CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

CENTRAL VALLEY REGION

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ORDER R5-2013-0106
NPDES NO. CA0082660

WASTE DISCHARGE REQUIREMENTS FOR THE CITY OF BRENTWOOD WASTEWATER TREATMENT PLANT CONTRA COSTA COUNTY

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

Table 1. Discharger Information

Discharger	**City of Brentwood**
Name of Facility	**Wastewater Treatment Plant**
Facility Address	**2251 Elkins Way**
	Brentwood, CA 94513
	Contra Costa County
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a m**ajor** discharge.	

The discharge by the City of Brentwood 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 effluent	37º 57’ 46.10” N	121º 41’ 02.59” W	Marsh Creek, within the Sacramento San Joaquin Delta

Table 3. Administrative Information

This Order was adopted by the Regional Water Quality Control Board on:	**26 July 2013**
This Order shall become effective on:	**14 September 2013**
This Order shall expire on:	**1 September 2018**
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:	**5 March 2018**

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 **26 July 2013**.

Original Signed by
PAMELA C. CREEDON, Executive Officer

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I. FACILITY INFORMATION

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

Table 4. Facility Information

Discharger	City of Brentwood
Name of Facility	Wastewater Treatment Plant
Facility Address	2251 Elkins Way
	Brentwood, CA 94513
	Contra Costa County
Facility Contact, Title, and Phone	Casey Wichert, Wastewater Operations Manager, 925-516-6060
Mailing Address	2251 Elkins Way Brentwood, CA 94513
Type of Facility	Publicly Owned Treatment Works
Facility Design Flow	5.0 million gallons per day ADWF (average dry weather flow)

II. FINDINGS

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

A. Background. The City of Brentwood (hereinafter Discharger) was authorized to discharge pursuant to Order R5-2008-0006-01 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0082660. The Discharger submitted a Report of Waste Discharge on 21 June 2012**,** and applied for a NPDES permit renewal to discharge up to 5.0 mgd (average dry weather flow) of tertiary treated wastewater from the City of Brentwood Wastewater Treatment Plant (hereinafter Facility). The application was deemed complete on 26 July 2012.

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

B. Facility Description. The Discharger owns and operates a publicly-owned wastewater treatment plant. The treatment system consists of a headworks (screening and grit removal), oxidation ditches and denitrification basins providing biological treatment, secondary clarification, tertiary filtration, chlorine disinfection, dechlorination, and a cascade aeration system. In the previous permit and as part of the Facility’s treatment train the Discharger utilized unlined ponds, which discharge wastes to land. The Discharger no longer utilizes the ponds as part of their treatment system. Currently, secondary and tertiary effluent is being diverted to the ponds only in case of an emergency. Therefore, the Discharger plans to line Pond 6 and decommission Ponds 7 and 8. Pond 7 was disconnected from the system on 31 May 2012. Wastewater is discharged from Discharge Point No. 001 (see table on cover page) to Marsh Creek, a water of the United States, within the Sacramento-San Joaquin Delta. The Discharger also produces Title 22 reclaimed for reclamation on City parks, medians, etc. WDR

Order R5-2004-0132 regulates the reclaimed water use. 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 Clean Water Act (CWA) and implementing regulations adopted by USEPA and chapter 5.5, division 7 of the California Water Code (Water Code; commencing with section 13370). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

D. Background and Rationale for Requirements. The Central Valley Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for Order requirements, is hereby incorporated into this Order and constitutes part of the Findings for this Order. Attachments A through E and G through J are also incorporated into this Order.

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

F. Technology-based Effluent Limitations. Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations (40 CFR 122.44), require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at Part 133 and Best Professional Judgment (BPJ) in accordance with Part 125, section 125.3. A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet.

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

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

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

H. Water Quality Control Plans. The Central Valley Water Board adopted a *Water Quality Control Plan*, *Fourth Edition (Revised October 2011),* for the Sacramento and San Joaquin River Basins (hereinafter Basin Plan) that designates beneficial uses in Section II, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Table II-1 of the Basin Plan identifies the beneficial uses of certain specific water bodies. The Sacramento-San Joaquin Delta is listed in Table II-1 and footnote 9 to Table II-1 provides specific beneficial uses for Marsh Creek. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, "Sources of Drinking Water Policy," which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. However, because Marsh Creek has designated beneficial uses specified in the Basin Plan, Resolution No. 88-63 is not applicable. The beneficial uses of Marsh Creek are as follows:

Table 5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Marsh Creek	Existing: Contact Water Recreation (REC-1); Non-Contact Water Recreation (REC-2); Warm Freshwater Habitat (WARM); Wildlife Habitat (WILD); Preservation of Rare, Threatened or Endangered Species (RARE), and Commercial and Sport Fishing (COMM).

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.*" Marsh Creek (Marsh Creek Reservoir to San Joaquin River) is listed as a WQLS for mercury and metals in the 303(d) list of impaired water bodies. No final TMDLs have been adopted for Marsh Creek, however water quality-based effluent limitations for methylmercury and chlorpyrifos and diazinon are included in this Order in accordance with TMDLs adopted for the Delta.

The State Water Board adopted the *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 water quality objectives for surface waters.

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 State Water Board adopted Decision 1641 (D-1641) on 29 December 1999, and revised on 15 March 2000. 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.

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

I. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on 22 December 1992, and later amended it on 4 May 1995 and 9 November 1999. About 40 criteria in the NTR applied in California. On 18 May 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on 13 February 2001. These rules contain water quality criteria for priority pollutants.

J. **State Implementation Policy.** On 2 March 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on 28 April 2000 with respect to the priority pollutant criteria promulgated for California by USEPA through the NTR and to the priority pollutant objectives established by the Central Valley Water Board in the Basin Plan. The SIP became effective on 18 May 2000 with respect to the priority pollutant criteria promulgated by USEPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005 that became effective on 13 July 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

K. **Compliance Schedules and Interim Requirements.** In general, an NPDES permit must include final effluent limitations that are consistent with CWA section 301 and with 40 CFR 122.44(d). There are exceptions to this general rule. The State Water Board's *Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits* (Compliance Schedule Policy) allows compliance schedules for new, revised, or newly interpreted water quality objectives or criteria, or in accordance with a TMDL. All compliance schedules must be as short as possible, and may not exceed ten years from the effective date of the adoption, revision, or new interpretation of the applicable water quality objective or criterion, unless a TMDL allows a longer

schedule. A Regional Water Board, however, is not required to include a compliance schedule, but may issue a Time Schedule Order pursuant to Water Code section 13300 or a Cease and Desist Order pursuant to Water Code section 13301 where it finds that the discharger is violating or threatening to violate the permit. The Regional Water Board will consider the merits of each case in determining whether it is appropriate to include a compliance schedule in a permit, and, consistent with the Compliance Schedule Policy, should consider feasibility of achieving compliance, and must impose a schedule that is as short as possible to achieve compliance with the effluent limit based on the objective or criteria.

Where a compliance schedule for a final effluent limitation exceeds one year, the Order must include interim numeric limitations for that constituent or parameter, interim milestones and compliance reporting within 14 days after each interim milestone. The permit may also include interim requirements to control the pollutant, such as pollutant minimization and source control measures. This Order does include compliance schedules and interim effluent limitations and/or discharge specifications. A detailed discussion of the basis for the compliance schedule(s) and interim effluent limitation(s) and/or discharge specifications is included in the Fact Sheet.

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

M. Stringency of Requirements for Individual Pollutants. This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on pH, biochemical oxygen demand (BOD), total suspended solids (TSS), and flow. The WQBELs consist of restrictions on acute and chronic whole effluent toxicity, ammonia (total as N), copper (total recoverable), chlorpyrifos, diazinon, dibromochloromethane, , methylmercury, BOD, and pH. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements.

WQBELs have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR 131.38. The scientific procedures for calculating the individual WQBELs for priority pollutants are based on the CTR-SIP, which was approved by USEPA on 18 May 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to 30 May 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to 30 May 2000, but not approved by USEPA before that date, are nonetheless "*applicable water quality*

standards for purposes of the [Clean Water] Act" pursuant to 40 CFR 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the technology-based requirements of the CWA and the applicable water quality standards for purposes of the CWA.

N. Antidegradation Policy. 40 CFR 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Central Valley Water Board's Basin Plan implements, and incorporates by reference, both the state and federal antidegradation policies. As discussed in detail in the Fact Sheet, the permitted discharge is consistent with the antidegradation provision of 40 CFR 131.12 and Resolution No. 68-16.

O. Anti-Backsliding Requirements. Sections 303(d)(4) and 402(o)(2) of the CWA and federal regulations at 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions. Some effluent limitations in this Order are less stringent that those in Order R5-2008-0006-01. As discussed in detail in the Fact Sheet, this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

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

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

The technical and monitoring reports in this Order are required in accordance with Water Code section 13267, which states the following in subsection (b)(1), "*In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge,*

waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."

The Discharger owns and operates the Facility subject to this Order. The monitoring reports required by this Order are necessary to determine compliance with this Order. The need for the monitoring reports is discussed in the Fact Sheet.

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

S. Provisions and Requirements Implementing State Law. The provisions/requirements in sections IV.B, V.B, VI.C.4.c, VI.C.5.b, VI.C.5.c, and VI.C.7.c of the Limitations and Discharge Requirements, and sections VI, VIII.B, and IX.A of Attachment E 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 Central Valley Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe WDRs for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet of this Order.

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

THEREFORE, IT IS HEREBY ORDERED, that WDR Order R5-2008-0006-01and Time Schedule Order R5-2012-0114 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 Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the federal CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

III. DISCHARGE PROHIBITIONS

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

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

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

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

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point No. 001

1. Final Effluent Limitations – Discharge Point No. 001

a. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point No. 0.001, with compliance measured at Monitoring Location EFF-001 as described in the Monitoring and Reporting Program, Attachment E:

Table 6. Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	7	12	15		
	lbs/day[1]	292	500	625		
Total Suspended Solids	mg/L	10	15	20		
	lbs/day[1]	417	625	834		
pH	standard units				6.5	8.5
Dissolved Oxygen	mg/L				5.5	
Ammonia (as N)	mg/L	1.1		2.1		
	lbs/day[1]	46		88		
Bis (2-Ethylhexyl) Phthalate	µg/L	5.9		12		
Chloride[2]	mg/L	344		398		
Copper (Total Recoverable)	µg/L	14		10.4		
Dibromochloromethane	µg/L	34		62		

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum

[1] Based on design flow of 5.0 mgd.
[2] Chloride effluent limits become effective **1 January 2018**

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

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

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

d. Temperature. The maximum temperature of the discharge shall not exceed the natural receiving water temperature, measured at RSW-001, by more than:

i. 20º F from 1 February through 30 November; and

ii. 24 º F from 1 December through 31 January.

