CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

CENTRAL VALLEY REGION

11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114
Phone (916) 464-3291 • FAX (916) 464-4645
http://www.waterboards.ca.gov/centralvalley

ORDER NO. R5-2008-0057
NPDES NO. CA0085260

WASTE DISCHARGE REQUIREMENTS FOR THE IRONHOUSE SANITARY DISTRICT WASTEWATER TREATMENT PLANT CONTRA COSTA COUNTY

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

Table 1. Discharger Information

Discharger	Ironhouse Sanitary District
Name of Facility	Ironhouse Sanitary District Wastewater Treatment Plant, Oakley, CA
Facility Address	450 Walnut Meadows Drive
	Oakley, CA 94561
	Contra Costa 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 Ironhouse Sanitary District 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	Domestic Wastewater	N38º,02',40.74939" N	121º, 41',40.21180" W	San Joaquin River

Table 3. Administrative Information

This Order was adopted by the Regional Water Quality Control Board on:	**25 April 2008**
This Order shall become effective on:	**14 June 2008**
This Order shall expire on:	**1 April 2013**
The Discharger shall file a Report of Waste Discharge in accordance with title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than:	**180 days prior to the Order expiration date**

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on **25 April 2008**.

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	Ironhouse Sanitary District
Name of Facility	Ironhouse Sanitary District Wastewater Treatment Plant
Facility Address	450 Walnut Meadows Drive
	Oakley, CA 94561
	Contra Costa County
Facility Contact, Title, and Phone	Ms. Jennifer Skrel, District Engineer
Mailing Address	Same
Type of Facility	Publicly Owned Treatment Works
Facility Design Flow	4.3 mgd (ADWF)

II. FINDINGS

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

A. Background.

The Ironhouse Sanitary District (hereinafter Discharger) owns and operates the Ironhouse Sanitary District Wastewater Treatment Plant (WWTP) and provides sewerage service for the communities of Oakley, Bethel Island and unincorporated areas in between, serving a population of approximately 31,200. The current WWTP consists of headworks, aerated ponds, and two effluent storage ponds. The Discharger disposes of disinfected secondary treated wastewater through irrigation of agricultural lands for production of hay and pastureland for grazing cattle. The effluent is dosed with sodium hypochlorite for disinfection prior to discharge to the irrigation fields. The current average dry weather flow (ADWF) is 2.64 mgd and the treatment ADWF capacity is 2.7 mgd.

The Discharger submitted a Report of Waste Discharge, dated 11 June 2007**,** and applied for a National Pollutant Discharge Elimination System (NPDES) permit authorization to discharge up to 4.3 mgd, ADWF, of treated wastewater, from a new WWTP to be constructed, to the San Joaquin River, within the Sacramento-San Joaquin Delta (Delta). The Discharger requested a year-round surface water discharge due to lack of adequate storage and disposal capacity. The application was deemed complete.

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 has designed the new WWTP (hereinafter Facility) to produce tertiary treated effluent with ultraviolet (UV) light disinfection and have a capacity of 4.3 mgd ADWF. The effluent from this Facility will be discharged in accordance with this Order through a new dedicated pipeline that will convey effluent to the San Joaquin River off of Jersey Island. The Discharger would continue to maximize land disposal and water reclamation with tertiary, nitrified and denitrified effluent. The Discharger expects to begin construction August 2008 with funding from the State Revolving Fund (SRF) loan program.

The Discharger proposes to discharge from Discharge 001 (see table on cover page) to the San Joaquin River, within the legal boundaries of the Delta, a water of the United States. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

This Order will only regulate surface water discharges to the San Joaquin River. The regulation of the wastewater treatment plant, storage and land disposal of wastewater effluent is provided by separate Waste Discharge Requirements (WDR) Order No. 5-01-237 or subsequent Waste Discharge Requirements.

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 a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

D. Background and Rationale for Requirements. The 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 F 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.

The Discharger prepared and circulated a Notice of Preparation and a Supplemental EIR describing the proposed treatment plant expansion and discharge to the San Joaquin River. The Supplemental EIR was circulated 18 October 2006 and a public hearing was held to hear comments on 5 December 2006. The Notice of Determination accepting the SEIR was filed with the State Clearinghouse 18 January 2007. CEQA requirements under Water Code section 13389 have been met.

F. Technology-based Effluent Limitations. Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations (CFR)[1] 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 Part 133 and Best Professional Judgment (BPJ) in accordance with Part 125, section 125.3. 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 section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. This Order contains requirements, expressed as a technology equivalence requirement, more stringent than secondary treatment requirements that are necessary to meet applicable water quality standards. The Regional Water Board has considered the factors listed in CWC Section 13241 in establishing these requirements. The rationale for these requirements, which consist of tertiary treatment or equivalent requirements, is discussed in the Fact Sheet.

Section 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) EPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed State criterion or policy interpreting the State's narrative criterion, supplemented with other relevant information, as provided in 40 CFR section 122.44(d)(1)(vi).

H. Water Quality Control Plans. The Regional Water Board adopted a *Water Quality Control Plan, Fourth Edition (Revised August 2006), for the Sacramento and San Joaquin River* (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 San Joaquin River are as follows:

[1] All further statutory references are to title 40 of the Code of Federal Regulations unless otherwise indicated.

Table 5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	**San Joaquin River**	Existing: municipal and domestic supply; agricultural supply, including stock watering; industrial service supply; industrial process supply; navigation; water contact recreation: non-contact water recreation, including aesthetic enjoyment; commercial and sport fishing; aquaculture; warm freshwater habitat; cold freshwater habitat; warm migration of aquatic organisms; cold migration of aquatic organisms; warm spawning, reproduction, and/or early development; and wildlife habitat.

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 Western Delta is listed as a WQLS for Chlorpyrifos, DDT, Diazinon, electrical conductivity, exotic species, group A pesticides, mercury and unknown toxicity in the 303(d) list of impaired water bodies.

The State Water Board adopted a *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California* (Thermal Plan) on 18 May 1972, and amended this plan on 18 September 1975. This plan contains temperature objectives applicable to the Delta. Requirements of this Order implement the Thermal Plan.

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

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 has concluded that where the Regional Water Board's Basin Plan allows for schedules of compliance and the Regional Water Board is newly interpreting a narrative standard, it may include schedules of compliance in the permit to meet effluent limits that implement a narrative standard. See In the Matter of Waste Discharge Requirements for Avon Refinery (State Board Order WQ 2001-06 at pp. 53-55). See also Communities for a Better Environment et al. v. State Water Resources Control Board, 34 Cal.Rptr.3d 396, 410 (2005). The Basin Plan for the Sacramento and San Joaquin Rivers includes a provision that authorizes the use of compliance schedules in NPDES permits for water quality objectives that are adopted after the date of adoption of the Basin Plan, which was 25 September 1995 (See Basin Plan at page IV-16). Consistent with the State Water Board's Order in the CBE matter, the Regional Water Board has the discretion to include compliance schedules in NPDES permits when it is including an effluent limitation that is a "new interpretation" of a narrative water quality objective. This conclusion is also consistent with the United States Environmental Protection Agency policies and administrative decisions. See, e.g., Whole Effluent Toxicity (WET) Control Policy. The Regional Water Board, however, is not required to include a schedule of compliance, 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 Basin Plan, should consider feasibility of achieving compliance, and must impose a schedule that is as short as practicable to achieve compliance with the objectives, criteria, or effluent limit based on the objective or criteria.

For CTR constituents, Section 2.1 of the SIP provides that, based on a Discharger's request and demonstration that it is infeasible for an existing Discharger to achieve immediate compliance with an effluent limitation derived from a CTR criterion, compliance schedules may be allowed in an NPDES permit. Unless an exception has been granted under section 5.3 of the SIP, a compliance schedule may not exceed 5 years from the date that the permit is issued or reissued, nor may it extend beyond 10 years from the effective date of the SIP (or 18 May 2010) to establish and comply with CTR criterion-based effluent limitations. Where a compliance schedule for a final effluent limitation that exceeds 1 year, the Order must include interim numeric limitations for that constituent or parameter. Where allowed by the Basin Plan, compliance schedules and interim effluent limitations or discharge specifications may

also be granted to allow time to implement a new or revised water quality objective. Since this Order is for a new discharger, no compliance schedules have been allowed.

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 C.F.R. § 131.21; 65 Fed. Reg. 24641 (27 April 2000).) Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after 30 May 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 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 and water quality-based effluent limitations for individual pollutants. The technology-based effluent limitations consist of restrictions on BOD_5 and TSS. The water quality-based effluent limitations consist of restrictions on turbidity and pathogens. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. In addition, this Order contains effluent limitations more stringent than the minimum, federal technology-based requirements that are necessary to meet water quality standards. These limitations are more stringent than required by the CWA. Specifically, this Order includes effluent limitations for BOD, TSS, turbidity and pathogens that are more stringent than applicable federal standards, but that are nonetheless necessary to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in the Fact Sheet. In addition, the Regional Water Board has considered the factors in Water Code section 13241 in establishing these requirements.

Water quality-based effluent limitations 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 water quality-based effluent limitations were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR section 131.38. The scientific procedures for calculating the individual water quality-based effluent limitations 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 section 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.

On 5 February 2008, the Discharger submitted economic information indicating that the cost of complying with this Order would be $18.0 million. The Regional Water Board has considered the specific costs identified in the Discharger's submittal. As discussed

in the Fact Sheet, IV. 2. C (3)(q), the individual pollutant restrictions are reasonably necessary to protect beneficial uses identified in the Basin Plan, and the economic information related to costs of compliance are not sufficient, in the Regional Water Board's determination, to justify failing to protect beneficial uses. Where appropriate, the Time Schedule Order provides additional time to achieve the pollutant-specific restriction.

N. Antidegradation Policy. Section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 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 provision of section 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 title 40, Code of Federal Regulations section 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. Since this Order is a new NPDES permit for a new discharge, the anti-backsliding requirements are not applicable.

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

Q. Monitoring and Reporting. Section 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 section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42. 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 – Not Applicable.

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.

IT IS HEREBY ORDERED, that 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.

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 001

1. Final Effluent Limitations – Discharge Point 001

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

a. The Discharger shall maintain compliance with the effluent limitations specified in Table 6:

Table 6. Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
5-day Biochemical Oxygen Demand	mg/L	10	15	20	---	---
	lbs/day[1]	359	537	717	---	---
Total Suspended Solids	mg/L	10	15	20	---	---
	lbs/day[1]	359	537	717	---	---
Settleable solids	ml/L	0.1	--	0.2	---	---
pH	std units	--	--	--	6.5	8.5
Oil and Grease	mg/L	10		15		
Turbidity	NTU	---	---	---	---	10
Total Coliform	MPN/100 mL	---	---	---	---	240
Ammonia as N (total)	mg/L	1.1	---	2.1	---	
	lbs/day[1]	39.4		75.3	---	---
Nitrate + Nitrite as N (total)	mg/L	10	--	--	--	--
Aluminum (Total Recoverable)	µg/L	71	---	143	---	---
Copper, Total	µg/L	8.5		17		
Fluoride	mg/L	19.6	---	---	---	---
Lead, Total	µg/L	3.4		6.9		
Total Residual Chlorine	mg/L	0.01	---	0.02	---	---

[1] Based on a design average dry weather flow of 4.3 mgd.

b. **Percent Removal:** The average monthly percent removal of BOD 5-day 20°C and total suspended solids shall not be less than 85 percent.

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

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

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

e. **Turbidity.** Effluent turbidity shall not exceed:

   i. 2 NTU, as a daily average; and
   ii. 5 NTU, more than 5% of the time within a 24-hour period.

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

i. 2.2 most probable number (MPN) per 100 mL, as a 7-day median; and
ii. 23 MPN/100 mL, more than once in any 30-day period.

g. **Average Dry Weather Discharge Flow.** The Average Dry Weather Discharge Flow shall not exceed 4.3 mgd.

h. **Total Recoverable Iron.** Effluent total recoverable iron concentrations shall not exceed 300 µg/L, as an annual average.

i. **Total Recoverable Manganese.** Effluent total recoverable manganese concentrations shall not exceed 50 µg/L, as an annual average.

j. **Foaming Agents (MBAS).** Effluent MBAS concentrations shall not exceed 340 mg/L, as an annual average.

k. **Salinity**.

i. From 16 August through 31 March, the effluent electrical conductivity shall not exceed 1,505 µmhos/cm, as a monthly average.

ii. From 1 April through 15 August, the Discharger shall maintain compliance with the salinity effluent limitations specified below:

(a) If the 14-day running average electrical conductivity of the San Joaquin River at Jersey Point is less than or equal to the concentrations identified in Table 8 below, the effluent electrical conductivity shall not exceed 1,505 µmhos/cm, as a monthly average.

(b) If the 14-day running average electrical conductivity of the San Joaquin River at Jersey Point is greater than the concentrations identified in Table 8 below, the effluent electrical conductivity shall not exceed the concentrations specified in Table 7, below, for the specific water year type and dates shown.

Table 7. Electrical Conductivity Effluent Limitations Based on Water Year Type[1], as a monthly average (µmhos/cm)

	Water Year Type				
Date	**Wet**	**Above Normal**	**Below Normal**	**Dry**	**Critical**
1 April – 31 May	440	440	440	440	1505
1 June – 14 June	450	450	450	1350	1505
15 June – 19 June	450	450	450	1350	1505
20 June – 15 August	450	450	740	1350	1505

[1] The Water Year Type is based on the State Water Board's Sacramento Valley 40-30-30 Index.

Table 8. Electrical Conductivity Concentrations Demonstrating Assimilative Capacity Basin Plan Water Quality Objectives – San Joaquin River at Jersey Point, Based on Water Year Type (µmhos/cm)

Date	Water Year Type				
	Wet	Above Normal	Below Normal	Dry	Critical
1 April – 31 May	436	436	436	436	N/A[1]
1 June – 14 June	446	446	446	1346	N/A[1]
15 June – 19 June	446	446	446	1346	N/A[1]
20 June – 15 August	446	446	736	1346	N/A[1]

[1] Not Applicable - During a critical water year, the effluent EC shall not exceed 1505 µmhos/cm, regardless of the receiving water EC concentration.

2. Interim Effluent Limitations – Not Applicable

B. Land Discharge Specifications – Not Applicable

Discharges to land are regulated by separate waste discharge requirements.

C. Reclamation Specifications – Not Applicable

Discharges to land are regulated by separate waste discharge requirements.

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 San Joaquin 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**: The dissolved oxygen concentration to be reduced below 5.0 mg/L at any time.

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

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

8. **pH**. The pH to be depressed below 6.5 or raised above 8.5. Furthermore, the pH to be changed by more than 0.5 on an annual average.

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

10. **Radioactivity**:

    a. Radionuclides to be present in concentrations that are harmful to human, plant, animal, or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.
    b. Radionuclides to be present in excess of the maximum contaminant levels specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations.

11. **Salinity**.

    a. To exceed the maximum mean daily chloride concentration of 150 mg/L for at least the number of days shown during the Calendar Year. Must be provided in intervals of not less than two weeks duration (Percentage of Calendar Year shown in parenthesis)

Year Type	No. days each cal. Year < 150 mg/L Cl^-
Wet	240 (66%)
Above Normal	190 (52%)
Below Normal	175 (48%)
Dry	165 (45%)
Critical	155 (42%)

    b. To exceed the maximum 14-day running average of mean daily EC of 440 μmhos/cm from April 1 to May 31 during all Water Year Types, except critical, or to exceed the maximum 14- day running average of mean daily EC in μmhos/cm in the table below:

Water Year Type	450 EC April 1 to	EC from date shown to August 15
Wet	Aug 15	---
Above Normal	Aug 15	---
Below Normal	June 20	740
Dry	June 15	1350
Critical	---	2200

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

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

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

15. **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.

16. **Temperature**. The Thermal Plan is applicable to this discharge. The Thermal Plan requires that the discharge shall not cause the following in the San Joaquin River:

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

    b. A surface water temperature rise greater than $4^{o}F$ above the natural temperature of the receiving water at any time or place.

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

18. **Turbidity**. The turbidity to increase as follows:

    a. More than 1 Nephelometric Turbidity Unit (NTU) where natural turbidity is between 0 and 5 NTUs.
    b. More than 20 percent where natural turbidity is between 5 and 50 NTUs.
    c. More than 10 NTU where natural turbidity is between 50 and 100 NTUs.
    d. More than 10 percent where natural turbidity is greater than 100 NTUs.

B. Groundwater Limitations – Not Applicable

Discharges to land are regulated by separate waste discharge requirements.

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 Code of Federal Regulations (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 five 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 ninety 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 three 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 four 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 five 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 section 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 section 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.

c. **Mercury.** If a TMDL program is adopted for total or methyl mercury, this Order shall be reopened and the total mercury interim mass effluent limitation modified (higher or lower) or an effluent concentration limitation for total and/or methyl mercury imposed.

d. Pollution Prevention. This Order requires the Discharger prepare pollution prevention plans following CWC section 13263.3(d)(3) for salinity and mercury. Based on a review of the pollution prevention plans, this Order may be reopened for addition and/or modification of effluent limitations and requirements for these constituents.

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

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

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

g. **Constituent Study.** If after review of the study results it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective this Order may be reopened and effluent limitations added for the subject constituents. Based on the results of this study and after the plant has operated and evaluated its performance this Order may be reopened to establish a more stringent performance-based limits.

h. **Bis(2-ethylhexyl)phthalate**. This Order requires the Discharger to collect and analyze effluent bis(2-ethylhexyl)phthalate samples using a clean technique. Should the results of that sampling show bis(2-ethylhexyl)phthalate in concentrations that exceed the applicable water quality criteria, this Order may be reopened to establish new effluent limitations.

i. **Diazinon, chloropyrifos, and EC TMDL**. This Order may be reopened, as necessary, and establish new final effluent limitations for diazinon, chloropyrifos, and EC based upon a waste load allocation derived from TMDLs established for the western Delta.

j. **Water Reclamation**. This Order requires the Discharger to continue its ongoing evaluation water reclamation alternative for existing and future users in the Delta Diablo Sanitation District service area. Should the evaluation demonstrate potential reuse, the Order may be reopened to modify the permit as necessary.

k. **Hardness-Dependent Metals Criteria.** The Discharger only supplied one hardness data point of the influent as an estimate of the proposed effluent hardness. In order to utilize the procedures outlined in Section IV.C.2.b. (Attachment F) for calculating water quality-based effluent limitations (WQBELs) for metals with hardness-dependent CTR criteria, it is necessary to have sufficient effluent hardness data to ensure that protective WQBELs are calculated. A conservative measurement of hardness was used in the calculation of the WQBELs for copper and lead (see Section IV.C.2.b.) A study is required to monitor the influent hardness for one-year to provide sufficient data to calculate the WQBELs. This Order may be reopened to modify the WQBELs

for metals with hardness-dependent CTR criteria based on the results of the study.

l. **Mixing Zone Validation Study.** This Order requires the Discharger to conduct a mixing zone validation study to verify the actual dilution at the boundaries of the mixing zones. This Order may be reopened to modify the dilution credits based on the results of the study.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity.** For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct chronic whole effluent toxicity testing, as specified in the Monitoring and Reporting Program (Attachment E, Section V.). Furthermore, this Provision requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exhibits a pattern of toxicity exceeding 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 effluent toxicity, and the procedures for reducing or eliminating effluent toxicity. The TRE Work Plan shall be developed in accordance with EPA guidance[2] 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 demonstrate a pattern of toxicity and require the Discharger to initiate a TRE to address the effluent toxicity.

[2] 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.

iii. **Numeric Monitoring Trigger.** The numeric toxicity monitoring trigger is > **16 TUc** (where TUc = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE when the effluent exhibits a pattern of toxicity.

