
ECA, total recoverable (3)	86	363.5
ECA Multiplier (4)	.527	0.715
LTA	45.4	259.8
AMEL Multiplier (95th%) (5)(6)	1.26	(8)
AMEL (µg/L)	57	(8)
MDEL Multiplier (99th%) (7)	1.90	(8)
MDEL (µg/L)	86	(8)

1 Basin Plan aquatic life criteria, based on a hardness of 71.6 mg/L as $CaCO_3$. The criteria are based on application of a site-specific metals translator.
2 CTR aquatic life criteria, based on a hardness of 71.6 mg/L as $CaCO_3$. The criteria are based on application of a site-specific metals translator.
3 ECA calculated per section 1.4.B, Step 2 of SIP.
4 Acute and Chronic ECA Multiplier calculated at 99th percentile per section 1.4.B, Step 3 of SIP or per sections 5.4.1 and 5.5.4 of the TSD. Coefficient of variation for data set = 0.30.
5 Assumes sampling frequency n<=4.
6 The probability basis for AMEL is 95th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.
7 The probability basis for MDEL is 99th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.
8 Limitations based on acute LTA (Acute LTA < Chronic LTA).

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

Table F-13. Summary of Water Quality-based Effluent Limitations for Discharge Point No. 001

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
pH	standard units	--	--	--	6.0	8.5
Priority Pollutants						
Copper, Total Recoverable	µg/L	17	--	26	--	--
Chlorodibromomethane	µg/L	3.5	--	10.3	--	--
Dichlorobromomethane	µg/L	12.2	--	29.3	--	--
Zinc, Total Recoverable	µg/L	57	--	86	--	--
Non-Conventional Pollutants						
Aluminum, Total Recoverable	µg/L	--	200[1]	--	--	--

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Ammonia Nitrogen, Total (as N)	mg/L	0.7	--	2.15	--	--
Chlorine, Total Residual	mg/L	--	0.011[2]	0.019[3]	--	--
Total Coliform Organisms	MPN/100 mL	--	23[4]	240[5]	--	--

[1] Applied as an annual average effluent limitation.
[2] Applied as a 4-day average effluent limitation.
[3] Applied as a 1-hour average effluent limitation.
[4] Applied as a monthly median for the first three years of the permit, then as a 7-day median thereafter.
[5] Effluent total coliform organisms are not to exceed 240 MPN/100 mL more than once in any 30-day period.

5. Whole Effluent Toxicity (WET)

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

a. **Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*." (Basin Plan at III-8.00) The Basin Plan also states that, "…*effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate*…". 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 or more 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). Annual whole effluent chronic toxicity testing performed by the Discharger from 2005 through 2008 indicated ceriodaphia exposure to 100% effluent did significantly reduce reproduction from the control in three of the four annual tests (2006, 2007, 2008). Other test parameters met criteria with 100% effluent. The Discharger was not required to conduct dilution series testing. This Order includes a narrative effluent limit for chronic whole effluent toxicity.

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[8] 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. However, the State Water Board found in WQO 2003-012 that, while it is not appropriate to include final numeric effluent limitations for chronic toxicity in NPDES permits for POTWs, permits must contain a narrative effluent limitation, numeric benchmarks for triggering accelerated monitoring, rigorous Toxicity Reduction Evaluation (TRE)/Toxicity Identification Evaluation (TIE) conditions, and a reopener to establish numeric effluent limitations for either chronic toxicity or the chemical(s) causing toxicity. Therefore, this Order includes a narrative effluent limitation for chronic toxicity and 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). This Order also includes a

[8] 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).

reopener that allows the Regional Water Board to reopen the permit and include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE.

To ensure compliance with the narrative effluent limitation and 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 a pattern of 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 a pattern of effluent toxicity has been demonstrated.

D. Final Effluent Limitations

1. Mass-based Effluent Limitations.

Title 40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g., CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Mass-based effluent limitations have been established in this Order for BOD_5 and TSS because they are oxygen-demanding substances. Mass-based effluent limitations were calculated based upon the permitted average dry weather flow allowed in Sections IV.A.1.g and IV.B.1.g of the Limitations and Discharge Requirements.

Except for the pollutants listed above, for those pollutant parameters for which effluent limitations are based on water quality objectives and criteria that are concentration-based, mass-based effluent limitations are not included in this Order.