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

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

f. Chronic Whole Effluent Toxicity. There shall be no chronic toxicity in the effluent discharge.

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

i. 2.2 most probable number (MPN) per 100 mL, as a 7-day median;
ii. 23 MPN/100 mL, more than once in any 30-day period; and
iii. 240 MPN/10 mL, at any time.

h. Average Dry Weather Flow. The average dry weather discharge flow shall not exceed 5.0 mgd.

i. Methylmercury. The effluent calendar annual methylmercury load shall not exceed 0.14 grams, in accordance with the Delta Mercury Control Program.

j. Chlorpyrifos and Diazinon. Effluent chlorpyrifos and diazinon concentrations shall not exceed the sum of one as defined below:

i. Average Monthly Effluent Limit

$$S_{AMEL} = \frac{C_{D\text{-}avg}}{0.08} + \frac{C_{C\text{-}avg}}{0.012} \leq 1.0$$

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

ii. Maximum Daily Effluent Limit

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

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

2. Interim Effluent Limitations

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

a. Effective immediately and until 1 January 2018, the following interim effluent limitation for chloride is applicable. This interim effluent limitation shall apply in lieu of the corresponding final average monthly and maximum daily effluent limitations specified for chloride in Table 6 during the time period indicated by this provision.

Table 7. Interim Effluent Limitations

Parameters	Units	Maximum Daily Effluent Limit
Chloride	mg/L	517

b. Mercury, Total. Effective immediately, and until 31 December 2030, the effluent calendar year annual total mercury load shall not exceed **34 grams**. These interim effluent limitations shall apply in lieu of the final effluent limits for methylmercury (Section IV.A.1.i).

B. Land Discharge Specifications for Discharges to Emergency Storage Pond Nos. 006 and 008

1. The discharge of waste classified as "hazardous" as defined in section 2521(a) of Title 23, California Code of Regulations (CCR) to the Emergency Storage Ponds is prohibited.

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

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

4. Wastewater in the ponds shall not have a pH less than 6.5 or greater than 9.0.

5. **Effective immediately**, the Discharger shall maintain compliance with the following Land Discharge Specifications in Table 8 for the discharge into Emergency Storage Pond Nos. 006 and 008, with compliance measured at Monitoring Location No. LND-001, as described in the attached MRP. **The Land Discharge Specifications prescribed in Table 8 shall remain in effect until the Executive Officer authorizes the removal of the requirements, subsequent to the Discharger lining Pond 006 and decommissioning Pond 008, per the compliance schedule for meeting the groundwater limitations in section VI.C.7.c.**

Table 8. Land Discharge Specifications

Parameters	Units	Effluent Limitations	
		Average Monthly	Maximum Daily
Biochemical Oxygen Demand (BOD_5) (5-day @ 20 Deg. C)	mg/L	40	80
Settleable Solids	mL/L	0.2	0.5

C. Reclamation Specifications (Set forth in WDR Order R5-2004-0132)

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 Marsh Creek:

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

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

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

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

5. **Dissolved Oxygen.** Concentrations of dissolved oxygen to fall below 5 mg/L at any time.

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

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

8. **pH.** The pH to be depressed below 6.5 nor raised above 8.5.

9. **Pesticides:**

   a. Pesticides to be present, individually or in combination, in concentrations that adversely affect beneficial uses;

   b. Pesticides to be present in bottom sediments or aquatic life in concentrations that adversely affect beneficial uses;

   c. Total identifiable persistent chlorinated hydrocarbon pesticides to be present in the water column at concentrations detectable within the accuracy of analytical methods approved by USEPA or the Executive Officer;

d. Pesticide concentrations to exceed those allowable by applicable antidegradation policies (see State Water Board Resolution No. 68-16 and 40 CFR 131.12.);

e. Pesticide concentrations to exceed the lowest levels technically and economically achievable;

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.

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

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

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

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

16. Temperature.

a. Surface water temperature, as measured at the RSW-002 monitoring station, to raise greater than 5 º F above the natural temperature of the receiving water on a monthly average basis for the months of March through September.

b. The receiving water temperature, as measured at the RSW-002 monitoring station, to exceed:

i. 74 º F as monthly average for October;

ii. 72 º F as monthly average for November;

iii. 65 º F as a period average for 1 December through 28 February.

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

18. Turbidity.

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

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

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

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

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

B. Groundwater Limitations

1. Release of waste constituents from any storage, treatment, or disposal component associated with the Facility, in combination with other sources, shall not cause the underlying groundwater to contain waste constituents in concentrations greater than background water quality or water quality objectives, whichever is greater. The discharge shall not cause the groundwater to exceed water quality objectives, unreasonably impact beneficial uses, or cause pollution or nuisance.

VI. PROVISIONS

A. Standard Provisions

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

2. The Discharger shall comply with the following provisions:

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

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

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

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

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

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

The causes for modification include:

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

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

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

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

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

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

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

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

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, and adequate public notification to water agencies whose contact with the noncomplying discharge is reasonably foreseeable.

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

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

i. Safeguard to electric power failure:

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

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

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

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

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

The technical report shall:

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

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

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

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

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

l. The Discharger shall submit technical reports as directed by the Executive Officer. All technical reports required herein that involve planning,

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

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

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

o. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, maximum daily effluent limitation, 1-hour average effluent limitation, or receiving water limitation contained in this Order, the Discharger shall notify the Central Valley Water Board by telephone (916) 464-3291 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within 5 days, unless the Central Valley Water Board waives confirmation. The written notification shall include the information required by the Standard Provision contained in Attachment D section V.E.1. [40 CFR 122.41(l)(6)(i)].

p. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from this facility, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.

q. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, address and telephone number of the persons

responsible for contact with the Central Valley Water Board and a statement. The statement shall comply with the signatory and certification requirements in the federal Standard Provisions (Attachment D, section V.B) and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

B. Monitoring and Reporting Program Requirements

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

C. Special Provisions

1. Reopener Provisions

a. Conditions that necessitate a major modification of a permit are described in 40 CFR 122.62, including, but not limited to:

i. If new or amended applicable water quality standards are promulgated or approved pursuant to section 303 of the CWA, or amendments thereto, this permit may be reopened and modified in accordance with the new or amended standards.

ii. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance.

b. This Order may be reopened for modification, or revocation and reissuance, as a result of the detection of a reportable priority pollutant generated by special conditions included in this Order. These special conditions may be, but are not limited to, fish tissue sampling, whole effluent toxicity, monitoring requirements on internal waste stream(s), and monitoring for surrogate parameters. Additional requirements may be included in this Order as a result of the special condition monitoring data.

c. **Mercury.** The Basin Plan's Delta Mercury Control Program was designed to proceed in two phases. After Phase 1, the Central Valley Water Board will conduct a Phase 1 Delta Mercury Control Program Review that considers: modification to the Delta Mercury Control Program. This Order may be reopened to address changes to the Delta Mercury Control Program.

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

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

h. **Chloride Compliance Schedule**. This Order includes a compliance schedule for chloride with final compliance required by 1 January 2018. The compliance schedule requires submittal of a report to identify the preferred compliance alternative and an implementation schedule by 31 December 2013. This Order may be reopened for addition and/or modification of the compliance schedule interim milestone tasks based on the results of this report.

i. **Regional Monitoring Program.** The Central Valley Water Board is developing a Regional Monitoring Program for the Sacramento-San Joaquin Delta. This Order may be reopened to modify the monitoring requirements to implement the Regional Monitoring Program.

j. **Drinking Water Policy**. The Central Valley Water Board is developing a Drinking Water Policy. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.

k. **CV-SALTS**. The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. This Order may be reopened to implement the CV-SALTS initiative.

l. **Biosolids Disposal Plan**. This Order may be reopened for future modification or changes in biosolids operations, which ultimately may result in a change from Class B Biosolids Technology to Class A Biosolids Technology.

m. **Diazinon and Chlorpyrifos Basin Plan Amendment.** Central Valley Water Board staff is developing a Basin Plan Amendment to provide an

implementation plan for NPDES-permitted domestic wastewater dischargers. This Order may be reopened to modify diazinon and chlorpyrifos effluent limitations, as appropriate, in accordance with an amendment to the Basin Plan.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. Chronic Whole Effluent Toxicity. For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct chronic whole effluent toxicity (WET) testing, as specified in the Monitoring and Reporting Program (Attachment E, section V). Furthermore, this Provision requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exhibits toxicity, as described in subsection ii below, the Discharger is required to initiate a TRE in accordance with an approved TRE Workplan, and take actions to mitigate the impact of the discharge and prevent recurrence of toxicity. A TRE is a site-specific study conducted in a stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TREs are designed to identify the causative agents and sources of effluent toxicity, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. This Provision includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

i. Accelerated Monitoring and TRE Initiation. When the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity monitoring, the Discharger shall initiate accelerated monitoring as required in the Accelerated Monitoring Specifications. The Discharger shall initiate a TRE to address effluent toxicity if any WET testing results exceed the numeric toxicity monitoring trigger during accelerated monitoring.

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

iii. Accelerated Monitoring Specifications. If the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity testing, the Discharger shall initiate accelerated monitoring within 14 days of notification by the laboratory of the exceedance. Accelerated monitoring shall consist of four (4) chronic toxicity tests conducted once every 2 weeks using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:

(a) If the results of four (4) consecutive accelerated monitoring tests do not exceed the monitoring trigger, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring. However,

notwithstanding the accelerated monitoring results, if there is evidence of effluent toxicity, the Executive Officer may require that the Discharger initiate a TRE.

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

(c) If the result of any accelerated toxicity test exceeds the monitoring trigger, the Discharger shall cease accelerated monitoring and begin a TRE to investigate the cause(s) of, and identify corrective actions to reduce or eliminate effluent toxicity. Within thirty (30) days of notification by the laboratory of any test result exceeding the monitoring trigger during accelerated monitoring, the Discharger shall submit a TRE Action Plan to the Central Valley Water Board including, at minimum.

(1) Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including a TRE WET monitoring schedule;

(2) Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and

(3) A schedule for these actions.

b. Phase 1 Methylmercury Control Study. In accordance with the Basin Plan's Delta Mercury Control Program and the compliance schedule included in this Order for methylmercury (Section VI.C.7.a), the Discharger shall participate in the Central Valley Clean Water Association (CVCWA) Coordinated Methylmercury Control Study (Study) to evaluate existing control methods and, as needed, develop additional control methods that could be implemented to achieve the methylmercury waste load allocation. A work plan was submitted by CVCWA on **20 April 2013**. The study work plan will be reviewed by a Technical Advisory Committee (TAC) and approved by the Executive Officer. The work plan shall be implemented immediately after approval by the Executive Officer, and a progress report shall be submitted by **20 October 2015.**

The Study shall evaluate the feasibility of reducing sources more than the minimum amount needed to achieve the methylmercury allocation. The Study also may include an evaluation of innovative actions, watershed approaches, offsets projects, and other short and long-term actions that result in reducing

inorganic (total) mercury and methylmercury to address the accumulation of methylmercury in fish tissue and to reduce methylmercury exposure. The Study may evaluate the effectiveness of using inorganic (total) mercury controls to control methylmercury discharges.