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 six-week period (i.e. one test every two weeks) using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:

a) If the results of four (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 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, and the source(s) of the toxicity are not easily identified as described in item b of this subsection, 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.

b. **Constituent Study**. Upon initiation of the discharge to the San Joaquin River, the Discharger shall conduct twelve (12) months of effluent and receiving water

monitoring to better characterize the quality of the discharge and receiving water. The study shall include monitoring of all constituents described in Attachment G – Constituents to be Monitored. The Discharger shall conduct twice monthly effluent monitoring at EFF-001 for the first three (3) months, and shall conduct monthly effluent monitoring the remainder of the Study. The monitoring of the receiving water shall be at RSW-001 and RSW-004 and shall be conducted monthly. Dioxin and Furan sampling shall be performed only twice during the year, as described in Attachment G. The Discharger shall comply with the following time schedule in conducting the study:

Task	Compliance Date
Submit Workplan and Time Schedule	**Within 6 months** following Order adoption
Begin Study	Initiation of Discharge to the San Joaquin River
Submit First Quarter Monitoring Results	Within 45-days of the final first quarter sampling event
Complete Study	One Year after initiation of Study
Submit Study Report with Summary of all Monitoring Results	Within 14 months after Initiation of Study

c. **Reclamation Study**. The Discharger shall conduct a wastewater regional reuse study. The study should identify existing and potential industrial recycled water users and include an economic analysis of recycling wastewater to these users. The Discharger shall complete and submit the study no later than **31 December 2008**. The Discharger shall also update its past reuse study to look at reuse opportunities (landscape, golf course irrigation, etc) within the Discharger's service area during the term of this Order. The updated reuse study shall be submitted to the Regional Water Board no later than **180 days prior to the expiration date of this Order**.

d. **Influent Hardness Study**. For one year, the Discharger shall conduct twice monthly hardness monitoring (as $CaCO_3$) of the influent to the existing wastewater treatment plant to better estimate the hardness of the effluent that will be discharged to the San Joaquin River. This Order may be reopened to modify the effluent limitations for metals with hardness-based CTR criteria. **The Discharger shall submit the results of the study within 18 months following adoption of this Order.**

e. **Mixing Zone Validation Study.** After initiation of the discharge to the San Joaquin River, the Discharger shall conduct a mixing zone study to validate the predicted dilution of the water quality modeling. The study shall evaluate the

actual dilution at the boundaries of the acute/chronic mixing zone and the human health mixing zone. The study shall be conducted during low flow conditions in the San Joaquin River. The Discharger shall comply with the following schedule for conducting the study:

Task	Compliance Date
Submit Work Plan and Time Schedule	Within 24 months from adoption of this Order
Conduct study	Within 12 months from initiation of the discharge
Submit Final Report	Within 4 months from completion of the study

3. Best Management Practices and Pollution Prevention

a. **Pollution Prevention Plan for salinity and mercury.** The Discharger shall prepare and implement a pollution prevention plan for salinity and mercury in accordance with CWC section 13263.3(d)(3). The minimum requirements for the pollution prevention plan are outlined in the Fact Sheet, Attachment F, VII (3). A work plan and time schedule for preparation of the pollution prevention plan shall be completed and submitted **within 6 months of the effective date of this Order** for approval by the Executive Officer. The Pollution Prevention Plan shall be completed and submitted to the Regional Water Board **within one(1) year following completion of the Constituent Study**, and progress reports shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

4. Construction, Operation and Maintenance Specifications – Not Applicable

5. Special Provisions for Municipal Facilities (POTWs Only)

a. **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. The Discharger has applied for and has been approved for coverage under State Water Board Order 2006-0003 for operation of its wastewater collection system in October 2006.

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 section 122.41(e)], report any non-compliance [40 CFR section 122.41(l)(6) and (7)], and mitigate any discharge from the collection system in violation of this Order [40 CFR. section 122.41(d)].

6. Other Special Provisions

a. Wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the California Department of Public Health reclamation criteria, California Code of Regulations, Title 22, Division 4, Chapter 3, (Title 22), or equivalent.

b. 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. **Initiation of Surface Water Discharge.** The surface water discharge to the San Joaquin River is contingent upon compliance with the following conditions:

i. **Outfall Diffuser.** The Discharger shall design, acquire necessary permits by appropriate agencies, and construct an outfall and diffuser to the San Joaquin River at Discharge Point EFF-001.

ii. **Facility Upgrades.** The Discharger shall have constructed the necessary Facility upgrades as described in Section VI.C.4.

iii. **Waste Discharge Requirements (WDRs)**. The Discharger shall submit a Report of Waste Discharge for land disposal and reclamation based on the new Facility at least 6 months prior to initiating surface water discharge..

iv. **Request for Surface Water Discharge.** The Discharger shall submit to the Regional Water Board a request for a surface water discharge to the San Joaquin River, which demonstrates compliance with items i. through iii., above. The surface water discharge is prohibited until the Executive Officer verifies compliance with Special Provisions VI.C.7.a., and approves the Discharger's request.

VII. COMPLIANCE DETERMINATION

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

A. **BOD and TSS Effluent Limitations**. Compliance with the final effluent limitations for BOD 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 20°C BOD (5-day) and total suspended solids 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 US EPA'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 Daily Discharge Flow Effluent Limitations**. The Average Daily Discharge Flow represents the average dry weather flow discharged by the Facility (i.e. daily average flow when groundwater is at or near normal and runoff is not occurring). Compliance with the Average Daily Discharge Flow effluent limitations will be determined annually based on the average daily flow over three consecutive dry weather months (e.g., July, August, and September).

D. **Total Coliform Organisms Effluent Limitations (Section IV.A.1.h)**. 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 seven days for which analyses have been completed. If the 7-day median of total coliform organisms exceeds a most probable number (MPN) of 2.2 per 100 milliliters, the Discharger will be considered out of compliance for that parameter for that 1 day only within the reporting period.

E. **Mass Effluent Limitations.** Compliance with the mass effluent limitations will be determined during average dry weather periods only when groundwater is at or near normal and runoff is not occurring.

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.

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 included, but are not limited to, the Sacramento-San Joaquin Delta, as defined in Water Code section 12220, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

Inland Surface Waters 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.

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

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

where:

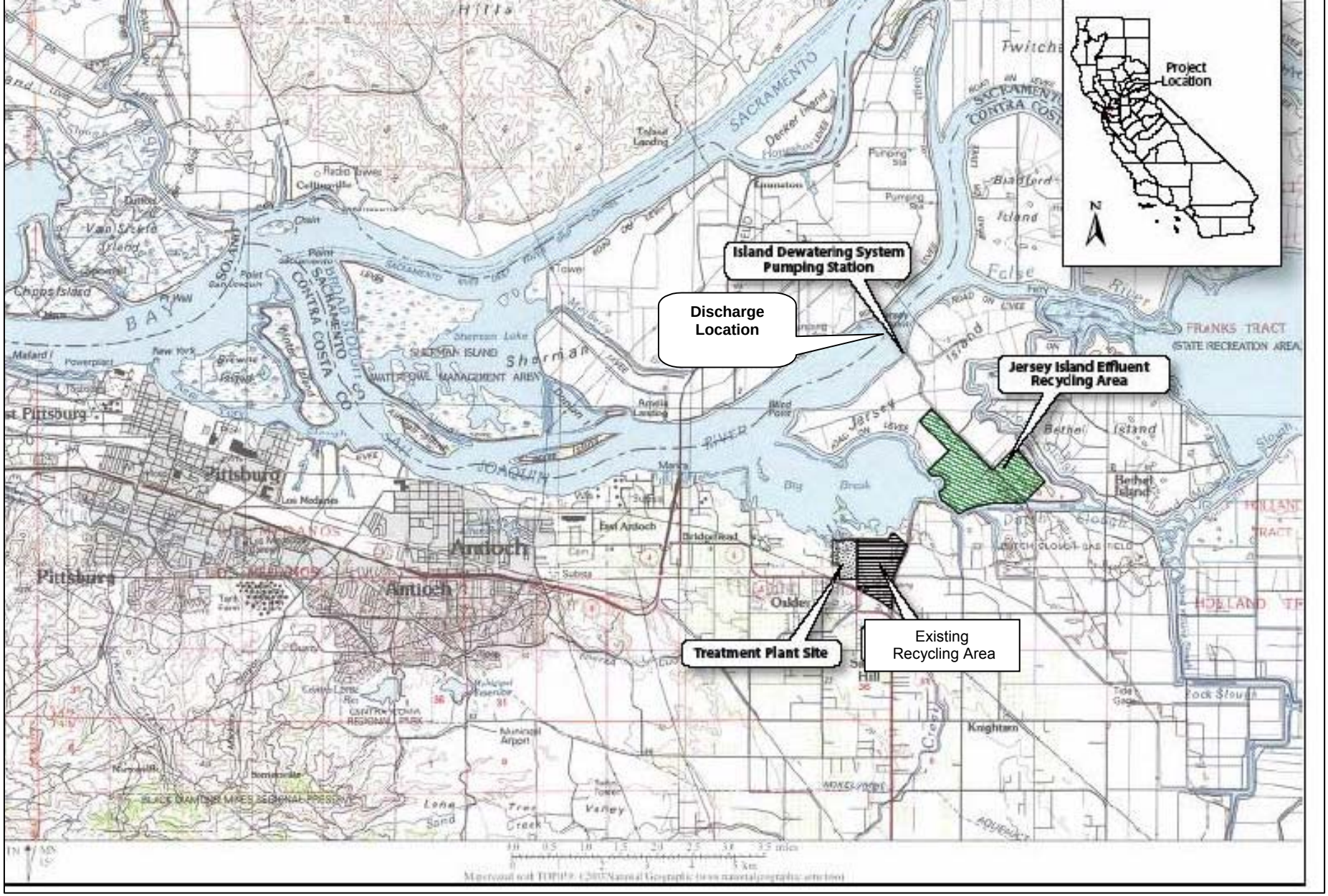
x is the observed value;

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.)


Project Location
N
Island Dewatering System Pumping Station
Discharge Location
Jersey Island Effluent Recycling Area
Treatment Plant Site
Existing Recycling Area
Pittsburg
Antioch
Sherman Island
Bethel Island
Knightsen
Oakley
Jersey Island
False River
Sacramento River
San Joaquin River
Big Break
Frank's Tract
(State Recreation Area)
Holland Tract
Contra Costa Co
Solano Co
Sacramento Co
Chipps Island
Van Sickle Island
Decker Island
Twitchell Island
Bradford Island
Point Sacramento
Point San Joaquin
Radio Towers
Cellinville
Tolland Landing
Emmaton
Pumping Sta
Sherman Lake
Sherman Island Wildlife Management Area
Mallard I
Powerplant
New York
Winter Island
Dutch Slough Gas Field
Tide Gate
Rock Slough
Los Medanos
East Antioch
Bridge Road
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Municipal Airport
Contra Loma Regional Park
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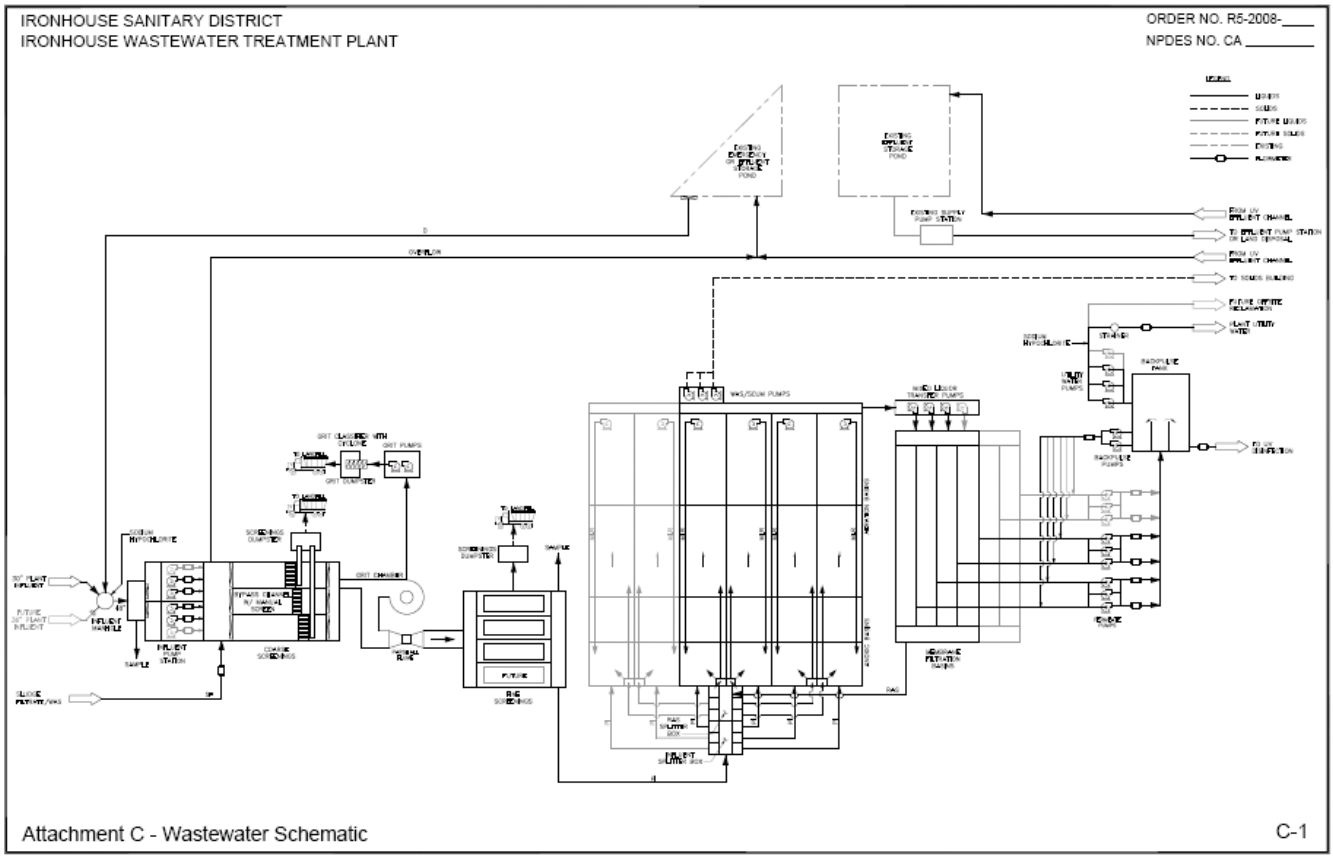
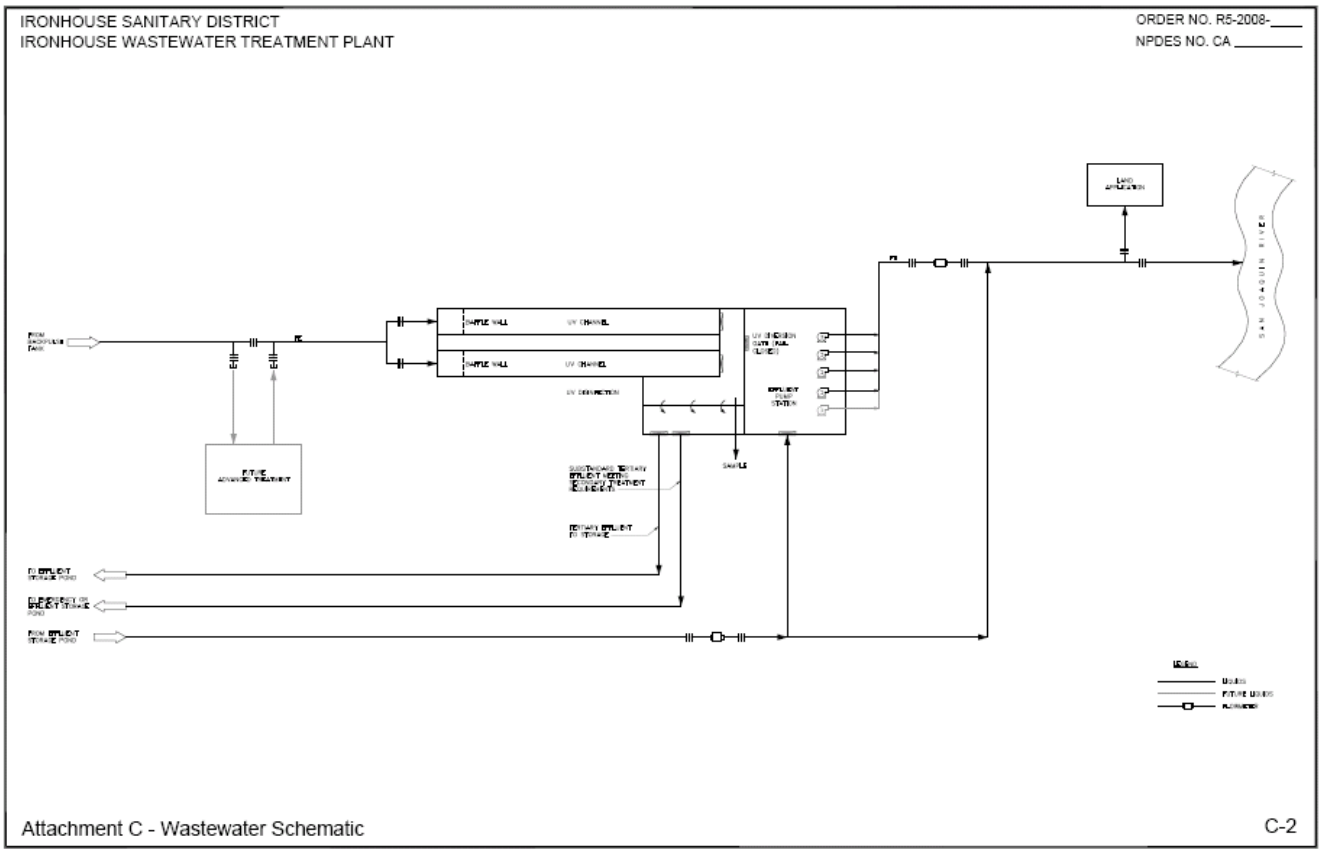
Valley
Aqueduct
Miles
Km


IRONHOUSE SANITARY DISTRICT
IRONHOUSE WASTEWATER TREATMENT PLANT
ORDER NO. R5-2008-____
NPDES NO. CA _____
Attachment C - Wastewater Schematic
C-1


IRONHOUSE SANITARY DISTRICT
IRONHOUSE WASTEWATER TREATMENT PLANT
ORDER NO. R5-2008-____
NPDES NO. CA _____
SAN JOAQUIN RIVER
Attachment C - Wastewater Schematic
C-2

ATTACHMENT D –STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

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

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

B. Need to Halt or Reduce Activity Not a Defense

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

C. Duty to Mitigate

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

D. Proper Operation and Maintenance

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

E. Property Rights

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

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

F. Inspection and Entry

The Discharger shall allow the 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 C.F.R. § 122.41(i); Wat. Code, § 13383):

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

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (40 C.F.R. § 122.41(i)(2));

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (40 C.F.R. § 122.41(i)(3)); and

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 C.F.R. § 122.41(i)(4).)

G. Bypass

1. Definitions

   a. “Bypass” means the intentional diversion of waste streams from any portion of a treatment facility. (40 C.F.R. § 122.41(m)(1)(i).)

   b. “Severe property damage” means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 C.F.R. § 122.41(m)(1)(ii).)

2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 C.F.R. § 122.41(m)(2).)

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

   a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. § 122.41(m)(4)(i)(A));

   b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 C.F.R. § 122.41(m)(4)(i)(B)); and

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

5. Notice

   a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 C.F.R. § 122.41(m)(3)(i).)

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

H. Upset

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

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was

caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 C.F.R. § 122.41(n)(2).).

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

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

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

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

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

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

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

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

B. Duty to Reapply

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

C. Transfers

This Order is not transferable to any person except after notice to the 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 C.F.R. § 122.41(l)(3); § 122.61.)

III. STANDARD PROVISIONS – MONITORING

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

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

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 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 C.F.R. § 122.41(j)(2).)

B. Records of monitoring information shall include:

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

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

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

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

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

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

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

1. The name and address of any permit applicant or Discharger (40 C.F.R. § 122.7(b)(1)); and

2. Permit applications and attachments, permits and effluent data. (40 C.F.R. § 122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the 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 C.F.R. § 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 C.F.R. § 122.41(k).)

2. All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA). (40 C.F.R. § 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 C.F.R. § 122.22(b)(1));

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

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

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the 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 C.F.R. § 122.22(c).)

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

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

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 C.F.R. § 122.22(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 C.F.R. § 122.41(l)(4)(i).)

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in 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 C.F.R. § 122.41(l)(4)(ii).)

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

D. Compliance Schedules

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

E. Twenty-Four Hour Reporting

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

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

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

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

3. The 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 C.F.R. § 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 C.F.R. § 122.41(l)(1)):

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

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

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

G. Anticipated Noncompliance

The Discharger shall give advance notice to the 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 C.F.R. § 122.41(l)(2).)

H. Other Noncompliance

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

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 C.F.R. § 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 C.F.R. § 122.42(b)):

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

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

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

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations section 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 California Department of Public Health (CDPH). In the event a certified laboratory is not available to the Discharger, analyses performed by a non-certified 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 CDPH. 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.

F. Monitoring will begin at initiation of the surface water discharge, however, reporting will begin with adoption of this Order.

