CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

CENTRAL VALLEY REGION

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ORDER NO. R5-2008-XXXX
NPDES NO. CA0079138

WASTE DISCHARGE REQUIREMENTS FOR THE CITY OF STOCKTON REGIONAL WASTEWATER CONTROL FACILITY SAN JOAQUIN COUNTY

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

Table 1. Discharger Information

Discharger	City of Stockton
Name of Facility	Regional Wastewater Control Facility
Facility Address	2500 Navy Drive
	Stockton, CA 95206
	San Joaquin
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a major discharge.	

The discharge by the City of Stockton Regional Wastewater Control Facility 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	Tertiary treated municipal wastewater	37º 56’ 15” N	121º 20’ 5” W	San Joaquin River

Table 3. Administrative Information

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

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

PAMELA C. CREEDON, Executive Officer

T E N T A T I V E

18 AUGUST 2008

Table of Contents

I. Facility Information 3
II. Findings 3
III. Discharge Prohibitions 10
IV. Effluent Limitations and Discharge Specifications 10
A. Effluent Limitations – Discharge Point No. 001 10
1. Final Effluent Limitations – Discharge Point No. 001 10
2. Interim Effluent Limitations 12
B. Land Discharge Specifications 12
C. Reclamation Specifications 12
V. Receiving Water Limitations 13
A. Surface Water Limitations 13
B. Groundwater Limitations 16
VI. Provisions 16
A. Standard Provisions 16
B. Monitoring and Reporting Program (MRP) Requirements 21
C. Special Provisions 21
1. Reopener Provisions 21
2. Special Studies, Technical Reports and Additional Monitoring Requirements 22
3. Best Management Practices and Pollution Prevention 25
4. Construction, Operation and Maintenance Specifications 26
5. Special Provisions for Municipal Facilities (POTWs Only) 27
6. Other Special Provisions 30
7. Compliance Schedules - Not Applicable 31
VII. Compliance Determination 31

List of Tables

Table 1. Discharger Information ..... Cover
Table 2. Discharge Location ..... Cover
Table 3. Administrative Information ..... Cover
Table 4. Facility Information 3
Table 5. Basin Plan Beneficial Uses 5
Table 6. Effluent Limitations 10

List of Attachments

Attachment A – Definitions A-1
Attachment B – Map B-1
Attachment C – Flow Schematic C-1
Attachment D – Standard Provisions D-1
Attachment E – Monitoring and Reporting Program (MRP) E-1
Attachment F – Fact Sheet F-1
Attachment G – RPA Summary G-1
Attachment H – Constituents to be Monitored H-1

I. FACILITY INFORMATION

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

Table 4. Facility Information

Discharger	City of Stockton
Name of Facility	Regional Wastewater Control Facility
Facility Address	2500 Navy Drive
	Stockton, CA 95206
	San Joaquin County
Facility Contact, Title, and Phone	Mark Madison, Director, (209) 937-8750
Mailing Address	SAME
Type of Facility	Publicly Owned Treatment Works
Facility Design Flow	55 million gallons per day (mgd)

II. FINDINGS

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

A. Background. The City of Stockton (hereinafter Discharger) is currently discharging pursuant to Order No. R5-2002-0083 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0079138. The Discharger submitted a Report of Waste Discharge, dated 29 September 2006, and applied for a NPDES permit renewal to discharge up to 55 million gallons per day (mgd) of treated wastewater from the City of Stockton Regional Wastewater Control Facility**,** hereinafter Facility. The application was deemed complete on 28 February 2007.

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

B. Facility Description. The Discharger owns and operates the Stockton Regional Wastewater Control Facility. The Facility provides primary treatment consisting of screening, grit removal, and primary sedimentation, and secondary treatment consisting of high rate trickling filters and secondary clarifiers. The secondary treated effluent is piped under the San Joaquin River to the tertiary level treatment facility, which consists of facultative ponds, engineered wetlands, two nitrifying biotowers, dissolved air flotation, mixed-media filters, and chlorination/dechlorination facilities. Several of the ponds are operated in a stand-by mode of operation as necessary, to achieve improved effluent quality by decreasing solids loading on the downstream treatment process, and by maintaining stable ammonia loading to the nitrifying biotowers.

Sludge is removed from the primary and secondary sedimentation processes to gravity thickeners for preliminary water removal, and then pumped to anaerobic digesters. After digestion, the treated sludge is pumped to a lagoon where anaerobic digestion continues. A dredge is used to pump the concentrated material from the bottom of the lagoon to a belt filter press and dewatered biosolids are removed by a private contractor off-site for agricultural reuse.

Wastewater is discharged from Discharge Point No. 001 (see table on cover page) to the San Joaquin River, a water of the United States, within the Sacramento-San Joaquin Delta. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

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 (CWC) (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 E, G, and H are also incorporated into this Order.

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

F. Technology-based Effluent Limitations*.* Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations (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. 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 that are necessary to achieve water quality standards. The Regional Water

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

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

H. Water Quality Control Plans. The Regional Water Board adopted a *Water Quality Control Plan, Fourth Edition (Revised February 2007), for the Sacramento and San Joaquin River Basins* (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Beneficial uses applicable to San Joaquin River are as follows:

Table 5. Basin Plan Beneficial Uses

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

The Basin Plan includes a list of Water Quality Limited Segments (WQLSs), which are defined as "…*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.)*." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to WQLSs. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.*" The Delta is divided into multiple WQLSs. The Facility discharges directly into the southern portion and just upstream of the Stockton Deep Water Ship

Channel (DWSC). The listing for both WQLSs are applicable to the discharge. The WQLSs are 303(d) listed for: chloropyrifos; DDT; diazinon; dioxin; EC; exotic species; furan compounds; group A pesticides; mercury; pathogens; PCBs; and unknown toxicity. Effluent Limitations for EC, mercury, pathogens, and toxicity are included in this Order.

A total maximum daily load (TMDL) for oxygen demanding substances in the DWSC was adopted by the Regional Water Board on 27 January 2005 (Resolution No. R5-2005-0005). The TMDL was approved by the State Water Board on 16 November 2005 and approved by the USEPA on 27 February 2007. Wasteload allocations for oxygen demanding substances, specifically ammonia, carbonaceous biochemical oxygen demand ($CBOD_5$), and dissolved oxygen (DO), have not been apportioned; however, this Order contains effluent limits for these constituents until the Regional Water Board establishes final effluent limitations.

Requirements of this Order implement the Basin Plan.

I. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on 22 December 1992, and later amended it on 4 May 1995 and 9 November 1999. About 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 CWA 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 Water 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 USEPA 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 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. This Order does not include compliance schedules and interim effluent limitations and/or discharge specifications. A detailed discussion is included in the Fact Sheet.

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

M. Stringency of Requirements for Individual Pollutants. This Order contains both technology-based and water quality-based effluent limitations for individual pollutants. The applicable technology-based effluent limitations consist of restrictions on $CBOD_5$ and total suspended solids (TSS). The applicable water quality-based effluent limitations consist of restrictions on aluminum, ammonia, bis(2-ethylhexyl)phthalate, chlorodibromomethane, cyanide, dichlorobromomethane, manganese, molybdenum, nitrate, and pathogens. This Order's technology-based pollutant restrictions implement

the minimum, applicable federal technology-based requirements. In addition, this Order includes effluent limitations for $CBOD_5$, TSS, and pathogens to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in the Fact Sheet (Attachment F). 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.

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 (Attachment F) 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 CFR 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. Some effluent limitations in this Order are less stringent than those in the previous Order. As discussed in detail in the Fact Sheet (Attachment F) this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

P. Endangered Species Act. This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act

(16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

Q. 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.

The Regional Water Board has determined pollution prevention is necessary to achieve compliance with water quality objectives for total dissolved solids (for salinity), and mercury. In accordance with Water Code section 13263.3(d)(C), this Order requires the Discharger to develop pollution prevention plans for these pollutants.

S. Provisions and Requirements Implementing State Law. The provisions/requirements in subsections IV.C., V.B, and VI.C.4.a. of this Order are included to implement state law only. These provisions/requirements are not required or authorized under the federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.

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

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

THEREFORE, IT IS HEREBY ORDERED, that Waste Discahrge Requirements Order No. R5-2002-0083 and Cease and Desist Order No. R5-2002-0084 are rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the CWC (commencing with section 13000) and regulations adopted thereunder, and the provisions of the federal CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

III. DISCHARGE PROHIBITIONS

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

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

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

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

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point No. 001

1. Final Effluent Limitations – Discharge Point No. 001

The Discharger shall maintain compliance with the following effluent limitations at Discharge Point No. 001, with compliance measured at Monitoring Location EFF-001 as described in the attached MRP (Attachment E):

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
Aluminum, Total Recoverable	µg/L	311		750		
Ammonia, Total (as N)	mg/L	2	--	5	--	--
	lbs/day[1]	918	--	2295	--	--
Bis(2-ethylhexyl)phthalate	µg/L	1.8	--	3.6	--	--

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Chlorodibromomethane	µg/L	5.0	--	16	--	--
Total Coliform Organisms	MPN/100ml	--	--	--	--	240
Cyanide, Total Recoverable	µg/L	4.1	--	9.0	--	--
Dichlorobromomethane	µg/L	6.8	--	20	--	--
Manganese, Total Recoverable	µg/L		--	286	--	--
Molybdenum, Total Recoverable	µg/L		--	13	--	--
Nitrate plus Nitrite (as N)	mg/L	40	--	--	--	--
pH	s.u.	--	--	--	6.5	8.5
Total Suspended Solids (TSS)	mg/L	10	15	20	--	--
	lbs/day[1]	4,590	6,885	9,180	--	--
5-Day CBOD @ 20 °C	mg/L	10	15	20	--	--
	lbs/day[1]	4,590	6,885	9,180	--	--

[1] Mass-based effluent limitations are based on a design flow of 55 mgd.

b. **Percent Removal:** The average monthly percent removal of CBOD 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. **Total Residual Chlorine.** Effluent total residual chlorine shall not exceed:

   i. 0.01 mg/L, as a 4-day average; and
   ii. 0.02 mg/L, as a 1-hour average.

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 Flow.** The Average Dry Weather Flow shall not exceed 55 mgd.

h. **Dissolved Oxygen.** The daily average effluent dissolved oxygen concentration shall not be less than 6.0 mg/L from 1 September through 30 November and 5.0 mg/L throughout the remainder of the year.

i. **Aluminum.** The discharge of total recoverable aluminum shall not exceed a concentration of 200 μg/L as an annual average.

j. **Electrical Conductivity.**

i. The electrical conductivity in the discharge shall not exceed an annual average of 1,300 µmhos/cm;

ii. If the Discharger fails to comply with the requirements in 1) or 2), below, the electrical conductivity in the discharge shall not exceed a monthly average of 700 µmhos/cm (1 April to 31 August), and 1000 µmhos/cm (1 September to 31 March):

1) The Discharger shall develop and submit a Salinity Plan as specified in Provision VI.C.3.c; and

2) The Discharger shall timely implement the Salinity Plan upon the Regional Water Board's approval. The proposed Salinity Plan will be circulated for no less than 30 days of public comment prior to the Regional Water Board's consideration of the Salinity Plan. The Regional Water Board may revise the Salinity Plan prior to final approval.

Upon determination by the Regional Water Board that the Discharger has materially failed to comply with the approved Salinity Plan due to circumstances within its control, the monthly average effluent limitations for electrical conductivity specified in k.ii., above, shall become effective immediately.

2. Interim Effluent Limitations

a. **Mercury.** The total annual mass discharge of total mercury shall not exceed 0.92 pounds. This interim performance-based limitation shall be in effect until the Regional Water Board establishes final effluent limitations after adoption of the Sacramento-San Joaquin Delta Methylmercury TMDL.

B. Land Discharge Specifications

[Not Applicable]

C. Reclamation Specifications

1. Use of reclaimed water covered by this Order shall be limited to dust control and compaction by building contractors, street sweeping, and limited on-site landscape irrigation. Additional specific reclamation uses may be approved by the Executive

Officer with the submission of a written report demonstrating, to the satisfaction of the Executive Officer, that the uses will be in compliance with the terms of the Order.

2. Reclaimed water shall be chlorinated secondary treated effluent. For disinfection, the median number of total coliform organisms in the water shall not exceed 23 MPN/100 ml, as determined from the bacteriological results of the last seven days for which analyses have been completed, and the number of coliform organisms shall not exceed 240 MPN/100 ml in any two consecutive samples.

3. Reclaimed water shall meet the criteria contained in Title 22, Division 4, CCR (section 60301, et seq.).

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

5. Controls on use for construction shall follow Guideline for Use of Reclaimed Water For Construction Purposes, as follows:

   a. Truck drivers should be instructed as to the reclamation specifications and potential health hazards involved with reuse of wastewater.
   b. Tank trucks and other equipment, which come into contact with reclaimed water, should be clearly identified with warning signs/placards.
   c. Tank trucks used for reclaimed water should be thoroughly cleaned of septage or other contaminants prior to reuse.
   d. Use of reclaimed water should not create any odor or nuisance.
   e. Ponding or runoff of reclaimed water should not occur.
   f. Aerosol formation during uses involving spraying should be minimized.
   g. Reclaimed water should be applied so as to prevent public or employee contact with water.
   h. Reclaimed water must not be introduced into any permanent piping system and no connection shall be made between the tank truck and any part of a domestic water system.
   i. Tank trucks should be cleaned and disinfected after the project is completed.
   j. Tank trucks used to transport reclaimed water shall not be used to carry domestic water.

6. Treated wastewater discharged for reclamation for purposes not specified in this section must be regulated under separate waste discharge requirements and must meet the requirements of California Code of Regulations (CCR), Title 22.

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

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

    a. The dissolved oxygen concentration to be reduced below 6.0 mg/L any time from 1 September through 30 November.
    b. The dissolved oxygen concentration to be reduced below 5.0 mg/L at any time from 1 December through 31 August.

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

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

8. **pH**. The pH to be depressed below 6.5, raised above 8.5, nor changed by more than 0.5 units. A 1-month averaging period may be applied when calculating the pH change of 0.5.

9. **Pesticides**:

    a. Pesticides to be present, individually or in combination, in concentrations that adversely affect beneficial uses;
    b. Pesticides to be present in bottom sediments or aquatic life in concentrations that adversely affect beneficial uses;
    c. Total identifiable persistent chlorinated hydrocarbon pesticides to be present in the water column at concentrations detectable within the accuracy of analytical methods approved by USEPA or the Executive Officer;
    d. Pesticide concentrations to exceed those allowable by applicable antidegradation policies (see State Water Board Resolution No. 68-16 and 40 CFR §131.12.).
    e. Pesticide concentrations to exceed the lowest levels technically and economically achievable;
    f. Pesticides to be present in concentration in excess of the maximum contaminant levels set forth in CCR, Title 22, Division 4, Chapter 15; and

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 CCR.

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

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

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

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

15. **Temperature**. The 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°F above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of the river channel at any point;

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

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

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

a. 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.

When wastewater is treated to a tertiary level (including coagulation) or equivalent, a 1-month averaging period may be used when determining compliance with this Receiving Surface Water Limitation for turbidity.

B. Groundwater Limitations

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

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

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

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

      i. Fecal coliform organisms median of 2.2 MPN/100 mL over any seven-day period; and

      ii. Nitrate plus Nitrite as nitrogen of 10 mg/L.

2. Groundwater Limitations B.1.b and c become effective upon completion of the requirements specified in Provision VI.C.2.c of this Order.

VI. PROVISIONS

A. Standard Provisions

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

2. The Discharger shall comply with the following provisions:

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

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

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

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

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

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

The causes for modification include:

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

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

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

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

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

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

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

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

ii. controls any pollutant limited in the Order.

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

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

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

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

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

i. A copy of this Order shall be maintained at the discharge facility and be available at all times to operating personnel. Key operating personnel shall be familiar with its content.

j. Safeguard to electric power failure:

i. The Discharger shall provide safeguards to assure that, should there be reduction, loss, or failure of electric power, the discharge shall comply with the terms and conditions of this Order.

ii. Upon written request by the Regional Water Board the Discharger shall submit a written description of safeguards. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means. A description of the safeguards provided shall include an analysis of the frequency, duration, and impact of power failures experienced over the past 5 years on effluent quality and on the capability of the Discharger to comply with the terms and conditions of the Order. The adequacy of the safeguards is subject to the approval of the Regional Water Board.

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

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

k. The Discharger, upon written request of the Regional Water Board, shall file with the Board a technical report on its preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. This report may be combined with that required under Regional Water Board Standard Provision VI.A.2.m.

   The technical report shall:

   i. Identify the possible sources of spills, leaks, untreated waste by-pass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.

   ii. Evaluate the effectiveness of present facilities and procedures and state when they became operational.

   iii. Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

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

l. A publicly owned treatment works (POTW) whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment and disposal facilities. The projections shall be made in January, based on the last 3 years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in 4 years, the Discharger shall notify the Regional Water Board by 31 January. A copy of the notification shall be sent to appropriate local elected officials, local permitting agencies and the press. Within 120 days of the notification, the Discharger shall submit a technical report showing how it will prevent flow volumes from exceeding capacity or how it will increase capacity to handle the larger flows. The Regional Water Board may extend the time for submitting the report.

m. The Discharger shall submit technical reports as directed by the Executive Officer. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical

reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

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

o. The Discharger shall conduct analysis on any sample provided by USEPA as part of the Discharge Monitoring Quality Assurance (DMQA) program. The results of any such analysis shall be submitted to USEPA's DMQA manager.

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

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

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

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

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

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

v. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, maximum daily effluent limitation, 1-hour average effluent limitation, or receiving water limitation contained in this Order, the Discharger shall notify the Regional Water Board by telephone (916) 464-3291 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within 5 days, unless the Regional Water Board waives

confirmation. The written notification shall include the information required by Attachment D, Section V.E.1 [40 CFR 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, Total.** If a TMDL program is adopted, this Order may be reopened to modify the interim mass effluent limitation (higher or lower) or impose an effluent concentration limitation if necessary to implement the provisions of the TMDL program as adopted, and approved by the State Water Board, Office of Administrative Law, and US EPA. If the Regional Water Board determines that a mercury offset program is feasible for dischargers subject to a NPDES permit, then this Order may be reopened to reevaluate the interim mercury mass loading limitation(s) and the need for a mercury offset program for the Discharger.

d. **Pollution Prevention.** This Order requires the Discharger to update and implement its salinity and mercury pollution prevention plans (*Pollution Prevention Plan Implementation for Total Dissolved Solids* [salinity]*, Mercury and Group A Pesticides,* February 2005). Based on the success of these 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 and Basin Plan objectives for applicable priority pollutant inorganic constituents. If the Discharger performs defensible water effect ratio 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 constituents. Or should an independent scientific peer review of the Arid West Water Quality Research Project technical report, *Evaluation of the EPA Recalculation Procedure in the Arid West Technical Report,* produce defensible findings that update the national ambient water quality criteria for aluminum, this Order may be reopened to modify the effluent limitations for aluminum.

g. **Best Practicable Treatment and Control Assessment.** This Order requires the Discharger to submit a corrective action plan and implementation schedule for necessary modifications to any of the Facility's storage, treatment, or disposal components where the groundwater monitoring results exceed either the background monitoring results (i.e. monitoring well MW-15 or MW-16) or groundwater water quality objectives. Based on a review of the results of the report and the analytical groundwater quality monitoring results, this Order may be reopened for addition of groundwater limitations for protection of beneficial uses.

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 to identify corrective actions to reduce or eliminate, effluent toxicity. If the discharge exceeds the toxicity numeric monitoring trigger established in this Provision, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE), in accordance with an approved updated TRE Work Plan, and to take actions to mitigate the impact of the discharge and prevent reoccurrence of toxicity. This Provision also requires the Discharger to update and submit its TRE Work Plan, conditionally approved by the Executive Officer in November 2003, based on the findings of the recent TRE investigation and the effectiveness of the newly implemented toxicity controls. In addition, this Provision includes procedures for accelerated chronic toxicity monitoring and TRE initiation. The Discharger shall conform with the following conditons:

i. **Update Toxicity Reduction Evaluation (TRE) Work Plan. Within 120 days of the effective date of this Order,** the Discharger shall submit to the Regional Water Board an updated TRE Work Plan for approval by the Executive Officer. The TRE Work Plan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Work Plan must be developed in accordance with USEPA guidance[2].

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

iii. **Numeric Monitoring Trigger.** The numeric toxicity monitoring trigger is > **1 TUc** (where TUc = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE.

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

a) If the results of four (4) consecutive accelerated monitoring tests do not exceed the monitoring trigger, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring. However, notwithstanding the accelerated monitoring results, if there is adequate evidence of a pattern of effluent toxicity, the Executive Officer may require that the Discharger initiate a TRE.

b) If the source(s) of the toxicity is easily identified (i.e., temporary plant upset), the Discharger shall make necessary corrections to the facility and shall continue accelerated monitoring until four (4) consecutive accelerated tests do not exceed the monitoring trigger. Upon confirmation that the effluent toxicity has been removed, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring.

c) If the result of any accelerated toxicity test exceeds the monitoring trigger, the Discharger shall cease accelerated monitoring and initiate a TRE to

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

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

Task	Compliance Date
Submit Work Plan and Time Schedule	No later than 2 years 6 months from adoption of this Order
Conduct monthly monitoring	During third year of permit term
Submit Final Report	6 months following completion of final monitoring event

c. **Time Schedule for Compliance with Groundwater Limitations and Best Practicable Treatment and Control.** State Water Board Resolution 68-16 (Antidegradaion Policy) requires best practicable treatment or control of the discharge necessary to assure that, *"(a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained."* In general, an exceedance of a water quality objective in the Basin Plan constitutes "pollution". The Discharger currently stores digested sludge in an unlined lagoon and secondary treated effluent is contained in unlined ponds. These activities have the potential to cause degradation of the underlying groundwater and groundwater monitoring results obtained within the Facility have at times exceeded the applicable water quality objectives for TDS and nitrate. However, because the Discharger's current monitoring network does not adequately characterize the variable background groundwater quality conditions in the vicinity of the Facility, it cannot be determined if the affected groundwater exceeds background water quality, which is necessary for evaluating compliance with the Groundwater Limitations in this Order. Therefore, to determine compliance with Groundwater Limitations V.B.1.b and c of this Order, the Discharger must submit a work plan and time schedule that describes the installation of any additional monitoring wells and

any other testing needed to effectively and fully characterize background quality conditions. If the background water quality investigation indicates that the discharge has caused a violation of the Groundwater Limitations, the Discharger must also submit a BPTC Evaluation Work Plan that sets forth a comprehensive technical evaluation and time schedule to implement or modify Facility as necessary to comply with the Antidegradation Policy.

The Discharger shall comply with the following schedule:

Task	Compliance Date
1 - Submit Work plan and Time Schedule for preparation of background groundwater quality characterization.	**Within 3 months** following the effective date of this Order.
2 - Submit Background Groundwater Quality Characterization Technical Report.	No longer than **2.5 years** after commencement of the study.
3 - Submit Work plan and Time Schedule for BPTC Technical Evaluation.	**60 days** following approval of the Background Groundwater Quality Characterization Technical Report.
4 – Submit BPTC Technical Evaluation Study.	As established by Task 3 and following approval of the work plan and time schedule
5 - Implement necessary modifications to achieve BPTC.	As established by Task 4 and following approval of technical evaluation and time schedule.