The Study shall include a description of methylmercury and/or inorganic (total) mercury management practices identified in Phase 1; an evaluation of the effectiveness, costs, potential environmental effects, and overall feasibility of the control actions. The Study shall also include proposed implementation plans and schedules to comply with methylmercury allocations as soon as possible. The Study shall be submitted to the Central Valley Water Board by **20 October 2018.**

The Executive Officer may, after public notice, extend the due date up to two years if the Discharger demonstrates it is making significant progress towards developing, implementing and/or completing the Study and reasonable attempts have been made to secure funding for the Study, but the Discharger has experienced severe budget shortfalls.

c. Temperature Study. This Order implements a Thermal Plan exception based on the results of the Thermal Plan Exception Report submitted by the Discharger on 25 January 2010. The Thermal Plan exception must be re-evaluated at each permit renewal. To improve the evaluation of thermal impacts to Delta Smelt, this Order requires the Discharger to prepare and submit a study to evaluate potential temperature effects of the discharge in Marsh Creek approximately one mile upstream from the confluence of Marsh Creek and Big Break. The Discharger shall meet the following schedule:

Task	Compliance Date
i. **Submit Work Plan and Time Schedule** The study may include results from modeling and/or temperature monitoring to evaluate thermal impacts of the discharge to Delta Smelt in the lower reaches of Marsh Creek. The Discharger shall consult with United States Fish and Wildlife staff in the development of the work plan.	**1 April 2014**
ii. **Submit Draft Study**	**31 May 2017**
iii. **Submit Final Study**	**30 November 2017**

3. Best Management Practices and Pollution Prevention

a. Pollution Prevention Plan for Mercury. The Discharger shall update and implement a pollution prevention plan (PPP) for mercury in accordance with Water Code section 13263.3(d)(3), per the compliance schedule in this Order for methylmercury (Section VI.C.7.b). The minimum requirements for the pollution prevention plan are outlined in the Fact Sheet (Attachment F section

VII.B.3.d). Progress reports shall be submitted annually in accordance with the Monitoring and Reporting Program *(Attachment E section X.D.1.).* The progress reports shall discuss the effectiveness of the PPP in the reduction of mercury in the discharge, include a summary of mercury and methylmercury monitoring results, and discuss updates to the PPP.

b. Mercury Exposure Reduction Program. The Discharger shall participate in a mercury Exposure Reduction Program in accordance with the Basin Plan's Delta Mercury Control Program. The Discharger, either individually or collectively with other Delta dischargers, shall submit an exposure reduction work plan for Executive Officer approval by **20 October 2013**. The objective of the Exposure Reduction Program is to reduce mercury exposure of Delta fish consumers most likely affected by mercury. The work plan shall address the Exposure Reduction Program objective, elements, and the Discharger's coordination with other stakeholders. The minimum requirements for the exposure reduction work plan are outlined in the Fact Sheet (Attachment F section VII.B.3.b). The Discharger shall integrate or, at minimum, provide good-faith opportunities for integration of community-based organizations, tribes, and consumers of Delta fish into planning, decision making, and implementation of exposure reduction activities. **The Discharger shall implement the work plan within six months of Executive Officer approval.**

c. Salinity Source Control Program. The Discharger shall continue to implement the Salinity Source Control Program and update as necessary. Annual progress reports shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

4. Construction, Operation and Maintenance Specifications

a. Title 22, or Equivalent, Disinfection Requirements. Wastewater discharged to Marsh Creek shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the Department of Public Health (DPH) reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent.

b. Turbidity. To ensure compliance with the Title 22, or equivalent, disinfection requirements, effluent turbidity shall not exceed any of the following:

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

c. Emergency Storage Pond Operating Requirements.

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

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

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

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

(b) Weeds shall be minimized.

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

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

5. Special Provisions for Municipal Facilities (POTWs Only)

a. Pretreatment Requirements.

i. The Discharger shall be responsible and liable for the performance of all Control Authority pretreatment requirements contained in 40 CFR Part 403, including any subsequent regulatory revisions to 40 CFR Part 403. Where 40 CFR Part 403 or subsequent revision places mandatory actions upon the Discharger as Control Authority but does not specify a timetable for completion of the actions, the Discharger shall complete the required actions within 6 months from the issuance date of this permit or the effective date of the 40 CFR Part 403 revisions, whichever comes later. For violations of pretreatment requirements, the Discharger shall be subject to enforcement actions, penalties, fines, and other remedies by USEPA or other appropriate parties, as provided in the CWA. <u>USEPA may initiate enforcement action against an industrial user for noncompliance with applicable standards and requirements as provided in the CWA.</u>

ii. The Discharger shall enforce the requirements promulgated under sections 307(b), 307(c), 307(d), and 402(b) of the CWA with timely, appropriate and effective enforcement actions. The Discharger shall cause all nondomestic users subject to federal categorical standards to achieve compliance no later than the date specified in those requirements or, in the case of a new nondomestic user, upon commencement of the discharge.

iii. The Discharger shall perform the pretreatment functions as required in 40 CFR Part 403 including, but not limited to:

(a) Implement the necessary legal authorities as provided in 40 CFR 403.8(f)(1);

(b) Enforce the pretreatment requirements under 40 CFR 403.5 and 403.6;

(c) Implement the programmatic functions as provided in 40 CFR 403.8(f)(2); and

(d) Provide the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3).

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

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

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

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

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

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

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

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

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

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

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

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

b. Sludge/Biosolids Treatment or Discharge Specifications. Sludge in this document means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the wastewater treatment plant. Biosolids refer to sewage sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and state regulations as a soil amendment for agricultural, silvicultural, horticultural, and land reclamation activities as specified under 40 CFR Part 503.

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

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

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

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

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

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

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

(a) Sources and amounts of biosolids generated annually.

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

(c) Plans for ultimate disposal. For landfill disposal, include the present classification of the landfill; and the name and location of the landfill.

d. Collection System. On 2 May 2006, the State Water Board adopted State Water Resources Control Board Order No. 2006-0003-DWQ, Statewide General Waste Discharge Requirements (WDRs) for Sanitary Sewer Systems. The Discharger shall be subject to the requirements of Order No. 2006-0003-DWQ and any future revisions thereto. Order No. 2006-0003-DWQ requires that all public agencies that currently own or operate sanitary sewer systems apply for coverage under the general WDRs. The Discharger has applied for and has been approved for coverage under Order 2006-0003-DWQ for operation of its wastewater collection system**.**

6. Other Special Provisions

Not Applicable

7. Compliance Schedules

a. Compliance Schedule for Final Effluent Limitations for Chloride.

i. **By 1 January 2018**, the Discharger shall comply with the chloride final effluent limitations specified in Section IV.A.1.a. Since the time schedule for completion of actions necessary to bring the waste discharge into compliance exceeds one year, this Order includes interim effluent limitations and interim requirements and dates for their achievement.

Task	Date Due
i. **Submit a Pollution Prevention Plan (PPP)[1] for Chloride**	**Complete**

Task	Date Due
ii. **Compliance Alternative Investigation and Selection of Preferred Compliance Alternative**. Submit a report that includes: 1) a compliance options investigations analysis and 2) a rationale for selection of preferred compliance option(s), and 3) a discussion of funding sources. The report must also describe the selected preferred compliance alternative (s) and preliminary milestone schedule for implementing the alternative (s) for compliance with the final effluent limits for chloride.	**31 December 2013**
iii. **Prepare Agenda Item for City Council Approval of Selected Alternative and Submit a report demonstrating compliance with this task that includes the following:** 1) agenda item prepared that summarizes findings from the Compliance Alternative Investigation and recommended preferred compliance alternative(s), 2) summary of the outcome of the City Council meeting (e.g., resolution on compliance alternative options and selected preferred alternative), and 3) schedule for implementing the selected alternative(s).	**30 June 2014**
iv. **Implementation of Selected Project Alternative**. Submit report demonstrating the Discharger has begun implementing the Selected Project Alternative.	**1 October 2014**
v. **Rate Analysis Report**. Submit a report that includes the following: 1) identification of the funding alternatives and sources and 2) an evaluation of the source of rate revenue necessary to fund recommended compliance project(s) and 3) consider alternative funding alternatives such as revenue bonds and/or State Revolving Funds.	**1 June 2015**
vi. **Project Funding.** Submit a financing plan for the selected compliance project(s) and a schedule for obtaining State Water Board funding, if applicable.	**1 December 2015**
vii. **Final Project Milestone Schedule.** Submit final project milestone schedule that ensures compliance with the final effluent limits for chloride by the final compliance date.	**1 February 2016**
viii. **Implementation of Expanded Recycled Water Usage**. Submit report that describes the implementation of the expanded use of recycled water to reduce discharge of treated effluent into Marsh Creek.	**31 December 2016**
ix. **Progress Reports**[3]	**31 December 2014** **31 December 2015** **31 December 2016**
viii. **Comply with Final Effluent Limitations for Chloride**. Submit report demonstrating compliance with the final limits	**1 January 2018**

[1] The PPP for chloride was submitted by the compliance date. The PPP was prepared and implemented in accordance with Water Code section 13263.3(d)(3) as outlined in the Fact Sheet (Attachment F section VII.B**.** 3.c).

[2] The progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, including studies, construction progress, evaluation of measures implemented, funding resources, and recommendations for additional measures as necessary to achieve full compliance by **1 January 2018**. If another report is due on the same date as a progress report, the reports can be combined into one submittal.

b. Compliance Schedule for Final Effluent Limitations for Methylmercury. This Order requires compliance with the final effluent limitations for methylmercury by **31 December 2030.** The Discharger shall comply with the following time schedule to ensure compliance with the final effluent limitations:

Task	Date Due
Phase 1	
i. Submit CVCWA Coordinated Methylmercury Control Study Work Plan	**Submitted**
ii. Update and Implement Pollution Prevention Plan (PPP)[1] for Mercury (per Section VI.C.3.a)	**1 February 2014**
iii. Submit Mercury Exposure Reduction Work Plan (per Section VI.C.3.b)	**20 October 2013**
iv. Implement CVCWA Coordinated Methylmercury Control Study Work Plan	**Immediately following Executive Officer Approval**
v. Implement Mercury Exposure Reduction Work Plan (per Section VI.C.3.b)	**6 months following Executive Officer Approval**
vi. Annual Progress Reports[2]	**20 October 2014** **20 October 2015** **20 October 2016** **20 October 2017**
vii. Submit CVCWA Coordinated Methylmercury Control Study Progress Report	**20 October 2015**
viii. Submit Final CVCWA Coordinated Methylmercury Control Study	**20 October 2018**[3]
Phase 2	
ix. Implement methylmercury control programs	**TBD**[4]
x. Full Compliance	**31 December 2030**[3]

1 The PPP for Mercury shall be updated and implemented in accordance with Section VI.C.3.a. The Discharger shall continue to implement its existing PPP for mercury during the period in which it updates the PPP.