2. Averaging Periods for Effluent Limitations.

Title 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, the 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 utilizes maximum daily effluent limitations in lieu of average weekly effluent limitations for chlorodibromomethane, 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. Based on a conversation between the Regional Water Board and the California DPH, annual average limitations are more appropriate for some pollutants whose effluent limitations are based on primary and secondary MCLs. Therefore, an annual average limitation has been applied for aluminum. Furthermore, for chlorine residual, BOD_5, TSS, pH, and total coliform organisms, weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in this Fact Sheet.

3. Satisfaction of Anti-Backsliding Requirements.

The Clean Water Act specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in Clean Water Act sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(l).

The following is a comparison of existing to proposed effluent for CTR constituents:

Constituent	**Order No. R5-2003-0130 Existing Limits** (AMEL / MDEL) (ug/L)	**Proposed Limits** (AMEL / MDEL) (ug/L)
Total Recoverable Copper	12 / 17	17 / 26
Total Recoverable Zinc	81 / 120	57 / 86
Chlorodibromomethane	14 / 29	3.5 / 10.3
Dichlorobromomethane	21 / 42	12.2 / 29.3
Tetrachloroethene	30 / 59	Not Required

The effluent limitation for total recoverable copper is less stringent. Copper criteria and subsequent effluent limitations were determined in an approach as described in section IV.C. *Water Quality Based Effluent Limits*. Monitoring data collected during the term of Order No. R5-2003-0130 is considered new information by the Regional Water Board and therefore the less stringent copper limitation does not constitute backsliding.

The effluent limitation for tetrachloroethene has been removed. Based on monitoring data collected during the term of Order No. R5-2003-0130, the discharge does not indicate reasonable potential to exceed water quality objectives for tetrachloroethene. Therefore, the effluent limitations are not retained in this Order. The monitoring data submitted by the Discharger is considered new information by the Regional Water Board. The removal of the effluent limitation on tetrachloroethene does not constitute blacksliding.

The revision of the copper limitation and the removal of effluent limitations for tetrachloroethene are consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Any impact on existing water quality will be insignificant.

4. Satisfaction of Antidegradation Policy

The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16. Compliance with these requirements will result in the use of best practicable treatment or control (BPTC) of the discharge. The impact on existing water quality will be insignificant.

This Order does not permit an increase in effluent average daily dry weather flow (ADWF). The permitted ADWF will remain the same as the permitted value in Order No. R5-2003-0130: 8.8 mgd. The Discharger plans to upgrade the capacity of the filters from 16 to 40 mgd in 2013. Once the upgrade is complete the Discharger will be able to discharge wet weather flows up to 40 mgd. The increase in winter flows does not require an antidegradation analysis, as there is no new degradation. Quality of the effluent discharge is equal or better than past discharge (i.e., all effluent will be filtered and filter efficiency will be equal or better than before). Although the instantaneous maximum discharge will be greater, the volume of discharge over several days will be no different, as influent has been temporarily stored in the wet weather storage basins during peak storm events then metered through the effluent filters as plant capacity allowed. Further the receiving water is better able to assimilate the peak discharges during the wet weather events, as dilution in the receiving water will be greater during storm events.

No new degradation will occur as a result of allowing a mixing zone or dilution credit for copper, zinc, chlorodibromomethane, and dichlorobromomethane. The concentration of pollutants and average dry weather flow of the discharge will not increase. The discharge is advanced secondary-level treated wastewater, which is a high level of treatment of sewage waste that is considered BPTC for most constituents in the wastewater and will result in attaining water quality standards applicable to the discharge. This Order also requires the Discharger to review and evaluate BPTC performance on an annual basis to identify any improvements needed to maintain BPTC performance. In addition, in order to assure, at a minimum, that current facility performance is maintained for these constituents, the

Discharger is required to conduct an Annual Performance Evaluation on the removal efficiency and concentration of these constituents.