3. Best Management Practices and Pollution Prevention

a. **Pollution Prevention Plan for Mercury.** The Discharger shall update and implement the pollution prevention plan for mercury ("Mercury and Group A Pesticides", February 2005) 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, Section VI.B.3.b. The updated plan shall be completed and submitted **within 6 months of the effective date of this Order** for approval.

b. **Salinity Reduction Goal.** The Discharger shall provide annual reports demonstrating reasonable progress in the reduction of salinity in its discharge to the San Joaquin River. The Regional Water Board finds that an annual average salinity goal of the maximum weighted average electrical conductivity of the City of Stockton's water supply (i.e. 273 µmhos/cm in March 2005), plus an increment of 500 µmhos/cm for typical consumptive use, is a reasonable intermediate goal that can be achieved through the proper implementation of a pollution prevention plan. The Discharger shall submit annual progress reports in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

c. **Salinity Plan.** The Discharger shall develop and implement a Salinity Plan to reduce its salinity impacts to the Delta in accordance with conditions i-iv below.

i. The Discharger shall implement all reasonable steps to obtain alternative, lower salinity water supply sources; and

ii. The Discharger shall develop and implement a salinity source control program that will identify and implement measures to reduce salinity in discharges from residential, commercial, industrial, and infiltration sources in an effort to meet the salinity reduction goal specified in previous Provision VI.C.3.b of this Order. As a part of its source control program, the Discharger shall update and implement its pollution prevention plan for salinity ("Pollution Prevention Plan Implementation for Total Dissolved Solids" [salinity], February 2005) in accordance with CWC section 13263.3(d)(3) (See section VI.B.3.b of the Fact Sheet for minimum requirements); and

iii. The Discharger shall participate financially in the development of the Central Valley Salinity Management Plan at a level commensurate with its contributions of salinity to the Delta; and

iv. The Discharger shall comply with the following schedule:

Task	Compliance Date
1 - Submit to the Regional Water Board for approval by the Executive Officer a draft Salinity Work Plan to reduce salinity impacts to the Delta.	**Within 6 months** following the effective date of this Order.
2 - Submit Final Salinity Work Plan.	No longer than **60 days** following approval of Task 1.

4. Construction, Operation and Maintenance Specifications

a. **Treatment Pond Operating Requirements.**

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

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

a) An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.
b) Weeds shall be minimized.
c) Dead algae, vegetation, and debris shall not accumulate on the water surface.

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

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

v. As a means of discerning compliance with the previous Pond Operating Requirements a.iv., the dissolved oxygen content in the upper zone (1 foot) of wastewater in the ponds shall not be less than 1.0 mg/L.

vi. Ponds shall not have a pH less than 6.5 or greater than 9.0.

5. Special Provisions for Municipal Facilities (POTWs Only)

a. **Pretreatment Requirements**

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

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

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

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

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

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

iii. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the necessary legal authorities, programs, and controls to ensure that the following incompatible wastes are not introduced to the treatment system, where incompatible wastes are:

a) Wastes which create a fire or explosion hazard in the treatment works;

b) Wastes which will cause corrosive structural damage to treatment works, but in no case wastes with a pH lower than 5.0, unless the works is specially designed to accommodate such wastes;

c) Solid or viscous wastes in amounts which cause obstruction to flow in sewers, or which cause other interference with proper operation or treatment works;

d) Any waste, including oxygen demanding pollutants (BOD, etc.), released in such volume or strength as to cause inhibition or disruption in the treatment works, and subsequent treatment process upset and loss of treatment efficiency;

e) Heat in amounts that inhibit or disrupt biological activity in the treatment works, or that raise influent temperatures above 40°C (104°F), unless the Regional Water Board approves alternate temperature limits;

f) Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

g) Pollutants which result in the presence of toxic gases, vapors, or fumes within the treatment works in a quantity that may cause acute worker health and safety problems; and

h) Any trucked or hauled pollutants, except at points predesignated by the Discharger.

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

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

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

b. **Sludge/Biosolids Discharge Specifications**

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

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

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

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

c. **Biosolids Disposal Requirements**

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

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

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

d. **Biosolids Storage Requirements**

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

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

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

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

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

   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)].

f. **Turbidity Operational Requirements.** The Discharger shall operate the treatment system to ensure that the turbidity measured at EFF-001, as described in the MRP (Attachment E), shall not exceed:

   i. 2 NTU as a daily average, and
   ii. 5 NTU more than 5 percent of the time within a 24-hour period, and
   iii. 10 NTU, at any time.

6. Other Special Provisions

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

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

c. 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 - Not Applicable

VII. COMPLIANCE DETERMINATION

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

A. **$CBOD_5$ and TSS Effluent Limitations (Section IV.A.1.b and IV.A.1.c)**. Compliance with the final effluent limitations for CBOD and TSS required in sections IV.A.1.b. and IV.A.1.c shall be ascertained by 24-hour composite samples. Compliance with effluent limitations IV.A.1.c for percent removal shall be calculated using the arithmetic mean of 20°C CBOD (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 (Section IV.A.1.a)**. Compliance with the final effluent limitations for aluminum can be demonstrated using either total or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by USEPA's Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.

C. **Total Mercury Mass Loading Effluent Limitations (Section IV.B.2.d)**. The procedures for calculating mass loadings are as follows:

1. The total pollutant mass load for each individual calendar month shall be determined using an average of all concentration data collected that month and the corresponding total monthly flow. All monitoring data collected under the monitoring and reporting program, pretreatment program and any special studies shall be used for these calculations.
2. In calculating compliance, the Discharger shall count all non-detect measures at one-half of the detection level. If compliance with the effluent limitation is not attained due to the non-detect contribution, the Discharger shall improve and implement available analytical capabilities and compliance shall be evaluated with consideration of the detection limits.

D. **Total Coliform Organisms Effluent Limitations (Section IV.A.1.j)**. For each day that an effluent sample is collected and analyzed for total coliform organisms, the 7-day median shall be determined by calculating the median concentration of total coliform bacteria in the effluent utilizing the bacteriological results of the last 7 days

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

Any excursion above the 1-hour average or 4-day average total residual chlorine effluent limitations is a violation. If the Discharger conducts continuous monitoring and the Discharger can demonstrate, through data collected from a back-up monitoring system, that a chlorine spike recorded by the continuous monitor was not actually due to chlorine, then any excursion resulting from the recorded spike will not be considered an exceedance, but rather reported as a false positive.

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

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

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

G. **Average Dry Weather Flow Effluent Limitations**. The Average Dry Weather 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 Dry Weather Flow effluent limitations will be determined annually based on the average daily flow over three consecutive dry weather months (e.g. July, August, and September).

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 USEPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

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

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

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

Inland Surface Waters are all surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

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

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

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

Median is the middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the $n/2$ and $n/2+1$).

Method Detection Limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in title 40 of the Code of Federal Regulations, Part 136, Attachment B, revised as of 3 July 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:

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

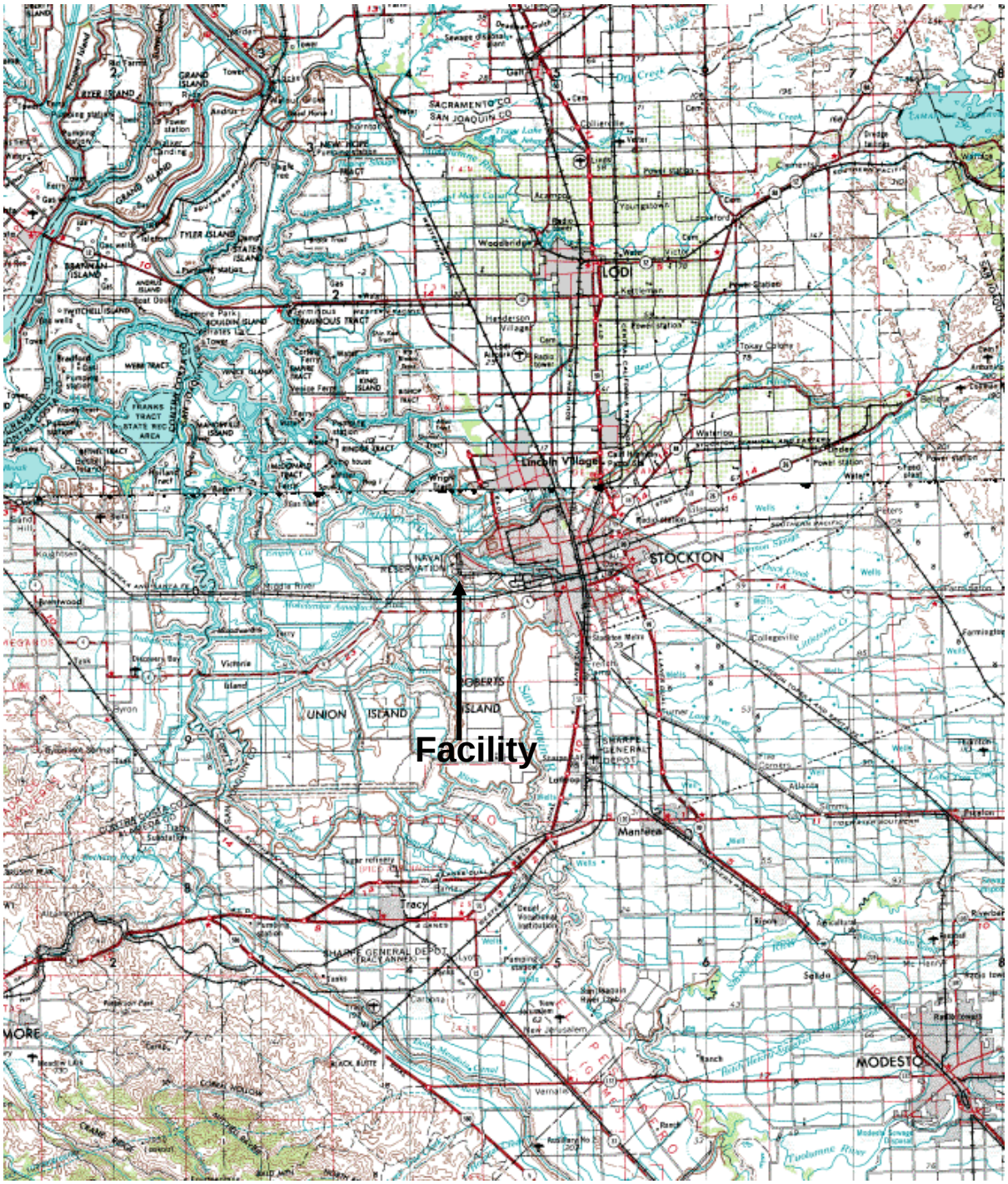
where:

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.)

ATTACHMENT B – MAP



Drawing Reference: **STOCKTON WEST (CA)** U.S.G.S TOPOGRAPHIC MAP 7.5 MINUTE QUADRANGLE *Photorevised 1987* *Not to scale*	**SITE LOCATION MAP** CITY OF STOCKTON REGIONAL WASTEWATER CONTROL FACILITY SAN JOAQUIN COUNTY	N W E S

ATTACHMENT C – FLOW SCHEMATIC

ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

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

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

B. Need to Halt or Reduce Activity Not a Defense

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

C. Duty to Mitigate

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

D. Proper Operation and Maintenance

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

E. Property Rights

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

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

F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 CFR §122.41(i); Wat. Code, §13383):

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

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

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

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

G. Bypass

1. Definitions

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

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

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

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

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

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

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

4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 CFR §122.41(m)(4)(ii).)

5. Notice

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

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

H. Upset

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

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

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

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

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

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

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

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

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

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

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

B. Duty to Reapply

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

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 CFR §122.41(l)(3); § 122.61.)

III. STANDARD PROVISIONS – MONITORING

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

B. Monitoring results must be conducted according to test procedures under 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 CFR §122.41(j)(4); §122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time. (40 CFR §122.41(j)(2).)

B. Records of monitoring information shall include:

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

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

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

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

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

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

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

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

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

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

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

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 CFR §122.41(k).)

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

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

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

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

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

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard

Provisions – Reporting V.B.3 above must be submitted to the Regional Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 CFR §122.22(c).)

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

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

C. Monitoring Reports

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

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

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 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 CFR §122.41(l)(4)(ii).)

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

D. Compliance Schedules

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

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall

also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 CFR §122.41(l)(6)(i).)

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

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

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

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

F. Planned Changes

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

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

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

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

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements. (40 CFR §122.41(l)(2).)

H. Other Noncompliance

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

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 CFR §122.41(l)(8).)

VI. STANDARD PROVISIONS – ENFORCEMENT

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

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Publicly-Owned Treatment Works (POTWs)

All POTWs shall provide adequate notice to the Regional Water Board of the following (40 CFR §122.42(b)):

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

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

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

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

Table of Contents

Attachment E – Monitoring and Reporting Program (MRP) E-1
I. General Monitoring Provisions E-1
II. Monitoring Locations E-2
III. Influent Monitoring Requirements E-3
A. Monitoring Location INF-001 ..... E-3
IV. Effluent Monitoring Requirements E-3
A. Monitoring Location EFF-001 ..... E-3
V. Whole Effluent Toxicity Testing Requirements E-5
VI. Land Discharge Monitoring Requirements – Not Applicable E-8
VII. Reclamation Monitoring Requirements E-8
A. Monitoring Location REC-001 ..... E-8
VIII. Receiving Water Monitoring Requirements – Surface Water and Groundwater E-9
A. Monitoring Location RSW-001 through RSW-008 ..... E-9
B. Visual Observations RSW-002, RSW-002A, and RSW-003 ..... E-10
C. Groundwater Monitoring E-10
IX. Other Monitoring Requirements E-11
A. Biosolids E-11
B. Municipal Water Supply E-11
X. Reporting Requirements E-13
A. General Monitoring and Reporting Requirements E-13
B. Self Monitoring Reports (SMRs) E-15
C. Discharge Monitoring Reports (DMRs) E-17
D. Other Reports E-17

List of Tables

Table E-1. Monitoring Station Locations E-2
Table E-2. Influent Monitoring E-3
Table E-3. Effluent Monitoring E-3
Table E-4. Chronic Toxicity Testing Dilution Series E-7
Table E-5. Reclamation Monitoring Requirements E-8
Table E-6. Receiving Water Monitoring Requirements E-9
Table E-7. Groundwater Monitoring Requirements E-10
Table E-9. Municipal Water Supply Monitoring Requirements E-12
Table E-10. Secondary Effluent Monitoring Requirements E-12
Table E-11. Pond(s) Monitoring Requirements E-13
Table E-12. Monitoring Periods and Reporting Schedule E-16
Table E-13. Reporting Requirements for Special Provisions Progress Reports E-17

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 State Department of Health Services. In the event a certified laboratory is not available to the Discharger, analyses performed by a noncertified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program must be kept in the laboratory and shall be available for inspection by Regional Water Board staff. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the Regional Water Board.

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

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

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

II. MONITORING LOCATIONS

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

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
--	INF-001	Location where a representative sample of the facility's influent can be obtained, prior to any additives, treatment processes, and plant return flows.
001	EFF-001	Location where a representative sample of the facility's effluent can be obtained prior to discharge into the receiving water. [Latitude: 37° 56' 15"; Longitude: 121° 20' 5"].
--	EFF-002	Location where a representative sample of the facility's secondary effluent can be obtained prior to transfer to the tertiary treatment plant, which includes facultative ponds surrounded by distribution canals.
--	PND-001 - 003	Location where a representative sample of the facultative ponds' wastewater can be obtained prior to transfer to the wetlands
--	RSW-001	San Joaquin River and Bowman Road, 8.0 miles south of Discharge Point No. 001.
--	RSW-002	San Joaquin River and Highway 4, 0.5 miles south of Discharge Point No. 001.
--	RSW-002A	San Joaquin River and Burns Cutoff, 0.5 miles north of Discharge Point No. 001.
--	RSW-003	San Joaquin River at Deep Water Channel, 1.5 miles north of Discharge Point No. 001.
--	RSW-004	San Joaquin River at Light 45, 2.5 miles north of Discharge Point No. 001.
--	RSW-005	San Joaquin River at Light 41, 3.5 miles north of Discharge Point No. 001.
--	RSW-006	San Joaquin River at Light 36, 5.0 miles north of Discharge Point No. 001.
--	RSW-007	San Joaquin River at Light 24, 7.3 miles north of Discharge Point No. 001.
--	RSW-008	San Joaquin River at Light 18, 9.0 miles north of Discharge Point No. 001.
--	RGW-XX	Monitoring wells MW-1 through MW-3 and MW5 through MW-18, and any other well subsequently installed for the study required in Provision VI.C.2.d. of this Order
--	REC-001	Reclaimed water prior to use.
--	BIO-001	Biosolids prior to removal from the facility.
--	SPL-001	Location where a representative sample of the municipal supply water can be obtained. If this is impractical, water quality data provided by the water supplier(s) may be used, as long as results are flow weighted.

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

1. The Discharger shall monitor influent into 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	
Carbonaceous Biochemical Oxygen Demand (CBOD) (5-day @ 20 Deg. C)	mg/L	24-hr Composite[1]	1/day	
Total Suspended Solids (TSS)	mg/L	24-hr Composite[1]	1/day	
pH	Standard Units	Meter	Continuous	
Electrical Conductivity	µmhos/cm @ 25°C	Grab	1/month	
Total Dissolved Solids		Grab	1/month	

[1] 24-hour flow proportional composite.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

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

Table E-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	mgd	Meter	Continuous	
Chlorine, Total Residual[1]	mg/L	Meter	Continuous	
Na_2HSO_3	mg/L	Meter[13]	Continuous[13]	
SO_2	mg/L	Meter[13]	Continuous[13]	
Temperature[2]	°F	Meter	Continuous	
Turbidity	NTU	Meter	Continuous	
pH	standard units	Meter	Continuous	

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Carbonaceous Biochemical Oxygen Demand (5-day @ 20 Deg. C) ($CBOD_5$)	mg/L	24-hr Composite[8]	1/day	
Total Suspended Solids (TSS)	mg/L	24-hr Composite[8]	1/day	
Total Coliform Organisms	MPN/100 mL	Grab	1/day	
Settleable Solids	mL/L	Grab	1/day	
Dissolved Oxygen	mg/L	Grab	1/day[9]	
Ammonia Nitrogen, Total (as N) [3, 4]	mg/L	24-hr Composite	1/day[9]	[12]
Nitrate Nitrogen, Total (as N)	mg/L	24-hr Composite	1/week	
Nitrite Nitrogen, Total (as NO_3)	mg/L	24-hr Composite	1/week	
Total Kjeldahl Nitrogen	mg/L	24-hr Composite	1/week	
Oil and Grease	mg/L	Grab	1/week	
Electrical Conductivity @ 25 Deg. C	µmhos/cm	Grab	1/week	
Total Dissolved Solids (TDS)	mg/L	Grab	1/week	
Total Organic Carbon	mg/L	24-hr Composite	1/month	
Aluminum, Total Recoverable[5]	µg/L	24-hr Composite	1/month	
Cyanide, Total Recoverable	µg/L	24-hr Composite	1/month	[11]
Mercury, Total	ng/L	Grab	1/month	EPA Method 1631[10]
Mercury, Methyl	ng/L	Grab	1/month	EPA Method 1630[10]
Manganese, Dissolved and Total Recoverable	µg/L	24-hr Composite	1/month	
Molybdenum, Total Recoverable	µg/L	24-hr Composite	1/month	
Bis-2 (ethylhexyl) phthalate	µg/L	Grab	1/month	
Chlorodibromomethane	µg/L	Grab	1/month	
Dichlorobromomethane	µg/L	Grab	1/month	
Standard Minerals[6]	mg/L	24-hr Composite	1/year	
Hardness (as $CaCO_3$)	mg/L	Grab	1/month	
Alkalinity	mg/L	Grab	1/month	

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method

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

2 Effluent temperature monitoring shall be at the Discharge Point location.

3 Concurrent with whole effluent toxicity monitoring.

4 Report as total.

5 Priority pollutants include all 126 priority pollutants listed in the California Toxics Rule (40 CFR 131.38). 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.

6 Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).

7 Concurrent with receiving surface water sampling.

8 24-hour flow proportioned composite.

9 Daily from 1 September through 1 March, twice weekly remainder of the year.

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

11 As specified in 40 CFR Part 136; or samples taken at the effluent without preservatives, may be analyzed for cyanide within 15 minutes from collection and must be performed by a laboratory certified for such analyses by the State Department of Public Health.

12 The method detection limit shall be at or below 0.1 mg/L.

13 Currently the Discharger does not have the capability for direct measurement, and thus calculated measurements may be used.

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.

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 (*Oncorhynchus 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 quarterly three species chronic toxicity testing.

2. *Sample Types* – Effluent samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at EFF-001. The receiving water control shall be a grab sample obtained from the RSW-001 sampling location.

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

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

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

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

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

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

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

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

Table E-4. Chronic Toxicity Testing Dilution Series

Sample	Dilutions (%)					Controls	
	100	50	25	12.5	6.25	Receiving Water	Laboratory Water
% Effluent	100	50	25	12.5	6.25	0	0
% Receiving Water	0	50	75	87.5	93.75	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

VII. RECLAMATION MONITORING REQUIREMENTS

A. Monitoring Location REC-001

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

Table E-5. Reclamation Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Volume Used	mgd	Estimated	1/day	--
Total Coliform Organisms	MPN/100ml	Grab	2/week	

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER AND GROUNDWATER

A. Monitoring Location RSW-001 through RSW-008

1. The Discharger shall monitor the San Joaquin River at Monitoring Locations RSW-001 through RSW-008 as follows:

Table E-6. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
River Flow	cubic feet/sec	Meter	15-minute intervals	[1]
Dissolved Oxygen	mg/L	Grab	1/week (or 1/month)[2]	
pH[3]	Standard Units	Grab	1/week (or 1/month)[2]	
Temperature[3]	°F (°C)	Grab	1/week (or 1/month)[2]	
Turbidity	NTUs	Grab	1/week (or 1/month)[2]	
Electrical Conductivity @ 25 Deg. C	µmhos/cm	Grab	1/week (or 1/month)[2]	
Total Dissolved Solids	mg/L	Grab	1/week (or 1/month)[2]	
Fecal Coliform Organisms	MPN/100 mL	Grab	1/week (or 1/month)[2]	
Volatile Suspended Solids	mg/L	Grab	1/week (or 1/month)[2]	
Total Suspended Solids	mg/L	Grab	1/week (or 1/month)[2]	
$CBOD_5$	mg/L	Grab	1/week (or 1/month)[2]	
Total Kjeldahl Nitrogen	mg/L	Grab	1/week (or 1/month)[2]	
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/week (or 1/month)[2]	
Nitrite Nitrogen, Total (as NO_3)	mg/L	Grab	1/week (or 1/month)[2]	
Ammonia Nitrogen, Total (as N)[3]	mg/L	Grab	1/week (or 1/month)[2,5]	[7]
	mg/L	Grab	Weekly[6]	[7]
Chlorophyll	mg/L	Grab	1/week (or 1/month)[2]	
Pheophytin	mg/L	Grab	1/week (or 1/month)[2]	
Hardness (as $CaCO_3$)	mg/L	Grab	1/month	
Alkalinity	mg/L	Grab	1/month	
Trihalomethanes[4]	µg/L	Grab	1/quarter	

1 Flow information reported to the Discharger by the USGS, collected from the flow monitoring station located approximately 500 feet south of the outfall. Flow will continue to be recorded in 15-minute intervals and reported to the Regional Water Board within self-monitoring report as a daily net flow value.

2 During the portion of the year from 1 May through 30 November or when dissolved oxygen levels are less than 5 mg/L, Stations RSW-001 through RSW-008 shall be sampled weekly at low slack tide, when practical (between 8:00 and 11:00 am). From 1 December through 30 April, sampling frequency shall be monthly.

3 Temperature and pH shall be collected at the time of ammonia monitoring to allow for determination of ammonia toxicity.

4 Trihalomethanes include bromoform, chloroform, dichlorobromomethane, and chlorodibromomethane. Concentrations of each constituent shall be separately monitored and reported.

5 Monitoring locations RSW-005 through RSW-008

6 Monitoring locations RSW-001 through RSW-004

7 The method detection limit shall be at or below 0.1 mg/L.

B. Visual Observations RSW-002, RSW-002A, and RSW-003

1. In conducting the weekly receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by RSW-002, RSW-002A, and RSW-003. A description, including at the minimum, the presence or absence of the following shall be recorded and summarized in the monthly self-monitoring reports.
   a. Floating or suspended matter;
   b. Discoloration;
   c. Bottom deposits;
   d. Aquatic life;
   e. Visible films, sheens, or coatings;
   f. Fungi, slimes, or objectionable growths; and
   g. Potential nuisance conditions.