2 The progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, including studies, construction progress, evaluation of measures implemented, sources of funding, and recommendations for additional measures as necessary to achieve full compliance by the final compliance date.

3 The Executive Officer may, after public notice, extend the due date for the Final CVCWA Coordinated Methylmercury Control Study up to two years if the Discharger demonstrates it is making significant progress towards developing, implementing and/or completing the Study and reasonable attempts have been made to secure funding for the Study, but the Discharger has experienced severe budget shortfalls.

4 To be determined. Following Phase 1 the Central Valley Water Board will conduct a Phase 1 Delta Mercury Control Program Review that considers: modification of methylmercury goals, objectives, allocations, final compliance date, etc. Consequently, the start of Phase 2 and the final compliance date is uncertain at the time this Order was adopted.

c. Compliance Schedule for Groundwater Limitations. This Order requires full compliance with the groundwater limitations by **30 June 2017**, and shall comply with the following time schedule to ensure compliance with the final groundwater limitations:

Task	Date Due
i. Submit Compliance Workplan and Time Schedule for lining Pond 6 and decommissioning Percolation Ponds 7 and 8	**Within 4 months following adoption of this Order**
ii. Begin design of Pond 6 lining	**1 March 2014**
iii. Begin construction of Pond 6 lining	**1 September 2014**
v. Decommission Ponds 7 and 8	**30 June 2015**
vi. Submit a report confirming Pond 6 lining and decommissioning of Ponds 7 and 8. Submit a request to Central Valley Water Board Executive Officer to cease groundwater monitoring and reduce land discharge monitoring.	**30 September 2015**
vii. Submit well abandonment Workplan	**1 September 2016**
viii. Abandon wells and submit well abandonment Report	**1 September 2017**
ix. Progress Reports[1]	**1 September, annually until final compliance**
xi. Full Compliance	**30 June 2017**

[1] The progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, including studies, construction progress, evaluation of measures implemented, sources of funding, and recommendations for additional measures as necessary to achieve full compliance by the final compliance date.

VII. COMPLIANCE DETERMINATION

A. BOD_5 and TSS Effluent Limitations (Section IV.A.1.a and b). Compliance with the final effluent limitations for BOD_5 and TSS required in Limitations and Discharge Requirements Section IV.A.1.a shall be ascertained by 24-hour composite samples. Compliance with effluent limitations required in Limitations and Discharge Requirements Section IV.A.1.b for percent removal shall be calculated using the arithmetic mean of BOD_5 and TSS in effluent samples collected over a monthly period as a percentage of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period.

B. Total Mercury Mass Loading Effluent Limitations (Section IV.A.2.b). 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 effluent monitoring data collected under the monitoring and reporting program, pretreatment program, and any special studies shall be used for these calculations. The total annual mass loading shall be the sum of the individual calendar months.

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.

C. Average Dry Weather Flow Effluent Limitations (Section IV.A.1.h.). The average dry weather discharge flow represents the daily average flow when groundwater is at or near normal and runoff is not occurring. Compliance with the average dry weather flow effluent limitations will be determined annually based on the average daily flow over three consecutive dry weather months (e.g., July, August, and September).

D. Total Coliform Organisms Effluent Limitations (Section IV.A.1.g.). For each day that an effluent sample is collected and analyzed for total coliform organisms, the 7-day median shall be determined by calculating the median concentration of total coliform bacteria in the effluent utilizing the bacteriological results of the last 7 days. For example, if a sample is collected on a Wednesday, the result from that sampling event and all results from the previous 6 days (i.e., Tuesday, Monday, Sunday, Saturday, Friday, and Thursday) are used to calculate the 7-day median. If the 7-day median of total coliform organisms exceeds a most probable number (MPN) of 2.2 per 100 milliliters, the Discharger will be considered out of compliance.

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

Any excursion above the 1-hour average or 4-day average total residual chlorine effluent limitations is a violation. If the Discharger conducts continuous monitoring and the Discharger can demonstrate, through data collected from a back-up monitoring system, that a chlorine spike recorded by the continuous monitor was not

actually due to chlorine, then any excursion resulting from the recorded spike will not be considered an exceedance, but rather reported as a false positive. Records supporting validation of false positives shall be maintained in accordance with Section IV Standard Provisions (Attachment D).

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

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

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

G. Priority Pollutant Effluent Limitations. Compliance with effluent limitations for priority pollutants shall be determined in accordance with Section 2.4.5 of the SIP, as follows:

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

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

a. A sample result is reported as detected, but not quantified (DNQ) and the effluent limitation is less than the RL; or

b. A sample result is reported as non-detect (ND) and the effluent limitation is less than the method detection limit (MDL).

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

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

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

the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

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

H. Chronic Whole Effluent Toxicity Effluent Limitation (Section IV.A.1.f), Compliance with the accelerated monitoring and TRE provisions of Provision VI.C.2.a shall constitute compliance with the effluent limitation.

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

ATTACHMENT A – DEFINITIONS

Acute Toxic Unit (TU_a)
The reciprocal of the effluent concentration that causes 50 percent of the organisms to die in an acute toxicity test ($TU_a = 100/LC_{50}$) (see LC_{50}).

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(I). In general, an exceedance of a water quality objective in the Basin Plan constitutes "pollution".

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

Biosolids
Sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and state regulations as a soil amendment for agriculture, silviculture, horticulture, and land reclamation activities.

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

Chronic Toxic Unit (TU_c)
The reciprocal of the effluent concentration that causes no observable effect on the test organisms in a chronic toxicity test (TU_c = 100/NOEC) (see NOEC).

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

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

The daily discharge may be determined by the analytical results of a composite sample taken over the course of 1 day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

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

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

Dilution Credit
Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Effect Concentration (EC)
A point estimate of the toxicant concentration that would cause an observable adverse effect (e.g. death, immobilization, or serious incapitation) in a given percent of the test organisms, calculated from a continuous model (e.g. Probit Model). EC_{25} is a point estimate of the toxicant concentration that would cause an observable adverse effect in 25 percent of the test organisms.

Effluent Concentration Allowance (ECA)
ECA is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in USEPA guidance

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

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

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

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

Inhibition Concentration (IC)
A point estimate of the toxicant concentration that would cause a given percent reduction in a non-lethal biological measurement (e.g. reproduction or growth), calculated from a continuous model (e.g. Interpolation Method). IC_{25} is a point estimate of the toxicant concentration that would cause a 25 percent reduction in a non-lethal biological measurement.

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

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

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

LC_{50}, Lethal Concentration, 50 percent
The toxic or effluent concentration that would cause death in 50 percent of the test organisms over a specified period of time.

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

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

Method Detection Limit (MDL)
MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in 40 CFR Part 136, Attachment B, revised as of 3 July 1999.

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

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

NOEC, No Observed Effect Concentration
The highest tested concentration of an effluent or test sample whose effect is not different from the control effect, according to the statistical test used (see LOEC). The NOEC is usually the highest tested concentration of an effluent or toxic that causes no observable effects on the test organisms (i.e. the highest concentration of toxicity at which the values for the observed responses do not statistically differ from the controls).

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

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

Persistent Pollutants

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

Pollutant Minimization Program (PMP)
PMP means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Central Valley Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention
Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State or Regional Water Board.

Residual Sludge
Sludge that will not be subject to further treatment at the Facility.

Satellite Collection System
The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

Source of Drinking Water
Any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan.

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

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

where:

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

Sludge

The solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes.

Solid Waste
Grit and screening material generated during preliminary treatment.

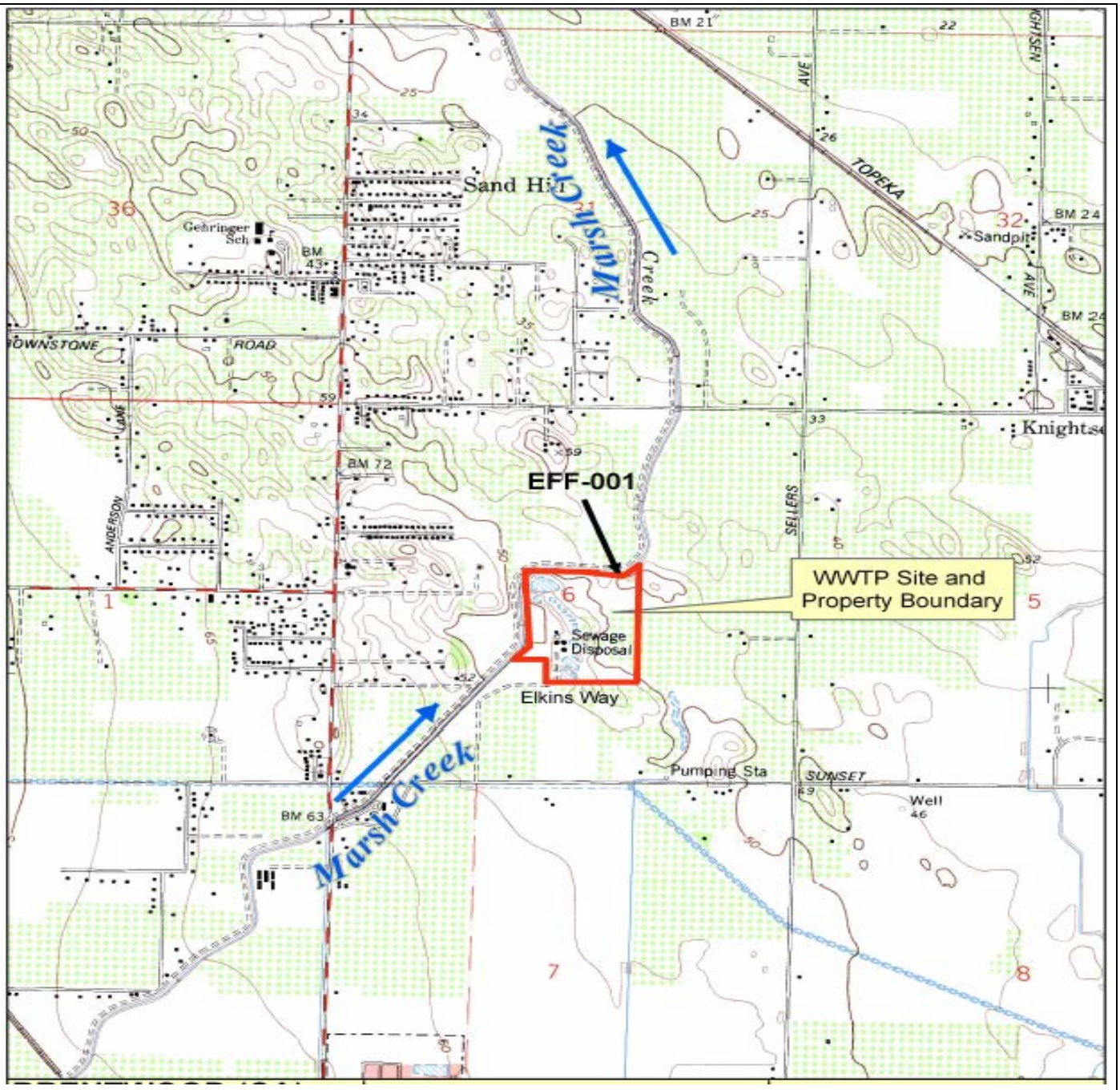
Toxicity Reduction Evaluation (TRE)
TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first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