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**	Facility influent, prior to any treatment.
001	**EFF-001**	Discharge from the Facility to the San Joaquin River at Jersey Island (38º 02' 40.75" N, Latitude;121º 41' 40.21" W, Longitude)
--	**RSW-001**	San Joaquin River, approximately 7 miles upstream from Discharge Point 001
--	**RSW-002**	San Joaquin River, 500 feet upstream from Discharge Point 001
--	**RSW-003**	San Joaquin River, 500 feet downstream from Discharge Point 001
--	**RSW-004**	San Joaquin River, approximately 3 miles downstream from Discharge Point 001, at the Antioch Bridge.
--	**WS-001**	Municipal Water Supply

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

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

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	mgd	Meter	Continuous	
BOD 5-day 20°C	mg/L	24-hr Composite[1]	5 days/week	
Total Suspended Solids	mg/L	24-hr Composite[1]	5 days/week	
pH	pH units	Grab	5 days/week	
TDS	mg/L	24-hr Composite[1]	1/month	
Electrical Conductivity @ 25°C	µmhos/cm	24-hr Composite[1]	5 days/week	

[1] 24-hour flow proportional composite

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. The Discharger shall monitor Ironhouse Wastewater Treatment Plant effluent at EFF-001 as follows:

Table E-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and (Minimum Level, units), respectively
Flow	mgd	Meter	Continuous	
Total Residual Chlorine[1]	mg/L	Grab	2/day[8]	
Turbidity	NTU	Meter	Continuous	
Temperature	°F	Meter	Continuous	
pH	pH units	Meter	Continuous	
BOD 5-day 20°C	mg/L	24-hr Composite[6]	5 days/week	
Total Suspended Solids	mg/L	24-hr Composite[6]	5 days/week	
Total Coliform Organisms	MPN/100 mL	Grab	5 days/week	
Settleable Solids	mL/L	Grab	1/month	
Dissolved Oxygen	mg/L	Grab	5 days/week	
Electrical Conductivity @ 25°C	µmhos/cm	24-hr Composite[6]	5 days/week[9]	
Ammonia (as N) [2,3]	mg/L	Grab	1/week	
Nitrate (as N)	mg/L	Grab	1/month	
Nitrite (as N)	mg/L	Grab	1/month	
Total Dissolved Solids	mg/L	24-hr Composite[6]	1/month	
Iron	µg/L	24-hr Composite[6]	1/month	
Aluminum	µg/L	24-hr Composite[6]	1/month	
MBAS	µg/L	24-hr Composite[6]	1/month	
Fluoride	mg/L	24-hr Composite[6]	1/month	
Copper	µg/L	24-hr Composite[6]	1/month	
Lead	µg/L	24-hr Composite[6]	1/month	
Manganese	µg/L	24-hr Composite[6]	1/month	
Chloride	mg/L	24-hr Composite[6]	1/month	
Oil and Grease	mg/L	Grab	1/month	
Mercury, total	ng/L	grab	1/month	[7]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and (Minimum Level, units), respectively
Mercury, methyl	ng/L	grab	1/month	[7]
Standard Minerals[5]	mg/L	24-hr Composite[6]	1/year	
Radionuclides		24-hr Composite[6]	1/year	

1 Total chlorine residual must be monitored with a method sensitive to and accurate at the permitted level of 0.01 mg/L.

2 Concurrent with biotoxicity monitoring

3 Report as total.

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. Hardness sampling to place concurrently with priority pollutant monitoring.

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.

6 24-hour flow proportioned composite

7 Unfiltered methyl mercury and total mercury samples shall be taken using clean hands/dirty hands procedures, as described in U.S. EPA method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, for collection of equipment blanks (section 9.4.4.2), and shall be analyzed by U.S. EPA method 1630/1631 (Revision E) with a method detection limit of 0.02 ng/l for methylmercury and 0.2 ng/l for total mercury.

8 Total residual chlorine monitoring only required when chlorine used for maintenance or other purposes at the Facility. Continuous monitoring in lieu of grab sample is also permitted.

9 For each day, the Discharger shall report the 14-day running average EC measured at the D-1641 Salinity Compliance Monitoring Station D-15 –San Joaquin River at Jersey Point, for the previous 14-day period. In addition, the Discharger shall report with each monthly self-monitoring report the Water Year Type as defined by the State Water Board's Sacramento Valley 40-30-30 Index.

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 weekly acute toxicity testing, concurrent with effluent ammonia sampling. If the discharge does not exceed the acute toxicity effluent limitations during the first six (6) months following initiation of discharge, the monitoring frequency may be reduced to monthly.

2. *Sample Types* – For static non-renewal and static renewal testing, the samples shall be flow proportional 24-hour composites and shall be representative of the volume

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

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

4. *Methods* – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition and its subsequent amendments or revisions. 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 monthly three species chronic toxicity testing. If the Discharger is not required to initiate a Toxicity Reduction Evaluation during the first twelve (12) months following initiation of discharge (per Section VI.C.2.a. of the Limitations and Discharge Specifications), the monitoring frequency may be reduced to quarterly.

2. *Sample Types* – Effluent samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location specified in the Monitoring and Reporting Program. The receiving water control shall be a grab sample obtained from the RSW-003U 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 sub-lethal (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 and its subsequent amendments or revisions.

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. The receiving water control shall be used as the diluent (unless the receiving water is toxic). If the receiving water is toxic, laboratory water may be used as the diluent, in which case, the receiving water must still be sampled and tested to provide evidence of toxicity.

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.C.a.iii.)

Table E-4. Chronic Toxicity Testing Dilution Series

Sample	Dilutions (%)					Controls	
	100	25	12.5	6.25	3.125	Receiving Water	Laboratory Water
% Effluent	100	25	12.5	6.25	3.125	0	0
% Receiving Water	0	75	87.5.	93.75	96.875	100	0
% Laboratory Water	0	0	0	0	0	0	100

C. **WET Testing Notification Requirements**. The Discharger shall notify the Regional Water Board within 24-hrs 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 – NOT APPLICABLE

Discharges to land are regulated by separate waste discharge requirements.

VII. RECLAMATION MONITORING REQUIREMENTS– NOT APPLICABLE

Discharges to land are regulated by separate waste discharge requirements.

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER AND GROUNDWATER

A. Monitoring Location RSW-002 and RSW-003

1. The Discharger shall monitor San Joaquin River at RSW-002and RSW-003 as follows:

Table E-5. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency[1]	Required Analytical Test Method
Dissolved Oxygen	mg/L	Grab	1/month[2]	
pH	Standard Units	Grab	1/month[2]	
Temperature	°F (°C)	Grab	1/month[2]	
Electrical Conductivity @ 25°C	µmhos/ cm	Grab	1/month[2]	
Turbidity	NTUs	Grab	1/month[2]	
Total Dissolved Solids	mg/L	Grab	1/month[2]	

[1] In the event that unsafe conditions exist (e.g. small craft advisories in effect) on scheduled sampling days, sampling shall be rescheduled. Should unsafe conditions prohibit the collection of samples at the frequency defined in this table, this shall be noted in the self monitoring report and sampling shall resume at the frequency defined in this table as soon as conditions allow.

[2] The monitoring frequency may be reduced to quarterly after the first year of monitoring following initiation of the discharge to the San Joaquin River.

IX. OTHER MONITORING REQUIREMENTS

A. Biosolids – Not Applicable

Discharges to land are regulated by separate waste discharge requirements.

B. Municipal Water Supply

1. **Monitoring Location WS-001**

   The Discharger shall monitor the Municipal Water Supply at WS-001 as follows. A sampling station shall be established where a representative sample of the municipal water supply can be obtained. Water supplies for less than 250 population can be excluded from the sampling. Municipal water supply samples shall be collected at approximately the same time as effluent samples.

Table E-6. Municipal Water Supply Monitoring Requirements

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

1 If the water supply is from more than one source, the EC shall be reported as a weighted average and include copies of supporting calculations

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.

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.

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

2. **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.

3. 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.

4. **Reporting Protocols.** The Discharger shall report with each sample result the applicable Reporting Level (RL) and the current Method Detection Limit (MDL), as determined by the procedure in 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.

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

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

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

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
   11020 Sun Center Dr., Suite #200
   Rancho Cordova, CA 95670-6114

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

Table E-7. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	Initiation of discharge	All	Submit with monthly SMR
Hourly	Initiation of discharge	Hourly	Submit with monthly SMR
Daily	Initiation of discharge	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	Submit with monthly SMR
Weekly	Initiation of discharge	Sunday through Saturday	Submit with monthly SMR
Monthly	First day of calendar month following initiation of discharge	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
Quarterly	Closest of January 1, April 1, July 1, or October 1 after (or on) first day of calendar month following initiation of discharge	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31	May 1 of same year August 1 of same year November 1 of same year February 1 of next year
Semiannually	Closest of January 1 or July 1 after (or on) first day of calendar month following initiation of discharge	January 1 through June 30 July 1 through December 31	August 1 of same year February 1 of the next year
Annually	January 1 after (or on) first day of calendar month following initiation of discharge	January 1 through December 31	February 1 of the next year

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

Table E-8. Reporting Requirements for Special Provisions Progress Reports

Special Provision	Reporting Requirements
Pollution Prevention Plans for Salinity and Mercury (Special Provisions VI.C.3.a.)	**1 June**, annually**,** after approval of work plan until final compliance

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.

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

5. Annual Pretreatment Reporting Requirements – Not Applicable

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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	
Discharger	Ironhouse Sanitary District
Name of Facility	Ironhouse Sanitary District Wastewater Treatment Plant
Facility Address	450 Walnut Meadows
	Oakley, CA 94561
	Contra Costa County
Facility Contact, Title and Phone	Jennifer Skrel, District Engineer, (925) 625-2279
Authorized Person to Sign and Submit Reports	Jennifer Skrel, District Engineer, (925) 625-2279
Mailing Address	SAME
Billing Address	SAME
Type of Facility	POTW
Major or Minor Facility	Major
Threat to Water Quality	1
Complexity	A
Pretreatment Program	N
Reclamation Requirements	None
Facility Permitted Flow	4.3 mgd ADWF
Facility Design Flow	4.3 mgd ADWF
Watershed	San Joaquin Delta Hydrologic Unit
Receiving Water	San Joaquin River
Receiving Water Type	Sacramento-San Joaquin Delta

A. Ironhouse Sanitary District (hereinafter Discharger) is the owner and operator of the Ironhouse Wastewater Treatment Plant (hereinafter Facility), a Publicly Owned Treatment Works (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 Discharger currently operates the Facility with land disposal only. This permit allows a new discharge to surface water. The Facility is permitted to discharge wastewater to San Joaquin River within the legal boundaries of the Sacramento – San Joaquin Delta, a water of the United States, and is currently regulated by Order 5-01-237, Waste Discharge Requirements, which was adopted on 7 September 2001.

C. The Discharger filed a report of waste discharge and submitted an application for new Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit on 11 June 2007. Based on requests by Regional Water Board staff, supplemental information was submitted to the Regional Water Board on 7, 14, 17, and 18 December 2007and 7 January 2008. A site visit was conducted on 29 November 2007, to observe operations and collect additional data to develop permit limitations and conditions.

II. FACILITY DESCRIPTION

The Discharger owns and operates the Ironhouse Sanitary District Wastewater Treatment Facility (hereafter "Facility") and provides sewerage service for the communities of Oakley, Bethel Island, and the unincorporated areas in between serving a population of approximately 31,200. The Facility consists of headworks, 7.5 acres of aerated ponds and 2 effluent storage ponds with a capacity of approximately 350 acre-feet (114 million gallons). Prior to discharge to irrigation fields, the effluent is dosed with sodium hypochlorite for disinfection. The Discharger disposes of the effluent through irrigation of agricultural lands for production of hay and pastureland for grazing cattle. Approximately 162 acres of land is located adjacent to the Facility on the mainland and an additional 425 acres on Jersey Island, one of eight western Delta islands. The current average dry weather flow (ADWF) is 2.64 mgd and the treatment capacity is 2.7 mgd. Due to a lack of adequate storage, and disposal capacity, the Discharger requested a year-round surface water discharge of tertiary treated effluent with ultraviolet (UV) light disinfection to the San Joaquin River off of Jersey Island. The Discharger would continue to maximize land disposal with tertiary, nitrified and denitrified effluent. The Discharger expects to begin construction of a new wastewater treatment plant in August 2008 with funding from the State Revolving Fund (SRF) loan program.

The Discharger proposes to construct a tertiary treatment facility with an initial capacity of 4.3 mgd (ADWF) and a build-out capacity of 8.6 mgd (ADWF). The facilities would include: coarse screening, grit removal, fine screening, anoxic basins, aeration basins, membrane filtration and UV disinfection. The effluent would be nitrified and denitrified and meet California Code of Regulations Title 22 disinfection requirements for both the surface water discharge and land disposal. The Discharger would continue to maximize land discharge to Jersey Island and water reclamation but discontinue land discharge on the mainland next to the Facility. The Discharger proposes to discharge from

Discharge 001 (see table on cover page) to the San Joaquin River, within the legal boundaries of the Delta, a water of the United States. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

This Order only regulates surface water discharges to the San Joaquin River. Currently, Waste Discharge Requirements (WDR) Order No. 5-01-237 regulates the storage and land disposal of wastewater effluent.

A. Description of Wastewater and Biosolids Treatment or Controls

The treatment system at the facility consists of preliminary treatment of coarse screening, grit removal, and fine screening. Biological treatment is by activated sludge, through anoxic and aeration basins including nitrification and denitrification. Tertiary treatment is by membrane filtration with ultraviolet light disinfection. Sludge is dewatered using a belt filter press. Dried biosolids are hauled to a landfill or land applied. The design average daily flow capacity is 4.3 mgd and current daily flows are 2.6 mgd.

B. Discharge Points and Receiving Waters

1. The Facility is located as shown in Attachment B (Figure B-1), a part of this Order.

2. Treated municipal wastewater is discharged at Discharge Point 001 to San Joaquin River within the Sacramento-San Joaquin Delta, a water of the United States at a point Latitude N38^{o}, 02', 40.74939" N and longitude 120°, 41', 40.21180" W.

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

Effluent limitations and Discharge Specifications contained in the existing WDR Order for land only discharges are not applicable to this Order.

D. Compliance Summary – Not Applicable

E. Planned Changes

The Discharger proposes to construct a tertiary treatment facility with an initial capacity of 4.3 mgd (ADWF) and a build-out capacity of 8.6 mgd (ADWF). The facilities would include: coarse screening, grit removal, fine screening, anoxic basins, aeration basins, membrane filtration and UV disinfection. The effluent would be nitrified and denitrified and meet Title 22 disinfection requirements.

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 August 2006), for the Sacramento and San Joaquin River Basins* (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, 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 San Joaquin River downstream of the discharge are municipal and domestic supply, agricultural irrigation, agricultural stock watering, industrial process water supply, industrial service supply, water contact recreation, other non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, 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, 40 CFR sections 131.2 and 131.10, require that all waters of the State regulated to protect the beneficial uses of public water supply, protection and propagation of fish, shell fish

and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation. Section 131.3(e), 40 CFR, defines existing beneficial uses as those uses actually attained after November 28, 1975, whether or not they are included in the water quality standards. Federal Regulation, 40 CFR section 131.10 requires that uses be obtained by implementing effluent limitations, requires that all downstream uses be protected and states that in no case shall a state adopt waste transport or waste assimilation as a beneficial use for any waters of the United States.

This Order contains Effluent Limitations requiring a tertiary 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, B.2.a.

2. **Thermal Plan.** The State Water Board adopted a *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California* (Thermal Plan) on May 18, 1972, and amended this plan on September 18, 1975. This plan contains temperature objectives for surface waters. The Thermal Plan applies to all discharges to the Sacramento-San Joaquin Delta. The Ironhouse Sanitary District discharge is a "new elevated temperature waste" as described in the Thermal Plan. Thus, the discharge must meet 5.B(1) and includes 5.A. (2) of the Plan and are described as follows:

   a. The maximum temperature shall not exceed the natural receiving water temperature by more than $20^{o}F$.

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

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

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

   The Antidegradation Analysis shows the effluent will not increase the receiving water temperature by more than $1.3^{o}F$ within the zone of initial mixing. And since the diffuser is 150 feet long at the San Joaquin River where it is 3300 feet wide, the discharge will not cause a $1^{o}F$ increase for more than 25% of the river cross-section.

3. **Bay-Delta Plan.** The *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (Bay-Delta Plan) was adopted in December 2006 by the State Water Board superseding the 1995 Bay-Delta Plan. The Bay-Delta Plan identifies the beneficial uses of the estuary and includes objectives for flow, salinity, and endangered species protection.

The Bay-Delta Plan attempts to create a management plan that is acceptable to the stakeholders while at the same time is protective of beneficial uses of the San Joaquin River. The State Water Board adopted Decision 1641 (D-1641) on December 29, 1999. D-1641 implements flow objectives for the Bay-Delta Estuary, approves a petition to change points of diversion of the Central Valley Project and the State Water Project in the Southern Delta, and approves a petition to change places of use and purposes of use of the Central Valley Project. The water quality objectives of the Bay-Delta Plan are implemented as part of this Order.

4. **Antidegradation Policy.** Section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 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 section 131.12 and State Water Board Resolution 68-16.

5. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at title 40, Code of Federal Regulations section 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.

6. **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) (EPCRKA) 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 Regional Water Board has adopted a numeric receiving water objective for arsenic, barium, copper, cyanide, iron, manganese, silver, and zinc that apply to the Sacramento-San Joaquin River Delta. 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 Emergency Planning and Community Right to Know Act (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 monitoring data indicate that there are constituents that may be present in the effluent that have a reasonable potential to cause or contribute to an exceedance of water quality standards and require inclusion of effluent limitations based on federal and state laws and regulations.

7. **Stormwater 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 stormwater program and are obligated to comply with the Federal Regulations.

8. **Delta Beneficial Uses Protection Resolution**. The Central Valley Regional Water Quality Control Board adopted Resolution No. R5-2007-0161 – Water Boards' Actions to Protect Beneficial Uses of the San Francisco Bay/Sacramento-San Joaquin Delta Estuary on 6 December 2007 that describes actions for the Water Boards to take to protect the beneficial uses of the Delta. Specific actions are included in this Order but are not limited to: assessing unknown toxicity in the Delta (weekly toxicity testing for discharge); remedy the impacts of once-through cooling water intake structures on marine and estuarine life (evaluate use of the Dischargers tertiary effluent for cooling water); and require characterization of discharges to and from Delta islands for water quality purposes (assure irrigation of Jersey Island with effluent is not impacting surface water quality through dewatering Jersey Island.

9. **Water Reuse Policy.** The Basin Plan's Water Reuse Policy states, "*The Regional Water Board encourages the reclamation and reuse of wastewater…and requires as part of a Report of Waste Discharge an evaluation of reuse and land disposal options as alternative disposal methods. Reuse options should include consideration of the following, where appropriate, based on the quality of the wastewater and the required quality for the specific reuses: industrial and municipal supply, crop irrigation, landscape irrigation, ground water recharge, and wetland restoration*." The purpose of the Water Reuse Policy is to evaluate alternative methods of disposal to prevent unnecessary discharges to surface water.

   Also, in December 2007, the Governor's Blue Ribbon Task Force developed a durable vision for sustaining management of the Delta with the goal of managing the Delta over the long term to restore and maintain identified functions and values that are determined to be important to the environmental quality of the Delta and the economic and social well being of the people of the state. Included in the twelve (12) recommendations to the Governor, is number 7. "A revitalized Delta ecosystem will require reduced diversions- or changes in patterns and timing of the diversions

upstream, within the Delta, and exported from the Delta – at critical times." Water reuse can contribute to this recommendation.

The Discharger developed a technical memorandum, dated 17 July 2006, that evaluated the feasibility of long-term land disposal of treated effluent. The technical memorandum evaluated the feasibility of 100 percent land disposal using Discharger-owned land, and furthermore, did not find additional land suitable for reclamation in the vicinity. Regional Water Board staff requested additional information to further evaluate the feasibility of a seasonal surface water discharge and requested clarification of the factors related to the suitability of the land on Jersey Island for irrigation. The following is a summary of the findings provided by the Discharger.

Land Only Discharge -The Discharger is currently permitted to discharge up to 3 mgd of disinfected secondary treated wastewater by irrigating pastureland and fodder crops adjacent to the treatment facilities (mainland) and on Jersey Island. . Based on studies, groundwater degradation beneath ISD's wastewater treatment plant and irrigated lands on the mainland property has the potential to occur or may have already occurred due to unlined storage and irrigation with non-nitrified/denitrified secondary effluent. In addition, there are concerns of potential impacts to the beneficial uses of the Contra Costa Canal. Additional disposal land adjacent to the treatment plant for treatment and disposal is limited due to proposed enhancement wetlands. Although the Discharger owns substantial land, over 3400 acres on Jersey Island, all of the island is below the level of the San Joaquin River, requiring continuous dewatering of the island with groundwater discharge to the San Joaquin River. The dewatering system maintains the groundwater level between 2 – 4 feet below ground surface. During winter, the groundwater level can be less than 1 foot below ground surface.