C. Groundwater Monitoring

1. The Discharger shall continue the groundwater monitoring program established under Order No. R5-2002-0083 (consisting of groundwater monitoring wells MW-1, MW-2, MW-3, and MW-5 through MW-18). Groundwater monitoring of MW-1, MW-2, MW-3, and MW-5 through MW-18 shall include, at a minimum, the following:

Table E-7. Groundwater Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Groundwater elevation	feet	Grab	1/quarter or 2/year[1]	
Total Dissolved Solids	mg/L	Grab	1/quarter or 2/year[1]	
Ammonia, Total (as N)	mg/L	Grab	1/quarter or 2/year[1]	
Nitrate (as N)	mg/L	Grab	1/quarter or 2/year[1]	
Nitrite (as N)	mg/L	Grab	1/quarter or 2/year[1]	
Total Kjeldahl nitrogen	mg/L	Grab	1/quarter or 2/year[1]	
pH	standard units	Grab	1/quarter or 2/year[1]	
Electrical Conductivity @ 25 Deg. C	µmhos/cm	Grab	1/quarter or 2/year[1]	
Fecal Coliform Organisms	MPN/100mL	Grab	1/quarter or 2/year[1]	
Boron	mg/L	Grab	1/quarter or 2/year[1]	

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Chloride	mg/L	Grab	1/quarter or 2/year[1]	
Dissolved Iron	mg/L	Grab	1/quarter or 2/year[1]	
Dissolved Manganese	mg/L	Grab	1/quarter or 2/year[1]	
Sodium	mg/L	Grab	1/quarter or 2/year[1]	

[1] MW-1, MW-2, MW-10, MW-12, MW-13, MW-15, and MW-17 shall be monitored quarterly; all other wells shall be monitored twice per year.

IX. OTHER MONITORING REQUIREMENTS

A. Biosolids

1. Monitoring Location BIO-001

1. A composite sample of sludge shall be collected annually at Monitoring Location BIO-001 in accordance with USEPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989, and tested for priority pollutants listed in 40 CFR section 122 Appendix D, Tables II and III (excluding total phenols).

2. A composite sample of sludge shall be collected when sludge is removed from the lagoon for disposal in accordance with USEPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989, and tested for the metals listed in Title 22.

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

4. Upon removal of sludge, the Discharger shall submit characterization of sludge quality, including sludge percent solids and quantitative results of chemical analysis for the priority pollutants listed in 40 CFR 122 Appendix D, Tables II and III (excluding total phenols). Suggested methods for analysis of sludge are provided in USEPA publications titled "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods" and "Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater". Recommended analytical holding times for sludge samples should reflect those specified in 40 CFR 136.6.3(e). Other guidance is available in USEPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989.

B. Municipal Water Supply

1. Monitoring Location SPL-001

The Discharger shall monitor the Municipal Water Supply at SPL-001 as follows. A sampling station shall be established where a representative sample of the

municipal water supply can be obtained. Municipal water supply samples shall be collected at approximately the same time as effluent samples.

Table E-9. Municipal Water Supply Monitoring Requirements

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

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

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

C. Secondary Effluent – Monitoring Location EFF-002

1. The Discharger shall monitor the Facility's secondary effluent at EFF-002 as required in Table E-10.

Table E-10. Secondary Effluent Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	mgd	Meter	Continuous	
Total Dissolved Solids	mg/L	Grab	1/week	
Ammonia (as N)	mg/L	Grab	1/month	
Nitrate (as N)	mg/L	Grab	1/month	
Nitrite (as N)	mg/L	Grab	1/month	
Total Kjeldahl Nitrogen	mg/L	Grab	1/month	
pH	standard units	Grab	1/week	
Electrical Conductivity @ 25 Deg. C	µmhos/cm	Grab	1/week	
Fecal Coliform Organisms	MPN/100mL	Grab	1/month	
Boron	mg/L	Grab	1/month	
Chloride	mg/L	Grab	1/month	
Dissolved Iron	mg/L	Grab	1/month	
Dissolved Manganese	mg/L	Grab	1/month	
Sodium	mg/L	Grab	1/month	

D. Wastewater in Facultative Ponds - Monitoring Locations PND-001 through PND-003.

1. At a minimum, the Discharger shall monitor wastewater impounded in each Facility pond(s) at PND-001 through PND-003 as required in Table E-11, below. Grab

samples shall be collected from each pond during the specified sampling frequency and combined to create one composite sample.

Table E-11. Pond(s) Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Dissolved Oxygen[1]	mg/L	Grab	1/week	
pH	Standard Units	Grab	1/week	
Freeboard	feet	--	1/week	
Available Storage Volume	Acre-feet	--	1/month	
BOD 5-day @ 20ºC	mg/L	Grab	1/week	
Total Dissolved Solids	mg/L	Grab	1/week	
Electrical Conductivity	umhos/cm	Grab	1/week	
Ammonia (as N)	mg/L	Grab	1/month	
Nitrate (as N)	mg/L	Grab	1/month	
Nitrite (as N)	mg/L	Grab	1/month	
Total Kjeldahl nitrogen	mg/L	Grab	1/month	
Fecal Coliform Organisms	MPN/100mL	Grab	1/month	
Boron	mg/L	Grab	1/month	
Chloride	mg/L	Grab	1/month	
Dissolved Iron	mg/L	Grab	1/month	
Dissolved Manganese	mg/L	Grab	1/month	
Sodium	mg/L	Grab	1/month	

1. Samples shall be collected at a depth of one foot from each pond in use, opposite the inlet. Samples shall be collected between 0700 and 0900 hours.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

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

2. Upon written request of the 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).

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

4. The Discharger shall report to the Regional Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of

reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act" of 1986.

5. **Reporting Protocols.** The Discharger shall report with each sample result the applicable Reporting Level (RL) and the current Method Detection Limit (MDL), as determined by the procedure in Part 136.

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

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

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

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

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

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

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

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

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

B. Self Monitoring Reports (SMRs)

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

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

3. In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly whether the discharge complies with waste discharge requirements. The highest daily maximum for the month, monthly and weekly averages, and medians, and removal efficiencies (%) for BOD and Total Suspended Solids, shall be determined and recorded as needed to demonstrate compliance.

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

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

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

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

Regional Water Quality Control Board
Central Valley Region
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-12. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	**First day of calendar month following effective date of this Order**	All	Submit with monthly SMR
1/day	**First day of calendar month following effective date of this Order**	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	Submit with monthly SMR
1/week	**First Sunday following first day of calendar month following permit effective date**	Sunday through Saturday	Submit with monthly SMR
1/month	First day of calendar month following permit effective date	First day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1/quarter	Closest of 1January, 1 April, 1 July, or 1 October following permit effective date	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	May 1 of the same year August 1 of the same year November 1 of the same year February 1 of the next year
2/year	Closest of 1 January or 1 July following permit effective date	1 January through 30 June 1 July through 31 December	August 1 of the same year February 1 of the next year
1/year	1 January following permit effective date	1 January through 31 December	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-13. Reporting Requirements for Special Provisions Progress Reports

Special Provision	Reporting Requirements
Annual Progress Reports for Salinity Reduction Goal (Provision VI.C.3.b)	**1 December**, annually

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

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

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

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

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

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

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

   e. The Discharger 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.** The Discharger shall submit annually a report to the Regional Water Board, with copies to USEPA Region 9 and the State Water Board, describing the Discharger's pretreatment activities over the previous 12 months. In the event that the Discharger is not in compliance with any conditions or requirements of this Order, including noncompliance with pretreatment audit/compliance inspection requirements, then the Discharger shall also include the reasons for noncompliance and state how and when the Discharger shall comply with such conditions and requirements.

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

a. A summary of analytical results from representative, flow proportioned, 24-hour composite sampling of the POTW's influent and effluent for those pollutants USEPA has identified under Section 307(a) of the CWA which are known or suspected to be discharged by industrial users.

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

b. A discussion of Upset, Interference, or Pass-Through incidents, if any, at the treatment plant, which the Discharger knows or suspects were caused by industrial users of the POTW. The discussion shall include the reasons why the incidents occurred, the corrective actions taken and, if known, the name and address of, the industrial user(s) responsible. The discussion shall also include a review of the applicable pollutant limitations to determine whether any additional limitations, or changes to existing requirements, may be necessary to prevent Pass-Through, Interference, or noncompliance with sludge disposal requirements.

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

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

   i. complied with baseline monitoring report requirements (where applicable);
   ii. consistently achieved compliance;
   iii. inconsistently achieved compliance;
   iv. significantly violated applicable pretreatment requirements as defined by 40 CFR 403.8(f)(2)(vii);

v. complied with schedule to achieve compliance (include the date final compliance is required);
vi. did not achieve compliance and not on a compliance schedule; and
vii. compliance status unknown.

A report describing the compliance status of each industrial user characterized by the descriptions in items iii. through vii. above shall be submitted for each calendar quarter **within 21 days of the end of the quarter**. The report shall identify the specific compliance status of each such industrial user and shall also identify the compliance status of the POTW with regards to audit/pretreatment compliance inspection requirements. If none of the aforementioned conditions exist, at a minimum, a letter indicating that all industries are in compliance and no violations or changes to the pretreatment program have occurred during the quarter must be submitted. The information required in the fourth quarter report shall be included as part of the annual report. This quarterly reporting requirement shall commence upon issuance of this Order.

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

i. the names and addresses of the industrial users subjected to surveillance and an explanation of whether they were inspected, sampled, or both and the frequency of these activities at each user; and
ii. the conclusions or results from the inspection or sampling of each industrial user.

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

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

v. Assessment of monetary penalties. For each industrial user identify the amount of the penalties.
vi. Restriction of flow to the POTW.
vii. Disconnection from discharge to the POTW.

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

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

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

State Water Resources Control Board
Division of Water Quality
P.O. Box 944213
Sacramento, CA 94244-2130

and the

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

ATTACHMENT F – FACT SHEET

Table of Contents

Attachment F – Fact Sheet F-3
I. Permit Information F-3
II. Facility Description F-4
A. Description of Wastewater and Biosolids Treatment or Controls F-4
B. Discharge Points and Receiving Waters F-5
C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data F-5
D. Compliance Summary F-8
E. Planned Changes F-8
III. Applicable Plans, Policies, and Regulations F-8
A. Legal Authority F-8
B. California Environmental Quality Act (CEQA) F-8
C. State and Federal Regulations, Policies, and Plans F-8
D. Impaired Water Bodies on CWA 303(d) List F-11
E. Other Plans, Policies and Regulations F-12
IV. Rationale For Effluent Limitations and Discharge Specifications F-13
A. Discharge Prohibitions F-14
B. Technology-Based Effluent Limitations F-14
1. Scope and Authority F-14
2. Applicable Technology-Based Effluent Limitations F-15
C. Water Quality-Based Effluent Limitations (WQBELs) F-16
1. Scope and Authority F-16
2. Applicable Beneficial Uses and Water Quality Criteria and Objectives F-16
3. Determining the Need for WQBELs F-21
4. WQBEL Calculations F-44
5. Whole Effluent Toxicity (WET) F-47
D. Final Effluent Limitations F-50
1. Mass-based Effluent Limitations F-50
2. Averaging Periods for Effluent Limitations F-50
3. Satisfaction of Anti-Backsliding Requirements F-51
4. Satisfaction of Antidegradation Policy F-51
E. Interim Effluent Limitations F-54
F. Land Discharge Specifications F-54
G. Reclamation Specifications F-54
V. Rationale for Receiving Water Limitations F-54
A. Surface Water F-55
B. Groundwater F-58
VI. Rationale for Monitoring and Reporting Requirements F-63
A. Influent Monitoring F-63
B. Effluent Monitoring F-63
C. Whole Effluent Toxicity Testing Requirements F-64
D. Receiving Water Monitoring F-64
1. Surface Water F-64
2. Groundwater F-64
E. Other Monitoring Requirements F-65

VII. Rationale for Provisions F-65
A. Standard Provisions F-65
B. Special Provisions F-66
1. Reopener Provisions F-66
2. Special Studies, Technical Reports, and Additional Monitoring Requirements F-67
3. Best Management Practices and Pollution Prevention F-71
4. Construction, Operation, and Maintenance Specifications F-73
5. Special Provisions for Municipal Facilities (POTWs Only) F-73
6. Other Special Provisions F-74
7. Compliance Schedules – Not Applicable F-74
VIII. Public Participation F-74
A. Notification of Interested Parties F-74
B. Written Comments F-75
C. Public Hearing F-75
D. Waste Discharge Requirements Petitions F-75
E. Information and Copying F-76
F. Register of Interested Persons F-76
G. Additional Information F-76

List of Tables

Table F-1. Facility Information F-3
Table F-2. Historic Effluent Limitations and Monitoring Data F-5
Table F-3. Summary of Technology-based Effluent Limitations F-16
Table F-4. Summary of Ammonia Effluent Limit Derivations F-26
Table F-5. Salinity Water Quality Criteria/Objectives F-38
Table F-6. Summary of Annual Electrical Conductivity Effluent Concentrations F-42
Table F-7. WQBEL Calculations for Aluminum F-46
Table F-8. WQBEL Calculations for Bis(2-ethylhexyl)Phthalate F-46
Table F-9. WQBEL Calculations for Chlorodibromomethane F-46
Table F-10. WQBEL Calculations for Dichlorobromomethane F-47
Table F-11. WQBEL Calculations for Cyanide F-47
Table F-12. Summary of Final Effluent Limitations F-53
Table F-13. Summary of Groundwater Conditions F-60

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	5B390107001
Discharger	City of Stockton
Name of Facility	Regional Wastewater Control Facility
Facility Address	2500 Navy Drive
	Stockton, CA 95206
	San Joaquin County
Facility Contact, Title and Phone	Mark Madison, Director, (209) 937-8750
Authorized Person to Sign and Submit Reports	Mark Madison, Director, (209) 937-8750
Mailing Address	SAME
Billing Address	SAME
Type of Facility	Publicly Owned Treatment Works
Major or Minor Facility	Major
Threat to Water Quality	1
Complexity	A
Pretreatment Program	Yes
Reclamation Requirements	No
Facility Permitted Flow	55 million gallons per day (mgd)
Facility Design Flow	55 mgd
Watershed	Sacramento-San Joaquin Delta
Receiving Water	San Joaquin River
Receiving Water Type	Sacramento-San Joaquin Delta

A. The City of Stockton (hereinafter Discharger) is the owner and operator of the City of Stockton Regional Wastewater Control Facility (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 Facility discharges wastewater to the San Joaquin River, a water of the United States, and is currently regulated by Order No. R5-2002-0083, which was adopted on 26 April 2002 and expired on 1 April 2007. Further, Cease and Desist Order No. R5-2002-0084 (CDO) was adopted by the Regional Water Board on 26 April 2002, and establishes a time schedule for the Discharger to comply with ammonia effluent limitations established in Order No. R5-2002-0083. The Orders were petitioned by the Discharger on 28 May 2002 and on 17 October 2002. The State Water Board granted Stay Order WQO 2002-0018 for portions of Order No. R5-2002-0083 and the CDO. On 2 May 2003, the Discharger filed a Motion for Preliminary Injunction/Order Requiring Stay until 5 September 2003, which the Superior Court upheld on 26 June 2003. The terms and conditions of the current Order have been automatically continued and remain in effect until new Waste Discharge Requirements and NPDES permit are adopted pursuant to this Order. However, as a result of the State Water Board Order and the Court Order, the compliance date for the final ammonia effluent limitations were extended to 10 August 2008, and the compliance date for meeting the tertiary treatment requirements was extended to 25 September 2007.

C. The Discharger filed a report of waste discharge and submitted an application for renewal of its Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit on 29 September 2006. Supplemental information was requested on 26 February 2007, and received on 28 February 2007. A site visit was conducted on 21 April 2006 to observe operations and collect additional data to develop permit limitations and conditions.

II. FACILITY DESCRIPTION

The Discharger provides sewerage service for the City of Stockton, the Port of Stockton, and surrounding urbanized San Joaquin County areas. The Facility serves a population of approximately 326,000, and discharges intermittently up to 55 mgd tertiary-level treated effluent to the San Joaquin River, within the Sacramento-San Joaquin Delta. The Facility average daily flow rate is approximately 31.7 mgd, and the maximum annual average effluent discharge was 36.37 mgd.

A. Description of Wastewater and Biosolids Treatment or Controls

The Facility is bifurcated by the San Joaquin River; the main facility (primary and secondary treatment facilities, and sludge processing facilities) is located east of the river and the tertiary treatment facility is located west of the river. At the main facility, the primary treatment consist of screening, grit removal, and primary sedimentation. The secondary treatment processes consist of high rate trickling filters and secondary clarifiers. Sludge is removed from the primary and secondary sedimentation processes to gravity thickeners for preliminary water removal, and then pumped to anaerobic digesters. After digestion, the treated sludge is pumped to a sludge lagoon where anaerobic digestion continues. A dredge is used to pump the concentrated material

from the bottom of the lagoon to a belt filter press, and dewatered biosolids are removed by a private contractor off-site for agricultural reuse.

From the main facility, the secondary-treated effluent is piped under the San Joaquin River to the tertiary treatment facility, which consists of unlined facultative oxidation ponds, engineered wetlands, two nitrifying biotowers, dissolved air flotation, mixed-media filters, and chlorination/dechlorination facilities. Several of the facultative ponds are operated in a stand-by mode of operation as necessary, to achieve improved effluent quality by decreasing solids loading on the downstream treatment process, and by maintaining stable ammonia loading to the nitrifying biotowers.

B. Discharge Points and Receiving Waters

1. The Facility is located in T1N, R6E, MDB&M, as shown in Attachment B, a part of this Order.

2. Tertiary-level treated municipal wastewater is discharged at Discharge Point No. 001 to the San Joaquin River, a water of the United States at latitude 37° 56' 15" N and longitude 121° 20' 05" W.

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

Effluent limitations/discharge specifications contained in the existing Order for discharges from Discharge Point No. 001 and representative monitoring data from the term of the previous Order are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (From 1 May 2002 – 31 January 2007)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Total Coliform[1]	MPN/100 mL	--	2.2[2]	23	--	50[2]	130
Total Coliform[3]	MPN/100 mL	23[4]	--	240	4[4]	--	1600
Turbidity[1,6]	NTU	--	2	10	--	35	58
Total Suspended Solids	mg/L	30	45	60	21	30	48
	lbs/day[6]	45,300	67,900	90,600	5,016	7,134	9,782
Settleable Matter	mL/L/hr	0.1	--	0.5	0.055	--	0.2
Oil and Grease	mg/L	10	--	15	9.5	--	14
	lbs/day[6]	4,600	--	6,900	2278	--	3234
Ammonia-N	mg/L	2	--	5	28	--	29
	lbs/day[6]	917	--	2,294	8,915	--	12,002
Copper[1]	µg/L	5.2	--	10.4	2.9	--	2.9
	lbs/day[6]	2.4	--	4.8	0.74	--	0.74
Copper[3]	µg/L	--	--	35	--	--	6
	lbs/day	--	--	16	--	--	2.19
Cyanide[1]	µg/L	4	--	9.2	8	--	13

Parameter	Units	Effluent Limitation			Monitoring Data (From 1 May 2002 – 31 January 2007)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
	lbs/day[6]	1.8	--	4.2	1.51	--	1.51
Cyanide[3]	µg/L	--	--	24	8	--	8
	lbs/day[6]	--	--	11	2.26	--	2.26
Chloroform	µg/L	52	--	129	21	--	21
	lbs/day[6]	24	--	59	5.09	--	5.09
Dichloromethane	µg/L	11	--	25	J 0.48	--	J 0.48
	lbs/day[6]	5	--	11.5	0.136	--	0.136
Trichloroethylene	µg/L	14.5	--	34	ND	--	ND
	lbs/day[6]	6.7	--	15.6	ND	--	ND
Bromodichloromethane	µg/L	--	--	82	--	--	36
	lbs/day[6]	--	--	37.6	--	--	16.5
Dibromochloromethane	µg/L	--	--	23	--	--	29
	lbs/day[6]	--	--	10.6	--	--	5.59
1,1-Dichloroethylene	µg/L	--	--	14.5	--	--	ND
	lbs/day[6]	--	--	6.7	--	--	ND
Tetrachloroethylene	µg/L	--	--	14.5	--	--	J 0.09
	lbs/day[6]	--	--	6.7	--	--	0.023
Bis (2-ethylhexyl) phthalate	µg/L	--	--	48	--	--	5.5
	lbs/day[6]	--	--	22	--	--	1.7
Diazinon	µg/L	--	--	0.1	--	--	J 0.155
	lbs/day[6]	--	--	0.046	--	--	0.039
DDT[1]	lbs/year	--	--	ND[7]	--	--	ND
DDT[3]	lbs/year	--	--	7.5[8]	--	--	ND
Endrin Aldehyde[1]	lbs/year	--	--	ND[7]	--	--	ND
Endrin Aldehyde[3]	lbs/year	--	--	12.9[8]	--	--	ND
Lindane[1]	lbs/year	--	--	ND[7]	--	--	ND
Lindane[3]	lbs/year	--	--	3.2[8]	--	--	ND
Mercury	lbs/year	--	--	0.92[8]	--	--	0.537
CBOD[9,10]	mg/L	10	20	25	9.78	17.17	25
	lbs/day[6]	4,590	9,170	11,500	2,655	4,753	8,173
CBOD[9,11]	mg/L	15	23	30	8.85	12.71	16
	lbs/day[6]	6,880	10,600	13,800	1,934	2,839	4,443
CBOD[9,12]	mg/L	20	30	50	18.07	22.4	30
	lbs/day[6]	9,170	13,800	22,900	5,335	7,213	9,621
Chlorine Residual	mg/L	--	0.01[13]	0.02[14]	--	0	0
	lbs/day[6]	--	4.6[13]	--	--	0	--
Dissolved Oxygen	mg/L	--	--	[15]	--	--	1.8[16]
pH	standard units	--	--	[17]	--	--	5.5 – 8.5[18]
CBOD Removal	%	85[19]	--	--	93.6[20]	--	--
TSS Removal	%	85[19]	--	--	92.3[20]	--	--
Flow	mgd	--	--	[21]	--	--	55
Acute Toxicity	% Survival	--	--	[22]	--	--	70[23]

Parameter	Units	Effluent Limitation			Monitoring Data (From 1 May 2002 – 31 January 2007)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Temperature	°F	--	--	[24]	--	--	15.2[25]

ND – Not Detected

1 Final limit became effective 1 May 2006.

2 Applied as a 7-day median.

3 Interim limit effective until 1 May 2006.

4 Applied as a monthly median.

5 Turbidity shall not exceed 5 NTU 5% of the time or 10 NTU at any given time monitored continuously.

6 Based upon a permitted flow of 55 mgd.

7 Non-detectable (ND). The Discharger shall use EPA standard analytical techniques that have the lowest practical levels for DDT, endrin aldehyde, and lindane with minimum acceptable reporting levels of 0.01 µg/L, 0.01 µg/L, and 0.02 µg/L, respectively. Detectable concentrations of these pollutants less than cited lowest practical levels shall be considered in compliance with this effluent limitation.

8 Yearly total as calculated per Effluent Limitation B.11 of Order No. R5-2002-083.

9 5-day, 20°C, carbonaceous biochemical oxygen demand, ascertained by 24-hour composite.

10 Effective 1 April through 31 October, and became effective 25 September 2007.

11 Effective 1 November through 30 November.

12 Effective 1 December through 31 March.

13 Applied as a 4-day average effluent limitation.

14 Applied as a 1-hour average effluent limitation.

15 Effective 1 January 2003, the Discharger shall maintain minimum daily average effluent DO concentration of 6.0 mg/L from 1 September through 30 November and 5.0 mg/L throughout the remainder of the year.