Toxicity Test
The procedure using living organisms to determine whether a chemical or an effluent is toxic. A toxicity test measures the degree of the effect of a specific chemical or effluent on exposed test organisms.

Toxicity Unit
The measure of toxicity in an effluent as determined by the acute toxic units (TU_a) or chronic toxic units (TU_c) measured. The larger the TU, the greater the toxicity.

Attachment B-1 – Map

Figure B-1. Site Map City of Brentwood Waste Treatment Plant



Drawing Reference: Brentwood (CA) U.S.G.S TOPOGRAPHIC MAP 7.5 MINUTE QUADRANGLE Currentness year 1978 Not to scale	SITE LOCATION MAP city of Brentwood wastewater treatment plant contra costa County	N W E S

Figure B-2. Site Map City of Brentwood Waste Treatment Plant

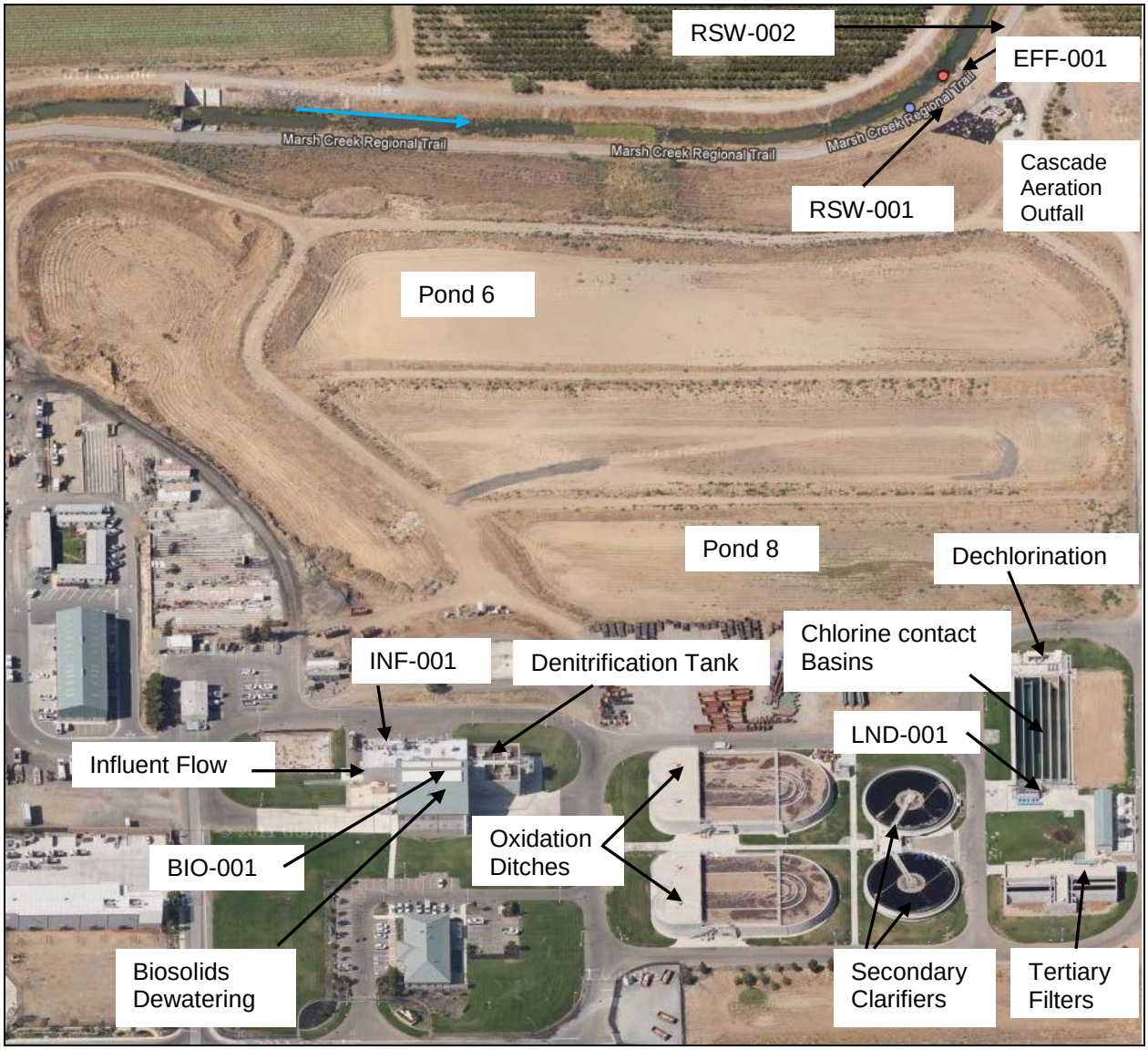
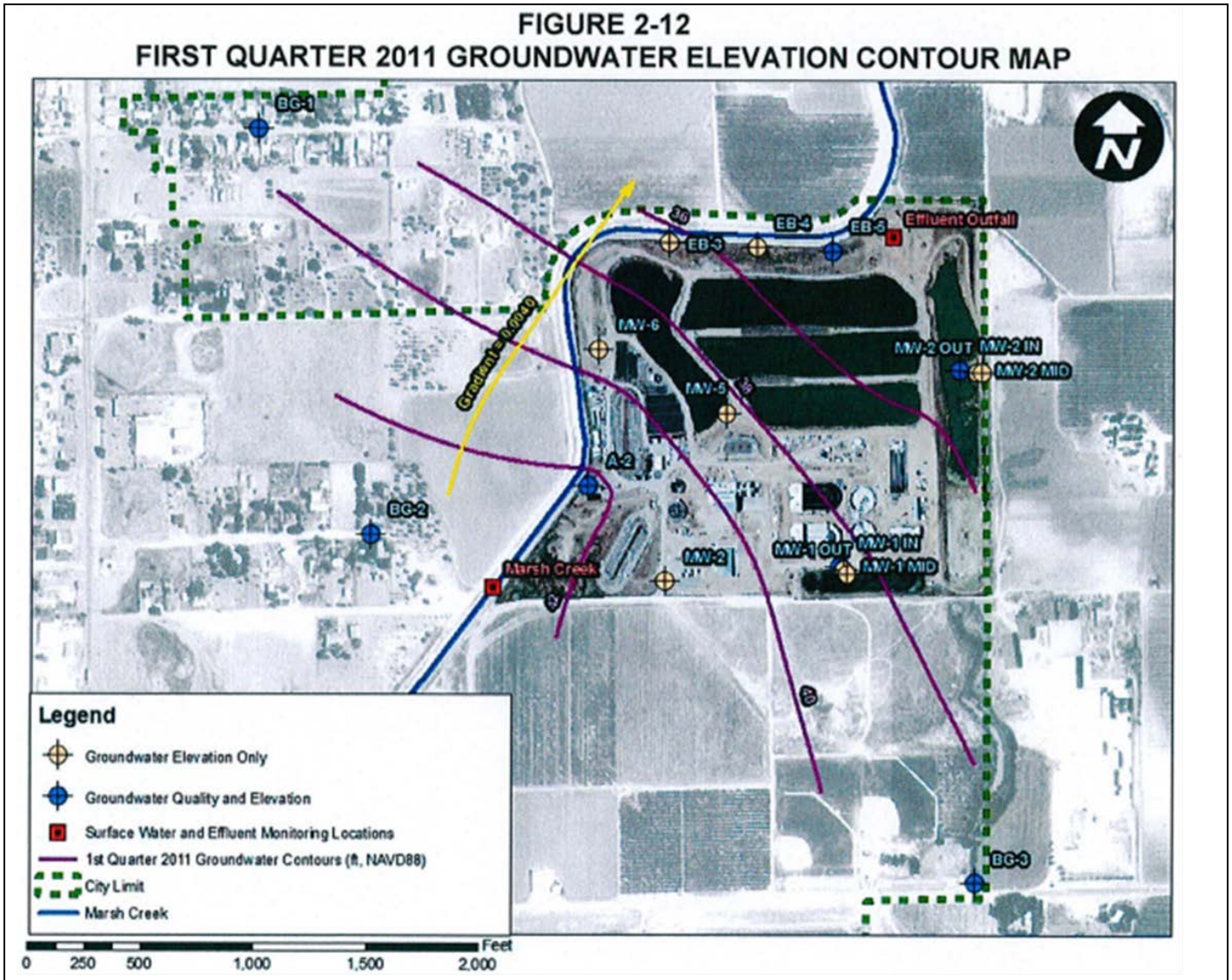