The Discharger completed a water balance for its ultimate capacity of 8.6 mgd that shows substantial storage would be required to keep the discharge on land (3,343 acre-feet). All storage ponds must be built on the mainland, since Jersey Island is below river level. However, much of the Discharger's land available on the mainland is committed to a restoration project, including the creation of 100 acres of tidal marsh and riparian habitat funded by an Integrated Regional Water Management grant by the State Water Board. Based on the Discharger's water balance, it is infeasible to only discharge to land at the ultimate capacity.

The water balance for the Phase I expansion (4.3 mgd) shows land disposal only with no surface water discharge is also infeasible. Storage requirements would be over 1300 acre-feet. The difficultly lies in operating an extensive year-round irrigation program on Jersey Island when groundwater is close to the ground surface. Only parts of Jersey Island could take effluent without ponding during winter months. Due to these concerns, 100% land disposal is not a feasible option for the Phase I expansion.

Seasonal Discharge – The Basin Plan and Bay-Delta Plan have restrictions on EC during April through August for protection of agriculture and fisheries. The EC limit can be as low as 440 µhmos/cm depending on the month and water year. Thus, at the request of Regional Water Board staff, the Discharger submitted several water balances identifying the feasibility of a seasonal discharge to the San Joaquin River. According to water balances provided by the Discharger, effluent storage during April and May appear to be the limiting factor for a seasonal discharge. Based on these water balances, it appears that a seasonal discharge that prohibits surface water discharges during April and May is not feasible.

100% Recycle to Contra Costa Power Plant for Cooling Water –The Mirant Delta Contra Costa Power Plant is within five miles of the Facility and is currently discharging once through cooling water into the San Joaquin River. Its NPDES permit allows discharges up to 450 mgd. The East County Regional Industrial Reuse Planning Grant, funded by the State Board, evaluates six (6) different water recycling alternatives including use of treated wastewater for cooling water. However, the feasilibity study will not conclude until Fall 2008. An advantage to using wastewater for cooling water is less water pumped from the San Joaquin River and less aquatic life entrained/impinged by the pumps. This Order requires the Discharger to submit a study detailing possible wastewater reclamation sites and economic analyses to reclaim its wastewater.

Based on the information submitted by the Discharger, it has adequately demonstrated that it is infeasible to maintain 100 percent land disposal using Discharger-owned land, and the Discharger has adequately demonstrated that additional reclamation land is not currently available in the vicinity. In addition, the Discharger has previously evaluated recycled water use in the 1991 and 2005 Wastewater Facilities Expansion Plan reports. The only potential existing customer or recycled water is the Bethel Island Golf Course, approximately 6 miles from the Facility. Costs to transport reclaimed water to this user are cost prohibitive. Currently the Discharger is exploring opportunities for reuse in the Delta Diablo Sanitation District service area as the proposed facilities will produce Title 22 tertiary effluent suitable for future recycled water reuse. This Order includes a compliance schedule for initiating a surface water discharge that requires the Discharger to complete its on-going reuse study and provide the results of the study to the Regional Water Board. This Order may be reopened based on the results of the reclamation study.

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 July 25, 2003 USEPA gave final approval to California's 2002 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 listing for the San Joaquin River, Western portion of the Sacramento-San Joaquin Delta includes: Chloropyrifos, DDT, Diazinon, Electrical Conductivity, Mercury, Group A pesticides, and Unknown Toxicity .

2. **Total Maximum Daily Loads.** The US EPA requires the Regional Water Board to develop total maximum daily loads (TMDLs) for each 303(d) listed pollutant and water body combination. The Basin Plan amendment for the Control of Diazinon and Chlorpyrifos Runoff into the Sacramento-San Joaquin Delta was adopted by the Central Valley Water Board on 23 June 2006. In order for the Amendment to become final, it must be approved by the State Water Resources Control Board, the Office of Administrative Law, and the U. S. EPA.

   A Basin Plan amendment for mercury is scheduled for adoption in 2008 by the Regional Water Board. A reopener provision is included in this Order to allow the permit to be reopened to implement the TMDL.

E. Other Plans, Polices and Regulations

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

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

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

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

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 Section 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that "*are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality*." Federal Regulations, 40 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 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, page IV-17.00, 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) EPA's published water quality criteria, (2) a proposed state criterion (*i.e*., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (*i.e*., the 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 section 125.3(a)(1) require technology-based effluent limitations for municipal Dischargers to be placed in NPDES permits based on Secondary Treatment Standards or Equivalent to Secondary Treatment Standards.

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

Based on this statutory requirement, USEPA developed secondary treatment regulations, which are specified in 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. Tertiary treatment is necessary to protect the beneficial uses of the receiving stream and the final effluent limitations for BOD_5 and TSS are based on the technical capability of the tertiary process. BOD_5 is a measure of the amount of oxygen used in the biochemical oxidation of organic

matter. The secondary and tertiary 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 tertiary treatment processes results in the ability to achieve lower levels for BOD_5 and TSS than the secondary standards currently prescribed; the 30-day average BOD_5 and TSS limitations have been revised to 10 mg/L, which is technically based on the capability of a tertiary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD_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-3 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 a tertiary (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. **Flow.** The wastewater treatment plant was designed to provide a tertiary level of treatment for up to a design flow of 4.3 mgd (ADWF). Therefore, this Order contains an Average Dry Weather Discharge Flow effluent limit of 4.3 mgd.

c. **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.

Summary of Technology-based Effluent Limitations
Discharge Point 001

Table F-2. Summary of Technology-based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Flow	mgd			4.3[1]		
BOD	mg/L	10	15	20		
	lbs/day	359	538	717		
TSS	mg/L	10	15	20		
	lbs/day	359	538	717		
pH[2]	SU				6.0	9.0

[1] The average dry weather discharge flow shall not exceed 4.3 mgd.
[2] More stringent water quality-based effluent limitations are applicable to the discharge and are included in this Order.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

As specified in section 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.** The San Joaquin River Basin covers over 15,000 square miles, and includes the entire drainage area to the San Joaquin River. Most of the valley floor is agricultural land, with an agricultural history dating to the 1870's. The San Joaquin River originates from the Sierra Nevada Mountain Range and flows through the northern portion of the San Joaquin Valley to its terminus in the Sacramento-San Joaquin Bay estuary. The River extends approximately 134 miles from Friant Dam to Stevenson where flows are intermittent, and from Stevenson to Vernalis, approximately 60 miles, where flows are perennial. Runoff from rain events occurring in the San Joaquin Valley provide short-term increases in River flows. River flow during the summer is primarily composed of dam releases of snow-melt water for agricultural, urban, recreational and wildlife purposes, and agricultural wastewater. At the points of discharge from the Facility, the San Joaquin River is within the boundary of the Sacramento - San Joaquin Delta.

The San Joaquin River in the vicinity of the Facility is strongly influenced by both tidal and river flows. The river flow is westerly during ebb tides and periods of high Delta outflow. During strong flood (incoming) tides, the river flow reverses towards the east. Tides in the Bay Area are classified as mixed semidiurnal, with two flood tides and two ebb tides of unequal range occurring over a 24.8-hour period. Mean tidal range about is 3 feet. Currents in the commercial shipping channel can be as high as 1.1 to 1.5 feet per second (fps).

The magnitude of tidal influence in the area fluctuates with gravitational influences (solar and lunar) and with freshwater outflow from the Delta. Freshwater outflow varies seasonally as well as in extended cycles. Low levels of inflow are considered to be 3.5 to 5 million cubic feet per second (cfs), while higher levels may range from 7.5 to 15 million cfs. Water diversions by the State Water Project (SWP) and the Central Valley Project (CVP) have had increasingly pronounced effects on freshwater outflows in the Delta, especially during years with below average precipitation. Salinity levels in the vicinity of the discharge

increase under such conditions. Saltwater intrusion and influence in the area increases during periods of low freshwater flow. As more water is diverted from the San Joaquin River for human use, the zone of saltwater intrusion extends farther upstream. Prior to 1984, this zone, termed the transition, entrapment, or null zone, was typically located in Suisun Bay during much of the year (October through March). Since 1984, the transition zone has shifted more or less permanently to the channels of the Sacramento and San Joaquin rivers.

b. **Hardness.** While no effluent limitation for hardness is necessary in this Order, hardness is critical to the assessment of the need for, and the development of, effluent limitations for certain metals. The *California Toxics Rule* and the *National Toxics Rule* contain water quality criteria for seven metals that vary as a function of hardness, the lower the hardness the lower the water quality criteria. The hardness-dependent metals include cadmium, copper, chromium III, lead, nickel, silver, and zinc. The general equation describing the CTR criteria is as follows:

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

Where:

WER = water-effect ratio (default of 1.0 used in this Order)
CF = total-to-dissolved conversion factor
m = criterion-specific constant
H = site Hardness
b = criterion-specific constant

The constants “m” and “b” are specific to both the metal under consideration, and the type of criterion (i.e. acute or chronic).

Effluent limitations for the discharge must be set to protect the beneficial uses of the receiving water for all discharge conditions. In the absence of the option of including condition-dependent, “floating” effluent limitations that are reflective of actual conditions at the time of discharge, effluent limitations must be set using a reasonable worst-case condition in order to protect beneficial uses for all discharge conditions. Recent studies indicate that using the receiving water lowest hardness for establishing water quality criteria is not the most protective for the receiving water. The Regional Water Board has evaluated these studies and concurs that for some parameters the beneficial uses of the receiving water are best protected using the lowest hardness value of the effluent, while for some parameters, the use of both the lowest hardness value of the receiving water and the lowest hardness value of the effluent is the most protective, provided sufficient hardness data for the effluent and receiving water are available.

Because of the non-linearity of the criterion equation, the relationship can be either concave downward or concave upward depending on the criterion-specific constants. For those contaminants whereby the regulatory criteria exhibit a concave downward relationship as a function of hardness (e.g. acute and chronic copper, chromium III, nickel, and zinc, and chronic cadmium), use of the lowest recorded effluent hardness for establishment of water quality objectives is fully protective of all beneficial uses regardless of whether the effluent or receiving water hardness is higher.

Since the Discharger has provided only one influent hardness data point, for purposes of establishing water quality-based effluent limitations, a conservative hardness from the major water supplier was used to estimate the lowest effluent hardness. This is a conservative assumption, because the hardness of the water supply typically increases by the time it reaches the wastewater treatment plant, due to consumptive uses. The Diablo Water District supplies approximately 81% of the water in the Discharger's service area. In mid 2006, the Diablo Water District began to supplement Contra Costa Water District water with groundwater supplies, which has caused an increase in the hardness. For purposes of calculating WQBELs for hardness dependent metals, the lowest water supply hardness from January 2007 through August 2007 (124 mg/L as $CaCO_3$) was used to estimate the Discharger's effluent hardness. This Order requires the Discharge to conduct an influent hardness study to better characterize the estimated effluent hardness of the new Facility. This Order may be reopened to modify the effluent limitations for metals with hardness-dependent CTR criteria. A lowest measured receiving water hardness of 36 mg/L (as $CaCO_3$) was used for the lowest receiving water hardness.

c. **Assimilative Capacity/Mixing Zones.** The effluent discharge will be to the San Joaquin River at Jersey Island, which is within the tidal estuary of the Delta. The tidal zone in this area of the San Joaquin River includes flood and ebb tides that move the river 5 miles upstream and downstream, and slack tides occur with no river movement for about 1 hour, twice each day. Multiple dosing of the receiving water with effluent occurs as the tide moves the water column upstream and downstream past the point of discharge. The complex dynamics of the stream flow, the tidal flows, the slack flows and the state and federal pumping operations must be considered in an evaluation of the available dilution for the discharge. The San Joaquin River is approximately 3300 feet wide at the proposed location for the outfall diffuser. The Discharger is proposing to construct a 150-foot outfall diffuser that will be at a depth of at least 20 to 30 feet and extends 550 feet off shore. The average tidal flow is 150,000 cubic feet/second (cfs) and the design capacity of the discharge is 6.5 cfs. Based on these factors, the dilution at the edge of the zone of initial mixing will be 20:1 and the dilution at the edge of the tidal mixing zone will be 1,000:1. The Discharger analyzed mixing zones for application of the acute aquatic life criteria, chronic aquatic life criteria, and long-term human health criteria by simulating the effluent concentration in different mixing zones.

i. **Assimilative Capacity.** The assimilative capacity of the receiving water was determined by evaluating background water quality data for the San Joaquin River in the vicinity of the proposed discharge. This data was collected from several sources. The Discharger sampled the river four times in 2007. The San Francisco Estuary Institute has a Regional Monitoring Program and has collected data since 1993 at sample point, BG30, within five miles of the discharge. Also within five miles of the discharge are the GWF Power Systems Site IV power Plant and the Mirant Delta Contra Costa power plant that discharge cooling water and collect ambient water quality data. Thus, four sources of water quality data were used in determining assimilative capacity in the receiving water. Based on the available data there is no assimilative capacity for copper, lead, manganese, iron, and aluminum. A discussion of the assimilative capacity for electrical conductivity and chloride is provided in Section IV.C.3.s. below.

ii. **Water Quality Modeling.** Jones and Stokes prepared an analysis of the mixing and transport of ISD effluent within the Delta for the October 2006 Supplemental Environmental Impact Report. To evaluate the tidal dilution of the discharge, the Department of Water Resources (DWR)'s Delta Simulation Model II (DSM2) was used with baseline flows for reservoir operations based on CALSIM results for the 2020 Operations Criteria and Plan. The DWR DSM2 model is a one-dimensional mathematical model for dynamic simulation of one-dimensional hydrodynamics (HYDRO), water quality (QUAL) and particle tracking (PTM) that provides a simulation package for analysis of complex hydrodynamic, water quality and ecological conditions in river and estuarine systems. The DSM2 model uses the 1976-1991 period as representative of tidal flows and salinity. The future Delta flow operations used in the DSM2 model are based on the United States Bureau of Reclamation CALSIM model and uses monthly hydrology during 1922 – 1991 to simulate the future Central Valley Project (CVP) and State Water Project (SWP) operations. The 2020 Operations Criteria and Plan of CVP and SWP operations was developed by the Bureau in 2004.

iii. **Acute (1-hour) Aquatic Life Criteria Dilution –** The worst-case condition for evaluating the acute (1-hour) dilution is during slack tide, in which there is no river movement for approximately one hour, twice each day. During this period tidal mixing is assumed to be zero. Therefore, the acute dilution is based solely on the jet dilution from the outfall diffuser. The diffuser will be placed perpendicular to the shoreline, be 150 feet long, and will be placed approximately starting at 400 feet and ending 550 feet offshore. The diffuser will consist of 16 duck-billed flexible ports located between 20 – 30 feet in depth. The ports will be orientated about 30º from the bottom and alternating upstream and downstream. Due to the design of the ports, each port will maintain a jet velocity of 5 feet per second (fps) allowing for turbulent mixing and rapid river water entrainment. Jet dilution occurs until the plume reaches the water surface. At a depth of 20 feet and a jet velocity of 5 fps, the plume would reach the surface approximately 40 feet from the outfall, resulting in a

minimum dilution of 20:1. During slack tide, the jet momentum will carry the mixed effluent plume beyond the initial 40-foot mixing zone, extending to about 150 feet in both directions from the diffuser. Therefore, the acute 1-hour mixing zone is 150 feet wide by 175 long, with a minimum 20:1 dilution at the edge of the mixing zone.

iv. **Chronic (4-day) Aquatic Life Criteria Dilution –** The chronic aquatic life criteria dilution is controlled by the tidal flows in the San Joaquin River. The dilution was estimated using the DSM2 model. The average tidal flow is about 150,000 cfs for about 4 hours during each ebb and flood tide. The average tidal volume passing the diffuser is approximately 50,000 acre-feet, with a tidal excursion of about 5 miles. As the tidal cycle repeats throughout each day, every day, the time-averaged effluent concentration near the diffuser in the receiving water under chronic conditions, at the worst-case scenario, slack tide, the effluent concentration is 3.53 percent. Based on the modeling at 4.3 mgd, the chronic aquatic life criteria mixing zone is 150 feet wide with a minimum dilution of 28:1 at the edge of the mixing zone.

v. **Human Health Criteria Dilution -** The maximum effluent discharge of 8.6 mgd was used for the EIR analysis to determine the fraction of effluent that would reach the Contra Costa Water District's water supply intakes both upstream and downstream of the discharge as well as the City of Antioch's water intake downstream of the discharge. Tidal flows at Jersey point average 150,000 cfs. To provide the worst-case condition, 15 cfs instead of 13 cfs (8.6 mgd) was used in the analysis along with simulating the low monthly net flow of –375 cfs in August 1976. The greatest concentration of effluent at 8.6 mgd is 0.25% at the Antioch water supply intake. Two important changes to conclusions when the discharge is decreased to 4.3 mgd are the mixing zone for slack tide is reduced to 175 feet and far-field effluent concentration is decreased to an average effluent concentration of 0.1%. The long-term human health tidal mixing zone extends 5 miles upstream and downstream of the discharge with a minimum dilution of 1000:1.

The effluent concentrations and mixing zone dimensions for the various water quality criteria are summarized in Table F-3 below:

Table F-3: Dilution and Mixing Zones

Criteria/Beneficial Use	Effluent Contribution to Receiving Water Concentration	Mixing Zone Dimensions	Representative Effluent & Receiving Water Quality
Acute (1-hour) aquatic life criteria (at slack tide)	5.19%[1]	150 ft wide by 175 ft	Maximum Concentration
Chronic (4-day) aquatic life criteria	3.53%[1]	150 ft wide by 175 ft	Maximum Concentration
Long-term human health criteria	0.1%[2]	5 miles upstream and down stream	Mean Concentration

[1] – Maximum effluent contribution
[2] – Average effluent contribution

Additional information on the mixing zones and dilution is available in the Antidegradation Analysis, December 2007 by Robertson-Bryan, Inc. and Appendix B of the 2006 Supplemental EIR.

This Order requires the Discharger to conduct a study after initiation of the discharge to validate the predicted dilution at the boundaries of the mixing zones. This Order may be reopened to modify the dilution credits based on the results of the study.

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 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 for aluminum, ammonia, manganese, chloride, electrical conductivity, total dissolved solids, fluoride, MBAS, iron, nitrate, nitrite, settleable solids, oil and grease, chlorine residual, lead, and copper. Water quality-based effluent limitations (WQBELs) for these constituents are included in this Order. 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.[1] 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. No effluent data is available since the tertiary wastewater treatment plant has not been constructed. The MEC was estimated using the results of one influent sample and an estimated performance removal. The estimated performance removal is based on the Central Valley Clean Water Association survey of eleven advanced wastewater treatment plants and their process efficiencies. The minimum constituent removal performance was used to determine reasonable potential. The WQBELs were calculated in accordance with section 1.4 of the SIP, as described in Attachment F, Section IV.C.4., except the MEC is estimated based on the expected treatment performance. Receiving water data collected by dischargers in the vicinity of the proposed discharge location were used in the RPA.

e. **Aluminum.** USEPA developed National Recommended Ambient Water Quality Criteria for protection of freshwater aquatic life for aluminum. The recommended four-day average (chronic) and one-hour average (acute) criteria for aluminum are 87 µg/L and 750 µg/L, respectively, for waters with a pH of 6.5 to 9.0. USEPA recommends that the ambient criteria are protective of the aquatic beneficial uses of receiving waters in lieu of site-specific criteria. Recent research on the applicability of the USEPA chronic criteria for aluminum in the Central Valley is under review by the staff of the State and Regional Water Boards. The USEPA chronic criteria will be used pending any other decision. The receiving stream has been measured to have a low hardness—typically 42 mg/L as $CaCO_3$. This condition is supportive of the applicability of the ambient water quality criteria for aluminum, according to USEPA's development document.

   The estimated MEC for aluminum is 158 µg/L, based on 3 influent samples collected on August 2004 and August 2007, while the maximum observed upstream receiving water aluminum concentration was 4760 µg/L, based on 75 samples collected between January 2002 and March 2007. Therefore, aluminum in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a level necessary to protect aquatic life resulting in a violation of the Basin Plan's narrative toxicity objective. Since the receiving water exceeds the acute and chronic toxicity criteria, no assimilative capacity for aluminum is available and a dilution credit cannot be allowed. This Order contains final Average Monthly Effluent Limitations (AMEL) and Maximum Daily Effluent Limitations (MDEL) for aluminum of 71 µg/L and 143 µg/L, respectively, based on

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

USEPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life (See Attachment F, Table F-7 for WQBEL calculations).

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.