16 Minimum daily discharge of the monitoring data.

17 Effective 1 April 2007, the discharge shall not have a pH less than 6.5 nor greater than 8.5. Prior to 1 April 2007, the discharge shall not have a pH less than 6.0 nor greater than 8.5. Individual excursions below or above the prescribed minimum and maximum pH limitations shall not exceed 60 minutes, respectively. The total duration of excursions shall not exceed 1% of the discharge time within the reporting period. The Discharger shall conduct an internal review and report the reasons for any individual excursion exceeding 30 minutes in duration to the Regional Water Board within the self-monitoring report.

18 Range of pH values of the monitoring data.

19 The arithmetic mean of 20°C CBOD (5-day) and total suspended solids in effluent samples collected over a monthly period shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85 percent removal).

20 Minimum monthly percent removal of the monitoring data.

21 The average dry weather discharge flow shall not exceed 55 mgd. The peak wet weather discharge flow shall not exceed 67 mgd.

22 Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall not be less than 70% for any one bioassay and 90% median for any three or more consecutive bioassays.

23 Minimum percent survival of the monitoring data.

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

25 Maximum difference between the effluent temperature and the natural receiving water temperature.

D. Compliance Summary

1. The Discharger has had an effluent limitation exceedence for discharges from the Facility to the San Joaquin River in May 2004 for pH.

2. The Discharger has had periodic effluent limitation exceedances for discharges from the Facility to the San Joaquin River from 2003 through 2004 for dissolved oxygen.

3. The Discharger has had periodic effluent limitation exceedances for discharges from the Facility to the San Joaquin River in 2006 for cyanide.

4. The Discharger has had an effluent limitation exceedence for discharges from the Facility to the San Joaquin River in October 2006 for dibromochloromethane.

5. The Discharger has had an effluent limitation exceedence for discharges from the Facility to the San Joaquin River in May 2006 through January 2007 for turbidity.

E. Planned Changes

[Not Applicable]

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 February 2007), 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 supply; industrial process supply; industrial service supply; water contact recreation; non-contact water recreation; migration of aquatic organisms; both cold and warm freshwater aquatic habitat; spawning, reproduction, and/or early development; wildlife habitat; and navigation.

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

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

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, Section IV.

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 18 May 1972, and amended this plan on 18 September 1975. This plan contains temperature objectives for surface waters, including estuaries. The Thermal Plan specifically includes the Sacramento-San Joaquin Delta within the definition of an estuary. The Discharger discharges tertiary-level treated wastewater effluent to San Joaquin River, within the legal boundary of the Delta as defined by Section 12220 CWC. The Discharger is considered to be an "Existing Discharger of Elevated Temperature Waste" as described in the Thermal Plan. Thus the Thermal Plan requirements for discharges to estuaries are applicable to this discharge. Requirements of this Order implement the Thermal Plan, and are described as follows:

a. The maximum temperature shall not exceed the natural receiving water temperature by more than 20ºF.

b. Elevated temperature waste discharge either individually or combined with other discharges shall not create a zone, defined by water temperatures of more than 1ºF 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 4ºF 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 Discharger has conducted two site-specific temperature studies, a far-field study (November 1995) and a near-field study (May 2006), to assess any possible thermal impacts of the discharge into the San Joaquin River on migrating fish, including possible stress effects on reproduction or early-life fish development (see section IV.C.3.aa for further discussion). Based on the results of both these studies, this Order does not impose additional temperature limitations; however, this Order does implement the requirements of the Thermal Plan (see sections IV.C.3.aa and V.A.1.o of this Fact Sheet).

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 May 1995 by the State Water Board superseding the 1991 Bay-Delta Plan. The Bay-Delta Plan identifies the beneficial uses of the estuary and includes objectives for flow, salinity, and endangered species protection.

   The 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 29 December 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.** See Limitations and Discharge Requirements – Findings, Section II.N; and Section IV.D.4 of this Fact Sheet.

5. **Anti-Backsliding Requirements.** See Limitations and Discharge Requirements – Findings, Section II.O; and Section IV.D.3 of this Fact Sheet.

6. ***Emergency Planning and Community Right to Know Act***. CWC section 13263.6(a) requires that "*the Regional Water Board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances*

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

The EPCRA Section 313 toxic chemical release data report indicates that acetaldehyde, ammonia, chlorine, chromium compounds, lead, mercury, MTBE, and zinc compounds discharge into the Discharger's collection system. The Regional Water Board has adopted numeric receiving water objectives for acetaldehyde, ammonia, chlorine, chromium compounds, lead, mercury, MTBE, and zinc compounds in the Water Quality Control Plan for the Central Valley Basin (Basin Plan). A reasonable potential analysis was conducted as specified in Section 1.3 of the SIP with the available data. As detailed in Section IV of this Fact Sheet, available effluent quality data indicate that effluent concentrations of ammonia, and chlorine do have a reasonable potential to cause or contribute to an excursion above numeric water quality objectives within the Basin Plan. Effluent limitations for ammonia, and chlorine are included in this permit pursuant to CWC Section 13263.6(a), and an interim effluent mass limitation for mercury (total) has been established in this Order to maintain the Discharger's current mercury loading to the San Joaquin River.

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. No storm water is directly discharged from the Facility, and therefore, coverage of stormwater discharges from the Facility is not necessary.

8. **Endangered Species Act.** See Limitations and Discharge Requirements – Findings, Section II.P.

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

1. Under Section 303(d) of the 1972 Clean Water Act, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 30 November 2006 USEPA gave final approval to California's 2006 Section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of Water Quality Limited Segments (WQLSs), which are defined as "…*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.)*." The Basin Plan also

states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.*" The Delta is divided into multiple WQLSs. The Facility discharges directly into the southern portion and just upstream of the Stockton Deep Water Ship Channel (DWSC). The listing for both WQLSs are applicable to the discharge. The WQLSs are 303(d) listed for: chloropyrifos; DDT; diazinon; dioxin; electrical conductivity (EC); exotic species; furan compounds; group A pesticides; mercury; pathogens; PCBs; and unknown toxicity.

2. **Total Maximum Daily Loads.** The USEPA requires the Regional Water Board to develop total maximum daily loads (TMDLs) for each 303(d) listed pollutant and water body combination. The DWSC is located directly downstream of the discharge location and is 303(d) listed for dissolved oxygen (DO).

   A TMDL for oxygen demanding substances in the DWSC was adopted by the Regional Water Board on 27 January 2005 (Resolution No. R5-2005-0005). The TMDL was approved by the State Water Board on 16 November 2005 and approved by the USEPA on 27 February 2007. The wasteload allocations contained in the TMDL for the Stockton Regional Wastewater Facility are equal to the effluent limitations that were in effect when the TMDL was adopted for oxygen demanding substances, specifically ammonia, $CBOD_5$, and DO. Until wasteload allocations are adopted by Regional Water Board, this Order contains effluent limitations requiring a tertiary-level treatment, or equivalent, which is necessary to protect the beneficial uses of the receiving water. For DO and ammonia, this Order retains the effluent limits from previous Order No. R5-2002-0083 (see section IV.C).

E. Other Plans, Policies and Regulations

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

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

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

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

2. The State Water Board adopted the *Water Quality Control Policy for the Enclosed Bays and Estuaries of California* (see Limitations and Discharge Requirements – Findings, Section II.J). The requirements within this Order are consistent with its policy.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

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

The Federal CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., §1311(b)(1)(C); 40 CFR, §122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to Federal regulations, 40 CFR §122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that "*are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality*." Federal regulations, 40 CFR, §122.44(d)(1)(vi), further provide that "[w]*here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits.*"

The CWA requires point source discharges to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations: 40 CFR §122.44(a) requires that permits include applicable technology-based limitations and standards, and 40 CFR §122.44(d) requires that permits include water quality-based effluent limitations 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) USEPA's published water quality criteria, (2) a proposed state criterion (*i.e*., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (*i.e*., the Regional Water Board's "Policy for Application of Water Quality Objectives")(40 CFR §§122.44(d)(1) (vi) (A), (B) or (C)), or (3) an indicator parameter. The Basin Plan contains a narrative objective requiring that: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*" (narrative toxicity objective). The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, discoloration, toxic substances, radionuclides, or taste and odor producing substances that adversely affect

beneficial uses. The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The Basin Plan also limits chemical constituents in concentrations that adversely affect surface water beneficial uses. For waters designated as municipal, the Basin Plan specifies that, at a minimum, waters shall not contain concentrations of constituents that exceed Maximum Contaminant Levels (MCL) of CCR Title 22. The Basin Plan further states that, to protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

A. Discharge Prohibitions

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

2. **Prohibition III.B (No bypasses or overflow of untreated wastewater, except under the conditions allowed by Federal Standard Provisions I.G. and I.H. in Attachment D of this permit).** As stated in Section I.G of Attachment D, Standard Provisions, this Order prohibits bypass from any portion of the treatment facility. Federal regulations, 40 CFR 122.41 (m), define “bypass” as the intentional diversion of waste streams from any portion of a treatment facility. This section of the federal regulations, 40 CFR 122.41 (m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Water Board’s prohibition of bypasses, the State Water Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the federal regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.

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

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

B. Technology-Based Effluent Limitations

1. Scope and Authority

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. **Carbonaceous Biochemical Oxygen Demand (5-Day @ 20°C) ($CBOD_5$) and Total Suspended Solids (TSS).** Federal regulations, 40 CFR, Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for $CBOD_5$ and TSS. Tertiary treatment is necessary to protect the beneficial uses of the receiving stream and the final effluent limitations for $CBOD_5$ 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 CBOD test is used as a substitute for BOD. The secondary and tertiary treatment standards for $CBOD_5$ and TSS are indicators of the effectiveness of the treatment processes. The principal design parameter for wastewater treatment plants is the daily $CBOD_5$ and TSS loading rates and the corresponding removal rate of the system. In applying CFR 40 Part 133 for weekly and monthly average $CBOD_5$ and TSS limitations, the application of tertiary treatment processes results in the ability to achieve lower levels for $CBOD_5$ and TSS than the secondary standards currently prescribed; therefore these limitations have been revised to 15 mg/L (weekly average) and 10 mg/L (monthly average), which is technically based on the capability of a tertiary system. In addition to these limits, a daily maximum effluent limitation of 20 mg/L for $CBOD_5$ and for TSS is included in this Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities.

   Also, 40 CFR 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. This Order contains a limitation requiring an average of 85 percent removal of $CBOD_5$ and TSS over each calendar month.

b. **Flow.** The Facility is designed to provide a tertiary level of treatment for up to a design flow of 55 mgd. Therefore, this Order contains an Average Dry Weather Flow effluent limit of 55 mgd.

c. The final technology-based effluent limitations required by this Order are summarized below in Table F-3

Table F-3. Summary of Technology-based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
CBOD 5-day @ 20°C	mg/L	10	15	20		
Total Suspended Solids	mg/L	10	15	20		
Flow	mgd			55[1]		
85% Removal of CBOD 5-day @ 20ºC and Total Suspended Solids						

[1] Average dry weather flow

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 California Toxics Rule (CTR) and National Toxics Rule (NTR) (see Limitations and Discharge Requirements – Findings, Section II.I).

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

a. **Receiving Water.** The receiving stream is the San Joaquin River, just upstream of the Stockton Deep Water Ship Channel (DWSC), and a portion of the Delta Waterways. The beneficial uses of the receiving water are described above in Section III.C.1 of this Fact Sheet.

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 metal criteria include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

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 hardness 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. The SIP does not address how to determine hardness for application to the equations for the protection of aquatic life when using hardness-dependent metals criteria. It simply states, in Section 1.2, that the criteria shall be properly adjusted for hardness using the hardness of the receiving water. The CTR requires that, for waters with a hardness of 400 mg/L (as $CaCO_3$), or less, the actual ambient hardness of the surface water must be used. It further requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones.[1] The CTR does not define whether the term "ambient," as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions.

The point in the receiving water affected by the discharge is downstream of the discharge. As the effluent mixes with the receiving water, the hardness of the receiving water can change. Therefore, it is appropriate to use the ambient hardness downstream of the discharge that is a mixture of the effluent and receiving water for the determination of the CTR hardness-dependent metals criteria. Recent studies indicate that using the lowest recorded receiving water hardness for establishing water quality criteria is not always protective of the receiving water under various mixing conditions (e.g. when the effluent hardness is less than the receiving water hardness). The studies evaluated the relationships between hardness and the CTR metals criterion that is calculated using the CTR metals equation. The equation describing the total recoverable regulatory criterion, as established in the CTR, is as follows:

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

Where:

H = Design Hardness
b = metal- and criterion-specific constant
m = metal- and criterion-specific constant

The constants "m" and "b" are specific to both the metal under consideration, and the type of total recoverable criterion (i.e. acute or chronic). The metal-specific values for these constants are provided in the CTR at paragraph (b)(2), Table 1.

The relationship between the Design Hardness and the resulting criterion in Equation 1 can exhibit either a downward-facing (i.e., concave downward) or an upward-facing (i.e., concave upward) curve depending on the values of the criterion-specific constants. The curve shapes for acute and chronic criteria for the metals are as follows:

Concave Downward: cadmium (chronic), chromium (III), copper, nickel, and zinc

[1] See 40 CFR 131.38(c)(4)(i)

Concave Upward: cadmium (acute), lead, and silver (acute)

For those contaminants where the regulatory criteria exhibit a concave downward relationship as a function of hardness, 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. Use of the lowest recorded effluent hardness is also protective under all possible mixing conditions between the effluent and the receiving water (i.e., from high dilution to no dilution). Therefore, for cadmium (chronic), chromium (III), copper, nickel, and zinc, the reasonable worst-case ambient hardness can be estimated by using the lowest effluent hardness. The water quality criteria for these metals were calculated for this Order using Equation 1 and a reported minimum effluent hardness of 98 mg/L as CaCO3, based on 247 samples obtained by the Discharger between 1 May 2002 and 31 January 2007.

For those metals where the regulatory criteria exhibit a concave upward relationship as a function of hardness, water quality objective based on either the effluent hardness or the receiving water hardness alone, would not be protective under all mixing scenarios. Instead, both the hardness of the receiving water and the effluent is required to determine the reasonable worst-case ambient hardness. The following equation provides fully protective water quality criteria for those metals that exhibit a concave upward relationship.

$$\text{CTR Criterion} = \left[\frac{m}{H_{rw}} \cdot \left(H_{eff} - H_{rw} \right) + 1 \right] \cdot e^{m \cdot \ln(H_{rw}) + b} \qquad \text{(Equation 2)}$$

Where:

H_{eff} = lowest recorded effluent hardness
H_{rw} = lowest recorded receiving water hardness
b = metal- and criterion-specific constant
m = metal- and criterion-specific constant

Therefore, for cadmium (acute), lead, and silver (acute) water quality criteria were calculated using Equation 2 with a lowest reported effluent hardness of 98 mg/L as $CaCO_3$ and a highest reported receiving water hardness of 220 mg/L as $CaCO_3$, based on four samples taken between January 2002 and December 2002.

c. **Assimilative Capacity/Mixing Zone.** Section 1.4.2 of the SIP specifies the requirements for establishing mixing zones and dilution credits. The allowance of mixing zones and dilution credits is discretionary and is determined on a discharge-by-discharge basis.

A dilution credit is a numerical value associated with the mixing zone that accounts for the receiving water entrained into the discharge. The dilution credit is a value used in the calculation of effluent limitations. Dilution credits may be limited or denied on a pollutant-by-pollutant basis.

Before establishing a mixing zone and dilution credit for a discharge, it must first be determined if, and how much receiving water is available to dilute the discharge. For determining year round mixing zones, the mixing zone and dilution credits must be determined using the parameters specified in Table 3 of Section 1.4.2.1 of the SIP.

The dilution method provided in the SIP assumes a constant diluting flow in the river, which is normal for most discharges. However, because the San Joaquin River is tidal, the flow of dilution water varies with the tidal cycle, resulting in river flow stagnation and very little dilution of effluent. Data provided by USGS Site No. 11304810 provides tidally filtered mean daily discharge data for the San Joaquin River just upstream of the discharge location. Receiving water flow data from 20 August 1995 through 20 September 2007 indicate a minimum tidally filtered daily discharge flow rate of -264 cubic feet per second (cfs) that occurred on 22 August 2007. Further, a minimum 7-day average tidally filtered daily discharge flow rate of -58.43 cfs was recorded on the date ending 24 August 2007. These negative flow rates indicate low flow conditions in the receiving water and substantial tidal influence, which could result in multiple periods of flow stagnation and little to no dilution. Additionally, tidal action impacts receiving water with multiple doses of the effluent as the river flows downstream past the discharge, reverses moving upstream past the discharge a second time, then again reverses direction and passes the discharge point a third time as it moves down the river.

Evaluation of Available Dilution for Acute and Chronic Aquatic Life Criteria. During the previous permit renewal for Order No. R5-2002-0083, a “Box Model” by Jones & Stokes was created to attempt to quantify the effect of the multiple doses of effluent to the receiving water. However, due to the impaired condition of the San Joaquin River, the presence of endangered species, and the uncertainty regarding the reliability and accuracy of this “Box Model” study of the discharge and receiving water, the Regional Water Board did not grant dilution credits and mixing zones for the acute and chronic aquatic life criteria. The Discharger has not provided additional information to adequately demonstrate that dilution credits for the acute and chronic aquatic life criteria are appropriate. Therefore, this Order does not allow any dilution credits in the calculations of water quality-based effluent limitations based on acute and chronic aquatic life criteria.

Evaluation of Available Dilution for Priority Pollutant Human Health Criteria. For human health criteria, critical environmental impacts are expected to occur far downstream from the source such that complete mixing is a valid assumption. With regard to completely mixed discharges the SIP states, “*For completely-mixed discharges…the amount of receiving water available to dilute the effluent*

shall be determined by calculating the dilution ratio (i.e. the critical receiving water flow divided by the effluent flow)…" The SIP recommends using the harmonic mean receiving water flow and the long-term arithmetic mean to calculate a dilution credit for human health criteria constituents. The previous permit, Order No. R5-2002-0083, granted a 10:1 dilution credit based on the San Joaquin River flows measured slightly upstream of the discharge during the period from November 1995 through June 2000 (848 cfs), which was the only data at that time, and the permitted design flow of 55 mgd (or 85 cfs). Order No. R5-2002-0083 also provisionally required the Discharger to conduct a human carcinogenic impact study that included at a minimum: 1) a human carcinogenic mixing zone evaluation and 2) an additive human carcinogenicity analysis to evaluate the relative carcinogenic risk of the combined discharge of multiple human carcinogens into the San Joaquin River. The human carcinogenic mixing zone evaluation must include, at minimum, a hydraulic analysis of the effluent discharged into the receiving water over a variety of flow conditions to delineate the extent of the corresponding human carcinogen criteria mixing zone.

In compliance, the Discharger submitted the "Evaluation of San Joaquin River Tidal Flow Dilution at the Stockton Regional Wastewater Control Facility" (Jones and Stokes, May 2005*),* and the human carcinogenic impact study final report, *Stockton Regional Wastewater Control Facility Human Carcinogen Impact Study Phase 2A: Basin Plan Calculation of Additive Toxicity Ratio* (EOA,Inc., 17 May 2006). In these studies, the Discharger tracked tidal movement during various tidal stages, estimated the cumulative tidal flow volume that moved past the discharge, analyzed the long-term average dilution flow, and evaluated the upstream flow at Vernalis combined with the diversions in the Old River to estimate the net flows within the vicinity of the discharges. Based on the findings of this study, there is available dilution for human health criteria.

The San Joaquin River flow data obtained slightly upstream of the discharge during the period from 20 August 1995 through 25 March 2008 was used to calculate the harmonic mean receiving water flow, as recommended in the SIP. The harmonic mean calculation is one over the average of the reciprocals of the running average flow rates; however, the strong tidal influence exerted on the San Joaquin River flows within the area of the discharge complicates this calculation. The calculation is relatively straightforward during the positive San Joaquin River flows, which occurs during the ebb-tide flows; however, the calculation is complex during the negative San Joaquin River flows, which may occur during flood-tide flows or drought years. When negative flow rate values occur, the "running average flow rate" can be positive or negative, and the average of the reciprocals of the running average flow rates can be close to zero. Thus, the harmonic mean calculated value may be artificially high or low (i.e. the harmonic mean of 1.01 and -1.00 is –202, or using the absolute value, the harmonic mean is 1.005). Each tidal period (either ebb-tide or flood-tide) is 6.2 hours, the daily tidal cycle is 24.8 hours, and the full lunar cycle is 28 days; therefore, using a 28-day running average flow rate in the harmonic mean calculation is appropriate to account for negative flows, which equates to an

harmonic mean of 647 cfs. Based on the harmonic flow of 647 cfs (November 1995 to 25 March 2008) and a long-term arithmetic mean of 48.6 cfs (1 May 2002 to 31 January 2007), a dilution credit of up to 13.3:1 may be allowed. Based on the findings of the human carcinogenic mixing zone evaluation study and the human carcinogenic impact study, a dilution credit of 13:1 is protective of the MUN beneficial use. Therefore, the proposed Order grants a 13:1 dilution credit applicable to the human health criteria, with a mixing zone that extends approximately 3.5 miles upstream and 1 mile downstream of the discharge (within this section of the San Joaquin River, the downstream is wider than the upstream section). There are no known drinking water intakes in the vicinity of the discharge.

Evaluation of Available Dilution for Agricultural Water Quality Objectives. For constituents where water quality criteria are based on agricultural water quality objectives, critical environmental impacts are expected to occur far downstream from the source such that complete mixing is a valid assumption. Regarding the application of a mixing zone, the TSD states that," …*the presence of mixing zones should not result in significant health risks, when evaluated using reasonable assumptions about exposure pathways. . .*". As previously stated, there are no known drinking water intakes in the vicinity of the discharge, but there is one agricultural water intake located near the discharge, which is used for flood irrigation in the spring time (depending on crop rotations). However, because protection of agricultural beneficial uses is based upon the long-term effects, for purposes of establishing WQBELs in this Order, dilution credits may be granted based on the San Joaquin River harmonic flow and a long-term arithmetic mean discharge (See Evaluation of Available Dilution for Priority Pollutant Human Health Criteria). Therefore, this Order grants a 13:1 dilution credit applicable to those constituents where water quality criteria are based on agricultural water quality objectives.

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, bis (2-ethylhexyl) phthalate, chlorine (total residual), chlorodibromomethane, cyanide, dichlorobromomethane, electrical conductivity, manganese, molybdenum, and nitrate plus nitrite. Water quality-based effluent limitations (WQBELs) for these constituents are included in this Order. A summary of the reasonable potential analysis (RPA) is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

c. The Regional Water Board conducted the RPA in accordance with Section 1.3 of the SIP. Although the SIP applies directly to the control of CTR priority pollutants, the State Water Board has held that the Regional Water Board may use the SIP as guidance for water quality-based toxics control.[2] The SIP states in the introduction "*The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency."* Therefore, in this Order the RPA procedures from the SIP were used to evaluate reasonable potential for both CTR and non-CTR constituents.

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

e. **Aluminum.** The Secondary MCL for aluminum for the protection of the MUN beneficial use is 200 µg/L. In addition, USEPA developed National Recommended Ambient Water Quality Criteria (NAWQC) for protection of freshwater aquatic life for aluminum, and the recommended four-day average (chronic) and one-hour average (acute) criteria are 87 µg/L and 750 µg/L, respectively. However, information contained in the footnotes to the NAWQC indicate that the development of the chronic criterion was based on specific receiving water conditions where there is low pH (below 6.5) and low hardness levels (below 50 mg/L as CaCO3). The San Joaquin River (SJR) has been measured to have hardness values—typically between 57 and 152 mg/L as $CaCO_3$. Because the hardness values in the SJR are higher (which decreases the toxic effects to aquatic life) than the water hardness values in which the criterion was developed, USEPA advises that a water effects ratio (WER) might

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

be appropriate to better reflect the actual toxicity of aluminum to aquatic organisms.