Figure B-3. Effluent and Receiving Water Monitoring Locations



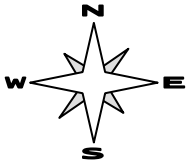
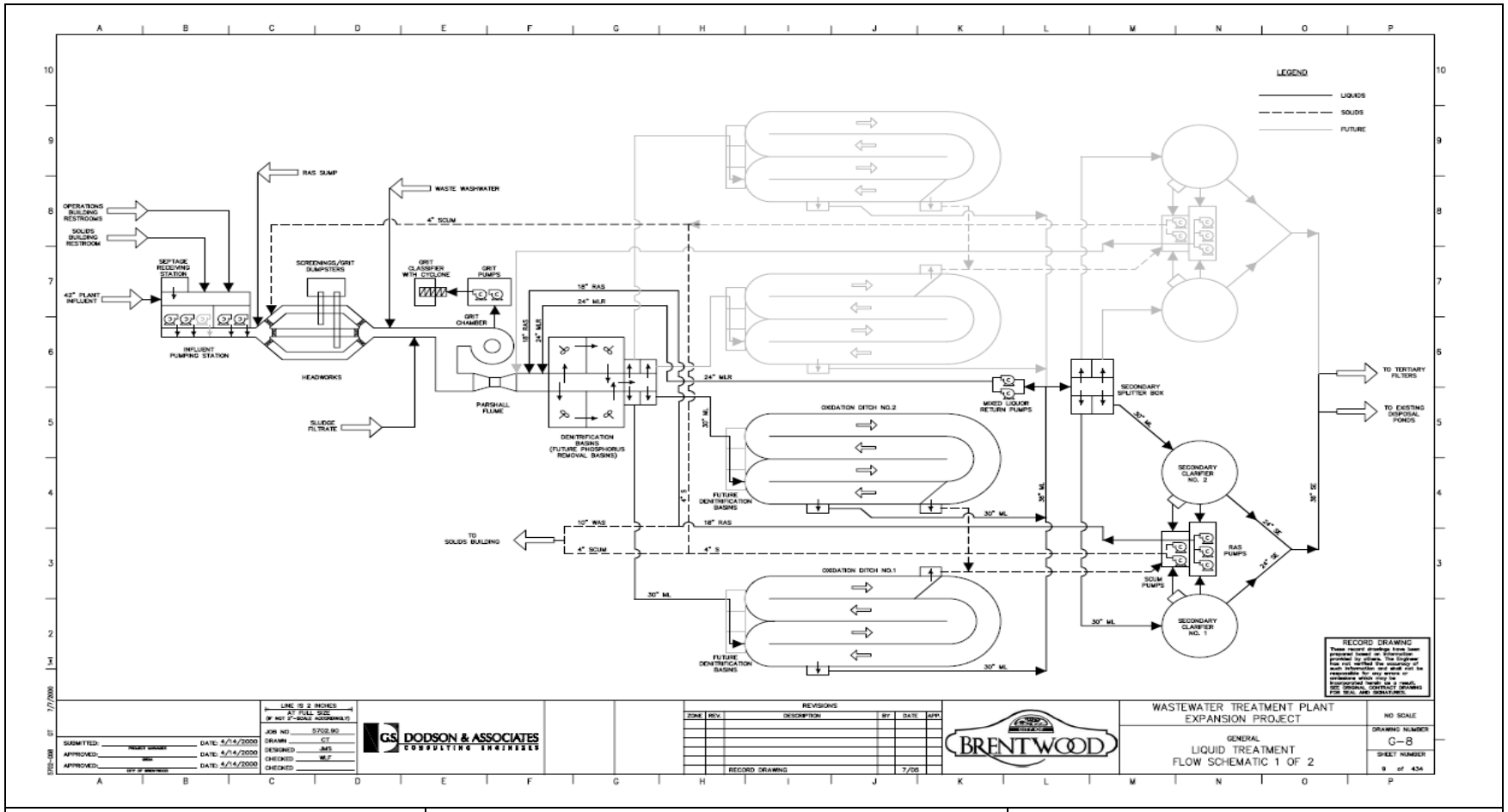
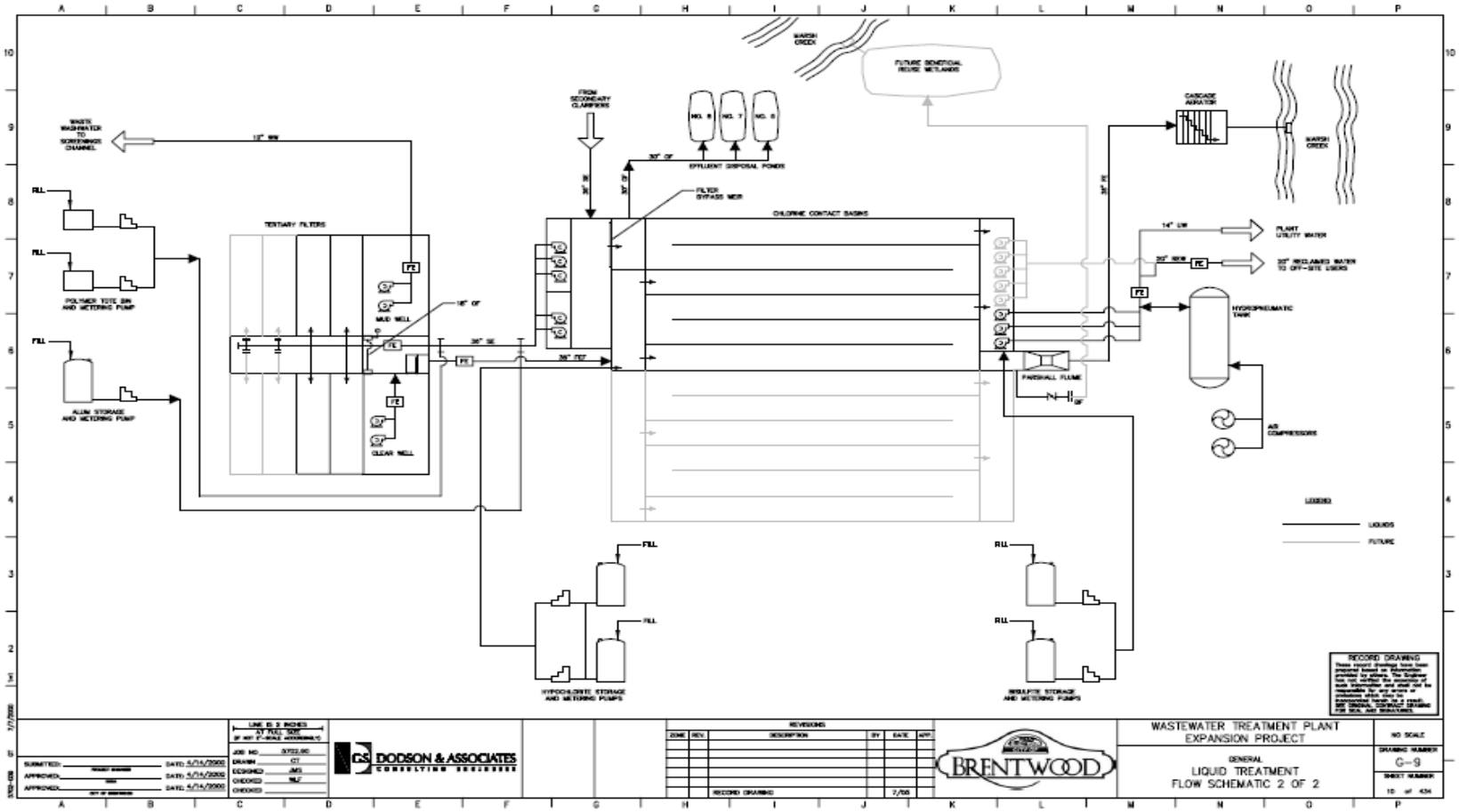
Drawing Reference: Brentwood (CA) Eco:Logic Engineering 2011	Groundwater Elevation Contour Map	

Figure B-4. City of Brentwood current monitoring well network

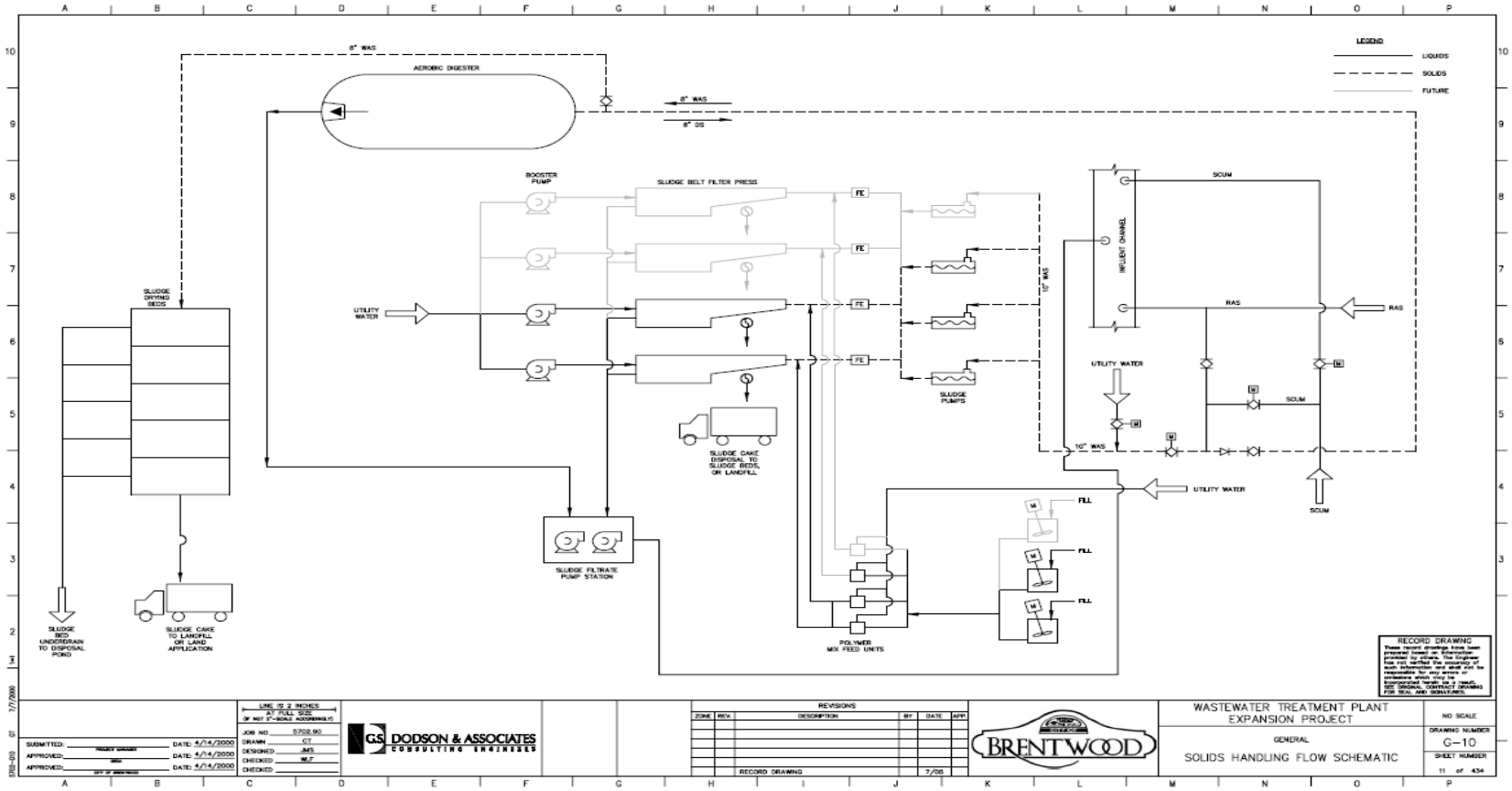
ATTACHMENT C – FLOW SCHEMATIC



ATTACHMENT C- PROCESS FLOW DIAGRAM 1	SITE FLOW ROUTING CITY OF BRENTWOOD WASTEWATER TREATMENT PLANT CONTRA COSTA COUNTY	N W E S



ATTACHMENT C- PROCESS FLOW DIAGRAM 2	SITE FLOW ROUTING CITY OF BRENTWOOD WASTEWATER TREATMENT PLANT CONTRA COSTA COUNTY	N W E S



ATTACHMENT C- PROCESS FLOW DIAGRAM 3	SOLIDS HANDLING CITY OF BRENTWOOD WASTEWATER TREATMENT PLANT CONTRA COSTA COUNTY	N W E S

ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

Duty to Comply

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

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

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))

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))

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).)