Summary of Final Effluent Limitations
Discharge Point No. 001

Table F-14. Summary of Final Effluent Limitations for 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	8.8	--	--	--	--	DC
Conventional Pollutants							
Biochemical Oxygen Demand, 5-day @ 20°C	mg/L	10	15	30	--	--	ASC
	lbs/day[2]	734	1101	2202	--	--	
	% Removal	85	--	--	--	--	CFR
Total Suspended Solids	mg/L	10	15	30	--	--	ASC
	lbs/day[2]	734	1101	2202	--	--	
	% Removal	85	--	--	--	--	CFR
pH	standard units	--	--	--	6.0	8.5	BP
Priority Pollutants							
Copper, Total Recoverable	µg/L	17	--	26	--	--	CTR
Chlorodibromomethane	µg/L	3.5	--	10.3	--	--	CTR
Dichlorobromomethane	µg/L	12.2	--	29.3	--	--	CTR
Zinc, Total Recoverable	µg/L	57		86			BP
Non-Conventional Pollutants							
Acute Toxicity	% Survival	[3]	--	--	--	--	BP
Aluminum, Total Recoverable	µg/L	--	200[4]	--	--	--	NAWQC/ SEC MCL
Ammonia Nitrogen, Total (as N)	mg/L	0.70	--	2.15	--	--	NAWQC
Chlorine, Total Residual	mg/L	--	0.011[5]	0.019[6]	--	--	NAWQC
Total Coliform Organisms	MPN/100 mL	--	23[7]	240[8]	--	--	DPH

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

[1] DC – Based on the design capacity of the Facility.
ASC – Based on advanced secondary treatment capability. These effluent limitations reflect the capability of a properly operated advanced secondary 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.
SEC MCL – Based on the Secondary Maximum Contaminant Level.
DPH – Based on CA Department of Public Health recommendation.
MCL – Based on the Primary Maximum Contaminant Level.

[2] Based on a design flow of 8.8 MGD.

[3] 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 or more consecutive bioassays ------ 90%

[4] Applied as an annual average effluent limitation.

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

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

[7] Applied as a monthly median for the first three years of the permit, then as a 7-day median thereafter.

[8] Effluent total coliform organisms are not to exceed 240 MPN/100 mL more than once in any 30-day period.

E. Interim Effluent Limitations

1. **Compliance Schedule for Ammonia.** The permit limitations for ammonia are more stringent than the limitations previously imposed. These new limitations are based on a new interpretation of the narrative objective for toxicity. The Discharger has demonstrated the need for additional time to implement actions to comply with the new limitations, as described below. A compliance schedule is necessary because the Discharger must implement actions, including facility improvements, such as fine air bubble diffusers, and operational modifications, such as adjusting pond return flow. The Discharger has identified some operational practices that may contribute to high ammonia, such as feeding back liquid decant waste from the sludge lagoons to the Plant. The liquid waste is high in alkalinity and is suspected to be directly affecting final effluent ammonia levels. Therefore, a compliance schedule for compliance with the effluent limitations for ammonia is established in the Order. The compliance schedule is as short as possible.

2. **Interim Limits for Ammonia.** The Compliance Schedule Policy requires the Regional Water Board to establish interim requirements and dates for their achievement in the NPDES permit. Interim numeric effluent limitations are required for compliance schedules longer than one year. Interim effluent limitations must be based on current treatment plant performance or existing permit limitations, whichever is more stringent.

   The interim limitations for ammonia in this Order are based on the current Facility performance. In developing the interim limitation, where there are 10 sampling data points or more, sampling and laboratory variability is accounted for by establishing

interim limits that are based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (Basic Statistical Methods for Engineers and Scientists, Kennedy and Neville, Harper and Row). Therefore, the interim limitation in this Order is established as the mean plus 3.3 standard deviations of the available data. If the resulting value is less than the maximum observed value, then the interim limit is set equal to the maximum value.

When there are less than 10 sampling data points available, the EPA Technical Support Document for Water Quality-based Toxics Control ((EPA/505/2-90-001), TSD) recommends a coefficient of variation of 0.6 be utilized as representative of wastewater effluent sampling. The TSD recognizes that a minimum of 10 data points is necessary to conduct a valid statistical analysis. The multipliers contained in Table 5-2 of the TSD are used to determine a maximum daily limitation based on a long-term average objective. In this case, the long-term average objective is to maintain, at a minimum, the current plant performance level. Therefore, when there are less than 10 sampling points for a constituent, interim limitations are based on 3.11 times the maximum observed effluent concentration to obtain the daily maximum interim limitation (TSD, Table 5-2).

The Regional Water Board finds that the Discharger can undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. Interim limitations are established when compliance with final effluent limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final effluent limitations, but in compliance with the interim effluent limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the effluent limitation can be achieved. Limited, short-term degradation is consistent with state and federal anti-degradation policies and is specifically authorized by 40 CFR § 122.47 and the EPA-approved Compliance Schedule Policy.