In May 2006, the Arid West Water Quality Research Project produced a research report, *Evaluation of the EPA Recalculation Procedure in the Arid West Technical Report*, to update NAWQC based on more recent data, and to recalculate these NAWQC to reflect the resident species observed in arid West receiving waters. This research report states that "*speciation and/or complexation of aluminum is highly dependent on ambient water quality characteristics and ultimately determines the mechanism of toxicity. [Increased] Concentrations of calcium in the water was shown to decrease toxic effects to fish."* Based on the Arid West Technical Report, the Chronic Aluminum (total) Criterion Value is calculated as 1954 µg/L for a mean hardness value of 272 mg/L as $CaCO_3$, which is similar to the WER value calculated in Manteca's Phase II WER Study.

The City of Manteca completed an aluminum WER study (12 April 2007) for the San Joaquin River near its discharge point, which is located upstream of the Discharger's outfall. The Manteca WER study, which may be used to calculate a WER for the City of Manteca's discharge, indicated that a WER of 22.7 can be applied to the chronic criterion for aluminum. Since the characteristics of the river (e.g. hardness and pH) near Manteca are similar to those near the City of Stockton, the results of the Manteca WER study put into question the applicability of the stringent CCC recommended by the NAWQC for aluminum. Using the WER adjustment in accordance with the SIP, the applicable water quality criteria for aluminum for chronic exposure becomes 22.7 x 87 µg/L or 1975 µg/L.

Although the Arid West Technical Report has not been approved by USEPA nor has it received independent scientific peer review, based on its findings and the Manteca WER study, the Regional Water Board finds that there is uncertainty of the appropriateness of using the chronic criterion recommended in the NAWQC (87 µg/L). Therefore, for this RPA for aluminum, an acute and chronic criterion of 750 µg/L was used for protection of aquatic life and the secondary MCL of 200 µg/L was used for protection of MUN.

Based on 21 samples collected between 29 January 2002 and 2 August 2006, the MEC for aluminum was 2,900 µg/L. The maximum observed upstream receiving water aluminum concentration was 1,800 µg/L, based on 19 samples collected between 20 March 2002 and 2 August 2006. 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 and the MUN beneficial use.

Based on the above information, using the chronic criterion recommended in the NAWQC (87 µg/L) is not appropriate for the receiving water. Therefore, this Order contains a final Average Monthly Effluent Limitation (AMEL) and Maximum Daily Effluent Limitation (MDEL) for aluminum of 311 µg/L and 750 µg/L, respectively, based on USEPA's NAWQC of 750 ug/L for the protection of freshwater aquatic life (See Table F-7 of this Fact Sheet for WQBEL

calculations). This Order also contains an annual average effluent limitation of 200 µg/L for aluminum, based on the Secondary MCL, for protection of the MUN beneficial use. In addition, this Order includes a reopener to consider a revision of the final effluent limitations for aluminum if additional information is provided by the Discharger, such as submission of a defensible water effects ratio study or defensible findings from an independent scientific peer review of the Arid West Technical Report, particularly the updated national ambient water quality criteria contained in Chapter 3 of that report.

Based on the sample results in the effluent, it appears that the Discharger may be in immediate non-compliance upon issuance of the permit. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for aluminum are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the aluminum effluent limitations is established in TSO No. R5-2008-XXXX in accordance with CWC section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3.

f. **Ammonia Nitrogen, Total (as N)***.* Untreated municipal 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 previous permit, Order No. R5-2002-0083, contained final effluent limitations for ammonia (as N), an AMEL of 2 mg/L (917 lbs/day) and an MDEL of 5 mg/L (2,294 lbs/day), and contained a provisional requirement to evaluate the effects that a nitrification facility would have and what additional treatment may be necessary. Because the Discharger could not immediately comply with the final effluent limitations, the Regional Water Board also issued Cease and Desist Order (CDO) No. R5-2002-0084 to provide a compliance schedule for construction and operation of the nitrification facilities. The CDO required full compliance with the ammonia limitations by 1 April 2007. The Discharger petitioned the State Water Board requesting review of these Orders. In response to the Discharger's petition, the State Water Board granted a stay for portions of the existing permit and the CDO (See previous section I.B of this Fact Sheet), and as a result, extended the compliance date with these ammonia effluent limitations to 10 August 2008. The Discharger has since added nitrification facilities, which include nitrifying biotowers and engineered wetlands; thus, the Discharger now partially nitrifies to remove ammonia from the waste stream to meet the ammonia limits in Order No. R5-2002-0083.

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. Therefore, the discharge has the reasonable potential to cause

or contribute to an exceedance of the Basin Plan's narrative toxicity objective. Applying CFR Part 122.44(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 standards (1-hour average; criteria maximum concentration) based on pH, and chronic standards (30-day average, criteria continuous concentration) 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. The beneficial uses of the San Joaquin River downstream of the discharge include migration of aquatic organisms, and spawning, reproduction, and/or early development. Thus, because the presence of salmonids and early fish life stages in San Joaquin River within the vicinity of the discharge is well-documented, the recommended criteria for waters where salmonids and early life stages are present were used. USEPA's recommended criteria are shown 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

Previous Order No. R5-2002-0083 demonstrated that the effluent discharge has reasonable potential to exceed ammonia water quality criteria in the receiving water through four separate methods: (1) identifying toxicity in the RWCF effluent using "real-time" data (ammonia, pH, and temperature occurring simultaneously), (2) identifying toxicity in the receiving water using "real-time" data, (3) showing reasonable potential based on critical conditions that are a combination of worst-case observations, and (4) evaluation based on the expected receiving water pH and temperature occurring under drought flow conditions. The complex derivation of the final ammonia effluent limitations were based on these four methods and the Discharger's cost-effective analysis of upgrading the Facility. As a result, previous Order No. R5-2002-0083 required the same ammonia-N effluent limits as the 1994 permit, MDEL of 5 mg/L and an AMEL of 2 mg/L, which became effective August 2008. By letter dated 22 March 2002, EPA Region IX concurred with the methodology for calculating the WQBELs for ammonia.

Since issuance of the previous Order No. R5-2002-0083, additional "real time" data for both the effluent and receiving water was obtained, and therefore, the effluent and receiving water monitoring data from September 1992 through December 2007 were evaluated to determine the accuracy of the evaluation of the acute and chronic ammonia criteria. An acute ammonia toxicity criterion was calculated for each receiving water pH value using the CMC equation based on salmonids present. A chronic toxicity criterion was calculated for each paired receiving water 30-day average temperature and pH using the CCC equation based on early life stages present. A total of 619 receiving water ammonia concentration samples (either R2 or R2a, whichever was greater) were compared to its paired acute and 30-day average chronic criteria for ammonia. Table F-4 below lists the occurrences where the receiving water ammonia concentration exceeded the ammonia criteria.

Table F-4. Summary of Ammonia Effluent Limit Derivations

Date	Year Hydrological Type	Ammonia Concentrations (mg/L as N)			Ammonia Criteria (mg/L as N)	
		Effluent Daily	Receiving Water Daily	Receiving Water Monthly Average	Acute	30-day Average Chronic
Jan-00	Above Normal	24.7	5.9	5.9	17.5	5.1
Jan-04	Dry	24.4	6.5	4.4	13	4.2
Feb-04	Dry	26	7.2	4.9	13.5	4.1
Feb-04	Dry	26	4.3	5.2	12	3.4
Feb-04	Dry	25.2	5.5	5.5	12.8	3.4

As indicated in Table F-4 above, at times the chronic criterion was exceeded in the receiving water. However, these exceedances occurred during periods of high effluent concentrations of ammonia, as much as five times the MDEL allowed in the previous Order. As previously discussed in this Fact Sheet, the Discharger upgraded the Facility in September 2006 to meet the final ammonia effluent limits. Further evaluation of 72 paired effluent and receiving water samples obtained after the Facility's upgrade (18 September 2006) yields a maximum daily effluent concentration value of 12.5 mg/L and an average value of 3.37 mg/L, and a receiving water maximum concentration of 0.9 mg/L and an average value of 0.35 mg/L. Based on this evaluation, the ammonia effluent limitations at a MDEL of 5 mg/L and an AMEL of 2 mg/L are fully protective of the beneficial uses, and therefore, this Order carries forward these limitations from the previous Order.

g. **Bis (2-ethylhexyl) phthalate.** Bis (2-ethylhexyl) 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 noninjurious 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 previous Order contained a daily maximum effluent limitation of 48 µg/L.

The MEC for bis (2-ethylhexyl) phthalate was 5.5 µg/L, based on 61 samples collected between 1 May 2001, and 14 June 2006, while the maximum observed upstream receiving water bis (2-ethylhexyl) phthalate concentration was 3.2 µg/L, based on 21 samples collected between 22 May 2002, and 15 November 2006. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the NTR criterion for bis (2-ethylhexyl) phthalate.

Section 1.4.3.2 of the SIP states that the ambient background concentration shall be set equal to the arithmetic mean of the individual reported measure or estimated concentration. All ambient background samples were reported below the reported detection limits (non-detects) except for the sample obtained on 10 November 2004, and therefore, the arithmetic mean concentration is set at that concentration value of 3.2 µg/L. Per the SIP, no dilution is allowed since the arithmetic mean exceeds the bis (2-ethylhexyl) phthalate criterion. This Order includes an AMEL and MDEL for bis (2-ethylhexyl) phthalate of 1.8 µg/L and 3.6 µg/L, respectively, based on the NTR criterion for the protection of human health (see Table F-8 for WQBEL calculations).

Based on the sample results in the effluent, it appears that the Discharger may be in immediate non-compliance upon issuance of the permit. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for bis (2-ethylhexyl) phthalate are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the bis (2-ethylhexyl) phthalate effluent limitations is established in TSO No. R5-2008-XXXX in accordance with CWC section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3.

h. **Chlorodibromomethane (Dibromochloromethane).** A performance-based MDEL of 23 µg/L was applied in the previous Order and monitoring requirements were established to evaluate the reasonable potential of chlorodibromomethane to exceed water quality criteria. The CTR includes a chlorodibromomethane criterion of 0.41 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. The MEC for chlorodibromomethane was 29 µg/L, based on 60 samples collected between 20 March 2002 and 15 November 2006 while concentrations were not detected in 26 receiving water samples (non-detects) collected during this same period. The reported detection levels ranged from 0.5 µg/L to 0.03 µg/L; accordingly, the ambient background concentration was

set at 0.03 µg/L (per SIP section 1.4.3.2). Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for chlorodibromomethane.

A dilution credit for chlorodibromomethane of up to 13:1 can be granted, based on the available human health dilution (see Section IV.C.2.c). An AMEL and MDEL for chlorodibromomethane of 5.0 µg/L and 16 µg/L, respectively, are included in this Order based on the CTR criterion for the protection of human health (see Table F-9 for WQBEL calculations). These more stringent effluent limitations are necessary to be consistent with the SIP and the antidegradation requirements.

Based on the sample results in the effluent, it appears that the Discharger may be in immediate non-compliance upon issuance of the permit. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for chlorodibromomethane are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the chlorodibromomethane effluent limitations is established in TSO No. R5-2008-XXXX in accordance with CWC section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3.

i. **Chlorine Residual.** The Discharger uses chlorine for disinfection, which is extremely toxic to aquatic organisms. The Discharger uses a sulfur dioxide process to dechlorinate the effluent prior to discharge to the San Joaquin River. Due to the existing chlorine use and the potential for chlorine to be discharged, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

The USEPA *Technical Support Document for Water Quality-Based Toxics Control* [EPA/505/2-90-001] contains statistical methods for converting chronic (4-day) and acute (1-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. However, because chlorine is an acutely toxic constituent that can and will be monitored continuously, an average 1-hour limitation is considered more appropriate than a maximum daily limitation; and a 4-day limitation is considered more appropriate than an average monthly effluent limitation. Therefore, an average 1-hour effluent limitation of 0.02 mg/L and an average 4-day effluent limitation of 0.01 mg/L for chlorine are included in this Order based on the criteria. Based on data reported during the previous permit term, it appears as if the Discharger can immediately comply with these new effluent limitations for chlorine residual.

The chlorine residual limitations required in this Order are protective of aquatic

organisms in the undiluted discharge. If compliance is maintained, the Regional Water Board does not anticipate residual chlorine impacts to benthic organisms.

j. **Chloride. (see Subsection below for Salinity)**

k. **Copper, Total Recoverable.** 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. Using the worst-case measured design hardness from the receiving water (90 mg/L as $CaCO_3$) and the USEPA recommended dissolved-to-total translator, the applicable chronic criterion (maximum 4-day average concentration) is 8.53 µg/L and the applicable acute criterion (maximum 1-hour average concentration) is 12.68 µg/L, as total recoverable.

The MEC for total copper was 6.3 µg/L, based on 67 samples collected between 20 March 2002 and 10 January 2007, while the maximum observed upstream receiving water total copper concentration was 5 µg/L, based on 10 samples collected between 20 March 2002 and 4 December 2002. Therefore, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for copper.

Therefore, based on new information and the procedures established in Section 1.3 of the SIP for determining reasonable potential, the discharge no longer demonstrates reasonable potential to exceed water quality criteria for copper. The removal of the effluent limitations for copper is in compliance with 40 CFR 122.44(l)(2)(i)(B)(1).

l. **Cyanide, Total Recoverable.** The CTR includes maximum 1-hour average and 4-day average cyanide concentrations of 22 µg/L and 5.2 µg/L, respectively, for the protection of freshwater aquatic life. The MEC for cyanide was 13 µg/L, based on 120 samples collected between 20 January 2002 and 30 June 2008, while the maximum observed upstream receiving water cyanide concentration was 300 µg/L, based on 10 samples collected between 20 March 2002 and 4 December 2002. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for cyanide. Previous Order No. R5-2002-0083 contains final limits for cyanide that became effective 1 May 2006, an AMEL of 4.0 µg/L and a MDEL of 9.2 µg/L. However, based on the procedures in the SIP, and on recent effluent data, this Order contains cyanide effluent limitations recalculated as an MDEL at 9.0 µg/L and an AMEL at 4.1 µg/L (see Table F-11 for WQBEL calculations).

To comply with the requirements of the previous Order No. R5-2002-0083, the Discharger developed a pollution prevention plan for cyanide, which included a source identification study and mass balance of influent loadings. Based on the findings of this study, the Discharger concluded that 71% of the cyanide influent load is from residential sources, 12% is from commercial sources, and 7% is

from the industrial dischargers. As such, implementation of local limits or other industrial source control may not have a significant impact in overall cyanide reduction.

To determine if the cyanide exceedences are actually a function of sample preservation techniques ("Cyanide Formation and Fate in Complex Effluents and its Relation to Water Quality," Water and Environmental Research Foundation, 2003), the Discharger is currently investigating the feasibility of modifying its analytical procedures. In addition to modifying analytical procedures, which in the City's case would require construction of new laboratory facilities, the City will also evaluate operational modifications that can be made to their filtration and disinfection facilities to reduce cyanide formation. The City will also evaluate the benefits and feasibility of switching its current chlorine-based disinfection system to alternative disinfection, and if necessary, construct alternative disinfection facilities. The previous Order No. R5-2002-0083 cyanide effluent limitation has been modified in this Order, and based on the sample results in the effluent, it appears that the Discharger may be in immediate non-compliance upon issuance of the permit. Because new or modified control measures may be necessary as proposed in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days, a compliance time schedule for compliance with the cyanide effluent limitations is established in TSO No. R5-2008-XXXX in accordance with CWC section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3.

m. **Diazinon.** The Basin Plan requires the Regional Water Board to consider relevant numerical criteria and guidelines developed by other agencies in determining compliance with the narrative toxicity objective (Basin Plan, IV-17.00). In March 2000, the California Department of Fish and Game (DFG) established acute and chronic criteria for diazinon to protect fresh water aquatic life. The acute (1-hour average) and chronic (4-day average) criteria are 0.08 µg/L and 0.05 µg/L, respectively. Order No. R5-2002-0083 established a MDEL of 0.1 µg/L.

The MEC for diazinon was <0.25 µg/L, based on 57 samples collected between 22 May 2002, and 10 January 2007, and no diazinon concentrations was detected in the upstream receiving water monitoring results, <0.25 µg/L, based on three samples collected between 22 May 2002, and 13 November 2002. Based on new information and the procedures established in Section 1.3 of the SIP for determining reasonable potential, the discharge no longer demonstrates reasonable potential to exceed water quality criteria for diazinon. The removal of the effluent limitations for diazinon is in compliance with 40 CFR 122.44(l)(2)(i)(B)(1).

n. **Dichlorobromomethane (Bromodichloromethane).** A performance-based MDEL of 82 µg/L was applied in the previous Order and monitoring requirements were established to evaluate the reasonable potential of dichlorobromomethane to exceed water quality criteria. The CTR includes a dichlorobromomethane

criterion of 0.56 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. The MEC for dichlorobromomethane was 36 µg/L, based on 82 samples collected between 20 March 2002 and 13 May 2008; while dichlorobromomethane concentrations were not detected in the upstream receiving water monitoring samples. Therefore, the discharge demonstrates a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for dichlorobromomethane.

A dilution credit for dichlorobromomethane of up to 13:1 can be granted, based on the available human health dilution (see Section IV.C.2.c). An AMEL and MDEL for dichlorobromomethane of 6.8 µg/L and 20 µg/L, respectively, are included in this Order based on the CTR criterion for the protection of human health (See Table F-10 for WQBEL calculations). These more stringent effluent limitations are necessary to be consistent with the SIP and antidegradation requirements.

Based on the sample results in the effluent, it appears that the Discharger may be in immediate non-compliance upon issuance of the permit. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for dichlorobromomethane are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the dichlorobromomethane effluent limitations is established in TSO No. R5-2008-XXXX in accordance with CWC section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3.

o. **1,1-Dichloroethylene (1,1-DCE).** The CTR includes a 1,1-dichloroethylene criterion of 0.057 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. Based on performance data collected between April 1994 and April 2000, the previous order established an interim MDEL of 14.5 µg/L.

1,1-dichloroethylene was not detected in the effluent and the maximum detection level was <0.06 µg/L, based on 68 samples collected between 20 March 2002 and 10 January 2007. Also, 1,1-dichloroethylene was not observed in the upstream receiving water concentration and the maximum detection level was <0.06 µg/L, based on 26 samples collected between 20 March 2002 and 15 November 2006. Based on new information and the procedures established in Section 1.3 of the SIP for determining reasonable potential, the discharge no longer demonstrates reasonable potential to exceed water quality criteria for 1,1-dichloroethylene. The removal of the effluent limitations for 1,1-dichloroethylene is in compliance with 40 CFR 122.44(l)(2)(i)(B)(1).

p. **Dissolved Oxygen.** Board Resolution No. R5-2005-0005 was adopted on 27 January 2005 by the Regional Water Board, and approved by the USEPA on 7 February 2007. Board Resolution No. R5-2005-0005 establishes a TMDL for factors contributing to the dissolved oxygen impairment in the Stockton Deep Water Ship Channel portion of the San Joaquin River. The TMDL is applicable to the Facility's discharge, but does not apply direct minimum limitations on DO concentrations in the effluent. However, the Basin Plan identifies objectives for dissolved oxygen in the SJR, between Turner Cut and Stockton. The previous permit, Order No. R5-2002-0083, contained effluent limitations for dissolved oxygen of 6.0 mg/L from 1 September through 30 November and 5.0 mg/L throughout the remainder of the year.

The minimum DO concentration observed was 1.8 mg/L based on 1,498 samples collected between 1 May 2002 through 31 January 2007. The discharge demonstrates reasonable potential to exceed water quality objectives contained in the Basin Plan. Therefore, the daily minimum effluent limitations for dissolved oxygen contained in the previous permit, Order No. R5-2002-0083, are retained in this Order, and are based on the Basin Plan water quality objectives for dissolved oxygen concentrations in the San Joaquin River.

q. **Electrical Conductivity. (see Subsection below for Salinity)**

r. **Manganese, Total Recoverable.** The applicable water quality objective for manganese contained in Table III-1 of the Basin Plan is 50 µg/L (as dissolved). In the absence of a specific translator for manganese, a translator of 1 is assumed (i.e., the applicable objective for manganese in the total form is equal to 50 µg/L). The MEC for manganese was 180 µg/L (reported as total), based on 23 samples collected between 29 January 2002 and 14 November 2006. The maximum observed upstream receiving water manganese concentration was 240 µg/L (as total), based on 10 samples collected between 20 March 2002 and 4 December 2002.

To determine the assimilative capacity of the San Joaquin River for manganese, the Discharger conducted additional upstream receiving water monitoring during the period 7 December 2005 through 2 August 2006, and measured manganese as total and dissolved. The results of this study were provided as part of their report of waste discharge, and the arithmetic mean of the observed upstream receiving water concentration for dissolved manganese was reported as 7 µg/L. The dissolved data for the receiving water indicates assimilative capacity exists in the receiving water for manganese. Therefore, a dilution credit for manganese of up to 13:1 can be granted, based on the available human health dilution (as discussed in Section IV.C.2.c above). In accordance with 40 CFR 122.45(c), the WQBEL in dissolved form was converted to the total form using the assumed translator of one. Based on the allowable dilution credit, an MDEL of 1308 µg/L is calculated. However, the Regional Water Board finds that granting of this dilution credit could allocate an unnecessarily large portion of the receiving water's assimilative capacity for manganese and could violate the Antidegradation Policy. For this reason, a performance-based effluent limitation

is included in this Order that is calculated in the same way that interim limits are calculated (see Section IV.E. below). An MDEL for total manganese of 286 µg/L is included in this Order based on Basin Plan objectives for the protection of human health. Based on the sample results for the effluent, it appears the Discharger can meet this new limitation.

s. **Mercury, Total.** 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 (based on a one-in-a-million cancer risk) 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.

From 20 March 2002 through 10 January 2007, the Discharger collected 67 effluent samples for total mercury. The maximum observed effluent mercury concentration was 0.013 µg/L (March 2002). The Stockton Deep Water Ship Channel portion of the Delta Waterways, which is about 1.5 miles downstream of the discharge, has been listed as an impaired water body pursuant to Section 303(d) of the Clean Water Act because of mercury. Mercury bioaccumulates in fish tissue, and therefore, the discharge of mercury to the receiving water is likely to contribute to exceedances of the narrative toxicity objective and impacts on beneficial uses. Because the Stockton Deep Water Ship Channel has been listed as an impaired water body for mercury, the discharge must not cause or contribute to increased mercury levels.

The SIP, Section 1.3, requires the establishment of an effluent limitation for a constituent when the receiving stream background water quality exceeds an applicable criterion or objective. Order No. R5-2002-0083 established a mass-based effluent limitation of 0.92 lbs/year for mercury based on the average flow rate for the period (33.2 mgd) and average discharge concentration for the period (0.0094 µg/L). In addition, the Discharger was required to perform an offset program feasibility and development study with the intention of mitigating the mass loading of mercury in effluent above the interim mass limitation. The Facility submitted the study in September 2006. The study identifies potentially feasible and unlikely feasible offset projects. The feasibility is primarily associated with legal liability concerns, regulatory constraints, applicable policies, and unwilling landowners. The report concludes that due to the uncertainty as to the viability of any offset projects, any future TMDL requirements, and future offset policies, it would be premature to propose permit conditions based on the current report. Therefore, the interim mass-based effluent limitation of 0.92 lbs/year is retained in this Order. This limitation is based on maintaining the mercury loading at the current level until a TMDL can be established and USEPA develops mercury standards that are protective of human health. Compliance

time schedules have not been included since the discharge currently meets the water quality criteria and the mass limitation. If USEPA develops new water quality standards for mercury, or if the Regional Water Board determines that a mercury offset program is feasible for dischargers subject to a NPDES permit, this Order may be reopened to reevaluate the interim mercury mass loading limitation(s) and the need for a mercury offset program.

t. **Molybdenum, Total Recoverable***.* Molybdenum is a naturally occurring trace element, and one of 15 elements known to be essential to plant growth. While essential in trace concentrations, excess concentrations are known to bioaccumulate in certain plant species, causing molybdenosis in ruminants (especially cattle) grazing on forage containing concentrations above 10 parts per million (ppm). Studies indicate the impact of molybdenum contamination of forage depends on the quality and amount of irrigation water applied to the field, as well as on the type and leachability of the soil. *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), recommends that the molybdenum concentration in waters used for agricultural irrigation not exceed 10 µg/L. Applying the Basin Plan "Policy for Application of Water Quality Objectives", the numeric standard that implements the narrative objective is the Agricultural Water Quality Goal of 10 µg/L.