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))

Inspection and Entry

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

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

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

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

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

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))

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))

STANDARD PROVISIONS – PERMIT ACTION

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))

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))

Transfers

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

STANDARD PROVISIONS – MONITORING

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

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

STANDARD PROVISIONS – RECORDS

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

STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Central Valley 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 Central Valley 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 Central Valley 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 Central Valley 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 Central Valley 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) and the Effluent and Receiving Water Characterization Study (Attachment I) in this Order (40 CFR 122.22(l)(4)).

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

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Central Valley 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 notify the Office of Emergency Services of any noncompliance that may endanger health or the environment within two (2) hours from the time the Discharger becomes aware of the circumstances. The Discharger shall notify the Central Valley Water Board of the noncompliance by telephone or fax within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided to the Central Valley Water Board within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 CFR 122.41(l)(6)(i))

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

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

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

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

F. Planned Changes

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

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

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

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

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

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 Central Valley 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 Central Valley Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 CFR 122.41(l)(8))

STANDARD PROVISIONS – ENFORCEMENT

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

ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Publicly-Owned Treatment Works (POTWs)

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

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

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

3. Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the

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

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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

I. GENERAL MONITORING PROVISIONS

A. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring locations specified below and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring locations shall not be changed without notification to and the approval of the Central Valley Water Board.

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

C. Chemical, bacteriological, and bioassay analyses of any material required by this Order shall be conducted by a laboratory certified for such analyses by the Department of Public Health (DPH). Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Central Valley Water Board. In the event a certified laboratory is not available to the Discharger for any onsite field measurements such as pH, DO, turbidity, temperature, and residual chlorine, such analyses performed by a noncertified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program for any onsite field measurements such as pH, DO, turbidity, temperature, and residual chlorine must be kept onsite in the treatment facility laboratory and shall be available for inspection by Central Valley Water Board staff. The Discharger must demonstrate sufficient capability (qualified and trained employees, properly calibrated and maintained field instruments, etc.) to adequately perform these field measurements. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the Central Valley Water Board.

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

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

F. Laboratories analyzing monitoring samples shall be certified by DPH, in accordance with the provision of CWC section 13176, and must include quality assurance/quality control data with their reports.

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

H. The Discharger shall file with the Central Valley Water Board technical reports on self-monitoring performed according to the detailed specifications contained in this Monitoring and Reporting Program.

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

II. MONITORING LOCATIONS

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

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description (include Latitude and Longitude when available)
--	INF-001	A location where a representative sample of the influent into the facility can be collected prior to any plant return flows or treatment processes.
001	EFF-001	A location where a representative sample of the effluent from the facility can be collected after all treatment processes and prior to commingling with other waste streams or being discharged into Marsh Creek. [Latitude: 37° 57' 46.10" N; Longitude: 121° 41 02.59" W]
--	LND-001	After secondary treatment, a location where a representative sample of partially treated effluent being discharged into Emergency Storage Pond 006 can be collected.
	LND-002	After the chlorine contact basin, a location where a representative sample of partially treated effluent discharged into disposal Pond 006 can be collected
--	PND-006	Representative sampling location for wastewater in Emergency Storage Pond 006.
--		
--	PND-008	Representative sampling location for wastewater in Emergency Storage Pond 008.
--	RSW-001	100 feet upstream of Discharge Point No. 001. [Latitude: 37°57'45.54" N; Longitude: 121°41'3.48" W]
--	RSW-002[1]	300 feet downstream of Discharge Point No. 001. [Latitude: 37°57'48.81" N; Longitude: 121°41'1.20"W]
--	BIO-001	Representative sample location for biosolids.
--	SPL-001	A location where a representative sample location for the municipal water supply can be collected. If the water supply is from more than one source, a weighted average should be calculated.
--	MW-1 IN MW-1 MID MW-1 OUT MW-2 MW 2 IN MW-2 MID MW 2 OUT; MW-5 MW 6 EB-3; EB-4, EB-5 BG-1 BG-2 BG-3	Groundwater monitoring locations (see Attachment B, Figure B-4)

[1] The receiving surface water monitoring locations have been renumbered in this Order. RSW-002 was removed from previous Order R5-2008-0006-01. Therefore, RSW-003 from previous Order R5-2006-0006-01 has been renamed RSW-002 in this Order.

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

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

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	[1]
BOD 5-day @ 20°C	mg/L	24-hr Composite [2]	1/Week	[1]
Total Suspended Solids	mg/L	24-hr Composite [2]	1/Week	[1]
Electrical Conductivity @ 25°C	µmhos/cm	24-hr Composite[2]	1/week	[1]

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

[2] 24-hour flow proportional composite.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. The Discharger shall monitor treated effluent that is discharged to Marsh Creek at Monitoring Location EFF-001 as follows. Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the outfall. Effluent samples should be representative of the volume and quality of the discharge. 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. Monitoring Location EFF-001

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	mgd	Meter	Continuous	[1]
Conventional Pollutants				
Biochemical Oxygen Demand (BOD) (5-day @ 20 Deg. C)	mg/L	24-hr Composite [2]	2/Week	[1]
	lbs/day	Calculate		--
	% removal	Calculate	1/Month	
Dissolved Oxygen	mg/L	Grab	1/day	[1]
Total Suspended Solids	mg/L	24-hr Composite [2]	2/Week	[1]
	lbs/day	Calculate		--
	% removal	Calculate	1/Month	
pH	Standard Units	Grab	1/day [3, 4]	[1]
Priority Pollutants				
Bis (2-Ethylhexyl) Phthalate	µg/L	Grab [5, 6]	1/Quarter	[1, 5]
Copper, Total Recoverable	µg/L	24-hr Composite [2]	1/Quarter	[1, 5]
Dibromochloromethane	µg/L	Grab [5, 6]	1/Month	[1, 5]
Dichlorobromomethane	µg/L	Grab [5, 6]	1/Quarter	[1, 5]
Mercury (methyl)	µg/L	Grab	1/Month	[11]
Mercury, Total Recoverable	µg/L	Grab	1/Month	[11, 5]
Priority Pollutants and Other Constituents of Concern	See Attachment I	See Attachment I	See Attachment I	[1, 5]
Non-Conventional and Other Pollutants				
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Week [3,7]	[1]
Chlorine, Total Residual	mg/L	Meter	Continuous	[1, 8]
Chloride	mg/L	24-hr Composite [2, 6]	1/Month	[1]
Chlorpyrifos	µg/L	Grab	1/year	EPA 8141A, EPA 8270C or EPA 625M
Diazinon	µg/L	Grab	1/year	EPA 8141A, EPA 8270C or EPA 625M
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Week	[1]
Hardness (as $CaCO_3$)	mg/L	Grab	1/Month [9]	[1]
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Quarter [10]	[1]
Nitrite Nitrogen, Total (as N)	mg/L	Grab	1/Quarter [10]	[1]
Oil and Grease	mg/L	Grab	1/month	[1]
Sulfate	mg/L	24-hr Composite [2]	1/month	[1]
Temperature	°C	Grab	1/day [3, 4]	[1]
Total Coliform Organisms	MPN/100 mL	Grab	5 days/Week [12]	[1]
Turbidity	NTU	Continuous	Continuous	[1]
Whole Effluent Toxicity (see Section V. below)	--	--	--	--

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

[2] 24-hour flow proportional composite.

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

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

[5] For priority pollutant constituents the reporting level shall be consistent with Sections 2.4.2 and 2.4.3 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (See Attachment I, Table I-1).[6] Volatile constituents shall be sampled in accordance with 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

[7] Concurrent with whole effluent toxicity monitoring.

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

[9] Hardness samples shall be collected concurrently with metals samples.

[10] Monitoring for nitrite and nitrate shall be conducted concurrently.

[11] Unfiltered methyl mercury and total mercury samples shall be taken using clean hands/dirty hands procedures, as described in U.S. EPA method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, for collection of equipment blanks (section 9.4.4.2), and shall be analyzed by U.S. EPA methods 1630 and 1631E with reporting limits of 0.05 ng/l for methyl mercury and 0.5 ng/l for total mercury.

[12] Samples for Total coliform organisms may be collected at any point following disinfection.

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

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

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

2. *Sample Types* – For static renewal testing, the samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location EFF-001.

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

4. *Methods* – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. 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 the effluent monitoring location EFF-001. The receiving water control shall be a grab sample obtained from the RSW-001 sampling location, as identified in this Monitoring and Reporting Program.

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

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

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

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

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

7. *Dilutions* – For routine and accelerated chronic toxicity monitoring, it is not necessary to perform the test using a dilution series. The chronic toxicity testing shall be performed using the 100% effluent and one control. If toxicity is found in any effluent test, the Discharger must conduct accelerated monitoring in accordance with Section VI.C.2.a of the Limitations and Discharge Requirements For the TRE monitoring, the chronic toxicity testing shall be performed using dilution series identified in Table E-4, below, unless an alternative dilution series is detailed in the submitted TRE Action Plan. A receiving water control or laboratory water control may be used as the diluent.

Table E-4. Chronic Toxicity Testing Dilution Series

	Dilutions [a] (%)					Control
Sample	**100**	**75**	**50**	**25**	**12.5**	
% Effluent	100	75	50	25	12.5	0
% Control Water	0	25	50	75	87.5	100

[a] Receiving water control or laboratory water control may be used as the diluent

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

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

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

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

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

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

   a. The results expressed in TUc, measured as 100/NOEC, and also measured as 100/LC50, 100/EC25, 100/IC25, and 100/IC50, as appropriate.

   b. The statistical methods used to calculate endpoints;

   c. The statistical output page, which includes the calculation of the percent minimum significant difference (PMSD);

   d. The dates of sample collection and initiation of each toxicity test; and

   e. The results compared to the numeric toxicity monitoring trigger.