The maximum ammonia effluent concentration was 18.9 mg/L, observed on 4 December 2008. The data set contained 36 data points, with a standard deviation of 5.2 and a mean of 2.7 mg/L. Based on this information, the interim maximum daily effluent limitation was calculated to be 19.9 mg/L. The Discharger is required to maintain existing Facility performance such that average monthly effluent concentrations do not exceed their respective concentrations recorded over the prior five years. These interim limitations shall apply until 5 years after the effective date of this Order at which time the final limitations will be applicable.

The final effluent limitations for ammonia are based, in part, on the past variability of the effluent concentrations. Therefore, the final effluent limitations could change based on future data associated with WWTP upgrades and process changes including the planned regionalization of biosolids facilities. Additionally, dilution credits may be applied to the final ammonia effluent limitations if the Discharger demonstrates the need and appropriateness.

F. Land Discharge Specifications

[NOT APPLICABLE]

G. Reclamation Specifications

[NOT APPLICABLE]

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 Regional 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, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, sediment, settleable material, suspended material, taste and odors, temperature, toxicity, and turbidity.

B. Groundwater

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

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

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

VI. RATIONALE FOR 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 Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP), 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 MRP for this Facility.

A. Influent Monitoring

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

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 is necessary to assess whether there is a reasonable potential for an exceedence of a water quality criteria/objective in the receiving water.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity**. Quarterly acute toxicity testing was required in Order No. R5-2003-0130 to demonstrate compliance with the Basin Plan's narrative toxicity objective. Consistent with requirements for other POTWs in the Central Valley Region, this Order requires monthly grab samples for acute toxicity monitoring. Monthly 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 was required in Order No. R5-2003-0130 to demonstrate compliance with the Basin Plan's narrative toxicity objective. This monitoring requirement has been increased to semi-annual monitoring to determine compliance with the narrative effluent limitations for chronic toxicity and 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 requirements for dissolved oxygen, pH, turbidity, and temperature have been retained from Order No. R5-2003-0130 and increased from monthly to weekly. Daily receiving water monitoring for flow has been added to this Order. Receiving water monitoring for electrical conductivity, ammonia (weekly), hardness (monthly), nitrate, aluminum, total dissolved solids (quarterly), and standard minerals (quarterly) have been added to this Order. Total and dissolved copper and zinc monitoring has been retained, although monitoring will now occur immediately upstream of the discharge (RSW-001) rather than at previous monitoring location (R-001a) located 8 miles upstream at the Caldwell Park boat ramp. Annual monitoring for chlorodibromomethane and dichlorobromomethane has also been included in this Order.

c. Order No. R5-2003-0130 required annual priority pollutant monitoring at a monitoring location (R-001a) located 8 miles upstream at the Caldwell Park boat ramp. This Order requires the annual priority pollutant monitoring to be conducted immediately upstream of the discharge location (RSW-001). The hardness (as $CaCO_3$) of the upstream receiving water shall also be monitored concurrent with the priority pollutants as well as pH to ensure the water quality criteria/objectives are correctly adjusted for the receiving water when determining reasonable potential as specified in section 1.3 of the SIP.

2. Groundwater

This Order requires a groundwater monitoring plan to be developed and implemented in order to assess any groundwater impacts (see Fact Sheet VII.B.2).

E. Other Monitoring Requirements

1. Biosolids Monitoring

Biosolids monitoring is required to ensure compliance with the biosolids disposal requirements (Special Provisions VI.C.5.b). Biosolids disposal requirements are imposed pursuant to 40 CFR Part 503 to protect public health and prevent groundwater degradation.

2. Water Supply Monitoring

In order to evaluate the sources of salinity and metals in the wastewater, this Order establishes monitoring requirements for standard minerals, electrical conductivity, total dissolved solids, copper, and zinc in the Discharger's water supply

3. Reclamation Monitoring

[NOT APPLICABLE]

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 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 Regional 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 for the Sacramento River is adopted. In addition, this Order may be reopened if the Regional 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.** As described further in section IV.C.2.d of this Fact Sheet, site-specific translators were used to calculate water quality criteria for copper and zinc based on upstream receiving water data. For the remaining inorganic constituents, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations for inorganic constituents contained within this Order. In addition, a default WER of 1.0 has been used in this Order for calculating criteria for applicable constituents. An acceptable WER can be used to adjust aquatic life-based water quality standards. If the Discharger submits an approved report 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 constituents.