The MEC for molybdenum was 13 µg/L, based on 68 samples collected between 19 November 2002 and 10 January 2007. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's chemical constituents objective. During the period from January 2006 through July 2006, the maximum background concentration of molybdenum was reported as 2.2 µg/L (2 July 2006), and the mean concentration was reported as 1.3 µg/L considering 8 sampling events. Results of the monitoring for molybdenum in the receiving water upstream of the Facility outfall indicate the San Joaquin River has assimilative capacity for molybdenum.

As discussed in Section IV.C.2.c. above, the effluent limitation calculation procedures in Section 1.4 of the SIP allow for the granting of a dilution credit for molybdenum based on the harmonic mean flow of the San Joaquin River and the arithmetic mean flow of the effluent. Based on the allowable dilution credit of up to 13:1, an AMEL and MDEL of 114 µg/L and 198 µg/L, is calculated respectively. However, the Regional Water Board finds that granting of this dilution credit could allocate an unnecessarily large portion of the receiving water's assimilative capacity for molybdenum and could violate the Antidegradation Policy. Using the statistical methods for calculating interim effluent limitations described in Section IV.E.1., the MDEL is calculated at 11 µg/L; but because it is below the MEC of 13 µg/L, the MDEL for molybdenum established in this Order is 13 µg/L, which is the MEC.

u. **Nitrate plus Nitrite (as N)***.* 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 a Primary MCL at Title 22 of the CCR, Table 64431-A, for the protection of human health for nitrate plus nitrite (sum as nitrogen) of 10,000 µg/L.

USEPA has developed a primary MCL and a MCL goal of 1,000 µg/L for nitrite (as nitrogen). For nitrate, USEPA has developed a Drinking Water Standards Primary MCL and an Ambient Water Quality Criteria for protection of human health non-cancerous effects of 10,000 µg/L. Furthermore, 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 nitrate plus nitrite.

Provision G.14 of the previous permit required the Discharger to evaluate existing and future levels of nitrate in the discharge to determine if it would cause or contribute to an in-stream excursion above a narrative or numeric water quality standard. The Discharger submitted the final report, *Nitrate Analysis for the Stockton Regional Wastewater Control Facility*, dated December 2004. The Discharger states in this report that as the Facility's nitrification system is completed and ammonia concentrations are nitrified, the resulting "*effluent nitrate will likely exceed the MCL value of 10 mg/L during most of the year*". . . but "*will be less than 10 mg/L during the summer months, when the pond removal of both ammonia and nitrate is greatest*. " The Discharger added nitrification facilities, which included biological trickling filter towers with plastic filter medium and engineered wetlands. Both nitrification facilities were on-line by 18 September 2006.

Subsequent samples (72 total) obtained by the Discharger from 18 September 2006 through 31 January 2008, resulted in MECs for nitrate and nitrite of 29 mg/L (29 January 2007) and 4.0 mg/L (14 March 2007), respectively, and a total of 384 samples obtained during this same period resulted in a MEC for ammonia of 17 mg/L (6 January 2007). Based on this data, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the nitrate plus nitrite criterion.

The maximum observed upstream receiving water nitrate and nitrite concentration was 4.2 mg/L and 0.1 mg/L respectively, based on 162 samples collected between 20 March 2002 and 9 January 2006. These results indicate that the receiving water has assimilative capacity for nitrate plus nitrite. Based on the dilution credit applicable to the human health criteria and the fact that modeling and field observations have shown that complete mixing is assured prior to the nearest possible drinking water intake, a dilution credit of up to 13:1 may be allowed (see Section IV.C.2.c of this Fact Sheet) in calculation of the

WQBELs for nitrate plus nitrite, resulting in an AMEL for nitrate plus nitrite of 113 mg/L. However, allocating the full assimilative capacity for these constituents is not consistent with the Antidegradation Policy (Resolution 68-16), and based on Facility performance, the Discharger can meet a more stringent performance-based effluent limitation. For this reason, a performance-based effluent limitation is included in this Order that is calculated in the same way as the interim limitations (see Section IV.E. below). Therefore, based on a mean of 14.8 µg/L and the standard deviation of 7.45 µg/L, an MDEL for nitrate plus nitrite (as N) of 40 mg/L is included in this Order. This effluent limitation is based on the MCL and is necessary to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the potential beneficial use of municipal and domestic supply.

v. **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*". The previous Order included 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. The antidegradation provisions of the State Water Resources Control Board Resolution No. 68-16 state that: " *Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained*." Based on effluent monitoring data obtained from 1 January 2003 through 31 January 2008, a MEC of 14 mg/L and a highest monthly average of 9.5 mg/L have been reported by the Discharger. Therefore, the discharge does not demonstrate a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative objective for oil and grease and floating material. This Order removes the effluent limitations for oil and grease based on new information consistent with anti-backsliding requirements of 40 CFR 122.44(l)(2)(i)(B)(*1*). The Regional Water Board finds removing the effluent limitations for oil and grease is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16. Any impact on existing water quality will be insignificant

w. **Pathogens**. The beneficial uses of the San Joaquin River include, in part, municipal and domestic supply, water contact recreation, and agricultural irrigation supply, and there is, at times, less than 20:1 dilution. To protect these beneficial uses, the 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 and food crop irrigation uses.

The California Department of Public Heath (DPH) (formally the Department of Health Services) has developed reclamation criteria, CCR, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Provision G.1 of the previous Order required the Discharger to treat wastewater to Title 22 treatment requirements (or equivalent) by 1 May 2006, which was extended to 25 September 2007 by State Water Board Stay Order and the Court Order. The Discharger has complied with Provision G.1 and currently treats effluent to Title 22 treatment requirements. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, schoolyards, and other areas of similar public access, wastewater be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 mL as a 7-day median. 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 DPH's reclamation criteria because the receiving water is used for irrigation of agricultural land and for contact recreation purposes. The stringent disinfection criteria of Title 22 are appropriate since the undiluted effluent may be used for the irrigation of food crops and/or for body-contact water recreation. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens. The method of treatment is not prescribed by this Order; however, wastewater must be treated to a level equivalent to that recommended by DPH.

In addition to coliform testing, turbidity specifications have been included as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. The previous Order established effluent limitations for turbidity, including a weekly average of 2 nephelometric turbidity units (NTU), and a daily maximum of 10 NTU. The previous Order also prohibited the effluent from exceeding 5 NTU more than 5 percent of the time, and prohibited the effluent from exceeding 10 NTU at any given time if the effluent was continuously monitored. 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. The limitations in the previous Order were solely an operational check to ensure the treatment system was functioning properly and could meet the limits for total coliform organisms. The effluent limitations were not intended to regulate turbidity in the receiving water. Rather, turbidity should be an operational parameter to determine proper system function and not a WQBEL. Therefore, to ensure compliance with the DPH recommended Title 22 disinfection criteria, this Order contains operational turbidity specifications to be met prior to disinfection in lieu of effluent limitations.

To be consistent with current DPH guidance the operational requirements for turbidity have been established as 2 NTU as a daily average, an instantaneous maximum of 10 NTU, and shall not exceed 5 NTU more than 5 percent of the time.This Order contains effluent limitations and requires a tertiary level of treatment, or equivalent, necessary to protect the beneficial uses of the receiving water. The Regional Water Board has previously considered the factors in CWC section 13241.

x. **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.

y. **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. There are no USEPA water quality criteria for the protection of aquatic organisms for these constituents. The Basin Plan contains a chemical constituent objective that incorporates State MCLs, contains a narrative objective, and contains numeric water quality objectives for EC, TDS, sulfate, and chloride. Table F-5 below summarizes salinity water quality objectives/criteria and effluent concentration values.

Table F-5. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Goal[1]	Secondary MCL[2]	Effluent	
			Avg	Max
EC (µmhos/cm)	Varies[3]	900, 1600, 2200	1205	1518
TDS (mg/L)	Varies	500, 1000, 1500	668	730
Sulfate (mg/L)	Varies	250, 500, 600	120	180
Chloride (mg/L)	Varies	250, 500, 600	178	210

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

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

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

i. **Chloride**. The secondary MCL for chloride is 250 mg/L, as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. The recommended agricultural water quality goal for chloride, that would apply the narrative chemical constituent objective, is 106 mg/L as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D. W. Westcot, Rome, 1985). The 106 mg/L water quality goal is intended to protect against adverse effects on sensitive crops when irrigated via sprinklers.

Chloride concentrations in the effluent ranged from 130 mg/L to 210 mg/L, with an average of 177.5 mg/L, for 12 samples collected by the Discharger from 29 January 2002 through 4 December 2002. Background concentrations in the San Joaquin River ranged from 38 mg/L to 140 mg/L, with an average of 108 mg/L, for 11 samples collected by the Discharger from 20 March 2002 through 4 December 2002. Both the receiving water and the effluent concentrations exceed the agricultural water quality goal of 106 mg/L.

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 Bay-Delta Plan's seasonal salinity objectives for the San Joaquin River at Brandt Bridge are 700 µmhos/cm from April through August, and 1000 µmhos/cm from September through March. These objectives are applicable throughout the general geographic area, and, therefore, apply to the Facility's discharge.

A review of the Discharger's monitoring reports for the last six years (2002 through 2007) shows an average effluent EC of 1205 µmhos/cm, with a range from 946 µmhos/cm to 1518 µmhos/cm for 290 samples. These levels exceed the applicable objectives. The background receiving water EC averaged 602.8 µmhos/cm in 192 sampling events collected by the Discharger from 20 March 2002 through 9 January 2007, with a maximum high of 1169 µmhos/cm. These data show that the receiving water frequently has no assimilative capacity for EC.

iii. **Sulfate**. The secondary MCL for sulfate is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. Sulfate concentrations in the effluent ranged from 10 mg/L to 180 mg/L, with an average of 119.8 mg/L, for 12 samples collected by the Discharger from 29 January 2002 through 4 December 2002. Background concentrations in

the San Joaquin River ranged from 37 mg/L to 130 mg/L, with an average of 86.7 mg/L, for 10 samples collected by the Discharger from 20 March 2002 through 4 December 2002. These concentrations do not exceed the secondary MCL recommended level of 250 mg/L.

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.

The average TDS effluent concentration was 668 mg/L; concentrations ranged from 550 mg/L to 730 mg/L for 12 samples collected by the Discharger from 29 January 2002 through 4 December 2002. These concentrations exceed the applicable water quality objectives. The background receiving water TDS ranged from 260 mg/L to 590 mg/L, with an average of 434 mg/L in 10 sampling events performed by the Discharger from 20 March 2002 through 4 December 2002. These data indicate the receiving water frequently exceeds water quality objectives and lacks assimilative capacity for TDS.

As required by previous Order No. R2-2002-083, the Discharger completed a Wastewater Treatment Feasibility Study (June 2004) and pollution prevention plan (February 2005) for TDS. In the June 2004 report, the Discharger states "it could be argued that the effluent discharge for Stockton's RWCF helps maintain water quality objectives of the Delta.", that "the Discharge will not impact this [Southern one-third of the Delta that is 303(d) listed] impaired area", and that "further treatment for TDS is unnecessary." However, in both reports, the Discharger provided the following alternatives that could further reduce salinity in the discharge if required:

- <u>Source control</u>:
  1) Actively monitor TDS levels in its drinking water supply wells and reduce the groundwater supply and supplement with surface water if groundwater TDS levels exceed the secondary MCL water quality objective; and

2) Develop an industrial outreach program to encourage industrial users to reduce TDS levels in the influent.

- Salinity removal processes: Add a pressure driven membrane system to the current treatment process train; however this alternative may pose additional issues with the disposal of the reject brine. Additionally, an estimated $295 million would be required to add these advanced treatment facilities, and annual operation and maintenance costs are estimated at an additional $21.6 million per year. (see section v. Salinity Effluent Limitations below for further discussion)
- Local ordinances: Develop local regulations to ban installation and use of new and existing water softeners and local industrial TDS limits to reduce concentrations in the influent.

v. **Salinity Effluent Limitations.** Effluent limitations based on the MCL, the agricultural water quality goal, or the Basin Plan would likely require construction and operation of a reverse osmosis treatment plant. The State Water Board, in Water Quality Order 2005-005 (for the City of Manteca), states, "…*the State Board takes official notice [pursuant to Title 23 of California Code of Regulations, Section 648.2] of the fact that operation of a large-scale reverse osmosis treatment plant would result in production of highly saline brine for which an acceptable method of disposal would have to be developed. Consequently, any decision that would require use of reverse osmosis to treat the City's municipal wastewater effluent on a large scale should involve thorough consideration of the expected environmental effects."* The State Water Board states in that Order, "*Although the ultimate solution to southern Delta salinity problems have not yet been determined, previous actions establish that the State Board intended for permit limitations to play a limited role with respect to achieving compliance with the EC water quality objectives in the southern Delta*." The State Water Board goes on to say, "*Construction and operation of reverse osmosis facilities to treat discharges…prior to implementation of other measures to reduce the salt load in the southern Delta, would not be a reasonable approach."*

The Regional Water Board, with cooperation of the State Water Board, has begun the process to develop a new policy for the regulation of salinity in the Central Valley. In a statement issued at the 16 March 2006, Regional Water Board meeting, Board Member Dr. Karl Longley recommended that the Regional Water Board continue to exercise its authority to regulate discharges of salt to minimize salinity increases within the Central Valley. Dr. Longley stated, "*The process of developing new salinity control policies does not, therefore, mean that we should stop regulation salt discharges until a possible interim approaches to continue controlling and regulating salts in a reasonable manner, and encourage all stakeholder groups that may be affected by the Regional Board's policy to actively participate in policy development*."

As previously described, effluent data for EC and TDS indicate that effluent concentrations continue to be at levels of concern that may affect beneficial

uses of the San Joaquin River. Therefore, this Order includes an annual average performance-based effluent limitation of 1300 µmhos/cm for EC to protect the receiving water from further salinity degradation, based on the highest annual average effluent concentration (see Table F-6 below). However, should the Discharger fail to implement the provisional requirements specified in Provision VI.C.3.c of this Order, then this Order requires the Discharger to comply with the seasonal monthly average EC effluent limits of 700 µmhos/cm from April through August and 1000 µmhos/cm from September through March instead, which are based on the Bay-Delta Plan water quality objectives for this geographical location.

Compliance with these effluent limitations and the requirements of Provision VI.C.3.c will result in a salinity reduction in the effluent discharged to the receiving water; however, the discharge may cause or contribute to an exceedance of a water quality objective for salinity until adequate measures are implemented to meet those objectives.

Table F-6. Summary of Annual Electrical Conductivity Effluent Concentrations

Electrical Conductivity (µmhos/cm)				
Year	**Count**	**Min**	**Avg**	**Max**
2002	40	1144	1264	1420
2003	50	1072	1195	1370
2004	50	1073	1209	1455
2005	48	1004	1229	1355
2006	50	968	1180	1518
2007	52	909	1089	1254

z. **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 The previous permit, Order No. R5-2002-0083, required a daily maximum effluent limitation of 0.5 ml/L and a monthly average effluent limit of 0.1 ml/L for settleable solids. Analytical monitoring results obtained since issuance of the previous permit showed that settleable solids concentration values in 1487 samples monitored during the period from 1 May 2002, through 31 January 2007, did not exceed the effluent limitations. Therefore, the discharge does not demonstrate a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative objectives for settleable solids. Based on this new information, this Order does not include effluent limitations for settleable solids; however, this Order requires effluent monitoring and contains a receiving water limitation for Settleable Substances to prevent deposition of material that causes nuisance or adversely affects beneficial uses as described further in section V.A. of this Fact Sheet.

aa. **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.

The Thermal Plan also states "Additional limitations shall be imposed when necessary to assure protection of beneficial uses." In part, beneficial uses applicable to San Joaquin River are migration of aquatic organisms (MIGR) both warm and cold habitats, and warm habitat spawning, reproduction, and/or early development (SPWN).

Previous permits, Orders No. 94-324 and R5-2002-0083, required the Discharger to evaluate the effect of its thermal discharge to migrating fish both within the vicinity of the discharge and downstream (or upstream due to tidal influences), with particular attention being paid to those periods when San Joaquin River flow is lowest and/or San Joaquin River or effluent temperature are highest. In compliance, the Discharger submitted in November 1995 (*Temperature Plan,* Systech 1995) and again in May 2006 (*Potential Thermal Effects of Stockton Regional Wastewater Control Facility Discharge on Migrating Fish in the San Joaquin River,* Jones and Stokes 2006) temperature studies to the Regional Water Board, USEPA, NOAA Fisheries, US Fish and Wildlife Services, and California Department of Fish and Game. These studies, based on data collected between 1988 through 1994 (for November 1995 report) and 2001 through 2005 (for May 2006 report) evaluated potential added stresses from the thermal discharge on the San Joaquin River and the potentially consequential near-field or far-field effects on adult and juvenile Chinook salmon and other migrating fish (i.e. delta smelt, splittail, etc.). Based on these reports, the Regional Water Board finds that additional thermal requirements are not necessary to protect the beneficial uses of San Joaquin River; comments were not received from the other state or federal agencies. Therefore, this Order does not contain additional temperature limitations; however, this Order does retain the previous permit, Order No. R5-2002-0083, temperature effluent and receiving water limitations to comply with the Thermal Plan requirements.

bb. **Tetrachloroethylene (PCE)*.*** The NTR includes a tetrachloroethylene criterion of 0.8 µg/L for the protection of human health, based on a one-in-a-million cancer risk for waters from which both water and aquatic organisms are consumed. Based upon available dilution, Order No. R5-2002-0083 established an MDEL of 14.5 µg/L.

Tetrachloroethylene was not detected in the effluent discharge, based on 65 samples collected between 20 March 2002 and 10 January 2007, while the maximum observed upstream receiving water tetrachloroethylene concentration was <0.04 µg/L, based on 26 samples collected between 20 March 2002 and 15 November 2007. Therefore, the discharge does not demonstrate a reasonable potential to cause or contribute to an in-stream excursion above the NTR criterion for tetrachloroethylene. Based on new information and the procedures established in Section 1.3 of the SIP for determining reasonable potential, the discharge no longer demonstrates reasonable potential to exceed water quality criteria for tetrachloroethylene. The removal of the effluent

limitations for tetrachloroethylene is in compliance with 40 CFR 122.44(l)(2)(i)(B)(1).

cc. **Trichloroethylene (TCE).** The CTR includes a trichloroethylene criterion of 2.7 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. Based upon available dilution, the previous order established an AMEL and MDEL of 14.5 µg/L and 34 µg/L, respectively.

Trichloroethylene was not detected (<0.05 µg/L), in 64 effluent monitoring samples collected between 20 March 2002 and 10 January 2007. Concentrations of trichloroethylene was not observed (<0.2 µg/L) in 26 upstream receiving water samples collected between 20 March 2002 and 15 November 2006. Based on new information and the procedures established in Section 1.3 of the SIP for determining reasonable potential, the discharge no longer demonstrates reasonable potential to exceed water quality criteria for trichloroethylene. The removal of the effluent limitations for trichloroethylene is in compliance with 40 CFR 122.44(l)(2)(i)(B)(1).

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

4. WQBEL Calculations

a. As discussed in Section IV.C.3 above, the annual average effluent limitation for aluminum was based on the Secondary MCL, for protection of the MUN beneficial use, and applied directly. For nitrate plus nitrite, and manganese, performance-based effluent limitation were calculated as the mean plus 3.3 standard deviations based on the most recent monitoring data. For molybdenum, a performance-based effluent limitation was established as the maximum effluent concentration based on the most recent monitoring data. For ammonia, total coliform, dissolved oxygen, pH, temperature, and chlorine residual, the effluent limitations from the previous Order were carried over.

b. Effluent limitations for aluminum, bis(2-ethylhexyl)phthalate, chlorodibromomethane, cyanide, and dichlorobromomethane were calculated in accordance with section 1.4 of the SIP. The following paragraphs describe the methodology used for calculating effluent limitations for these parameters.

c. **Effluent Limitation Calculations.** In calculating maximum effluent limitations, the effluent concentration allowances were set equal to the criteria/standards/objectives.

$$ECA_{acute} = CMC \qquad ECA_{chronic} = CCC$$

For the human health, agriculture, or other long-term criterion/objective, a dilution credit can be applied. The ECA is calculated as follows:

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

where:

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

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

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

CMC = criteria maximum concentration (1-hour average)

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

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

D = dilution credit

B = maximum receiving water concentration

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

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

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

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

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

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

WQBELs were calculated for aluminum, bis(2-ethylhexyl) phthalate, chlorodibromomethane, cyanide, and dichlorobromomethane as follows in Tables F-7 through F-11, below.

Table F-7. WQBEL Calculations for Aluminum

	Acute	Chronic
Criteria (µg/L) [1]	750	750
Dilution Credit	No Dilution	No Dilution
ECA	750	750
ECA Multiplier	0.22	0.40
LTA	168.39	303.21
AMEL Multiplier (95th%)	1.85	[2]
AMEL (µg/L)	**311**	[2]
MDEL Multiplier (99th%)	4.45	[2]
MDEL (µg/L)	**750**	[2]

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

Table F-8. WQBEL Calculations for Bis(2-ethylhexyl)Phthalate

	Human Health
Criteria (mg/L)	1.8
Dilution Credit	0
ECA	1.8
AMEL (mg/L)[1]	**1.8**
MDEL/AMEL Multiplier[2]	2.01
MDEL (mg/L)	**3.6**

[1] AMEL = ECA per section 1.4.B, Step 6 of SIP
[2] Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier as determined in Step 5 of Section 1.4 of the SIP.

Table F-9. WQBEL Calculations for Chlorodibromomethane

	Human Health
Criteria (mg/L)	0.41
Dilution Credit	13:1
ECA	4.97
AMEL (mg/L)[1]	**5.0**
MDEL/AMEL Multiplier[2]	3.29
MDEL (mg/L)	**16**

[1] AMEL = ECA per section 1.4.B, Step 6 of SIP
[2] Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier as determined in Step 5 of Section 1.4 of the SIP.

Table F-10. WQBEL Calculations for Dichlorobromomethane

	Human Health
Criteria (mg/L)	0.56
Dilution Credit	13:1
ECA	6.8
AMEL (mg/L)[1]	**6.8**
MDEL/AMEL Multiplier[2]	3.01
MDEL (mg/L)	**20**

[1] AMEL = ECA per section 1.4.B, Step 6 of SIP
[2] Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier as determined in Step 5 of Section 1.4 of the SIP.

Table F-11. WQBEL Calculations for Cyanide

	Acute	Chronic
Criteria (µg/L)[1]	22	5.2
Dilution Credit	No Dilution	No Dilution
ECA	22	5.2
ECA Multiplier	0.27	0.46
LTA	5.85	2.40
AMEL Multiplier (95th%)	[2]	1.70
AMEL (µg/L)	[2]	**4.1**
MDEL Multiplier (99th%)	[2]	3.76
MDEL (µg/L)	[2]	**9.0**

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

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." Effluent limitations for acute toxicity have been included in this Order as follows:

Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay----------	70%
Median for any three or more consecutive bioassays ---------	90%

The previous permit, Order No. R5-2002-0083, contained these same acute toxicity requirements. Based on the weekly acute toxicity test results conducted during December 2003 through January 2007, the Discharger demonstrated compliance with these acute toxicity requirements.

b. **Chronic Aquatic Toxicity.** Based on 116 monthly samples for whole effluent chronic toxicity testing performed by the Discharger from 2 February 2002 through 20 June 2006, the Discharger reported a maximum toxicity result for algal cell density, performed on *Selenastrum capricoruntum*, of greater than 16 TU_c. The Discharger conducted accelerated chronic toxicity testing for *Selenastrum capricornutum* as a result of final effluent toxicity, and conducted the required TIE studies. In January 2005, the Phase I TIE indicated that the effluent contaminant(s) responsible for chronic toxicity to *Selenestrum capricornutum* were primarily organic in nature (January and March 2005, TIE of the City of Stockton Effluent Toxicity to *Selenastrum capricornutum,* Pacific EcoRisk). Subsequently, Phase II TIE procedures were initiated to identify the organic compound(s) responsible for final effluent toxicity; however, the testing indicated that the toxicity was not persistent (Phase II TIE of Stockton Effluent Toxicity to *Selenastrum capricornutum,* April 2005, Pacific EcoRisk). In total, during the period from March 2002 through March 2007, the Discharger conducted 132 WET tests and 9 TIE tests for Selenastrum capricornutum.