Based on the sample results in the effluent, the limitations appear to put the Discharger in immediate non-compliance.

f. **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's proposed Facility will use nitrification to remove ammonia from the waste stream. However, inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. Discharges of ammonia would violate the Basin Plan narrative toxicity objective. Applying 40 CFR section122.44(d)(1)(vi)(B), it is appropriate to use USEPA's Ambient National Water Quality Criteria for the Protection of Freshwater Aquatic Life for ammonia, which was developed to be protective of aquatic organisms.

USEPA's *Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life*, for total ammonia, recommends acute (1-hour average; criteria maximum concentration) standards based on pH and chronic (30-day average, criteria continuous concentration) standards based on pH and temperature. It also recommends a maximum four-day average concentration of 2.5 times the criteria continuous concentration. 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 San Joaquin River has a beneficial use of cold freshwater habitat and the presence of salmonids and early fish life stages in the San Joaquin River is well-documented, the recommended criteria for waters where salmonids and early life stages are present were used. USEPA's recommended criteria are show below:

$$CCC_{30-day} = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) \times MIN\left(2.85, 1.45 \cdot 10^{0.028(25-T)}\right), \text{ and}$$

$$CMC = \left(\frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}} \right),$$

where *T* is in degrees Celsius

The maximum permitted effluent pH is 8.5. The Basin Plan objective for pH in the receiving stream is the range of 6.5 to 8.5. No temperature data for effluent is available. Therefore the maximum observed 30-day R-1 temperature was 75.4ºF (24.1 C), for the 30-day period ending August 2007 is used to calculate a CCC of 1.13 mg/L ammonia as N, while the maximum effluent pH limitation (8.5) was used to calculate a CMC of 2.14 mg/L ammonia as N. Water quality-based effluent limitations based on these criteria, with the allowed dilution credits discussed above, are 8.0 mg/L (as N) for the AMEL and 16.0 mg/L (as N) for the MDEL. However, the Discharger's Antidegradation analysis was based on a fully nitrified effluent with no dilution credit applied for establishing effluent limitations. Since the Discharger is constructing treatment facilities that will fully nitrify the wastewater, which removes ammonia, and the Antidegradation analysis did not consider dilution, effluent Limitations for ammonia have been calculated without the benefit of dilution. This Order includes an AMEL and MDEL of 1.1 mg/L and 2.1 mg/L, respectively, to assure the treatment process adequately nitrifies the waste stream to protect the aquatic habitat beneficial uses.

g. **Bis (2-ethylhexyl) phthalate.** Bis (2-ethyl-hexyl) phthalate 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.

   The estimated MEC for bis (2-ethyl-hexyl) phthalate was 16.6 µg/L, based on 1 influent sample collected in August 2004, while the maximum observed upstream receiving water bis(2-ethyl-hexyl) phthalate concentration was 8.0 µg/L, based on 8 samples collected between January 2002 and March 2007. However, recent research indicates sampling and laboratory techniques may result in false positives in detecting bis(2-ethylhexyl) phthalate. Therefore, this Order requires the Discharger to sample for bis(2-ethylhexyl) phthalate using a clean technique. If the results show concentrations exceeding water quality criteria, this Order may be reopened to establish new effluent limitations.

h. **Chloroform.** The Basin Plan contains the *Policy for Application of Water Quality Objectives*, which provides that narrative objectives may be translated using numerical limits published by other agencies and organizations. The California

Environmental Protection Agency (Cal/EPA) Office of Environmental Health Hazard Assessment (OEHHA) has published the Toxicity Criteria Database, which contains cancer potency factors for chemicals, including chloroform, that have been used as a basis for regulatory actions by the boards, departments and offices within Cal/EPA. The OEHHA cancer potency value for oral exposure to chloroform is 0.031 milligrams per kilogram body weight per day (mg/kg-day). By applying standard toxicological assumptions used by OEHHA and USEPA in evaluating health risks via drinking water exposure of 70 kg body weight and two liters per day water consumption, this cancer potency factor is equivalent to a concentration in drinking water of 1.1 µg/L (ppb) at the one-in-a-million cancer risk level. This risk level is consistent with that used by the California Department of Public Health (CDPH) to set *de minimis* risks from involuntary exposure to carcinogens in drinking water in developing MCLs and Action Levels and by OEHHA to set negligible cancer risks in developing Public Health Goals for drinking water. The one-in-a-million cancer risk level is also mandated by USEPA in applying human health protective criteria contained in the NTR and the CTR to priority toxic pollutants in California surface waters.

The observed influent chloroform based on one influent sample collected in August 2004 was 11 µg/L. No treatment performance removal percentage for chloroform was applied to the influent sample because chloroform was not one of the constituents surveyed by the Discharger. Chloroform is a byproduct of chlorination and can be formed during the treatment process if chlorine is used to disinfect the wastewater. Chlorine will not be used for disinfection, but limited quantities may used to backwash filters. Therefore, reasonable potential is difficult to determine with the limited data available. Chloroform will be monitored and evaluated during the first year of operation of the wastewater treatment plant. If the results show concentrations exceeding water quality criteria, this Order may be reopened to establish effluent limitations for chloroform.

i. **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 translate dissolved concentrations to total concentrations. The USEPA default conversion factors for copper in freshwater are 0.96 for both the acute and the chronic criteria. The RPA for copper was performed using the lowest receiving water hardness of 36 mg/L (as $CaCO_3$) and the USEPA recommended dissolved-to-total translator, the applicable chronic criterion (maximum four-day average concentration) is 3.7 µg/L and the applicable acute criterion (maximum one-hour average concentration) is 5.1 µg/L, as total recoverable.

The estimated MEC for total copper was 4.7 µg/L, based on 1 sample collected August 2004, while the maximum observed upstream receiving water total copper concentration was 6.2 µg/L, based on 48 samples collected between March 1993 and March 2007. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria

The procedures outlined in Section IV.C.2.b. of the Attachment F were used to calculate WQBELs for copper. The CTR criteria for copper exhibits a concave downward relationship, therefore, the lowest estimated effluent hardness was used to calculate the WQBELs, as discussed above in Section IV.C.2.b. An AMEL and MDEL for total copper of 8.5 µg/L and 17 µg/L, respectively, are included in this Order based on CTR criteria for the protection of freshwater aquatic life (See Attachment F, Table F-6 for WQBEL calculations). Based on the sample results in the effluent, it appears the Discharger can meet these new limitations.

j. **Electrical Conductivity. (see Subsection u. Salinity)**

k. **Iron.** The Secondary MCL - Consumer Acceptance Limit for iron is 300 µg/L. The estimated MEC for iron was 288 µg/L, based on 1 influent sample collected in August 2004, while the maximum observed upstream receiving water iron concentration was 2800 µg/L, based on 65 samples collected between January 2003 and March 2007. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary MCL for iron. The receiving water has exceeded the Secondary MCL for iron. Therefore, no assimilative capacity is available in the receiving water for iron. An annual average effluent limitation of 300 µg/L for iron is included in this Order based on protection of the Basin Plan's narrative chemical constituents objective.

   Based on the sample results in the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations.

l. **Lead**. The CTR includes hardness-dependent standards for the protection of freshwater aquatic life for lead. The standards for metals are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for lead in freshwater are 1.46203-[0.145712 X ln(hardness)] for both the acute and the chronic criteria. The RPA for lead was performed using the lowest receiving water hardness of 36 mg/L (as $CaCO_3$) and the USEPA recommended dissolved-to-total translator, the applicable chronic criterion (maximum four-day average concentration) is 0.87 µg/L and the applicable acute criterion (maximum one-hour average concentration) is 22 µg/L, as total recoverable.

   The estimated MEC for total lead was 1.4 µg/L, based on 1 influent sample collected August 2004, while the maximum observed upstream receiving water total lead concentration was 1.3 µg/L, based on 48 samples collected between March 1993 and March 2007. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria

for lead. In accordance with 40 CFR 122.44(d), effluent limitations for lead are required.

The procedures outlined in Section IV.C.2.b. of the Attachment F were used to calculate WQBELs for lead. The CTR criteria for lead exhibits a concave upward relationship, therefore, the lowest estimated effluent hardness and the lowest receiving water hardness were used to calculate the WQBELs, as discussed above in Section IV.C.2.b. An AMEL and MDEL for total lead of 3.4 µg/L and 6.9 µg/L, respectively, are included in this Order based on CTR criteria for the protection of freshwater aquatic life (See Attachment F, Table F-6 for WQBEL calculations). Based on the sample results in the effluent, it appears the Discharger can meet these new limitations.

m. **Fluoride**. The primary MCL for fluoride is 2000 µg/L. The agricultural water quality goal, that would apply the narrative chemical constituents objective, is 1000 µg/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 1000 µg/L 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. These crops are either currently grown in the area or may be grown in the future. The estimated MEC for fluoride is 1000 µg/L based on 1 influent sample. This level is at the applicable objectives. The background receiving water maximum fluoride is 72 µg/L in 46 sampling events collected by the Discharger and other agencies from January 2003 through March 2007. These data show that the receiving water has assimilative capacity for fluoride. The human health dilution factor of 1000:1 is not appropriate for fluoride because fluoride is not a carcinogen. Thus a dilution factor of 20:1, based on the 150 foot mixing zone and Best Professional Judgment, the AMEL is 19,560 µg/L or 19.6 mg/L (See Attachment F, Table F-9 for WQBEL calculations). The Discharger may conduct a site-specific study and present additional information and the permit may be reopened. Based on the sample results in the effluent, it appears the Discharger can meet this new limitation. After the plant has operated and evaluated its performance this Order may be reopened to establish a more stringent performance-based limit.

n. **Manganese.** The Secondary MCL - Consumer Acceptance Limit for manganese is 50 µg/L. The estimated MEC for manganese was 73 µg/L, based on 2 influent samples collected between August 2004 and August 2007, while the maximum observed upstream receiving water manganese concentration was 98 µg/L, based on 29 samples collected between February 2000 and March 2007. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary MCL for manganese. The receiving water has exceeded the Secondary MCL for manganese. Therefore, no assimilative capacity is available in the receiving water for manganese. An average annual effluent limitation of 50 µg/L for manganese is included in this

Order based on protection of the Basin Plan's narrative chemical constituents objective.

Based on the sample results in the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations.

o. **Mercury.** The current USEPA Ambient Water Quality Criteria for Protection of Freshwater Aquatic Life, continuous concentration, for mercury is 0.77 µg/L (30-day average, chronic criteria). The CTR contains a human health criterion 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 maximum estimated effluent mercury concentration is 0.007 µg/L. The Western Sacramento-San Joaquin Delta has been listed as an impaired water body pursuant to Section 303(d) of the Clean Water Act because of mercury. The Regional Water Board is nearing completion of a methylmercury TMDL, it is scheduled for adoption in 2008. Mercury bioaccumulates in fish tissue and, therefore, discharge of mercury to the receiving water is likely to contribute to an exceedance of the narrative toxicity objective and impacts on beneficial uses. Because the Western Sacramento-San Joaquin Delta has been listed as an impaired water body for mercury, the discharge must not cause or contribute to increased mercury levels. If a TMDL program is adopted for total or methyl mercury or USEPA develops new water quality standards for total and/or methyl mercury, this Order shall be reopened as necessary.

p. **Methylene blue active substances (MBAS).** The Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of for foaming agents (MBAS) is 0.500 mg/L. The estimated MEC for MBAS was 3.7 mg/L, based on 1 sample collected between August 2004, while the maximum observed upstream receiving water MBAS concentration was 0.016 mg/L, based on 16 samples collected between November 2003 and March 2007. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary MCL for MBAS. A dilution factor of 1000:1 is allowed for this constituent, therefore, an average annual effluent limitation of 340 mg/L for MBAS is included in this Order based on protection of the Basin Plan's narrative chemical constituents objective. After the plant has operated and evaluated its performance this Order may be reopened to establish a more stringent performance-based limit.

q. **Nitrite and 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. The California DPH has adopted Primary MCLs at Title 22 of the California Code of Regulations (CCR), Table 64431-A, for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (measured as nitrogen), respectively. Title 22 CCR, Table 64431-A, also includes a primary MCL of 10 mg/L for the sum of nitrate and nitrite, measured as nitrogen.

USEPA has developed a primary MCL and an MCL goal of 1,000 µg/L for nitrite (as nitrogen). For nitrate, USEPA has developed Drinking Water Standards (10 mg/L as Primary Maximum Contaminant Level) and Ambient Water Quality Criteria for protection of human health (10 mg/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. The conversion of ammonia to nitrites and the conversion of nitrites to nitrates present a reasonable potential for the discharge to cause or contribute to an in-stream excursion above the Primary MCLs for nitrite and nitrate. A human health dilution factor of 1000 is not allowed for nitrate plus nitrite, because the environmental effects of nitrate may occur over short durations. Therefore, a dilution factor of 20 was considered for this constituent and an AMEL of 205 mg/L for nitrate plus nitrite. However, the Dischargers Antidegradation Analysis was based on the USEPA primary MCL of 10 mg/L. Based on the Discharger's Antidegradation analysis and due to the fact that the Facility will include denitrification, an AMEL of 10 mg/L is included in this Order to ensure compliance with Resolution 68-16. This effluent limitation is included in this Order to assure the treatment process adequately denitrifies the waste stream to protect the beneficial use of municipal and domestic supply. After the plant has operated and evaluated its performance this Order may be reopened to establish a more stringent performance-based limit.

r. **Oil and Grease.** Untreated domestic wastewater contains oil and grease. The Basin Plan includes a water quality objective for oil and grease in surface waters, which states: "*Waters shall not contain oils, greases, waxes, or other materials 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*". This Order includes numeric monthly average and daily maximum Effluent Limitations of 10 mg/l and 15 mg/l, respectively, to implement the Basin Plan's narrative objective for oil and grease. These effluent limitations are based on best professional judgment (BPJ) and Regional Water Board staff's experience with wastewater treatment plant capabilities and levels necessary to meet the Basin Plan objective for oil and grease. A daily maximum effluent limitation for oil and grease is included in the Order, in lieu of a weekly average, to ensure that the treatment works operate in accordance with design capabilities. The daily maximum effluent limitation will also ensure that the Discharger requires proper removal and disposal of oil and grease from

commercial food service sources and properly operates and maintains the collection system to minimize plugging from oil and grease. The Discharger can also maintain compliance through educating the public on the impacts of discharging oil and grease into the collection system.

s. **Pathogens**. The beneficial uses of the San Joaquin River in the Sacramento-San Joaquin Delta include municipal and domestic supply, water contact recreation, and agricultural irrigation supply. To protect these beneficial uses, the Regional Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease. The principal infectious agents (pathogens) that may be present in raw sewage may be classified into three broad groups: bacteria, parasites, and viruses. Tertiary treatment, consisting of chemical coagulation, sedimentation, and filtration, has been found to remove approximately 99.5% of viruses. Filtration is an effective means of reducing viruses and parasites from the waste stream. The wastewater must be treated to tertiary standards (filtered), or equivalent, to protect contact recreational, municipal and domestic supply, and food crop irrigation uses.

Typically the Regional Water Board requires Title 22 or equivalent tertiary treatment when there is less than 20:1 dilution, based on recommendations by the CDPH. However, as discussed above in the Fact Sheet at Section IV.C.2.c., the discharge has at least 20:1 dilution at all times. Although there is 20:1 dilution, tertiary level treatment is required based on the following:

a. The Discharger developed its EIR and antidegradation analysis based on a Title 22 or equivalent tertiary treatment facility.

b. There are four water intakes within ten miles of the discharge. Therefore, providing a high level of disinfection is appropriate to protect the MUN beneficial use.

c. This is a new discharge to the Delta. With the significant pelagic organism decline, the fragile nature of the Delta, unknown Delta stressors and recent legal decisions on water supply diversions within the Delta, it is prudent to require a high level of treatment for new discharges.

The CDPH has developed reclamation criteria, CCR, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, schoolyards, and other areas of similar public access, wastewater be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 m*l* as a 7-day median. As coliform organisms are living and mobile, it is impracticable to quantify an exact number of coliform organisms and to establish weekly average limitations. Instead, coliform organisms are measured as a most probable number and regulated based on a 7-day median limitation.

Title 22 also requires that recycled water used as a source of water supply for non-restricted recreational impoundments be disinfected tertiary recycled water

that has been subjected to conventional treatment. A non-restricted recreational impoundment is defined as "*…an impoundment of recycled water, in which no limitations are imposed on body-contact water recreational activities.*" Title 22 is not directly applicable to surface waters; however, the Regional Water Board finds that it is appropriate to apply an equivalent level of treatment to that required by CDPH's reclamation criteria because the receiving water is used for irrigation of agricultural land and for contact recreation purposes. The stringent disinfection criteria of Title 22 are appropriate since the undiluted effluent may be used for the irrigation of food crops and/or for body-contact water recreation. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens. The method of treatment is not prescribed by this Order; however, wastewater must be treated to a level equivalent to that recommended by CDPH.

In addition to coliform testing, a turbidity effluent limitation has been included as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. The tertiary treatment process, or equivalent, is capable of reliably meeting a turbidity limitation of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations. Therefore, to ensure compliance with the CDPH recommended Title 22 disinfection criteria, weekly average effluent limitations are impracticable for turbidity.

This Order contains effluent limitations and a tertiary level of treatment, or equivalent, necessary to protect the beneficial uses of the receiving water. In accordance with CWC section 13241, the Regional Water Board has considered the following:

i. The past, present and probable future beneficial uses of the receiving stream include municipal and domestic supply, agricultural irrigation, agricultural stock watering, industrial process water supply, industrial service supply, body contact water recreation, other non-body contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, wildlife habitat, and navigation.

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

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

iv. The economic impact of requiring an increased level of treatment has been considered. The Discharger has estimated that the increased level of treatment will cost approximately $18.0 million. The loss of beneficial uses within downstream waters, without the tertiary treatment requirement, which includes prohibiting the irrigation of food crops and prohibiting public access for contact recreational purposes, would have a detrimental economic impact. In addition to pathogen removal to protect irrigation and recreation, tertiary treatment may also aid in meeting discharge limitations for other pollutants, such as heavy metals, reducing the need for advanced treatment specific for those pollutants.

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

vi. It is the Regional Water Board's policy, (Basin Plan, page IV-12.00, Policy 2) to encourage the reuse of wastewater. The Regional Water Board requires dischargers to evaluate how reuse or land disposal of wastewater can be optimized. The need to develop and use recycled water is facilitated by providing a tertiary level of wastewater treatment that will allow for a greater variety of uses in accordance with CCR, Title 22.

vii. The Regional Water Board has considered the factors specified in CWC section 13263, including considering the provisions in CWC section 13241, in adopting the disinfection and filtration requirements under Title 22 criteria. The Regional Water Board finds, on balance, that these requirements are necessary to protect the beneficial uses of The San Joaquin River in the Western Sacramento-San Joaquin Delta, including water contact recreation and irrigation uses.

t. **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.*" Effluent Limitations for pH are included in this Order based on the Basin Plan objectives for pH.

u. **Salinity.** The discharge contains total dissolved solids (TDS), chloride, sulfate, and electrical conductivity (EC). 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. The Basin Plan contains a chemical constituent objective that incorporates State MCLs, contains a narrative objective, and contains numeric water quality objectives for EC and Chloride in the vicinity of the discharge.

The Basin Plan contains site-specific water quality objectives for the San Joaquin River in the vicinity of the discharge based on the *2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (Bay-Delta Plan). The Bay-Delta Plan was adopted in May 1995 by the State Water Board and was revised in December 2006. The Bay-Delta Plan identifies the beneficial uses of the estuary and includes objectives for flow, salinity, and endangered species protection. The Bay-Delta Plan is reviewed periodically in compliance with CWC section 13240 and federal CWA section 303(d).

In December 1999 and March 2000, the State Water Board adopted and revised Water Rights Decision 1641 (D-1641) as part of the State Water Board's implementation of the Bay-Delta Plan. Many of the objectives in the Bay-Delta Plan are best implemented by making changes in the flow of water of in the operation of facilities that move water. Accordingly, this decision amends certain water rights by assigning responsibilities to the persons or entities holding those rights to help meet the objectives. Although the Bay-Delta Plan's purpose is for regulating flow for water right holders, the water quality objectives apply to dischargers as well.

The Basin Plan site-specific water quality objectives are described below under sections on Chloride and Electrical Conductivity.

i. **Chloride**. The secondary MCL for chloride is 250 mg/L, as 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.