d. **Salinity Evaluation and Minimization Plan.** This Order requires the Discharger to prepare a Salinity Evaluation and Minimization Plan (SEMP). This reopener provision allows the Central Valley Water Board to reopen this Order for addition and/or modification of effluent limitations and requirements for salinity based on review and implementation of the SEMP.

e. **Total Maximum Daily Loads (TMDL).** This Order may be reopened and modified as necessary to implement any TMDLs that are adopted or modified and are applicable to the receiving water.

f. **Bis (2-Ethylhexyl) Phthalate**. This Order may be reopened and modified as necessary if monitoring results indicate that the discharge has a reasonable potential to cause or contribute to an exceedance of a water quality standard.

g. **New Information.** This Order may be reopened and modified as necessary when new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance, including approved process changes or an updated mixing zone/dilution study. For example, modifications to the Chronic Whole Effluent Toxicity Accelerated Monitoring Trigger, or the effluent limitations for chlorine disinfection byproducts or ammonia, may be appropriate.

2. Special Studies and Additional Monitoring Requirements

a. **Annual Performance Evaluation.** As discussed in the Fact Sheet, dilution and corresponding mixing zones have been granted for copper, zinc, chlorodibromomethane, and dichlorobromomethane. In order to assure, at a minimum, current facility performance is maintained for these constituents, the Discharger is required to conduct an Annual Performance Evaluation on the removal efficiency of these constituents. In conducting this evaluation, Discharger shall determine, using appropriate statistical methods and a 99% confidence level, whether pollutant concentrations are increasing, decreasing, or exhibits no change in concentration. The intent of this requirement is to detect increasing trends in pollutant concentrations during normal WWTP operations and to ensure that the increases are not due to relaxed efforts on the part of the Discharger. Discharger shall submit a work plan outlining the proposed methodology and statistical analysis to the Central Valley Water Board for approval no later than **6 months after date of adoption of this Order**. The Annual Performance Evaluation Report shall be submitted to the Central Valley Water Board **by 1 February, each year starting in 2012**.

b. **Annual Best Practicable Treatment or Control (BPTC) Review.** In order to ensure that BPTC is fully and optimally implemented to ensure that mixing zones are as small as practicable, the Discharger shall conduct an annual review of the treatment and control measures used to implement BPTC for pollutants that receive dilution credits and mixing zones, to determine if any modifications, maintenance, or improvements are required to maintain BPTC performance. Such modifications, maintenance, or improvements may include maintenance of filters, effluent diffuser, or other treatment processes, calibration or fine-tuning of the chlorination/dechlorination system or nitrification and denitrification processes, or modification of the source control program. A report that includes the findings of the review, and any modifications, maintenance, or improvements that are required to fully implement BPTC shall be submitted to the Central Valley Water Board **by 1 February, each year starting in 2012**. The Discharger shall fully, and optimally implement BPTC at all times.

c. **Salinity Evaluation and Minimization Plan (SEMP).** The Discharger shall prepare a Salinity Evaluation and Minimization Plan (SEMP) to identify sources of salinity in effluent from the Facility, and measures available to minimize the concentration and mass loading of salinity. The plan, including a proposed schedule to implement the identified minimization measures, shall be completed

and submitted to the Regional Water Board within **1 year of the effective date of this Order** for approval by the Executive Officer. Following SEMP approval, the Discharger shall implement the applicable minimization measures according to the approved schedule.

d. **Mixing Zone/Dilution Study.** The Discharger conducted a mixing zone study prior to the installation of two new diffusers in 2009. The Central Valley Water Board finds that the Study results are applicable up to effluent flows of 16 mgd. Therefore, this Order requires the Discharger to conduct a mixing zone/dilution study following construction of treatment processes that enable the Discharger to exceed wet weather effluent flows of 16 mgd. A work plan and schedule for conducting the study shall be submitted to the Central Valley Water Board within **60 days after capacity upgrades have been made at the Facility**. The mixing zone/dilution study shall be completed and submitted to the Central Valley Water Board within **one year of approval of the work plan and schedule**.