In April 2007, the Discharger concluded the TRE, and submitted the evaluation report to the Regional Water Board, *Assessment of the City of Stockton's Historic Whole Effluent Toxicity Testing and Toxicity Reduction Evaluation Programs for Selenastrum capriconutum*, Jones & Stokes Associates. The TRE identified the toxicant in the *Selenastrum capriconutum* bioassay as ammonia. Recent Facility upgrades that included new nitrification facilities are expected to reduce the occurrence of the toxicant ammonia, and as a result, subsequent accelerated monitoring concluded in October 2007 without further *Selenastrum capricornutum* (algae) toxicity.

Other WET testing data also demonstrated that the effluent discharge from the Facility has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective. During the period from

5 March 2002 through 13 June 2006, 52 samples resulted in a maximum toxicity of survival and growth for *Ceriodaphnia dubia* of 2 TU_c and 25 samples resulted in a maximum toxicity of 4 TU_c. No dilution has been granted for the chronic condition. Therefore, chronic toxicity testing results exceeding 1 chronic toxicity unit (TUc) demonstrates the discharge has a reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective.

Based upon the findings of the extensive WET testing and TIE/TRE, the WET procedure in the MRP allows the removal of the toxicant ammonia prior to conducting the WET analysis.

Numeric chronic WET effluent limitations have not been included in this Order. The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limits. This has resulted in the petitioning of a NPDES permit in the Los Angeles Region[3] that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012*, "In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits."* The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. Because the toxicity control provisions in the SIP are under revision, it is infeasible to develop numeric effluent limitations for chronic toxicity. Therefore, this Order requires that the Discharger meet best management practices for compliance with the Basin Plan's narrative toxicity objective, as allowed under 40 CFR 122.44(k).

To ensure compliance with the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic whole effluent toxicity testing, as specified in the Monitoring and Reporting Program (Attachment E, Section V.). Furthermore, Special Provisions VI.C.2.a. of this Order requires the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge demonstrates a pattern of toxicity exceeding the numeric toxicity monitoring trigger, the Discharger is

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

required to initiate a Toxicity Reduction Evaluation (TRE), in accordance with an approved TRE work plan. The numeric toxicity monitoring trigger is not an effluent limitation, it is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if a pattern of effluent toxicity has been demonstrated.

D. Final Effluent Limitations

1. Mass-based Effluent Limitations

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

Mass-based effluent limitations were calculated for TSS, $CBOD_5$ and ammonia based upon the permitted average dry weather flow allowed in Section IV.A.1.h. of the Limitations and Discharge Requirements.

2. Averaging Periods for Effluent Limitations

Title 40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. However, for toxic pollutants and pollutant parameters in water quality permitting, the USEPA recommends the use of a maximum daily effluent limitation in lieu of average weekly effluent limitations for two reasons. "*First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed.*" (TSD, pg. 96) This Order utilizes maximum daily effluent limitations in lieu of average weekly effluent limitations for aluminum, ammonia, manganese, molybdenum, bis(2-ethylhexyl)phthalate, chlorodibromomethane, cyanide, and dichlorobromomethane 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 TSS, $CBOD_5$, pH, and total coliform organisms, weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in Attachment F, Section IV.C.3., above.

3. Satisfaction of Anti-Backsliding Requirements

Some effluent limitations in this Order are less stringent than those in the previous permit, Order No. R5-2002-0083. However, since the issuance of Order No. R5-2002-0083, the Discharger upgraded the Facility to provide a higher level of treatment, including a tertiary filtration system. Based upon this new information, as discussed below, this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

The previous permit, Order No. R5-2002-0083, established effluent limitations for chloroform; copper; diazinon; dichloromethane; 1,1-dichloroethylene; 4,4-DDT; endrin aldehyde; lindane; oil and grease; settleable matter; tetrachloroethylene (PCE); and trichloroethylene (TCE). Based on new information gathered over the term of Order No. R5-2002-0083, the discharge does not demonstrate reasonable potential to exceed the applicable water quality criteria/objective for these constituents. The removal of these effluent limitations is consistent with the anti-backsliding provisions, and the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16. Any impact on existing water quality will be insignificant.

Order No. R5-2002-0083 contained effluent limitations for turbidity. The limitations were solely an operational check to ensure the treatment system was functioning properly and could meet the limits for total coliform organisms. The effluent limitations were not intended to regulate turbidity in the receiving water. Rather, turbidity is an operational parameter to determine proper system functioning and not a WQBEL.

This Order contains operational requirements for turbidity to be met prior to disinfection in lieu of effluent limitations. However, the operational requirements in this Order are an equivalent limitation that is not less stringent than the effluent limitations required in the Previous Order, and therefore does not constitute backsliding.

The proposed revised operational requirements for turbidity are the same as the effluent limitations in Order No. R5-2002-0083 (See Special Provisions VI.C.5.f. Turbidity Operational Requirements). These revisions are consistent with state regulations implementing recycled water requirements.

The revision in the turbidity limitation is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16 because this Order imposes equivalent or more stringent requirements than Order No. R5-2002-0083 and therefore does not allow degradation.

4. Satisfaction of Antidegradation Policy

Resolution 68-16 and 40 CFR section 131.12 require the Regional Board, in regulating discharge of waste, to maintain high quality waters of the State until it is demonstrated that any change in quality will be consistent with maximum benefit to

the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Water Board's policies (e.g., quality that exceeds water quality objectives). Resolution 68-16 requires the discharge be regulated to meet best practicable treatment or control to assure that pollution or nuisance will not occur and the highest water quality consistent with the maximum benefit to the people of the State be maintained.

Policies and procedures for complying with this directive are set forth in the Basin Plan. Resolution 68-16 is applied on a case-by-case, constituent-by-constituent basis in determining whether a certain degree of degradation can be justified. It is incumbent upon the Discharger to provide technical information for the Regional Water Board to evaluate

Surface Water. With regards to surface water, the receiving water may exceed applicable water quality objectives for certain constituents as described in this Order. However, this Order and TSO Order R5-2008-XXXX require the Discharger, in accordance with specified compliance schedules, to meet requirements that will result in the use of best practicable treatment or control of the discharge and will result in compliance with water quality objectives, with the exception of dissolved oxygen. This Order also establishes interim effluent limitations and compliance schedules for pollutants that cannot immediately be controlled to prevent any additional degradation of surface water by these pollutants. The total allowable discharge of 55 mgd has not been increased from the previous permit, Order No. R5-2002-0083, and, therefore, does not cause additional degradation beyond that allowed in the previous permit. The discharge is consistent with Resolution 68-16 and 40 CFR section 131.12 because this Order requires the discharger to meet requirements that will result in best practicable treatment or control to assure that pollution or nuisance will not occur. Some degradation is consistent with maximum benefit to the people of the state because the discharge allows for economic or social development in the area.

Groundwater. Groundwater monitoring has been conducted around the Facility; however, additional groundwater quality monitoring results are needed. In addition, certain aspects of wastewater treatment and control practices may not be justified as representative of Best Practicable Treatment and Control (BPTC). Reasonable time is necessary to gather specific information about the Facility to make informed, appropriate, long-term decisions. This Order, therefore, establishes some groundwater limitations to assure protection of beneficial uses of groundwater (see section V.B in the Limitations and Discharge Requirements section of this Order), provisionally requires the Discharger to a corrective action plan and implementation schedule for necessary modifications (see section VI.C.2.d in the Limitations and Discharge Requirements section of of this Order), and includes a reopener to consider a revision or addition of the final groundwater limitations if necessary when additional analytical monitoring results or other information are obtained. During this period, degradation may occur from certain constituents, but cannot exceed water quality objectives (or natural background water quality should it exceed objectives) or cause nuisance. For additional information see Section V.B of this Fact Sheet.

Summary of Final Effluent Limitations
Discharge Point No. 001

Table F-12. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Aluminum, Total Recoverable	µg/L	311	200[8]	750	--	--
Ammonia Nitrogen, Total (as N)	mg/L	2	--	5	--	--
	lbs/day[2]	918	--	2295	--	--
Bis(2-ethylhexyl)phthalate	µg/L	1.8	--	3.6	--	--
Chlorodibromomethane	µg/L	5.0	--	16	--	--
Chlorine, Total Residual	µg/L	--	0.01[3]	0.02[1]	--	--
Coliform, Total[4]	MPN/100ml	--		--	--	240
Cyanide, Total Recoverable	µg/L	4.1	--	8.9	--	--
Dichlorobromomethane	µg/L	6.8	--	20	--	--
Dissolved Oxygen	mg/L	--	--	--	[7]	--
Flow	mgd	--	--	55[9]	--	--
Manganese, Total Recoverable	µg/L			286		
Molybdenum, Total Recoverable	µg/L		--	13	--	--
Nitrate plus Nitrite (as N)	mg/L	40	--	--	--	--
pH	s.u.	--	--	--	6.5	8.5
Temperature	°F	--	--	[5]	--	--
TSS[6]	mg/L	10	15	20	--	--
	lbs/day[2]	4590	6885	9180	--	--
$CBOD_5$[6]	mg/L	10	15	20	--	--
	lbs/day[2]	4590	6885	9180	--	--

1 Applied as an average 1-hour limitation.
2 Mass-based effluent limitations are established using the following formula:
Mass (lbs/day) = flow rate (mgd) x 8.34 x effluent limitation (mg/L)
where: Mass = mass limitation for a pollutant (lbs/day)
Effluent limitation = concentration limit for a pollutant (mg/L)
Flow rate = average dry weather flow (55 mgd)
3 Applied as a 4-day average limitation.
4 Effluent total coliform also shall not exceed i.) 2.2 MPN/100ml, as a 7-day median; and ii). 23 MPN/100ml, more than once in any 30-day period.
5 The maximum effluent temperature shall not exceed the natural receiving water temperature by more than 20°F.
6 In addition to concentration-based effluent limitation, the arithmetic mean of TSS or $CBOD_5$ in effluent samples collected over a monthly period shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same time during the same period (85 percent removal).
7 The Discharger shall maintain a minimum daily average effluent DO concentration of 6.0 mg/L from 1 September through 30 November and 5.0 mg/L from 1 December through 31 August.
8 Annual Average
9 Average Dry Weather Flow

E. Interim Effluent Limitations

1. **Mercury.** See Section IV.C.3.s. for the rationale for the interim effluent limitations for mercury

F. Land Discharge Specifications

[Not Applicable]

G. Reclamation Specifications

For Order No. R5-2002-0083, the Discharger had requested to be allowed to supply chlorinated secondary treated wastewater for specific reclamation uses, including limited on-site uses such as dust control and compaction by building contractors, street sweeping, and landscape irrigation, in addition to wastewater being used to irrigate 16 acres of agricultural land adjacent to the Facility, which is regulated by WDR Order No. 95-183.

Reclaimed water is required to meet the criteria contained in Title 22, Division 4, CCR (section 60301, et seq.). This Order retains the reclamation requirements contained in the previous Order *to reduce public health concerns and comply with the requirements of Title 22 California Code of Regulations.*

Treated wastewater discharged for reclamation purposes not specified in this Order must be approved by the Executive Officer, or regulated under separate waste discharge requirements, and must meet the requirements of CCR, Title 22.

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

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

A. Surface Water

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

   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. Rationale for these numeric receiving surface water limitations are as follows:

   a. **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.

   b. **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.

   c. **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.

   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. **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.

f. **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.

g. **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.

h. **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 a monthly averaging period for determining compliance with the 0.5 receiving water pH limitation is included in this Order.

i. **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.

j. **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.

k. **Suspended Sediments.** 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.

l. **Settleable Substances.** 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 substances are included in this Order and are based on the Basin Plan objective.

m. **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.

n. **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.

o. **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 1ºF 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 4ºF 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.

p. **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.

q. **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

1. **Basin Plan, Beneficial Uses, and Regulatory Considerations.** The beneficial uses of the underlying ground water are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.

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

2. **Antidegradation.** The antidegradation directives of State Water Board Resolution No. 68-16, "Statement of Policy With Respect to Maintaining High Quality Waters in California," or "Antidegradation Policy" require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Some degradation of the groundwater for certain constituents is consistent with maximum benefit to the people of California because the technology, energy, and waste management advantages of municipal water treatment plants far outweigh the environmental

impact of a community that would otherwise be reliant on numerous domestic wells. Economic prosperity of local communities is of maximum benefit to the people of California, and therefore, sufficient reason to accommodate this wastewater discharge provided terms of reasonable degradation are defined and met.

3. **Wastewater Storage.** The Discharger utilizes an unlined sludge lagoon located within the secondary treatment facility on the east side of the San Joaquin River, and three unlined facultative oxidation ponds located on the west side of the San Joaquin River that store treated domestic waster before the tertiary treatment process. Domestic wastewater contains constituents of concern such as total dissolved solids (TDS), specific conductivity (EC), pathogens, nitrates, organics, metals, and oxygen demanding substances (BOD).

   Within the eastern portion of the Facility, digested "sludge is pumped to a sludge lagoon where it is allowed to concentrate. A dredge is used to pump settled and concentrated material off the bottom of the lagoon. . ." (ROWD, September 2006) Within the western portion of the Facility, "Effluent is introduced into a recirculation canal at the northeast corner of Pond #1 [located adjacent to the San Joaquin River], from where it flows south and then west around the perimeter of Ponds #1-3. Control gates along the recirculation canal are opened or closed as needed to introduce effluent to the south end of the facultative ponds. Similar flow control gates are located at a lower elevation along the northern edge of the facultative ponds and allow pond water into a recirculation canal parallel to the facultative pond's northern edges. . . .A perimeter groundwater interceptor drainage ditch is located outside the recirculation canal south of the facultative ponds and a subsurface interceptor drain is located west of the recirculation canal west of Pond #3." From the interceptor ditch, "captured groundwater is pumped back to the recirculation canal. . . Water from the facultative ponds entering the north recirculation canal can be directed via pipeline northward to another recirculation canal that delivers water to the west end of the engineered wetlands." (Condor Earth Technologies, Inc. 22 September 2006) Treated domestic sewage in the unlined lagoon, recirculation canals, or facultative ponds, may result in an increase in the concentration of constituents of concern in groundwater, and therefore, the previous Order No. R5-2002-0083 required the Discharger to design and construct a network of groundwater monitoring wells that includes "one or more background monitoring wells and a sufficient number of designated monitoring wells to evaluate performance of best practicable control technology (BPCT) measures and to determine if the discharge has degraded groundwater."

4. **Groundwater Quality.** By 17 December 2003, the Discharger installed fourteen monitoring wells (MW1 – MW14), and to identify background groundwater quality, two additional monitoring wells were installed (MW15 and MW16). Surface water samples were also obtained from the San Joaquin River near (1) Garwood Bridge, (2) the intersection of San Joaquin River and Burns Cutoff, (3) Pond No. 2, (4) the Agricultural Ditch West of Pond #3, and (5) Pump Station near Oxidation Pond #1. In 2005, two additional monitoring wells were installed, MW-17 and MW-18. MW-17 was installed down gradient (east) of MW-13, which contained nitrate concentrations that exceed the MCL. MW-18 was installed outboard of the recirculation canal to

relocate MW-4, which may have been influenced by, or directly hydraulically connected to, the recirculation canal and therefore may not be representative of groundwater conditions (Geotechnical Consultants, Inc. 2004, Condor Earth Technologies, Inc. 2006). The secondary-level treated effluent discharged through the recirculation canal and stored in the facultative ponds was not monitored.

Quarterly samples of electrical conductivity (EC), total dissolved solids (TDS), ammonia, nitrate as nitrogen, Total Kjeldahl Nitrogen (TKN), and total coliform were collected. Water quality as indicated by the analytical results shows high levels of EC and TDS in monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-12, MW-13, MW-17, and MW-18. Analytical results also show high levels of nitrate in monitoring wells MW-10 and MW-13, and high levels of total coliform in monitoring wells MW-7, MW-8, MW-9, MW-13, and MW-17. Table F-13 below summarizes the range of the data from the period of December 2004 through June 2006 for some monitoring wells.

Monitoring well MW-4 is located between the recirculation canal and the groundwater interceptor drain, and therefore, may not represent groundwater conditions. Monitoring wells MW-8, MW-9, MW-11, and MW-14 are located close to the San Joaquin River and reflect the influence of fresh water recharge from the river, and therefore, also may not represent groundwater conditions. MW-1, MW-2, and MW-10 are also located along the western side of the San Joaquin River. However, MW-1 and MW-2, located on the eastern side of Pond #1 and along the recirculation canal, contain higher EC and TDS levels than the San Joaquin River, which suggests that these wells may be hydraulically and chemically influenced by Pond #1 or the recirculation canal. No known samples were obtained from Pond #1 nor the secondary effluent to conclude differently, and the single sample obtained from Pond #2, which contained EC and TDS concentrations at 1100 and 600 mg/L, respectively, is insufficient data to make informed, appropriate determinations. MW-10, located near an effluent canal, contains high levels of nitrate, which suggests that it may be hydraulically and chemically influenced by the effluent. (Geotechnical Consultants, Inc. 2004, Condor Earth Technologies, Inc. 2006)

Table F-13. Summary of Groundwater Conditions

Parameter	Water Quality Objectives	Background Monitoring Wells		Groundwater Monitoring Wells Near Ponds						Monitoring Wells at Secondary Facility		
				Between Ponds & SJR		South of Ponds		West of Ponds		Sludge Lagoon	East of Clarifiers	
		MW-15	MW-16	MW-1	MW-2	MW-3	MW-5	MW-6	MW-7	MW-12	MW-13	MW-17
EC (umhos/cm)	700[2]	1012 - 1662	1056 - 1922	1478 - 2886	1544 - 2869	1750 - 1800	1830 - 2492	1197 - 1940	1462 - 2233	1211 - 2305	1640 - 2976	1293 - 2322
	900, 1600, 2200[3]											
TDS (mg/L)	450[2]	870 - 1170	1170 - 1220	1440 - 1510	1430 - 1570	990 - 1040	1490 - 1570	1130 - 1250	1200 - 1290	1020 - 1420	1670 - 2050	1430 - 1730
	500, 1000, 1500[3]											
Ammonia as N	1.5	-0.2 to 10.6	-0.2 to 0.3	-0.2 to 3.8	-0.2 to 0.6	-0.2 to 0.7	-0.2 to 0.4	-0.2 to 0.3	-0.2 to 0.4	-0.2 to 2.2	-0.2 to 1.5	-0.2 to 0.2
Nitrate as N (mg/L)	10[1]	-0.1 to 22.2	-0.1	-0.1 to 0.2	-1	-0.1	-0.1 to 1.2	-0.1	-0.1	-0.1	0.6 to 38.6	1.1 to 7.5

TKN	--	-0.5	<0.5	0.5	0.6	-0.5	1.1	0.5	-0.5	6	-0.5	0.6
Total Coliform (MPN/100 mL)	<2.2[4]	23 - 7000	-2 to 80	-2 to 70	-2 to 13	-2 to 50	-2 to 23	-2 to 80	-2 to 11100	-2 to 3.6	-2 to 24000	-2 to 80

1. USEPA Drinking Water Standards (Primary Maximum Contaminant Level)
2. Agricultural water quality goals based on *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985) Agricultural water quality goals listed provide no restrictions on crop type or irrigation methods for maximum crop yield. Higher concentrations may require special irrigation methods to maintain crop yields or may restrict types of crops grown.
3. Department of Public Health Secondary MCLs. The secondary MCLs are stated as a recommended level, upper level, and a short-term maximum level.
4. Basin Plan water quality objective for MUN beneficial use.

5. **Background Conditions.** The Facility is located in the San Joaquin Delta, and the Facility is bifurcated by the San Joaquin River. In general, areas of poor water quality with high salinity exist throughout the Delta subbasin. TDS values range from 210 to 7800 mg/L and average about 1190 mg/L. Areas of elevated chloride and nitrate occur in several areas within the subbasin. (California's Groundwater, Bulletin 118, 20 January 2006) Monitoring results obtained along this segment of the San Joaquin River indicate an average TDS value of about 400 mg/L, which is significantly lower than the subbasin levels. Land use to the west of the Facility is predominately agricultural, and land use to the east of the Facility is mixed uses of agricultural and municipal supply water. "Groundwater flow occurs primarily through fine-grained sand and silty sand channel deposits found as laterally discontinuous lenses and stingers set within clays. The approximate depth of the silty channel deposits is on the order of 150 feet. The upper aquifer has poor transmissivity and low storage." (Geotechnical Consultants, Inc. 2004)

   By definition background groundwater conditions are those pollutants that are present in the groundwater that are not attributable to the Facility's activities. Rather, these conditions are outside the influence of the Facility, and may be caused by local geophysical, hydrological, and meteorological process, and wildlife and outside anthropogenic activities. The Discharger installed two background monitoring wells, MW-15 and MW-16. "Background well MW-15 is located 1700 feet upgradient of the ponds to the south, and background well MW-16 is located 2500 feet downgradient of the ponds to the west. . . MW-15 is a true background well, uninfluenced by the presence of the ponds." (Condor Earth Technologies, Inc. September 2006) These background monitoring wells are located on the western side of the San Joaquin River. Previous Table F-13 summarizes the range of data obtained in the background monitoring wells MW-15 and MW-16, which, at times, exceed water quality objectives. No known background monitoring well was installed on the eastern side of the San Joaquin River.

   The Basin Plan stipulates that when the background condition(s) is less stringent than the numeric water quality objective, the background condition supercedes the numeric water quality objective. Therefore establishing the numeric level at which constituents of concern are present in the groundwater with no influence from the Facility is relevant in determining if the discharge degrades groundwater and in evaluating the performance of the Facility's BPCT measures. Since anthropogenic

activities do not affect all aspects of water quality, it is possible that background water quality conditions can exist for one constituent but not for another, and therefore, generalizations about the subbasin water quality conditions may not adequately protect the beneficial uses. For instance, the high levels of EC and TDS at MW-1 and MW-2 and the high levels of nitrates in MW-10 and MW-13 indicate possible localized impacts. The Discharger's groundwater condition study states "the geology creates a situation where there is considerable variability and poor interconnection between groundwater at different places." (Condor Earth Technologies, Inc. September 2006)

6. **Groundwater Limits.** In allowing a discharge, the Regional Water Board must comply with CWC Section 13263 in setting appropriate conditions. The Regional Water Board is required, relative to the groundwater that may be affected by the discharge, to implement the Basin Plan and consider the beneficial uses to be protected along with the water quality objectives essential for that purpose. The Regional Water Board need not authorize the full utilization of the waste assimilation capacity of the groundwater (CWC 13263(b)) and must consider other waste discharges and factors that affect that capacity.