The Basin Plan contains site-specific water quality objectives for chloride at the Antioch Water Works Intake, based on the 2006 Bay-Delta Plan, described as follows:

The maximum mean daily chloride concentration of 150 mg/L for at least the number of days shown during the Calendar Year. Must be provided in

intervals of not less than two weeks duration (Percentage of Calendar Year shown in parenthesis)

Year Type	No. days each cal. Year < 150 mg/L Cl^-
Wet	240 (66%)
Above Normal	190 (52%)
Below Normal	175 (48%)
Dry	165 (45%)
Critical	155 (42%)

Chloride concentrations in the effluent are estimated to be 160 mg/L based on one sample collected August 2004. The maximum background concentrations in the San Joaquin River was 1200 mg/L, with an average of 171 mg/L, for 75 samples collected by the Discharger and others from January 2003 through March 2007. Based on modeling performed by the Discharger, the maximum incremental increase of chloride caused by the discharge when the receiving water is at 150 mg/L (i.e. the most stringent Basin Plan objective) is estimated to be only 0.022 mg/L. Although this is an insignificant increase, the effluent and receiving water chloride concentrations demonstrate that the effluent had a reasonable potential to cause or contribute to an exceedance of the Basin Plan's site-specific objectives for chloride.

ii. **Electrical Conductivity (EC)**. The secondary MCL for EC is 900 µmhos/cm as a recommended level, 1600 µmhos/cm as an upper level, and 2200 µmhos/cm as a short-term maximum. 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. These crops are either currently grown in the area or may be grown in the future. 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.

As discussed above, there are specific salinity requirements established in the Basin Plan for the San Joaquin River at Jersey Point, based on the 2006 Bay-Delta Plan. The water quality objective is at times 450 µmhos/cm for protection of agricultural use and 440 µmhos/cm for protection of striped bass spawning. The EC limits vary depending on the type of water year and are detailed in Table F-4, below:

Table F-4. Basin Plan Water Quality Objectives for Electrical Conductivity – San Joaquin River at Jersey Point, Based on Water Year Type (maximum 14- day running average of mean daily EC in μmhos/cm)

Date	Water Year Type				
	Wet	Above Normal	Below Normal	Dry	Critical
1 April – 31 May	440	440	440	440	2200
1 June – 14 June	450	450	450	1350	2200
15 June – 19 June	450	450	450	1350	2200
20 June – 15 August	450	450	740	1350	2200

Compliance with the Bay-Delta Plan's EC objectives is met through reservoir operations by the Department of Water Resources and the Bureau of Reclamation. The EC of the San Joaquin River at Jersey Point fluctuates throughout the year, primarily based on the outflow of the river to the San Francisco Bay. As discussed in detail in the Discharger's Antidegradation Analysis report, the San Joaquin River at Jersey Point has generally been in compliance with the objectives. An evaluation of historical compliance from 1984 to 2005 was performed and the results of the evaluation are summarized in the Table F-5 below.

Table F-5: Historical Compliance with Electrical Conductivity Objectives at Jersey Point (Water Years 1984-2005)

Water Year Type	Number of Years of this Type	Number of Years with Exceedances	Year with Exceedances (number of days)	Applicable Objectives[1] (μhmos/cm)
Wet	7	0	N/A	450
Above Normal	4	1	2005 (3)	450
Below Normal	1	1	2004 (12)[2]	450/740
Dry	5	1	1987 (37)	450/1350
Critically Dry	5	0	N/A	2200

Notes:
[1] Objectives apply from April 1 through August 15 as 14-day running daily averages. Objectives change in certain water years partway through June (see Figure 2).
[2] The Jones Tract levee break occurred on June 3, 2004, and was closed on June 30, 2004; the exceedances of criteria, 450 μmhos/cm as 14-day running averages, occurred from June 10–21, 2004.
N/A = not applicable

The expected annual average effluent EC is 1376 μhmos/cm, and at times the receiving water exceeds the Basin Plan's site-specific objectives for EC. Therefore, there is reasonable potential for the discharge to cause or contribute to an exceedance of the objectives. Based on the modeling by the Discharger, the estimated maximum incremental increase in EC that may be caused by the discharge is 3 μhmos/cm, which is offset by a decrease in EC due to the discharge increasing the outflow of the San Joaquin River. The net worst-case increase is estimated to be approximately 2 μhmos/cm.

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

estimated MEC sulfate concentration is 71mg/L based on a sample collect August 2004. Background concentrations in San Joaquin River ranged from 9.3 mg/L to 160 mg/L, with an average of 41 mg/L, for 4 samples collected by the Discharger from January 2003 through March 2007. The effluent does not exceed the secondary MCL recommended level of 250 mg/L. Therefore, the discharge does not a reasonable potential to cause or contribute to an exceedance of the applicable water quality objectives for sulfate.

iv. **Total Dissolved Solids (TDS).** The secondary MCL for TDS is 500 mg/L as a recommended level, 1000 mg/L as an upper level, and 1500 mg/L as a short-term maximum. The recommended agricultural water quality goal for TDS, 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 TDS concentrations without harm, however, as the salinity of the irrigation water increases, more crops are potentially harmed by the TDS, or extra measures must be taken by the farmer to minimize or eliminate any harmful impacts.

Background concentrations in San Joaquin River ranged from 87 mg/L to 2200 mg/L, with an average of 477 mg/L, for 65 samples collected by the Discharger from January 2003 through March 2007. These concentrations exceed the applicable water quality objectives. Therefore, the discharge has a reasonable potential to cause or contribute to an exceedance of the applicable water quality objectives for TDS.

v. **Salinity Effluent Limitations.** As discussed above, the effluent has a reasonable potential to cause or contribute to an in-stream excursion of the applicable water quality objectives for chloride, EC, and TDS. Therefore, water quality-based effluent limitations are required in accordance with federal regulations. The receiving water often has assimilative capacity for salinity and significant dilution is available. During periods when the ambient salinity is adequately below water quality standards (i.e. assimilative capacity exists), an EC effluent limitation of 1505 µhmos/cm is required in this Order, which allows for some dilution. This effluent limitation is based on the EC concentration used in the Discharger's antidegradation analysis. During periods when there is no assimilative capacity, the discharge must meet the Basin Plan's site-specific water quality objectives for the San Joaquin River at Jersey Point at the end-of-pipe, without the benefit of dilution.

Compliance with the effluent limitation for EC will be protective of the chloride, and TDS recommended levels, therefore, no effluent limitations are included for chloride and TDS. Monitoring is required for these constituents to ensure that EC is a satisfactory indicator parameter for salinity.

v. **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 contains average monthly and average daily effluent limitations for settleable solids.

Because the amount of settleable solids is measured in terms of volume per volume without a mass component, it is impracticable to calculate mass limitations for inclusion in this Order. A daily maximum effluent limitation for settleable solids is included in the Order, in lieu of a weekly average, to ensure that the treatment works operate in accordance with design capabilities.

w. **Temperature**. The Thermal Plan requires that, "*The maximum temperature shall not exceed the natural receiving water temperature by more than 20°F.*" Therefore, to ensure compliance with the Thermal Plan an effluent limitation for temperature is included in this Order.

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

4. WQBEL Calculations

a. Effluent limitations for aluminum, ammonia, nitrate, manganese, MBAS, and fluoride were calculated in accordance with section 1.4 of the SIP. The following paragraphs describe the methodology used for calculating effluent limitations.

b. **Effluent Limitation Calculations.** In calculating maximum effluent limitations, the ECA is calculated as follows:

$$ECA_{acute} = CMC + D(CMC - B)$$
$$ECA_{chronic} = CCC + D(CCC - B)$$

For the human health, agriculture, or other long-term criterion/objective, the ECA is calculated as follows:

$$ECA_{HH} = HH + D(HH - B)$$

where:

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

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

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

CMC = criteria maximum concentration (one-hour average)

CCC = criteria continuous concentration (four-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 is used. Additional statistical multipliers were then used to calculate the maximum daily effluent limitation (MDEL) and the average monthly effluent limitation (AMEL).

The AMEL's are set equal to the human health ECAs and a statistical multiplier is used to calculate the MDEL.

LTA_{acute}

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

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

$LTA_{chronic}$

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

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

Water quality-based effluent limitations were calculated for aluminum, ammonia, copper, fluoride, and lead as follows in Tables F-6 through F-9, below.

Table F-6. WQBEL calculations for CTR constituents

Description	Copper		Lead	
Effluent Concentrations				
At least 80% of data ND?	No		No	
Sample Count	1		1	
MEC (µg/l)	4.7		1.4	
Mean (µg/l)	NA		NA	
Std. Deviation (µg/l)	NA		NA	
Coeff of Variation (CV) (µg/l)	0.60		0.60	
Background Concentrations				
Sample Count	1		1	
Max Background (µg/l)	6.2		1.1	
Avg Background (µg/l)	NA		NA	
Criteria	acute	chronic	acute	chronic
CTR Criteria (µg/l, dissolved)	16.5	10.8	69.5	3.18
Translator	0.96	0.96	0.76	0.76
Criteria (µg/l, total recoverable)	17.1	11.2	91.4	4.18
Effluent Limit Calculations				
Dilution Credit[7]	0	0	0	0
ECA[(1)](µg/l)	17.1	11.2	91.4	4.18
σ^2	0.31		0.31	
σ_4^2	0.09		0.09	
ECA Multiplier [(2)]	0.321	0.527	0.321	0.527
Long-Term Average (LTA)	5.5	5.9	29.4	2.2
AMEL Multiplier [(3)(4)]	1.6	6	6	1.55
AMEL	**8.5**	**6**	**8**	**3.4**
MDEL Multiplier [(5)]	3.1	6	8	3.11
MDEL	**17**	**6**	**8**	**6.9**

(1) ECA calculated per Section 1.4.B, Step 2 of SIP. This allows for the consideration of dilution.
(2) Acute and Chronic ECA Multipliers calculated at 99th percentile per Section 1.4.B, Step 3 of SIP.
(3) Assumes sampling frequency n is equal or less than 4.
(4) The probability basis for AMEL is 95th percentile per Section 1.4.B, Step 5 of SIP
(5) The probability basis for MDEL is 99th percentile per Section 1.4.B, Step 5 of SIP
(6) Not applicable as acute criterion LTA is more stringent
(7) No assimilative capacity = no dilution
(8) Not applicable as chronic criterion LTA is more stringent

Table F-7 WQBEL Calculations for Aluminium

	Acute	Chronic
Criteria (µg/L) [1]	750	87
Dilution Credit	No assimilative capacity	No assimilative capacity
ECA	750	87
ECA Multiplier	0.321	0.527
LTA	240.8	45.9
AMEL Multiplier (95th%)	(2)	1.55
AMEL (µg/L)	(2)	**71**
MDEL Multiplier (99th%)	(2)	3.11
MDEL (µg/L)	(2)	**143**

(1) USEPA Ambient Water Quality Criteria
(2) Limitations based on chronic LTA (Chronic LTA < Acute LTA)

Table F-8 WQBEL Calculations for Ammonia

	Acute	Chronic 30-day	Chronic 4-day
pH [1]	8.5	8.1	
Temperature °C [2]	N/A	24.1	
Criteria (mg/L) [3]	2.14	1.13	2.83
Dilution Credit	0	0	0
ECA	2.14	1.13	2.83
ECA Multiplier	0.321	0.780	0.527
LTA [4]	0.69	0.88	1.49
AMEL Multiplier (95th%)	1.55[5]	(5)	(5)
AMEL (mg/L)	**1.1[5]**	(5)	(5)
MDEL Multiplier (99th%)	3.11[5]	(5)	(5)
MDEL (mg/L)	**2.1[5]**	(5)	(5)

(1) Acute design pH = 8.5 (max. allowed effluent pH), Chronic design pH = median receiving stream pH
(2) Temperature = Maximum 30-day average seasonal effluent temperature
(3) USEPA Ambient Water Quality Criteria
(4) 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.
(5) Limitations based on acute LTA (LTA_{acute} < $LTA_{chronic}$< $LTA_{chronic}$ 4-day)

Table F-9 WQBEL Calculations for Fluoride

	Basin Plan
Criteria (mg/L) [1]	1.0
Dilution Credit	20
ECA	19.6
AMEL (mg/L)	19.6

(1) Agricultural Water Quality Goal (Ayers and Westcot)

Summary of Water Quality-based Effluent Limitations
Discharge Point 001

Table F-10. Summary of Water Quality-based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Ammonia	mg/L	1.1		2.1	---	---
	lbs/day	39.4		75.3	---	---
Nitrate + Nitrite	mg/L	10	---	---	---	---
Aluminum	µg/L	71	---	143	---	---
Manganese	µg/L	50[1]	---	---	---	---
MBAS	mg/L	340[1]	---	---	---	---
Iron	µg/L	300[1]				
Copper, Total	µg/L	8.5		17		
Fluoride	mg/L	19.6	---	---	---	---
Lead, Total	µg/L	3.4		6.9		
Settleable solids	ml/L	0.1	--	0.2	---	---
pH	std units	--	--	--	6.5	8.5
Oil and Grease	mg/L	10		15		
Turbidity[2]	NTU	---	5	2	---	10
Total Residual Chlorine	mg/L	0.01	---	0.02	---	---
Total Coliform[3]	MPN/100 mL	---	---	2.2	---	240
Temperature[4]	ºF					
Acute Toxicity[5]	% survival					
Electrical Conductivity	µmhos/cm	1,505[6]				

1 Annual average effluent limitation
2 Effluent turbidity shall not exceed 2 NTU, as a daily average; 5 NTU, more than 5% of the time within a 24-hour period, and 10 NTU at any time.
3 Effluent total coliform organisms shall not exceed 2.2 MPN/100mL as a 7-day median, 23 MPN/100mL more than once in a 30-day period, and 240 MPN/100mL at any time.
4 Effluent temperature shall not exceed the receiving water temperature by more than 20ºF.
5 Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than 70%, minimum for any one bioassay; and 90%, median for any three consecutive bioassays.
6 Effluent limitation for EC dependent on assimilative capacity in San Joaquin River at Jersey Point.

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 bioassays ---------- | 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 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 quarterly chronic WET monitoring for demonstration of compliance with the narrative toxicity objective.

In addition to WET monitoring, Special Provisions VI.C.2.a. 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.

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 were calculated based upon the design average dry weather flow of 4.3 mgd.

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 US EPA 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 ammonia, aluminum, , oil and grease, and total residual chlorine as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Furthermore, for BOD, TSS, pH, coliform, and turbidity, 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 Attachment F, Section IV.C.3., above.

For effluent limitations based on Primary and Secondary MCLs, except nitrate and nitrite, this Order includes annual average effluent limitations. The Primary and Secondary MCLs are drinking water standards contained in Title 22 of the California Code of Regulations. Title 22 requires compliance with these standards on an annual average basis (except for nitrate and nitrite), when sampling at least quarterly. Since it is necessary to determine compliance on an annual average

basis, it is impracticable to calculate average weekly and average monthly effluent limitations.

3. Satisfaction of Anti-Backsliding Requirements.

Since this Order is a new NPDES permit for a new discharge, the anti-backsliding requirements are not applicable.

4. Satisfaction of Antidegradation Policy

The Discharger developed a report titled, *Antidegradation Analysis for the Ironhouse Sanitary District Wastewater Treatment Plant, December 2007*, (Robertson-Bryan Inc.), that provides a complete antidegradation analysis following the guidance provided by State Water Board APU 90-004. Pursuant to the guidelines, the Report evaluated whether changes in water quality resulting from the proposed new discharge to the San Joaquin River at Jersey Point (4.3 mgd tertiary treated wastewater) are consistent with the maximum benefit to the people of the state, will not unreasonably affect beneficial uses, will not cause water quality to be less than water quality objectives, and that the discharge provides protection for existing in-stream uses and water quality necessary to protect those uses. The Regional Water Board concurs with the Antidegradation Analysis.

a. Water quality parameters and beneficial uses which will be affected by this Order and the extent of the impact. This Order does not adversely impact beneficial uses of the receiving water or downstream receiving waters. All beneficial uses will be maintained and protected. This Order provides for an increase in the volume and mass of pollutants discharged directly to the receiving water. Code of Federal Regulations 40 CFR 131.12 defines the following tier designations to describe water quality in the receiving water body.

Tier 1 Designation: *Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. (40 CFR 131.12)*

Tier 2 Designation*: Where the quality of waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control. (40 CFR 131.12)*

The tier designation is assigned on a pollutant-by-pollutant basis. The following is the potential effect on water quality parameters regulated in this Order, and was assessed in the Antidegradation Analysis:

- The water quality of San Joaquin River off Jersey Island, with respect to chemical constituents, pH, DO, and turbidity would be minimally affected by the discharge, and water quality necessary to protect beneficial uses would be maintained. This is also expected to be the case for temperature; however, further assessment of this parameter may be warranted in the future.

- The new discharge would use less than 10% of available assimilative capacity for all constituents assessed. The discharge also would negligibly increase loading of bioaccumulative constituents. No beneficial uses of San Joaquin River are anticipated to be adversely affected by the planned action.

b. Scientific Rationale for Determining Potential Lowering of Water Quality.
The rationale used in the Antidegradation Analysis is based on Code of Federal Regulation, Section 131.12 (40 CFR 131.12), USEPA memorandum Regarding Tier 2 Antidegradation Reviews and Significance Thresholds (USEPA 2005) USEPA Region 9 Guidance on Implementing the Antidegradation Provisions of 40 CFR 131.12 (USEPA 1987), State Water Board Resolution No. 68-16, a State Water Board 1987 policy memorandum to the Regional Water Quality Control Boards, and an Administrative Procedures Update (APU 90-004) issued by the State Water Board to the Regional Water Quality Control Boards.

The scientific rationale used in the Antidegradation Analysis to determine if the Order allows a lowering of water quality is to determine the reduction of assimilative capacity. Assimilative capacity was calculated on a mass-balanced, concentration basis and, for bioaccumulative constituents, calculated on a mass loading basis. This approach is consistent with recent USEPA guidance and addresses a key objective of the Antidegradation Analysis to "[c]ompare receiving water quality to the water quality objectives established to protect designated beneficial uses" (APU 90-004). USEPA has recommended ten (10) percent as a measure of significance for identifying those substantial lowerings of water quality that should receive a full tier 2 antidegradation review. APU 90-004 requires the consideration of "feasible alternative control measures" as part of the procedures for a complete antidegradation analysis.

The Antidegradation Analysis analyzed each pollutant detected in the effluent and receiving water to determine if the proposed discharge of 4.3 mgd authorized by this Order potentially allows significant increase of the amount of pollutants present in the upstream and downstream receiving water influenced by the proposed discharge. Pollutants that significantly increased concentration or mass downstream would have required an alternatives analysis to determine whether implementation of alternatives to the proposed action would be in the best socioeconomic interest of the people of the region, and be to the maximum

benefit of the people of the State. Details on the scientific rationale are discussed in detail in the Antidegradation Analysis. This includes a detailed discussion on calculating acute, chronic, and long-term water quality effects associated with a continuous discharge to a tidal estuary where the jet-diffuser and tidal flows provide the critical mixing and dilution.

The Regional Water Board concurs with this scientific approach.

c. Alternative Control Measures. The Discharger considered several alternatives that would reduce or eliminate the lowering of water quality resulting from the proposed 4.3 mgd discharge. A number of effluent disposal alternatives were assessed to determine if any alternative would substantially reduce or eliminate the lowering of water quality as a result of the proposed 4.3 mgd discharge. These plant expansion alternatives are summarized below:

1. Different levels of treatment to address constituent-specific issues (i.e., extended air oxidation ditch with deep-bed sand filtration, MBR with microfiltration, chlorination, and UV disinfection);

2. Zero discharge (100%) recycling of effluent;

3. Alternative disposal options (percolation ponds, offsite reclamation, wetland construction);

4. Winter-only discharge;

5. Connect to, and expansion of, another regional wastewater treatment plant (conveyance of raw sewage to the Delta Diablo Sanitation District Wastewater Treatment Plant);

6. Combined discharge of treated effluent with the City of Brentwood; and

7. Alternative discharge locations (New York Slough and Sacramento River off Sherman Island).

None of the alternatives evaluated would substantially reduce or eliminate significant water quality impacts of the proposed action, because the proposed action would not significantly degrade water quality. Some of the alternatives may result in water quality effects elsewhere, or other environmental impacts, that are worse than those identified for the proposed action.

d. Socioeconomic Evaluation. The objective of the socioeconomic analysis was to determine if the lowering of San Joaquin River water quality off Jersey Island is in the maximum interest of the people of the state. The socioeconomic evaluation considered the social benefits and costs based on the ability to accommodate socioeconomic development in the Contra Costa County General Plan and the City of Oakley General Plan.