e. **Annual Inflow and Infiltration Reduction Progress Report.** The Discharger shall submit a report that summarizes the I&I reduction efforts conducted by the Discharger during the prior year and provide an estimate of the I&I reduction achieved during the prior year. The I&I Reduction Progress Report shall be submitted to the Central Valley Water Board **by 1 February, each year.**

f. **Site-Specific Metals Translator Study Update.** The Discharger shall submit to the Central Valley Water Board a site-specific metals translator study update, performed in accordance with Section 1.4.1 of the SIP, by no later than **1 year prior to the expiration date of this Order** if the Discharger wishes to have site-specific metals translators considered during the next permit renewal.

g. **Groundwater Monitoring Plan**. The Discharger shall submit a workplan to implement a groundwater monitoring program sufficient to identify and quantify any groundwater impacts from operation of the Facility ponds. The workplan shall include an implementation schedule that is as short as practicable. The workplan shall include the parameters to be monitored in groundwater, and the frequency of monitoring. The workplan shall be submitted to the Central Valley Water Board for approval within **1 year after the effective date of this Order**. The workplan shall be fully implemented within **3 years after the effective date of this Order**.

h. **Annual Mixing Zones and Dilution Verification Study.** In order to ensure that the mixing zones and dilutions described in this Order continue to be available, the Discharger shall conduct an annual verification study. A work plan for such studies shall be submitted to the Regional Water Board **within 1 year of the effective date of this Order** for approval by the Executive Officer. For example, such studies may include aerial measurements of dye releases to verify expected mixing and dilution conditions, or direct measurement of tracers or pollutant concentrations at the edge of the defined mixing zones. The results of the annual study shall be submitted by 1 February each year, beginning in 2013.

i. **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 III-8.00.) Adequate WET data is not available to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective. Attachment E of this Order requires annual 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 Regional Water Board an Initial Investigative TRE Work Plan 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 and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity is demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of > 1 TUc (where TUc = 100/NOEC) is applied in the provision, because there is currently insufficient data to justify a specific dilution credit for chronic toxicity in this Order. Therefore, a TRE is triggered when the effluent exhibits a pattern of toxicity at 100% effluent. The Discharger may collect additional chronic toxicity data that would enable the Regional Water Board to evaluate the appropriateness of applying specific dilution credits to the chronic toxicity monitoring trigger. The reopener provision in Section C.1.b.ii of the Permit would be exercised to modify the chronic toxicity monitoring trigger, if warranted.

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 a pattern of toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

The provision requires accelerated monitoring consisting of four chronic toxicity tests every 2 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 the testing 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 a pattern 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 Work Plan in accordance with USEPA guidance. Numerous guidance documents are available, as identified below:

- *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants,* (EPA/833B-99/002), August 1999.

- Generalized Methodology for Conducting Industrial TREs*, (EPA/600/2-88/070), April 1989.*

- *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures,* Second Edition, EPA 600/6-91/005F, February 1991.

- *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I*, EPA 600/6-91/005F, May 1992.

- *Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting acute and Chronic Toxicity,* Second Edition, EPA 600/R-92/080, September 1993.