   TDS and EC concentrations in nearly all wells, including at times the background wells, exceed water quality objectives. However, high TDS and EC concentration values in localized areas such as monitoring wells MW-1 and MW-2 located between Pond #1 and the San Joaquin River on the western portion of the Facility, indicate that the treated domestic wastewater may be impacting groundwater. Further indications that MW-1 and MW-2 may be locally impacted comes from a hydrograph study finding that states "there is a net hydrostatic pressure gradient towards the river from the ponds." (Condor Earth Technologies, Inc. September 2006) Also, nitrate concentration values in MW-10 located near the San Joaquin River and the effluent discharge on the western portion of the Facility indicate that certain wastewater control practices may not be justified as representative of Best Practicable Treatment and Control (BPTC). On the eastern portion of the Facility, high TDS and EC concentrations in MW-12, MW-13 and MW-17 and high nitrate concentrations in MW-13 and MW-17 indicate that certain aspects of wastewater treatment and control practices also may not be justified as representative of BPTC, or certain operation and maintenance practices may not be justified as best management practices. Still, insufficient data has been reported to establish background groundwater conditions, even though it appears that groundwater in the aquifer beneath the Facility may be impacted for beneficial uses. Though groundwater monitoring has been conducted around the Facility, additional background groundwater quality data are needed to establish the most appropriate groundwater limits. Reasonable time is necessary to gather specific information about the Facility to make informed, appropriate, long-term decisions.

   Therefore, this Order provisionally requires the Discharger to install additional monitoring wells and any other testing needed to effectively and fully characterize background quality conditions. Based on this information, the Discharger must technically evaluate the Facility's processes or storage areas and submit a time schedule to implement or modify BPTCs as necessary. This Order also contains

narrative and numeric groundwater limitations that become effective upon completion of the background quality condition and BPTC evaluation studies. This Order contains a reopener to add or modify groundwater limitations as necessary.

In addition, this Order requires the continued monitoring of the groundwater monitoring network to monitor the impact of the discharge and help develop long-term groundwater limits. This Order also requires monitoring of the secondary effluent transported to the facultative ponds to measure concentrations of certain constituents contained in the treated domestic wastewater, and of the pond water to determine whether degradation of the groundwater for certain constituents from percolation of the treated domestic wastewater stored in the unlined facultative ponds is consistent with maximum benefit to the people of California, and thus, complies with Antidegradation Policy.

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_5 and TSS reduction requirements).

Influent monitoring requirements for flow, pH, $CBOD_5$, TSS, EC, and TDS are retained from the previous order.

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. Because the effluent data submitted by the Discharger did not demonstrate reasonable potential for barium, chromium VI, chloroform, copper, dichloromethane, TCE, PCE, or 1,1-dichloroethylene, specific effluent monitoring requirements for these parameters were removed. These parameters will continue to be monitored annually as part of the priority pollutant monitoring. Effluent monitoring requirements from the previous order for the remaining parameters are carried over to assess compliance with effluent limitations. Monitoring requirements for aluminum, dissolved oxygen, and manganese are established or modified from the previous order to assess compliance with newly established effluent limitations. Monitoring

requirements for DDT, endrin aldehyde, and lindane have been reduced because the available data indicate that these parameters do not have reasonable potential to exceed water quality criteria, however monitoring requirements for these parameters has not be eliminated because the receiving water is 303(d) listed for these parameters. Monitoring requirement for methyl-mercury has been added to assess the impacts of the discharge on the receiving stream. A special study requires monitoring of priority pollutants (Provision VI.C.2.d) to assess reasonable potential to exceed water quality criteria for these parameters.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Consistent with the requirements contained in Order No. R5-2002-0083, weekly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.

2. **Chronic Toxicity.** Chronic whole effluent toxicity testing has been increased from quarterly to monthly monitoring in order to demonstrate compliance with the Basin Plan's narrative toxicity objective.

D. Receiving Water Monitoring

1. Surface Water

a. Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream to assess reasonable potential to exceed water quality criteria for these parameters. Receiving water monitoring is carried over from the previous Order. In particular, annual monitoring requirements for priority pollutants and standard minerals have been established.

2. Groundwater

a. Section 13267 of the California Water Code states, in part, *"(a) A Regional Water Board, in establishing…waste discharge requirements… may investigate the quality of any waters of the state within its region*" and *"(b) (1) In conducting an investigation…, the Regional Water Board may require that any person who… discharges… waste…that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Water Board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports*." In requiring those reports, the Regional Water Board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports. The Monitoring and Reporting Program (Attachment E) is issued pursuant to California Water Code Section 13267. The groundwater monitoring and reporting program required by this Order and the Monitoring and Reporting Program are necessary to assure compliance with these waste

discharge requirements. The Discharger is responsible for the discharges of waste at the Facility subject to this Order.

b. This Order requires the Discharger to continue groundwater monitoring as established under Order No. R5-2002-0083 and includes a regular schedule of groundwater monitoring in the attached Monitoring and Reporting Program. The groundwater monitoring reports are necessary to evaluate impacts to waters of the State to assure protection of beneficial uses and compliance with Regional Water Board plans and policies, including Resolution No. 68-16. Evidence in the record includes effluent monitoring data that indicates the presence of constituents that may degrade groundwater and surface water. For additional information see previous Section V.B of this Fact Sheet.

E. Other Monitoring Requirements

1. Reclamation Monitoring

Reclamation monitoring is required to ensure compliance with Effluent Limitations and Discharge Specifications IV.C. in the Limitations and Discharge Requirements section of this Order.

2. Biosolids Monitoring

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

3. 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. **Special Provisions VI.C.1.a. & b.** These provisions are based on CFR Part 123 and allow future modification of this Order and its effluent limitations as necessary in response to updated WQOs that may be established in the future.

b. **Mercury, Total.** This provision allows the Regional Water Board to reopen this Order in the event a mercury TMDL program is adopted. In addition, this Order shall be reopened if the Regional Water Board determines that a mercury offset program is feasible for dischargers subject to a NPDES permits.

c. **Pollution Prevention.** This Order requires the Discharger to update and implement the salinity and mercury pollution prevention plans (PPP) following CWC section 13263.3(d)(3). 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 and success in the implementation of these plans.

d. **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.

e. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria and Basin Plan objectives for ammonia or applicable priority pollutant inorganic constituents. If the Discharger performs defensible water effect ratio 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 applicable constituents. Accordingly, this provision allows the Regional Water Board to reopen this Order to modify the applicable effluent limitations in the event that the Discharger conducts and completes these studies, or based upon an independent scientific peer review's defensible findings that update the national ambient water quality criteria for aluminum.

f. **Groundwater Degradation Assessment.** This Order requires the Discharger to complete and submit a correction action plan and implementation schedule for

necessary modifications to any of the Facility's storage, treatment, or disposal components where the groundwater monitoring results exceed either the background monitoring results or the appropriate numeric groundwater water quality objectives that are adequately protective of the beneficial uses. This reopener provision allows the Regional Water Board to reopen this Order for addition and/or modification of the groundwater limitations and requirements based on this report and the site-specific objectives for protection of the beneficial uses.

2. Special Studies, Technical Reports, 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.) To comply with Provision G.12 in the previous permit, Order No. R5-2002-0083, the Discharger submitted a TRE/TIE Work Plan, dated 26 July 2002. On 27 March 2003, Regional Water Board staff provided comments regarding the TIE/TRE Work Plan and the Discharger's subsequent Technical Memorandum dated 11 December 2002, and requested the Discharger to update the TIE/TRE Work Plan accordingly. Subsequently, the Discharger submitted the revised TIE/TRE Work Plan on 10 December 2003, and the Executive Officer conditionally approved the work plan on 4 May 2004.

In April 2007, the Discharger concluded the TRE, and submitted the evaluation report to the Regional Water Board, *Assessment of the City of Stockton's Historic Whole Effluent Toxicity Testing and Toxicity Reduction Evaluation Programs for Selenastrum capriconutum*, Jones & Stockes Associates. The TRE identified the toxicant in the *Selenastrum capriconutum* bioassay as ammonia. Recent Facility upgrades that included new nitrification facilities were expected to reduce the occurrence of the toxicant ammonia. Subsequent accelerated monitoring concluded in October 2007 without further *Selenastrum capricornutum* (algae) toxicity, and, therefore, confirmed the TRE findings.

This provision requires the Discharger to update its TRE Work Plan in accordance with USEPA guidance. In addition, the provision provides a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity has been demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of > 1 TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does not allow any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits 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 2 weeks using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991* (TSD). The TSD at page 118 states, "EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required." Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then 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 update its 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.

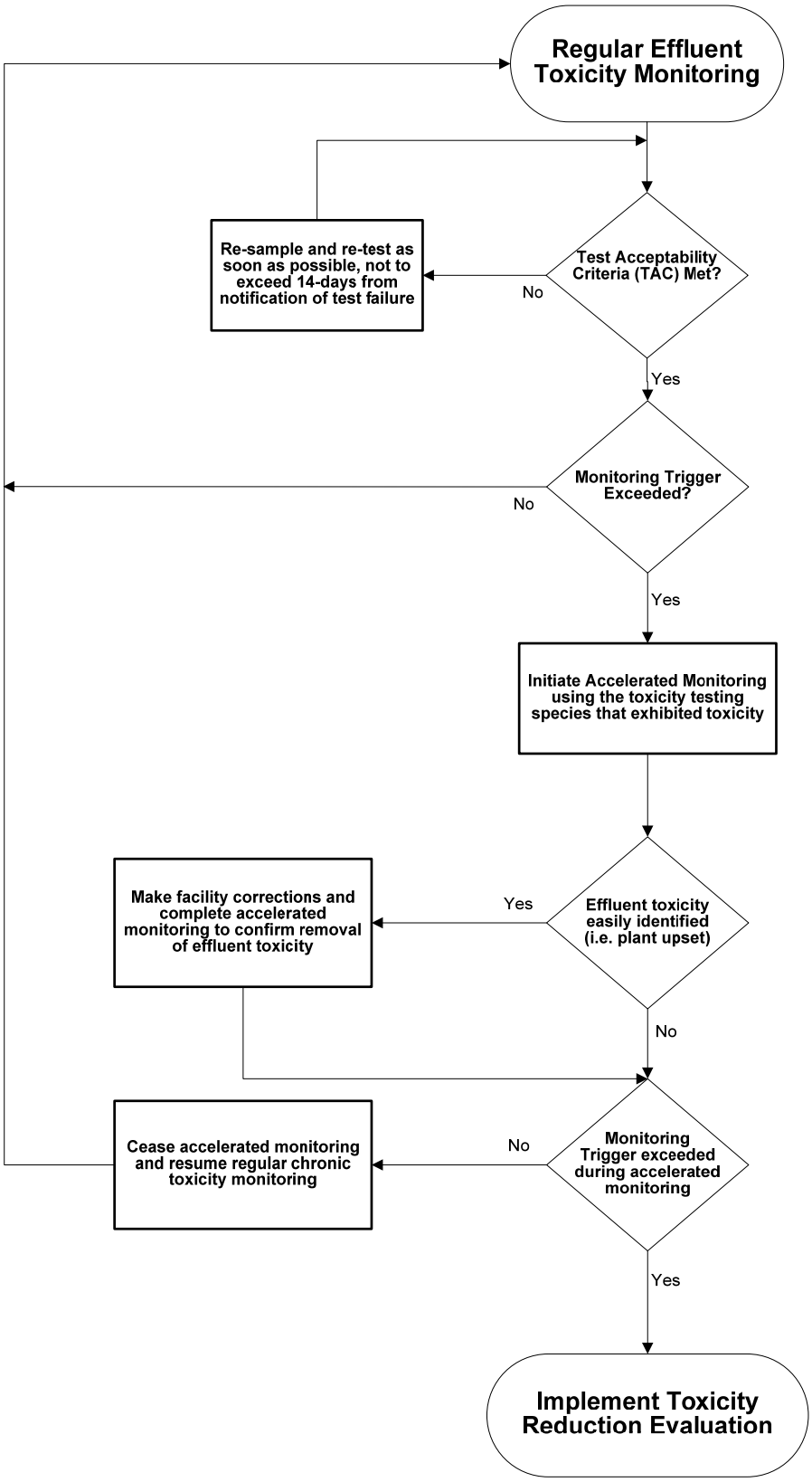
- *Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity*, Second Edition, EPA/600/R-92/081, September 1993.

- *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



b. **Effluent and Receiving Water Characterization Study.** An effluent and receiving water monitoring study is required to ensure adequate information is available for the next permit renewal.

c. **Groundwater Degradation Assessment and Best Practicable Treatment or Control (BPTC) Evaluation workplan.** The previous permit required the Discharger to install a groundwater monitoring network, including the characterization of background groundwater quality. To comply, the Discharger installed 18 monitoring wells, which includes the background groundwater quality monitoring well, MW-15. Quarterly monitoring results from 30 December 2003, through 5 February 2008, indicated that the Facility's storage, treatment, or disposal components may have degraded the underlying groundwater quality (see Section V.B. of this Fact Sheet). Therefore this provision is necessary to prevent further degradation of the underlying groundwater within the influences of the Facility, and to ensure that the Beneficial Uses of the groundwater are protected. For additional information see previous Section V.B of this Fact Sheet.

3. Best Management Practices and Pollution Prevention

a. **Pollution Prevention Plan (PPP) for Mercury.** The Discharger shall update and implement its PPP for mercury (*Pollution Prevention Plan Implementation for Total Dissolved Solids* [salinity]*, Mercury and Group A Pesticides,* February 2005), in accordance with CWC section 13263.3(d)(1)(D). The interim effluent limitation for mercury limit the mass loading to current levels. The PPP for mercury is necessary to ensure that the discharge of this pollutants does not increase pending the development of TMDLs.

b. **CWC section 13263.3(d)(3) Pollution Prevention Plans.** The pollution prevention plans required for mercury and salinity [measured as electrical conductivity] shall, at a 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.

c. **Salinity Reduction Goal.** In an effort to monitor progress in reducing salinity discharges to the San Joaquin River, the Discharger shall provide annual reports demonstrating reasonable progress in the reduction of salinity in its discharge to the San Joaquin River. An annual average salinity goal of the maximum weighted average electrical conductivity of the City of Stockton's water supply (i.e. 273 µmhos/cm in March 2005), plus an increment of 500 µmhos/cm for typical consumptive use, has been established as a reasonable goal during the term of this permit. The annual reports shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

d. **Salinity Plan.** The Regional Water Board, with cooperation of the State Water Board, has begun the process to develop a new policy for the regulation of salinity in the Central Valley. As previously described in this Fact Sheet, effluent data for EC and TDS indicate that effluent concentrations continue to be at levels of concern that may affect beneficial uses of the San Joaquin River. Therefore, this Order requires the Discharger to develop a Salinity Plan to reduce its salinity impacts to the San Joaquin River, which at a minimum must include source control measures, contributing financially in the development of the Central Valley Salinity Management Plan, and as reasonably possible, changing to water supplies with lower salinity. In addition, the Discharger is required to update and implement its pollution prevention plan for salinity in accordance with CWC section 13263.3(d)(3), and to implement pollution prevention measures to reduce the salinity in its discharge to the San Joaquin River.

The Antidegradation Policy (Resolution No. 68-16) requires that the Discharger implement best practicable treatment or control (BPTC) of its discharge. For salinity, the Regional Water Board is limiting effluent salinity of municipal

wastewater treatment plants to an increment of 500 µmhos/cm over the salinity of the municipal water supply or at existing levels. Based on the available data submitted by the Discharger, the highest concentration of EC reported was 273 µmhos/cm, based on 14 samples taken between September 2002 and June 2006. See previous section, "Salinity Production Goal", for additional information.

4. Construction, Operation, and Maintenance Specifications

a. **Treatment Pond Operating Requirements.** Requirements for the operation and maintenance of the treatment ponds are established to prevent flooding, reduce nuisances, and reduce public health concerns.

5. Special Provisions for Municipal Facilities (POTWs Only)

a. **Pretreatment Requirements.**

i. CWA Section 307(b), and CFR Part 403, require publicly owned treatment works to develop an acceptable industrial pretreatment program. A pretreatment program is required to prevent the introduction of pollutants and prevent pass through of pollutants that exceed water quality objectives, standards or permit limitations. Pretreatment requirements are imposed pursuant to CFR Part 403.

ii. The Discharger shall implement and enforce its approved pretreatment program and is an enforceable condition of this Order. If the Discharger fails to perform the pretreatment functions, the Regional Water Board, the State Water Board or the USEPA may take enforcement actions against the Discharger as authorized by the CWA.

b. **Biosolids (Special Provisions VI.C.5.b-d).** The use, disposal, or storage of biosolids is regulated under federal and State laws and regulations, including permitting requirements and technical standards included in 40 CFR Part 503. The Discharger is required to comply with the standards and time schedules contained in 40 CFR Part 503.

Title 27, CCR, Division 2, Subdivision 1, section 20005 establishes approved methods for the disposal of collected screenings, residual sludge, biosolids, and other solids removed from liquid wastes. This Order includes requirements to ensure the Discharger disposes of solids in compliance with State and federal regulations.

c. **Collection System.** The Discharger's collection system is part of the treatment system that is subject to the Order 2006-0003, adopted by the State Water Board in May 2006; this Order is a Statewide General WDR for Sanitary Sewer Systems. Therefore, the Discharger shall be subject to the requirements of Order 2006-0003 and any future revisions thereto. Pursuant to federal regulations, the Discharger must properly operate and maintain its collection

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

6. Other Special Provisions

a. **Tertiary Treatment.** To protect public health and safety, the Discharger is to comply with DHS reclamation criteria, CCR Title 22, Division 4, Chapter 3, or equivalent.

b. To protect public health and safety, treatment and storage facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

c. **Ownership Change.** Sections 122.41(l)(3) and 122.61 of the CFR establish requirements for the transfer of an NPDES permit. Special Provision VI.C.6.c of this Order requires the Discharger to comply with federal regulations for the transfer of NPDES permits in the event of a change of ownership.
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7. Compliance Schedules – Not Applicable

VIII. PUBLIC PARTICIPATION

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

A. Notification of Interested Parties

The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through publication in the Stockton Record.

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 **22 September 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: 23/24 October 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 916-464-3291.

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 Ms. Gayleen Perreira at 916-464-4824.

ATTACHMENT G - REASONABLE POTENTIAL SUMMARY

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
1,1-Dichloroethylene	µg/L	<0.06	<0.06	0.057	--	--	0.057	3.2	--	6	No
4,4'-DDT	mg/L	<0.002	<0.002	0.00059	1.1	0.001	0.00059	0.00059	ND	--	No
Aluminum	µg/L	1,900	1,800	87	750[1]	87[2]	--	--	--	200	Yes
Ammonia	µg/L	31,000	1,400	370	2,140[1,3]	370[4,5]	--	--	--	--	Yes
Antimony	µg/L	0.7	0.5	6	--	--	14	4,300	--	6	No
Arsenic	µg/L	4.4	4.1	10	340	150	--	--	--	10	No
Barium	µg/L	26	72	1,000	--	--	--	--	--	1,000	No
Bis(2-Ethylhexyl)Phthalate	µg/L	5.5	3.2	1.8	--	--	1.8	5.9	--	4	Yes
Bromoform	µg/L	0.8	<0.03	4.3	--	--	4.3	360	--	80	No
Cadmium	µg/L	0.04	<0.1	2.27	4.01	2.27	--	--	--	5	No
Carbofuran	µg/L	2.3	<5	18	--	--	--	--	--	18	No
Chloride	µg/L	210,000	140,000	106,000	860,000[1]	230,000[2]	--	--	--	210000	No
Chlorodibromomethane	µg/L	29	<0.03	0.41	--	--	0.41	34	--	80	Yes
Chloroform	µg/L	21	0.3	80	--	--	--	--	--	80	No
Chromium (total)	µg/L	1.2	3.8	50	--	--	--	--	--	50	No
Chromium (VI)	µg/L	1.2	0.41	11.43	16.29	11.43	--	--	--	--	No

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Copper	µg/L	6	5	8.53	12.68	8.53	1,300	--	--	1,000	No
Cyanide	µg/L	13	300	5.2	22	5.2	700	220,000	--	150	Yes
Diazinon	µg/L	<0.006	<0.25	0.05	0.08[9]	0.05[10]	--	--	--	--	No
Dichlorobromomethane	µg/L	28	0.07	0.56	--	--	0.56	46	--	80	Yes
Diethyl Phthalate	µg/L	6	<2	23,000	--	--	23,000	120,000	--	--	No
Endrin Aldehyde	µg/L	<0.002	<0.002	0.76	--	--	0.76	0.81	ND	--	No
Fluoride	µg/L	600	400	2,000	--	--	--	--	--	2,000	No
gamma-BHC	µg/L	<0.002	<0.002	0.019	0.95	0.08	0.019	0.063	ND	0.2	No
Iron, dissolved	µg/L	<12	100	300	--	--	--	--	--	300	No
Lead	µg/L	0.81	1.1	2.78	71.4	2.78	--	--	--	15	No
Manganese	µg/L	170	240	50	--	--	--	--	--	50	Yes
Mercury	µg/L	0.011	0.0088	0.05	1.40[1]	0.77[2]	0.05	0.051	--	2	No
Methyl Chloride	µg/L	0.7	<0.5	3	--	--	--	--	--	3[11]	No
Methyl tert-butyl ether	µg/L	2	3.4	5	151,000[1]	51,000[2]	--	--	--	5	No
Methylene Blue Activated Substances	µg/L	200	NA	500	--	--	--	--	--	500	No
Methylene Chloride	µg/L	0.48	0.12	4.7	--	--	4.7	1,600	--	5	No
Molybdenum	µg/L	13	NA	10	--	--	--	--	--	10[8]	Yes
Nickel	µg/L	5	6.4	47.7	429.2	47.7	610	4,600	--	100	No

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Nitrate	µg/L	29,000	4,200	10,000	--	--	--	--	--	10,000	Yes
Nitrite	µg/L	2,300	100	1,000	--	--	--	--	--	1,000	Yes
Phosphorus	µg/L	3,900	300	0.14	--	--	--	--	--	0.14[12]	No
Selenium	µg/L	2	2	5	20	5	--	--	--	20[8]	No
Silver	µg/L	0.4	0.03	3.39	3.39	--	--	--	--	100	No
Sulfate	µg/L	180,000	130,000	250,000	--	--	--	--	--	250,000	No
Tetrachloroethylene	µg/L	0.09	<0.04	0.8	--	--	0.8	8.85	--	5	No
Thallium	µg/L	0.3	0.1	1.7	1,400	40	1.7	6.3	--	2	No
Toluene	µg/L	3.6	<0.5	150	--	--	6,800	200,000	--	150	No
Trichloroethylene	µg/L	<0.05	0.2	2.7	--	--	2.7	81	--	5	No
Zinc	µg/L	20	9	109.58	109.58	109.58	--	--	--	5,000	No

General Note: All inorganic concentrations are given as a total recoverable.
MEC = Maximum Effluent Concentration
B = Maximum Receiving Water Concentration or lowest detection level, if non-detect
C = Criterion used for Reasonable Potential Analysis
CMC = Criterion Maximum Concentration (CTR criterion unless otherwise noted)
CCC = Criterion Continuous Concentration (CTR criterion unless otherwise noted)
Water & Org= Water and Organism Criterion Concentration (CTR or NTR)
Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective
MCL = Drinking Water Standards Maximum Contaminant Level
NA – Not available
ND – Reported as non-detect

Footnotes:
(1) USEPA National Recommended Ambient Water Quality Standard, 1-hour average
(2) USEPA National Recommended Ambient Water Quality Standard, 4-day average
(3) Salmonids present and maximum permitted effluent pH of 8.5
(4) USEPA National Recommended Ambient Water Quality Standard, 30-day average
(5) Early Life Stages (ELS) present and maximum allowable effluent pH of 8.5 and maximum allowable 30-day rolling averageR-1 temperature of 8.02°C

(8) Ayers, R.S. and D.W. Westcot, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985)
(9) California Department of Fish and Game, Office of Spill Prevention and Emergency Response, Hazard Assessment and Water Quality Criteria, 1-hour average

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

(10) California Department of Fish and Game, Office of Spill Prevention and Emergency Response, Hazard Assessment and Water Quality Criteria, 4-day average
(11) USEPA Drinking Water Health Advisory or Suggested No-Adverse-Response Levels (SNARLs) for toxicity other than cancer risk
(12) USEPA IRIS Reference Dose for white phosphorous. The Regional Board staff are still considering the applicability and relationship of this criterion to total phosphorus.

Attachment H - 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