Given the current infrastructure, future development in the City of Oakley and surrounding unincorporated Contra Costa County, would rely on the Discharger and its Facility for wastewater collection, treatment, and recycled water services. The plant expansion and new 4.3 mgd surface water discharge would accommodate planned and approved growth in the City of Oakley and surrounding areas. Should the incremental changes in San Joaquin water quality characterized herein be disallowed, such action would: (1) force future developments in the Discharger's service area to find alternative methods for disposing of wastewater; (2) require adding a reverse-osmosis treatment processes to a significant portion of flow, and possibly other plant upgrades, to eliminate the small water quality changes; or (3) prohibit planned and approved development within and adjacent to the Discharger's service area. On balance, allowing the minor degradation of water quality is in the best interest of the people of the area and the state, compared to these other options; and is necessary to accommodate important economic or social development in the area.

e. Justification for Allowing Degradation. Potential degradation identified in the Antidegradation Analysis and due to this Order is justified by the following considerations:

1. Implementation of alternatives does not provide important socioeconomic benefit to the people of the region, nor do they provide maximum benefit to the people of the State. The alternatives to the proposed project would inhibit socioeconomic growth making it economically infeasible for any new development to occur.

2. The Discharger's planned wastewater treatment facility will produce Title 22 tertiary treated effluent that will result in minimal water quality degradation. The Discharger's planned wastewater treatment process will meet or exceed the highest statutory and regulatory requirements which meets or exceeds best practical, treatment and control (BPTC);

3. The Order is fully protective of the beneficial uses of the San Joaquin River off Jersey Island. The anticipated water quality changes in the San Joaquin River will not reduce or impair its designated beneficial uses and is consistent with State and federal antidegradation policies;

4. No feasible alternatives currently exist to reduce the impacts; and

5. The Discharger has fully satisfied the requirements of the intergovernmental coordination and public participation provisions of the State's continuing planning process concurrent with the public participation period of this Order.

Summary of Final Effluent Limitations
Discharge Point 001

Table F-10. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
BOD	mg/L	10	15	20		
	lbs/day[7]	359	537	717		
TSS	mg/L	10	15	20		
	lbs/day[7]	359	537	717		
Flow	mgd	4.3				
Ammonia	mg/L	1.1		2.1	---	---
	lbs/day	39.4		75.3	---	---
Nitrate + Nitrite	mg/L	10	---	---	---	---
Aluminum	µg/L	71	---	143	---	---
Manganese	µg/L	50[1]	---	---	---	---
MBAS	mg/L	340[1]	---	---	---	---
Iron	µg/L	300[1]				
Copper, Total	µg/L	8.5		17		
Fluoride	mg/L	19.6	---	---	---	---
Lead, Total	µg/L	3.4		6.9		
Settleable solids	ml/L	0.1	--	0.2	---	---
pH	std units	--	--	--	6.5	8.5
Oil and Grease	mg/L	10		15		
Turbidity[2]	NTU	---	5	2	---	10
Total Residual Chlorine	mg/L	0.01	---	0.02	---	---
Total Coliform[3]	MPN/100 mL	---	---	2.2	---	240
Temperature[4]	ºF					
Acute Toxicity[5]	% survival					
Electrical Conductivity	µmhos/cm	1,505[6]				

1 Annual average effluent limitation
2 Effluent turbidity shall not exceed 2 NTU, as a daily average; 5 NTU, more than 5% of the time within a 24-hour period, and 10 NTU at any time.
3 Effluent total coliform organisms shall not exceed 2.2 MPN/100mL as a 7-day median, 23 MPN/100mL more than once in a 30-day period, and 240 MPN/100mL at any time.
4 Effluent temperature shall not exceed the receiving water temperature by more than 20ºF.
5 Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than 70%, minimum for any one bioassay; and 90%, median for any three consecutive bioassays.
6 Effluent limitation for EC dependent on assimilative capacity in San Joaquin River at Jersey Point.
7 Based upon a design treatment capacity of 4.3 mgd.

E. Interim Effluent Limitations – Not Applicable

F. Land Discharge Specifications – Not Applicable

1. The Land Discharge Specifications are contained in separate Wastewater Discharge Requirements

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 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 biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, turbidity, and electrical conductivity.

   Numeric Basin Plan objectives for bacteria, dissolved oxygen, pH, temperature, and turbidity are applicable to this discharge and have been incorporated as Receiving Surface Water Limitations. Rational for these numeric receiving surface water

limitations are as follows:

a. ***Ammonia.** The Basin Plan states that, "[w]*aters shall not contain un-ionized ammonia in amounts which adversely affect beneficial uses. In no case shall the discharge of wastes cause concentrations of un-ionized ammonia (NH_3) to exceed 0.025 mg/l (as N) in receiving waters.*"

b. ***Bacteria.** The Basin Plan includes a water quality objective that "*[I]n water designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml*." Numeric Receiving Water Limitations for bacteria are included in this Order and are based on the Basin Plan objective.

c. ***Biostimulatory Substances**. The Basin Plan includes a water quality objective that "*[W]ater shall not contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses."* Receiving Water Limitations for biostimulatory substances are included in this Order and are based on the Basin Plan objective.

d. ***Color**. The Basin Plan includes a water quality objective that "*[W]ater shall be free of discoloration that causes nuisance or adversely affects beneficial uses."* Receiving Water Limitations for color are included in this Order and are based on the Basin Plan objective.

e. ***Chemical Constituents**. The Basin Plan includes a water quality objective that *"[W]aters shall not contain chemical constituents in concentrations that adversely affect beneficial uses."* Receiving Water Limitations for chemical constituents are included in this Order and are based on the Basin Plan objective.

f. ***Dissolved Oxygen.** The Basin Plan includes a water quality objective that "*[W]ithin the legal boundaries of the Delta, the dissolved oxygen concentrations shall not be reduced below: 7.0 mg/L in the Sacramento River (below the I Street Bridge) and in all Delta waters west of the Antioch Bridge; 6.0 mg/L in the San Joaquin River (between Turner Cut and Stockton, 1 September through 30 November); and 5.0 mg/L in all other Delta waters except those bodies of water which are constructed for special purposes and from which fish have been excluded or where the fishery is not important as a beneficial use*." Numeric Receiving Water Limitations for dissolved oxygen are included in this Order and are based on the Basin Plan objective.

g. ***Floating Material**. The Basin Plan includes a water quality objective that *"[W]ater shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses."* Receiving Water Limitations for floating material are included in this Order and are based on the Basin Plan objective.

h. ***Oil and Grease**. The Basin Plan includes a water quality objective that *"[W]aters shall not contain oils, greases, waxes, or other materials 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."* Receiving Water Limitations for oil and grease are included in this Order and are based on the Basin Plan objective.

i. ***pH.** The Basin Plan includes water quality objective that *"[T]he 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*" This Order includes receiving water limitations for both pH range and pH change.

The Basin Plan allows an appropriate averaging period for pH change in the receiving stream. Since there is no technical information available that indicates that aquatic organisms are adversely affected by shifts in pH within the 6.5 to 8.5 range, an averaging period is considered appropriate and an annual averaging period for determining compliance with the 0.5 receiving water pH limitation is included in this Order.

j. ***Pesticides**. The Basin Plan includes a water quality objective for pesticides beginning on page III-6.00. Receiving Water Limitations for pesticides are included in this Order and are based on the Basin Plan objective.

k. ***Radioactivity**. The Basin Plan includes a water quality objective that *"[R]adionuclides shall not 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."* The Basin Plan states further that *"[A]t a minimum, waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations…"* Receiving Water Limitations for radioactivity are included in this Order and are based on the Basin Plan objective.

l. ***Sediment.** The Basin Plan includes a water quality objective that *"[T]he suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses"* Receiving Water Limitations for suspended sediments are included in this Order and are based on the Basin Plan objective.

m. ***Settleable Material.** The Basin Plan includes a water quality objective that *"[W]aters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses."* Receiving Water Limitations for settleable material are included in this Order and are based on the Basin Plan objective.

n. ***Suspended Material.** The Basin Plan includes a water quality objective that *"[W]aters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses."* Receiving Water Limitations for suspended material are included in this Order and are based on the Basin Plan objective.

o. ***Taste and Odors**. The Basin Plan includes a water quality objective that *"[W]ater 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."* Receiving Water Limitations for taste- or odor-producing substances are included in this Order and are based on the Basin Plan objective.

p. **Temperature.** The Thermal Plan is applicable to this discharge. The Thermal Plan requires that the discharge shall not cause the following in San Joaquin River:

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

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

Receiving Water Limitations for temperature are included in this Order and are based on the Thermal Plan requirements.

q. ***Toxicity**. The Basin Plan includes a water quality objective that *"[A]ll waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life."* Receiving Water Limitations for toxicity are included in this Order and are based on the Basin Plan objective.

r. ***Turbidity.** The Basin Plan includes a water quality objective that "*[I]ncreases in turbidity attributable to controllable water quality factors shall not exceed the following limits:*

- *Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU.*
- *Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.*
- *Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.*

- *Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent*."

A numeric Receiving Surface Water Limitation for turbidity is included in this Order and is based on the Basin Plan objective for turbidity.

B. Groundwater – Not Applicable

Discharges to land are regulated by separate waste discharge requirements.

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 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 (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 and TSS 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.

2. The SIP states that if "…*all reported detection limits of the pollutant in the effluent are greater than or equal to the C* [water quality criterion or objective] *value, the RWQCB* [Regional Water Board] *shall establish interim requirements…that require additional monitoring for the pollutant….*" The Constituent Study required in Section Section 2.b. Special Studies will be completed when operational data is available and all reported detection limits for all constituents are to be less than or equal to corresponding applicable water quality criteria or objectives. Monitoring for these constituents has been included in this Order in accordance with the SIP.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Weekly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity. The Delta is 303(d) listed for unknown toxicity. If the discharge does not exceed the acute toxicity effluent limitations during the first 12 months following initiation of discharge, the monitoring frequency may be reduced to monthly.

2. **Chronic Toxicity.** Monthly chronic whole effluent toxicity testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective. If the Discharger is not required to initiate a Toxicity Reduction Evaluation during the first 12 months following initiation of discharge (per Section VI.C.2.a. of the Limitations and Discharge Specifications), the monitoring frequency may be reduced to quarterly.

D. Receiving Water Monitoring

1. Surface Water

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

2. Groundwater – Not Applicable

E. Other Monitoring Requirements

1. **Water Supply Monitoring**

   Water supply monitoring is required to evaluate the source of constituents in the wastewater.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

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

Section 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. Section 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with section 123.25, this Order omits federal conditions that address enforcement authority specified in sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

a. **Mercury, EC, Diazinon and Chloropyifos TMDLs.** This reopener provision allows the Regional Water Board to reopen this Order for addition and/or modification of effluent limitations and requirements for total or methyl mercury, electrical conductivity or diazinon or chloropyrfos should TMDLs be adopted by the Board,

b. **Pollution Prevention.** This Order requires the Discharger prepare pollution prevention plans following CWC section 13263.3(d)(3) for aluminum, manganese, mercury and electrical conductivity. This reopener provision allows the Regional Water Board to reopen this Order for addition and/or modification of effluent limitations and requirements for these constituents based on a review of the pollution prevention plans.

c. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a 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.

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

e. **Constituent Study.** This Order requires the Discharger to conduct a constituent study to determine both reasonable potential and facility performance once the facility is operating. This reopener provision allows the Regional Water Board to reopen this Order for addition and/or modification of effluent limitations and requirements for any constituents based on a review of the constituent study.

f. **Bis(2-ethylhexyl)phthalate Study, EC site-specific Study.** This Order requires the Discharger to conduct a site-specific study for EC, and collect and analyze bis(2-ethlyhexyl)phthalate using a clean technique. This Order may be reopened pending the results of these studies and establish new limitations.

g. **Water Reclamation**. This Order requires the Discharger to evaluate water reclamation alternative for existing and future users in the Delta Diablo Sanitation District service area. Should the evaluation demonstrate potential reuse, the Order may be reopened to modify the permit as necessary.

h. **Hardness-Dependent Metals Criteria.** The Discharger only supplied one hardness data point of the influent as an estimate of the proposed effluent hardness. In order to utilize the procedures outlined in Section IV.C.2.b. (Attachment F) for calculating water quality-based effluent limitations (WQBELs) for metals with hardness-dependent CTR criteria, it is necessary to have sufficient effluent hardness data to ensure that protective WQBELs are calculated. A conservative measurement of hardness was used in the calculation of the WQBELs for copper and lead (see Section IV.C.2.b.) A study is required to monitor the influent hardness for one-year to provide sufficient data to calculate the WQBELs. This Order may be reopened to modify the WQBELs for metals with hardness-dependent CTR criteria based on the results of the study.

2. Special Studies and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, “All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” (Basin Plan at 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 Quarterly 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 > 16 TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does not allow

any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits a pattern of toxicity at 100% effluent.

Accelerated Monitoring. The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is 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 two weeks using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991* (TSD). The TSD at page 118 states, "EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required." Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of 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.

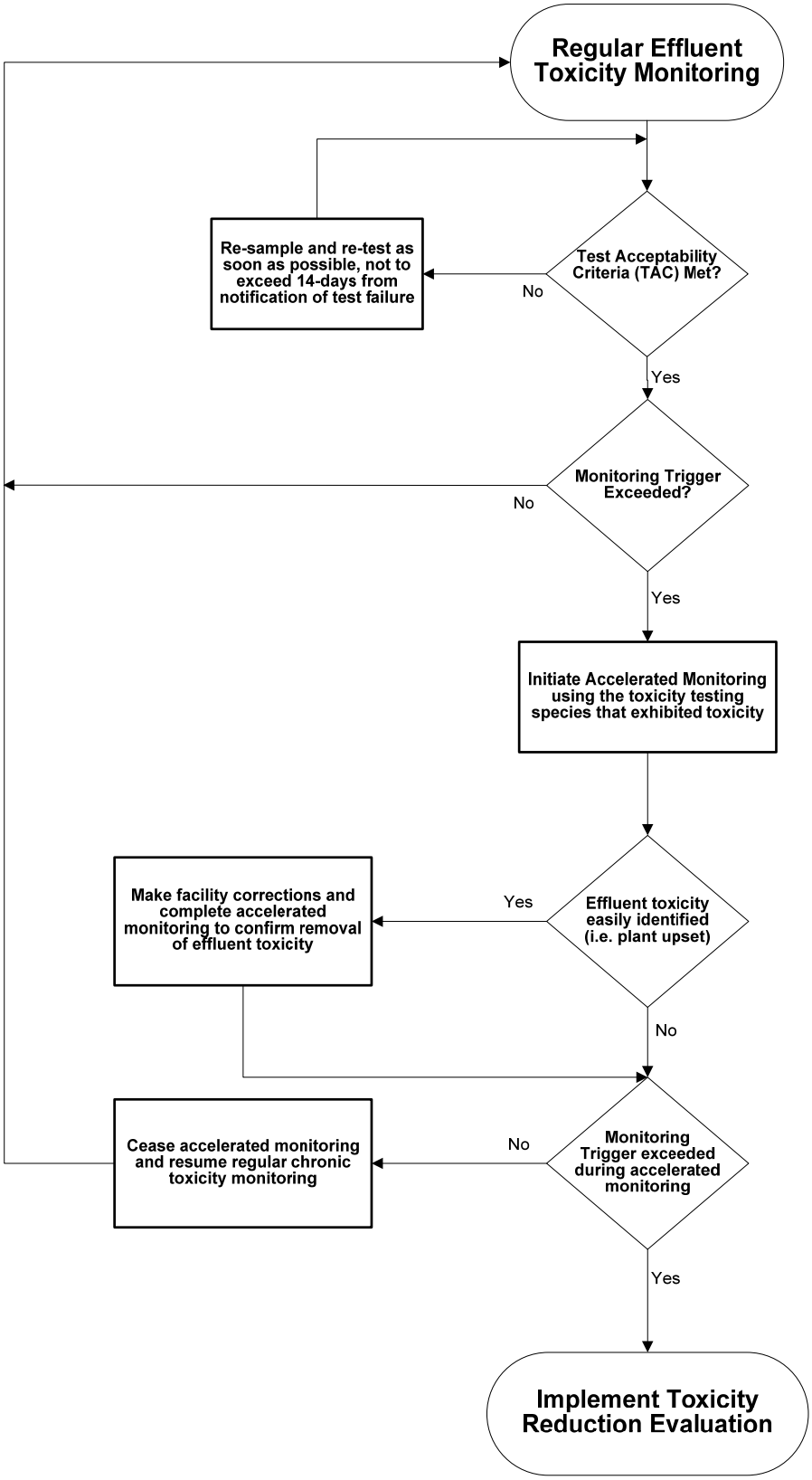
- *Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity*, Second Edition, EPA 600/R-92/081, September 1993.

- *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



c. **Constituent Study.** This Order requires the Discharger to conduct a constituent study to determine both reasonable potential and facility performance once the facility is operating. This reopener provision allows the Regional Water Board to reopen this Order for addition and/or modification of effluent limitations and requirements for any constituents based on a review of the constituent study.

f. **Reclamation Study**. The Discharger shall conduct a wastewater reclamation study. The study will identify existing and potential reclaimed water users and include an economic analysis of reclaiming wastewater. The Discharger shall complete and submit the study prior to initiating discharge to the San Joaquin River and no later than 31 December 2008.

g. **Influent Hardness Study**. For one year, the Discharger shall conduct twice monthly hardness monitoring (as $CaCO_3$) of the influent to the existing wastewater treatment plant to better estimate the hardness of the effluent that will be discharged to the San Joaquin River. This Order may be reopened to modify the effluent limitations for metals with hardness-based CTR criteria. **The Discharger shall submit the results of the study within 18 months following adoption of this Order.**

The Discharger only supplied one hardness data point of the influent as an estimate of the proposed effluent hardness. In order to utilize the procedures outlined in Section IV.C.2.b. (Attachment F) for calculating effluent limitations for metals with hardness-dependent CTR criteria, it is necessary to have sufficient effluent hardness data to ensure that protective WQBELs are calculated. A conservative measurement of hardness was used in the calculation of the WQBELs for copper and lead (see Section IV.C.2.b.) This study will provide sufficient data to calculate the WQBELs. This Order may be reopened to modify the WQBELs for metals with hardness-dependent CTR criteria based on the results of the study.

3. Best Management Practices and Pollution Prevention

a. **Pollution Prevention Plan (PPP) for salinity and mercury.** A PPP for mercury and salinity is required in this Order per CWC section 13263.3(d)(3), as outlined in subsection b., below.

b. **CWC section 13263.3(d)(3) Pollution Prevention Plans.** The pollution prevention plans required for aluminum, salinity, manganese, mercury, iron, copper, lead and chloride shall, at minimum, meet the requirements outlined in CWC section 13263.3(d)(3). The minimum requirements for the pollution prevention plans include the following:

i. An estimate of all of the sources of a pollutant contributing, or potentially contributing, to the loadings of a pollutant in the treatment plant influent.

ii. An analysis of the methods that could be used to prevent the discharge of the pollutants into the Facility, including application of local limits to industrial or commercial dischargers regarding pollution prevention techniques, public education and outreach, or other innovative and alternative approaches to reduce discharges of the pollutant to the Facility. The analysis also shall identify sources, or potential sources, not within the ability or authority of the Discharger to control, such as pollutants in the potable water supply, airborne pollutants, pharmaceuticals, or pesticides, and estimate the magnitude of those sources, to the extent feasible.

iii. An estimate of load reductions that may be attained through the methods identified in subparagraph ii.

iv. A plan for monitoring the results of the pollution prevention program.

v. A description of the tasks, cost, and time required to investigate and implement various elements in the pollution prevention plan.

vi. A statement of the Discharger's pollution prevention goals and strategies, including priorities for short-term and long-term action, and a description of the Discharger's intended pollution prevention activities for the immediate future.

vii. A description of the Discharger's existing pollution prevention programs.

viii. An analysis, to the extent feasible, of any adverse environmental impacts, including cross-media impacts or substitute chemicals that may result from the implementation of the pollution prevention program.

ix. An analysis, to the extent feasible, of the costs and benefits that may be incurred to implement the pollution prevention program.

4. Construction, Operation, and Maintenance Specifications – Not Applicable

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

a. Collection System. On May 2, 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. The Discharger has applied for and has been approved for coverage under State Water Board Order 2006-0003 for operation of its

wastewater collection system in October 2006.

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 section 122.41(e)], report any non-compliance [40 CFR section 122.41(l)(6) and (7)], and mitigate any discharge from the collection system in violation of this Order [40 CFR. section 122.41(d)].

6. Other Special Provisions

7. Compliance Schedules

a. **Initiation of Surface Water Discharge.** The surface water discharge to the San Joaquin River is contingent upon compliance with the following conditions:

i. **Outfall Diffuser.** The Discharger shall design, acquire necessary permits by appropriate agencies, and construct an outfall and diffuser to the San Joaquin river at Discharge Point EFF-001.

ii. **Facility Upgrades.** The Discharger shall have constructed the necessary Facility upgrades as described in Section VI.C.4.

iii. **Submit Waste Discharge Requirements (WDRs).** The Discharger shall submit a Report of Waste Discharge for land disposal and reclamation based on the new Facility.

iv. **Request for Surface Water Discharge.** The Discharger shall submit to the Regional Water Board a request for a surface water discharge to the San Joaquin River, which demonstrates compliance with items i. through iii., above. The surface water discharge is prohibited until the Executive Officer verifies compliance with Special Provisions VI.C.7.a., and approves the Discharger's request.