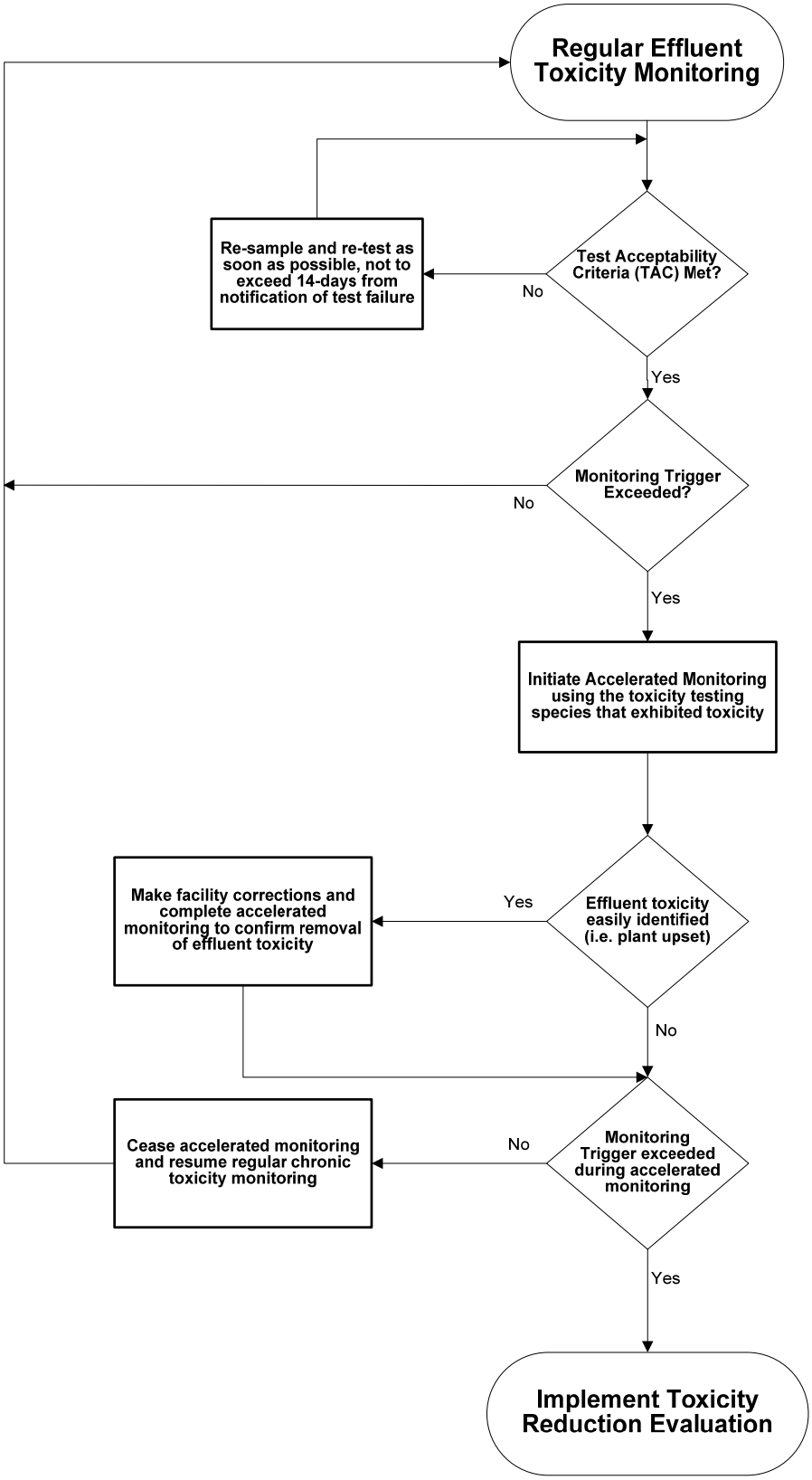
- *Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity*, Second Edition, EPA 600/R-92/081, September 1993.

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

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

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

Figure F-1
WET Accelerated Monitoring Flow Chart



3. Best Management Practices and Pollution Prevention- Not Applicable

4. Construction, Operation, and Maintenance Specifications

a. **Emergency Storage Basin Operating Requirements.** The operation and maintenance specifications for the emergency storage basins are necessary to ensure proper operation of the emergency storage basin and minimize the potential for impacts to groundwater quality.

5. Special Provisions for Municipal Facilities (POTWs Only)

a. **Pretreatment Requirements.**

i. The Federal Clean Water Act, 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 which is an enforceable condition of this Order. If the Discharger fails to perform the pretreatment functions, the Regional Water Board, the State Water Board or USEPA may take enforcement actions against the Discharger as authorized by the CWA.

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

a. **Compliance Schedules.** The Discharger submitted information to justify a compliance schedule for ammonia. The information included all items specified in the Compliance Schedule Policy. This Order establishes a compliance schedule for new, final, WQBELs for ammonia and requires full compliance by **5 years of the effective date of this Order**.

VIII. PUBLIC PARTICIPATION

The California Regional Water Quality Control Board, Central Valley Region (Regional Water Board) is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for the Facility. As a step in the WDR adoption process, the Regional Water Board staff has developed tentative WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Regional 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 publication of a Notice of Public Hearing (Notice) in the Redding Record Searchlight. The Notice was also posted at the Redding City Hall and at the entrance to the Facility.

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 Regional Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the Regional Water Board, written comments should be received at the Regional Water Board offices by 5:00 p.m. on **27 August 2010**.

C. Public Hearing

The Regional 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:

Date:	22/23/24 September 2010
Time:	8:30 am
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 Regional 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 http://www.waterboards.ca.gov/rwqcb5/ 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 Resources Control Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Regional Water Board's action 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 (ROWD), 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 Regional 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 Regional 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 Bryan Smith at (530) 226-3425.

ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS

Table G-1. Summary of Reasonable Potential Analysis for Discharge Point No. 001

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Aluminum	ug/L	39.3	463	87	750	87	N/A	N/A	N/A	200	**Yes**
Ammonia	ug/L	18.9	N/A	2.14	2.14	7.33[4] 2.8[5]			N/A		**Yes**
Antimony	ug/L	0.536	0.041[1]	6	N/A	N/A	14	4300	N/A	6	No
Arsenic	ug/L	2.92	2.09	10	340	150	N/A	N/A	10	10	No
Beryllium	ug/L	<0.02	<0.02[1]	4	N/A	N/A	N/A	N/A	N/A	4	No
Cadmium	ug/L	0.074	0.037	0.25[2] 0.44[3]	1.8[2] 3.1[3]	1.3[2] 1.9[3]	N/A	N/A	0.25[2] 0.44[3]	5	No
Chromium (III)	ug/L	0.44	0.69	106.1[2] 157.4[3]	980[2] 1321[3]	106.1[2] 157.4[3]	N/A	N/A	N/A	N/A	No
Chromium (VI)	ug/L	N/A	N/A	11.2	16	11	N/A	N/A	N/A	N/A	No
Copper	ug/L	12.10	3.65	5.78[2] 8.73[3]	7.6[2] 12.1[3]	5.8[2] 8.7[3]	1300	N/A	7.6[2] 11.7[3]	1000	**Yes**
Lead	ug/L	0.386	0.22	1.1[2] 2.0[3]	29[2] 53[3]	1.1[2] 2.0[3]	N/A	N/A	N/A	15	No
Mercury	ug/L	0.00037	0.00351	0.050	N/A	N/A	0.050	0.051	N/A	2	No
Nickel	ug/L	2.23	1.14	26.1[2] 39.3[3]	240[2] 350[3]	26.1[2] 39.3[3]	610	4600	N/A	100	No
Selenium	ug/L	2.29	<0.60	5.0	20	5	N/A	N/A	N/A	50	No
Silver	ug/L	0.18	<0.02	1.0[2] 2.1[3]	1.0[2] 2.1[3]	N/A	N/A	N/A	10	100	No
Thallium	ug/L	<0.001	<0.004[1]	1.7	N/A	N/A	1.7	6.3	N/A	2.0	No
Zinc	ug/L	60.49	7.78	22.7[2] 34.0[3]	77[2] 115[3]	83.9[2] 126.3[3]	N/A	N/A	22.7[2] 34.0[3]	5000	**Yes**
Cyanide	ug/L	<0.003	<0.003[1]	5.2	22	5.2	700	220,000	N/A	200	No
Chloroform	ug/L	36	<0.14[1]	80	N/A	N/A	N/A	N/A	N/A	80	No
Toluene	ug/L	0.3 J	<0.14[1]	150	N/A	N/A	6,800	200,000	N/A	150	No
Chlorodibromomethane	ug/L	7.3	<0.15[1]	0.41	N/A	N/A	0.41	34	N/A	80	**Yes**
Dichlorobromomethane	ug/L	15	<0.17[1]	0.56	N/A	N/A	0.56	46	N/A	80	**Yes**
Tetrachloroethene	ug/L	0.34	<0.22[1]	0.8	N/A	N/A	0.8	8.85	N/A	5	No
Bis(2-Ethylhexyl)Phthalate	ug/L	4.9	<0.30[1]	1.8	N/A	N/A	1.8	5.9	N/A	4	**No**
Di-n-Butyl Phthalate	ug/L	4.2 J	<0.25[1]	2700	N/A	N/A	2700	12000	N/A	N/A	No

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential

[1] Data collected at Sacramento River at Caldwell Park
[2] Criteria for receiving water (utilizing lowest observed receiving water hardness of 44.2 mg/L as $CaCO_3$).
[3] Criteria for effluent (utilizing lowest observed effluent hardness of 71.6 mg/L as $CaCO_3$).
[4] 4-day
[5] 30-day
General Note: All inorganic concentrations are given as a total recoverable.

MEC = Maximum Effluent Concentration
B = Maximum Receiving Water Concentration or lowest detection level, if non-detect
C = Criterion used for Reasonable Potential Analysis
CMC = Criterion Maximum Concentration (CTR or NTR)
CCC = Criterion Continuous Concentration (CTR or NTR)
Water & Org = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)
Org. Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)
Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective
MCL = Drinking Water Standards Maximum Contaminant Level
NA = Not Available
(1) ND = Non-detect