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 Ironhouse Sanitary District Wastewater Treatment Plant. 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 the following Contra Costa Times on 14 February 2008 and the Oakley Post Office and the Bethel Island Post Office on 12 February 2009.

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 14 March 2008.

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: 24/25 April 2008
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 (RWD), 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 (916) 464-3281.

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 Kathleen Cole Harder at (916) 464-4778.

Attachment G - Constituents to be monitored

			Controlling Water Quality Criterion for Surface Waters			
CTR #	Constituent	CAS Number	Basis	Criterion Concentration (ug/L or noted) (1)	Criterion Quantitation Limit (ug/L or noted)	Suggested Test Methods
VOLATILE ORGANICS						
28	1,1-Dichloroethane	75343	Primary MCL	5	0.5	EPA 8260B
30	1,1-Dichloroethene	75354	National Toxics Rule	0.057	0.5	EPA 8260B
41	1,1,1-Trichloroethane	71556	Primary MCL	200	0.5	EPA 8260B
42	1,1,2-Trichloroethane	79005	National Toxics Rule	0.6	0.5	EPA 8260B
37	1,1,2,2-Tetrachloroethane	79345	National Toxics Rule	0.17	0.5	EPA 8260B
75	1,2-Dichlorobenzene	95501	Taste & Odor	10	0.5	EPA 8260B
29	1,2-Dichloroethane	107062	National Toxics Rule	0.38	0.5	EPA 8260B
	cis-1,2-Dichloroethene	156592	Primary MCL	6	0.5	EPA 8260B
31	1,2-Dichloropropane	78875	Calif. Toxics Rule	0.52	0.5	EPA 8260B
101	1,2,4-Trichlorobenzene	120821	Public Health Goal	5	0.5	EPA 8260B
76	1,3-Dichlorobenzene	541731	Taste & Odor	10	0.5	EPA 8260B
32	1,3-Dichloropropene	542756	Primary MCL	0.5	0.5	EPA 8260B
77	1,4-Dichlorobenzene	106467	Primary MCL	5	0.5	EPA 8260B
17	Acrolein	107028	Aquatic Toxicity	21	2	EPA 8260B
18	Acrylonitrile	107131	National Toxics Rule	0.059	2	EPA 8260B
19	Benzene	71432	Primary MCL	1	0.5	EPA 8260B
20	Bromoform	75252	Calif. Toxics Rule	4.3	0.5	EPA 8260B
34	Bromomethane	74839	Calif. Toxics Rule	48	1	EPA 8260B
21	Carbon tetrachloride	56235	National Toxics Rule	0.25	0.5	EPA 8260B
22	Chlorobenzene (mono chlorobenzene)	108907	Taste & Odor	50	0.5	EPA 8260B
24	Chloroethane	75003	Taste & Odor	16	0.5	EPA 8260B
25	2- Chloroethyl vinyl ether	110758	Aquatic Toxicity	122 (3)	1	EPA 8260B
26	Chloroform	67663	OEHHA Cancer Risk	1.1	0.5	EPA 8260B
35	Chloromethane	74873	USEPA Health Advisory	3	0.5	EPA 8260B
23	Dibromochloromethane	124481	Calif. Toxics Rule	0.41	0.5	EPA 8260B
27	Dichlorobromomethane	75274	Calif. Toxics Rule	0.56	0.5	EPA 8260B
36	Dichloromethane	75092	Calif. Toxics Rule	4.7	0.5	EPA 8260B
33	Ethylbenzene	100414	Taste & Odor	29	0.5	EPA 8260B
88	Hexachlorobenzene	118741	Calif. Toxics Rule	0.00075	1	EPA 8260B
89	Hexachlorobutadiene	87683	National Toxics Rule	0.44	1	EPA 8260B
91	Hexachloroethane	67721	National Toxics Rule	1.9	1	EPA 8260B
94	Naphthalene	91203	USEPA IRIS	14	10	EPA 8260B
38	Tetrachloroethene	127184	National Toxics Rule	0.8	0.5	EPA 8260B
39	Toluene	108883	Taste & Odor	42	0.5	EPA 8260B
40	trans-1,2-Dichloroethylene	156605	Primary MCL	10	0.5	EPA 8260B
43	Trichloroethene	79016	National Toxics Rule	2.7	0.5	EPA 8260B
44	Vinyl chloride	75014	Primary MCL	0.5	0.5	EPA 8260B
	Methyl-tert-butyl ether (MTBE)	1634044	Secondary MCL	5	0.5	EPA 8260B
	Trichlorofluoromethane	75694	Primary MCL	150	5	EPA 8260B
	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	Primary MCL	1200	10	EPA 8260B
	Styrene	100425	Taste & Odor	11	0.5	EPA 8260B
	Xylenes	1330207	Taste & Odor	17	0.5	EPA 8260B

SEMI-VOLATILE ORGANICS						
60	1,2-Benzanthracene	56553	Calif. Toxics Rule	0.0044	5	EPA 8270C
85	1,2-Diphenylhydrazine	122667	National Toxics Rule	0.04	1	EPA 8270C
45	2-Chlorophenol	95578	Taste and Odor	0.1	2	EPA 8270C
46	2,4-Dichlorophenol	120832	Taste and Odor	0.3	1	EPA 8270C
47	2,4-Dimethylphenol	105679	Calif. Toxics Rule	540	2	EPA 8270C
49	2,4-Dinitrophenol	51285	National Toxics Rule	70	5	EPA 8270C
82	2,4-Dinitrotoluene	121142	National Toxics Rule	0.11	5	EPA 8270C
55	2,4,6-Trichlorophenol	88062	Taste and Odor	2	10	EPA 8270C
83	2,6-Dinitrotoluene	606202	USEPA IRIS	0.05	5	EPA 8270C
50	2-Nitrophenol	25154557	Aquatic Toxicity	150 (5)	10	EPA 8270C
71	2-Chloronaphthalene	91587	Aquatic Toxicity	1600 (6)	10	EPA 8270C
78	3,3'-Dichlorobenzidine	91941	National Toxics Rule	0.04	5	EPA 8270C
62	3,4-Benzofluoranthene	205992	Calif. Toxics Rule	0.0044	10	EPA 8270C
52	4-Chloro-3-methylphenol	59507	Aquatic Toxicity	30	5	EPA 8270C
48	4,6-Dinitro-2-methylphenol	534521	National Toxics Rule	13.4	10	EPA 8270C
51	4-Nitrophenol	100027	USEPA Health Advisory	60	5	EPA 8270C
69	4-Bromophenyl phenyl ether	101553	Aquatic Toxicity	122	10	EPA 8270C
72	4-Chlorophenyl phenyl ether	7005723	Aquatic Toxicity	122 (3)	5	EPA 8270C
56	Acenaphthene	83329	Taste and Odor	20	1	EPA 8270C
57	Acenaphthylene	208968	No Criteria Available		10	EPA 8270C
58	Anthracene	120127	Calif. Toxics Rule	9,600	10	EPA 8270C
59	Benzidine	92875	National Toxics Rule	0.00012	5	EPA 8270C
61	Benzo(a)pyrene (3,4-Benzopyrene)	50328	Calif. Toxics Rule	0.0044	0.1	EPA 8270C
63	Benzo(g,h,i)perylene	191242	No Criteria Available		5	EPA 8270C
64	Benzo(k)fluoranthene	207089	Calif. Toxics Rule	0.0044	2	EPA 8270C
65	Bis(2-chloroethoxy) methane	111911	No Criteria Available		5	EPA 8270C
66	Bis(2-chloroethyl) ether	111444	National Toxics Rule	0.031	1	EPA 8270C
67	Bis(2-chloroisopropyl) ether	39638329	Aquatic Toxicity	122 (3)	10	EPA 8270C
68	Bis(2-ethylhexyl) phthalate	117817	National Toxics Rule	1.8	3	EPA 8270C
70	Butyl benzyl phthalate	85687	Aquatic Toxicity	3 (7)	10	EPA 8270C
73	Chrysene	218019	Calif. Toxics Rule	0.0044	5	EPA 8270C
81	Di-n-butylphthalate	84742	Aquatic Toxicity	3 (7)	10	EPA 8270C
84	Di-n-octylphthalate	117840	Aquatic Toxicity	3 (7)	10	EPA 8270C
74	Dibenzo(a,h)-anthracene	53703	Calif. Toxics Rule	0.0044	0.1	EPA 8270C
79	Diethyl phthalate	84662	Aquatic Toxicity	3 (7)	2	EPA 8270C
80	Dimethyl phthalate	131113	Aquatic Toxicity	3 (7)	2	EPA 8270C
86	Fluoranthene	206440	Calif. Toxics Rule	300	10	EPA 8270C
87	Fluorene	86737	Calif. Toxics Rule	1300	10	EPA 8270C
90	Hexachlorocyclopentadiene	77474	Taste and Odor	1	1	EPA 8270C
92	Indeno(1,2,3-c,d)pyrene	193395	Calif. Toxics Rule	0.0044	0.05	EPA 8270C
93	Isophorone	78591	National Toxics Rule	8.4	1	EPA 8270C
98	N-Nitrosodiphenylamine	86306	National Toxics Rule	5	1	EPA 8270C
96	N-Nitrosodimethylamine	62759	National Toxics Rule	0.00069	5	EPA 8270C
97	N-Nitrosodi-n-propylamine	621647	Calif. Toxics Rule	0.005	5	EPA 8270C
95	Nitrobenzene	98953	National Toxics Rule	17	10	EPA 8270C
53	Pentachlorophenol	87865	Calif. Toxics Rule	0.28	0.2	EPA 8270C
99	Phenanthrene	85018	No Criteria Available		5	EPA 8270C
54	Phenol	108952	Taste and Odor	5	1	EPA 8270C
100	Pyrene	129000	Calif. Toxics Rule	960	10	EPA 8270C

INORGANICS						
	Aluminum	7429905	Ambient Water Quality	87	50	EPA 6020/200.8
1	Antimony	7440360	Primary MCL	6	5	EPA 6020/200.8
2	Arsenic	7440382	Ambient Water Quality	0.018	0.01	EPA 1632
15	Asbestos	1332214	National Toxics Rule/ Primary MCL	7 MFL	0.2 MFL >10um	EPA/600/R-93/116(PCM)
	Barium	7440393	Basin Plan Objective	100	100	EPA 6020/200.8
3	Beryllium	7440417	Primary MCL	4	1	EPA 6020/200.8
4	Cadmium	7440439	Public Health Goal	0.07	0.25	EPA 1638/200.8
5a	Chromium (total)	7440473	Primary MCL	50	2	EPA 6020/200.8
5b	Chromium (VI)	18540299	Public Health Goal	0.2	0.5	EPA 7199/ 1636
6	Copper	7440508	National Toxics Rule	4.1 (2)	0.5	EPA 6020/200.8
14	Cyanide	57125	National Toxics Rule	5.2	5	EPA 9012A
	Fluoride	7782414	Public Health Goal	1000	0.1	EPA 300
	Iron	7439896	Secondary MCL	300	100	EPA 6020/200.8
7	Lead	7439921	Calif. Toxics Rule	0.92 (2)	0.5	EPA 1638
8	Mercury	7439976	TMDL Development		0.0002 (11)	EPA 1669/1631
	Manganese	7439965	Secondary MCL/ Basin Plan Objective	50	20	EPA 6020/200.8
9	Nickel	7440020	Calif. Toxics Rule	24 (2)	5	EPA 6020/200.8
10	Selenium	7782492	Calif. Toxics Rule	5 (8)	5	EPA 6020/200.8
11	Silver	7440224	Calif. Toxics Rule	0.71 (2)	1	EPA 6020/200.8
12	Thallium	7440280	National Toxics Rule	1.7	1	EPA 6020/200.8
	Tributyltin	688733	Ambient Water Quality	0.063	0.002	EV-024/025
13	Zinc	7440666	Calif. Toxics Rule/ Basin Plan Objective	54/ 16 (2)	10	EPA 6020/200.8
PESTICIDES - PCBs						
110	4,4'-DDD	72548	Calif. Toxics Rule	0.00083	0.02	EPA 8081A
109	4,4'-DDE	72559	Calif. Toxics Rule	0.00059	0.01	EPA 8081A
108	4,4'-DDT	50293	Calif. Toxics Rule	0.00059	0.01	EPA 8081A
112	alpha-Endosulfan	959988	National Toxics Rule	0.056 (9)	0.02	EPA 8081A
103	alpha-Hexachlorocyclohexane (BHC)	319846	Calif. Toxics Rule	0.0039	0.01	EPA 8081A
	Alachlor	15972608	Primary MCL	2	1	EPA 8081A
102	Aldrin	309002	Calif. Toxics Rule	0.00013	0.005	EPA 8081A
113	beta-Endosulfan	33213659	Calif. Toxics Rule	0.056 (9)	0.01	EPA 8081A
104	beta-Hexachlorocyclohexane	319857	Calif. Toxics Rule	0.014	0.005	EPA 8081A
107	Chlordane	57749	Calif. Toxics Rule	0.00057	0.1	EPA 8081A
106	delta-Hexachlorocyclohexane	319868	No Criteria Available		0.005	EPA 8081A
111	Dieldrin	60571	Calif. Toxics Rule	0.00014	0.01	EPA 8081A
114	Endosulfan sulfate	1031078	Ambient Water Quality	0.056	0.05	EPA 8081A
115	Endrin	72208	Calif. Toxics Rule	0.036	0.01	EPA 8081A
116	Endrin Aldehyde	7421934	Calif. Toxics Rule	0.76	0.01	EPA 8081A
117	Heptachlor	76448	Calif. Toxics Rule	0.00021	0.01	EPA 8081A
118	Heptachlor Epoxide	1024573	Calif. Toxics Rule	0.0001	0.01	EPA 8081A
105	Lindane (gamma-Hexachlorocyclohexane)	58899	Calif. Toxics Rule	0.019	0.019	EPA 8081A
119	PCB-1016	12674112	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
120	PCB-1221	11104282	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082

121	PCB-1232	11141165	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
122	PCB-1242	53469219	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
123	PCB-1248	12672296	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
124	PCB-1254	11097691	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
125	PCB-1260	11096825	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
126	Toxaphene	8001352	Calif. Toxics Rule	0.0002	0.5	EPA 8081A
	Atrazine	1912249	Public Health Goal	0.15	1	EPA 8141A
	Bentazon	25057890	Primary MCL	18	2	EPA 643/ 515.2
	Carbofuran	1563662	CDFG Hazard Assess.	0.5	5	EPA 8318
	2,4-D	94757	Primary MCL	70	10	EPA 8151A
	Dalapon	75990	Ambient Water Quality	110	10	EPA 8151A
	1,2-Dibromo-3-chloropropane (DBCP)	96128	Public Health Goal	0.0017	0.01	EPA 8260B
	Di(2-ethylhexyl)adipate	103231	USEPA IRIS	30	5	EPA 8270C
	Dinoseb	88857	Primary MCL	7	2	EPA 8151A
	Diquat	85007	Ambient Water Quality	0.5	4	EPA 8340/ 549.1/HPLC
	Endothal	145733	Primary MCL	100	45	EPA 548.1
	Ethylene Dibromide	106934	OEHHA Cancer Risk	0.0097	0.02	EPA 8260B/ 504
	Glyphosate	1071836	Primary MCL	700	25	HPLC/ EPA 547
	Methoxychlor	72435	Public Health Goal	30	10	EPA 8081A
	Molinate (Ordram)	2212671	CDFG Hazard Assess.	13	2	EPA 634
	Oxamyl	23135220	Public Health Goal	50	20	EPA 8318/ 632
	Picloram	1918021	Primary MCL	500	1	EPA 8151A
	Simazine (Princep)	122349	USEPA IRIS	3.4	1	EPA 8141A
	Thiobencarb	28249776	Basin Plan Objective/ Secondary MCL	1	1	HPLC/ EPA 639
16	2,3,7,8-TCDD (Dioxin)	1746016	Calif. Toxics Rule	1.30E-08	5.00E-06	EPA 8290 (HRGC) MS
	2,4,5-TP (Silvex)	93765	Ambient Water Quality	10	1	EPA 8151A
	Diazinon	333415	CDFG Hazard Assess.	0.05	0.25	EPA 8141A/ GCMS
	Chlorpyrifos	2921882	CDFG Hazard Assess.	0.014	1	EPA 8141A/ GCMS

OTHER CONSTITUENTS						
	Ammonia (as N)	7664417	Ambient Water Quality	1500 (4)		EPA 350.1
	Chloride	16887006	Agricultural Use	106,000		EPA 300.0
	Flow			1 CFS		
	Hardness (as $CaCO_3$)			5000		EPA 130.2
	Foaming Agents (MBAS)		Secondary MCL	500		SM5540C
	Nitrate (as N)	14797558	Primary MCL	10,000	2,000	EPA 300.0
	Nitrite (as N)	14797650	Primary MCL	1000	400	EPA 300.0
	pH		Basin Plan Objective	6.5-8.5	0.1	EPA 150.1
	Phosphorus, Total (as P)	7723140	USEPA IRIS	0.14		EPA 365.3
	Specific conductance (EC)		Agricultural Use	700 umhos/cm		EPA 120.1
	Sulfate		Secondary MCL	250,000	500	EPA 300.0
	Sulfide (as S)		Taste and Odor	0.029		EPA 376.2
	Sulfite (as SO_3)		No Criteria Available			SM4500-SO3
	Temperature		Basin Plan Objective	^{o}F		
	Total Disolved Solids (TDS)		Agricultural Use	450,000		EPA 160.1

FOOTNOTES:

(1) - The Criterion Concentrations serve only as a point of reference for the selection of the appropriate analytical method. They do not indicate a regulatory decision that the cited concentration is either necessary or sufficient for full protection of beneficial uses. Available technology may require that effluent limits be set lower than these values.

(2) - Freshwater aquatic life criteria for metals are expressed as a function of total hardness (mg/L) in the water body. Values displayed correspond to a total hardness of 40 mg/L.

(3) - For haloethers

(4) - Freshwater aquatic life criteria for ammonia are expressed as a function of pH and temperature of the water body. Values displayed correspond to pH 8.0 and temperature of 22 C.

(5) - For nitrophenols.

(6) - For chlorinated naphthalenes.

(7) - For phthalate esters.

(8) - Basin Plan objective = 2 ug/L for Salt Slough and specific constructed channels in the Grassland watershed.

(9) - Criteria for sum of alpha- and beta- forms.

(10) - Criteria for sum of all PCBs.

(11) - Mercury monitoring shall utilize "ultra-clean" sampling and analytical methods. These methods include:

Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, US EPA; and

Method 1631: Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluoresence, US EPA

Dioxin and Furan Sampling

Section 3 of the State Implementation Plan requires that each NPDES discharger conduct sampling and analysis of dioxin and dibenzofuran congeners. Dioxin and Furan sampling shall be conducted in the effluent and receiving water once during dry weather and once during wet weather.

Each sample shall be analyzed for the seventeen congeners listed in the table below. High Resolution GCMS Method 8290, or another method capable of individually quantifying the congeners to an equivalent detection level, shall be used for the analyses.

For each sample the discharger shall report:

- The measured or estimated concentration of each of the seventeen congeners
- The quantifiable limit of the test (as determined by procedures in Section 2.4.3, No. 5 of the SIP)
- The Method Detection Level (MDL) for the test

The TCDD equivalent concentration for each analysis calculated by multiplying the concentration of each congener by the Toxicity Equivalency Factor (TEF) in the following table, and summing the resultant products to determine the equivalent toxicity of the sample expressed as 2,3,7,8-TCDD.

Congener	TEF
2,3,7,8TetraCDD	1
1,2,3,7,8-PentaCDD	1.0
1,2,3,4,7,8-HexaCDD	0.1
1,2,3,6,7,8-HexaCDD	0.1
1,2,3,7,8,9-HexaCDD	0.1
1,2,3,4,6,7,8-HeptaCDD	0.01
OctaCDD	0.0001
2,3,7,8-TetraCDF	0.1
1,2,3,7,8-PentaCDF	0.05
2,3,4,7,8-PentaCDF	0.5
1,2,3,4,7,8-HexaCDF	0.1
1,2,3,6,7,8-HexaCDF	0.1
1,2,3,7,8,9-HexaCDF	0.1
2,3,4,6,7,8-HexaCDF	0.1
1,2,3,4,6,7,8-HeptaCDF	0.01
1,2,3,4,7,8,9-HeptaCDF	0.01
OctaCDF	0.0001