   Additionally, the monthly discharger self-monitoring reports shall contain an updated chronology of chronic toxicity test results expressed in TUc, and organized by test species, type of test (survival, growth or reproduction), and monitoring frequency, i.e., either quarterly, monthly, accelerated, or Toxicity Reduction Evaluation (TRE).

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

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

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

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

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

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

VI. LAND DISCHARGE MONITORING REQUIREMENTS

A. Monitoring Location LND-001

1. **Effective immediately**, the Discharger shall monitor influent into Emergency Storage Ponds 006 and 008 at Monitoring Location LND-001 in accordance with Table E-5a. **The monitoring requirements prescribed in Table E-5a shall remain in effect until the Executive Officer authorizes the cessation of the monitoring requirements, subsequent to the Discharger lining Pond 006 and decommissioning Pond 008, per the compliance schedule for meeting the groundwater limitations in section VI.C.7.c of the Limitations and Discharge Requirements:**

Table E-5a. Monitoring for Discharges to Storage Ponds

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Total Volume Discharged to Ponds	Gallons	Calculated	1/event[2]	
Biochemical Oxygen Demand (5-day @20 °C)	mg/L	Grab	1/event[2, 3]	[1]
Settleable Solids	mL/L	Grab	1/event[2, 3]	[1]
Electrical Conductivity @25°C	µmhos/cm	Grab	1/event[2, 3]	[1]
pH	Standard Units	Grab	1/event[2, 3]	[1]

[1] As specified in 40 CFR Part 136.
[2] An "event" is defined as each discharge to the Emergency Storage Ponds.
[3] The monitoring frequency shall be 1/event, not to exceed 1/day. Furthermore, monitoring is not required during periods when the Facility is not staffed. The reason for not monitoring must be provided in the monthly self-monitoring report.

2. **Effective upon Executive Officer approval of the cessation of the monitoring requirements in Table E-5a**, the Discharger shall monitor influent into Emergency Storage Pond 006 at Monitoring Location LND-001, in accordance with Table E-5b**:**

Table E-5b. Monitoring for Discharges to Emergency Storage Pond 006

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Event duration	Hours	--	1/event[1]	
Total Volume Discharged to Ponds	Gallons	Calculated	1/event[1]	

[1] For the purposes of these monitoring requirements, an "event" is defined as any discharge to Emergency Storage Pond 006.

B. Monitoring Locations PND-006 and PND-008

1. The Discharger shall monitor Emergency Storage Pond Nos. 006 and 008 at PND-006 and 008, respectively, as follows:

Table E-6. Land Discharge Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Dissolved Oxygen[1]	mg/L	Grab	1/month	[2]
pH[1]	Standard Units	Grab	1/month	[2]
Freeboard	Feet	--	1/month	[2]

[1] Monitoring for dissolved oxygen and pH is not required when pond water depth is less than 1 foot.
[2] As specified in 40 CFR Part 136.

VII. RECLAMATION MONITORING REQUIREMENTS (Set forth In Order R5-2004-0132)

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER AND GROUNDWATER

A. Monitoring Location RSW-001 and RSW-002

1. The Discharger shall monitor Marsh Creek at RSW-001 and RSW-002 as follows:

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

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Dissolved Oxygen	mg/L	Grab	1/week	[1]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/week	[1]
pH	Standard Units	Grab	1/week	[1]
Temperature	°F	Grab	1/week	[1]
Turbidity	NTU	Grab	1/week	[1]
Hardness (as $CaCO_3$)	mg/L	Grab	1/quarter	[1]
Priority Pollutants and Other Constituents of Concern[2]	See Attachment I	See Attachment I	See Attachment I	[1]

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
[2] Monitoring only required at RSW-001.

B. Groundwater Monitoring Locations

1. Groundwater monitoring locations shall be consistent with Figure B-4 and shall be sampled and analyzed according to the schedule below. All samples shall be collected using approved EPA methods. **The groundwater monitoring requirements prescribed below shall remain in effect until the Executive Officer authorizes the cessation of the monitoring requirements, subsequent to the Discharger lining Pond 006 and decommissioning Pond 008, per the compliance schedule for meeting the groundwater limitations in section VI.C.7.c of the Limitations and Discharge Requirements:**

i. Monitoring locations MW-1 MID, MW-1 OUT; MW-2, MW-2 MID, MW-2 OUT; MW-5; MW-6; EB-3; and EB-4

(a) Elevation Only

ii. Monitoring locations BG-1, BG-2, BG-3, EB-5; MW-1 IN, and MW-2

(a) Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged of at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Groundwater monitoring at Monitoring

locations BG-1, BG-2, BG-3, EB-5, MW-1 IN, and MW-2 shall include, at a minimum, the following in Table E-8.

Table E-8. Groundwater Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Depth to Groundwater	±0.01 feet	Measurement	1/Quarter	Observation
Groundwater Elevation [1]	±0.01 feet	Calculated	1/Quarter	--
Gradient	feet/feet	Calculated	1/Quarter	--
Gradient Direction	Compass Degrees	Calculated	1/Quarter	--
Electrical Conductivity @ 25°C[3]	µmhos/cm	Grab	1/Quarter	[2]
Total Dissolved Solids[3]	mg/L	Grab	1/Quarter	[2]
Total Coliform Organisms[3]	MPN/100 mL	Grab	1/Quarter	[2]

[1] Groundwater elevation shall be determined based on depth-to-water measurements from a surveyed measuring point elevation on the well. The groundwater elevation shall be used to calculate the direction and gradient of groundwater flow, which must be reported.

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

[3.] Those groundwater wells identified for elevation only shall not be sampled for these constituents.

IX. OTHER MONITORING REQUIREMENTS

A. Biosolids

1. Monitoring Location BIO-001

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

b. Biosolids monitoring shall be conducted using the methods in T*est Methods for Evaluating Solid Waste, Physical/Chemical Methods* (EPA publication SW-846), as required in 40 CFR 503.8(b)(4). All results must be reported on a 100% dry weight basis. Records of all analyses must state on each page of the laboratory report whether the results are expressed in “100% dry weight” or “as is”.

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

B. Municipal Water Supply

1. Monitoring Location 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/year	[3]
Electrical Conductivity @ 25°C[1]	µmhos/cm	Grab	1/year	[3]
Standard Minerals[2]	mg/L	Grab	1/year	[3]

1 If the water supply is from more than one source, the total dissolved solids and electrical conductivity shall be reported as a weighted average and include copies of supporting calculations.
2 Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).
3 As specified in 40 CFR Part 136.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

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

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

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

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

B. Self Monitoring Reports (SMRs)

1. The Discharger shall electronically submit SMR's using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). The CIWQS Web site will provide additional information for SMR submittal in the event there will be a planned service interruption for electronic submittal.

2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through IX. The Discharger shall submit monthly, quarterly, annual SMR's including the results of all required monitoring using U.S. EPA-approved test methods or other test methods specified in this Order. SMR's are to include all new monitoring results obtained since the last SMR was submitted. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.

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

Table E-10. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date

Continuous	Permit Effective Date	All through the discharge period	First day of second calendar month following month of sampling
1/day	Permit Effective Date	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	First day of second calendar month following month of sampling
1/week	15 September 2013 (Sunday)	Sunday through Saturday	First day of second calendar month following month of sampling
1/month	1 October 2013	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1/quarter	1 October 2013	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	1 May 1 August 1 November 1 February
1/year	1 January 2014	1 January through 31 December	1 February

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

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

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

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

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

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

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

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

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

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

6. **Reporting Requirements.** The Discharger shall submit SMR's in accordance with the following requirements:

   a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.

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

7. **Calculation Requirements**. The following shall be calculated and reported in the SMRs:

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

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

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

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

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

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

C. Discharge Monitoring Reports (DMRs)

1. At any time during the term of this permit, the State Water Board or Central Valley Water Board may notify the Discharger to electronically submit DMR's. Until such notification is given specifically for the submittal of DMR's, the Discharger shall submit DMR's in accordance with the requirements described below.

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

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

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

D. Other Reports

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

Table E-11. Reporting Requirements for Special Provisions Reports

Special Provision	Reporting Requirements
Pollution Prevention Plan for Mercury and Compliance Schedule for Methylmercury, Progress Reports (Special Provisions VI.C.3.a. and VI.C.7.b.)	20 October 2014 20 October 2015 20 October 2016 20 October 2017
Central Valley Clean Water Association (CVCWA) Coordinated Methylmercury Control Study Progress Report (Special Provision VI.C.7.b)	20 October 2015
Salinity Source Control Program, Progress Reports (Special Provisions VI.C.3.c.)	**31 December**, annually
Chloride Compliance Schedule, Progress Reports (Special Provision VI.C.7.a)	31 December 2014 31 December 2015 31 December 2016

2. The Discharger shall report the results of any special studies, analysis and evaluations, workplans**,** and Pollution Prevention Plan required by Special Provisions VI.C of this Order. The Discharger shall report the progress in satisfaction of compliance schedule dates specified in the Special Provision at section VI.C.7 of this Order. The Discharger shall submit reports with the first monthly SMR scheduled to be submitted on or immediately following the report due date AND/OR in compliance with SMR reporting requirements described in subsection X.B.3 above.

3. Within 60 days of permit adoption, the Discharger shall submit a report outlining reporting levels (RLs), method detection limits, and analytical methods for approval. The Discharger shall comply with the monitoring and reporting requirements for CTR constituents as outlined in section 2.3 and 2.4 of the SIP. The maximum required reporting levels for priority pollutant constituents shall be based on the Minimum Levels (MLs) contained in Appendix 4 of the SIP,

determined in accordance with Section 2.4.2 and Section 2.4.3 of the SIP. In accordance with Section 2.4.2 of the SIP, when there is more than one ML value for a given substance, the Central Valley Water Board shall include as RLs, in the permit, all ML values, and their associated analytical methods, listed in Appendix 4 that are below the calculated effluent limitation. The Discharger may select any one of those cited analytical methods for compliance determination. If no ML value is below the effluent limitation, then the Central Valley Water Board shall select as the RL, the lowest ML value, and its associated analytical method, listed in Appendix 4 for inclusion in the permit. Table I-1 (Attachment I) provides required maximum reporting levels in accordance with the SIP.

4. **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 or fourth year of this permit term, the Discharger shall conduct quarterly monitoring of the effluent at EFF-001 and of the receiving water at RSW-001 for all priority pollutants and other constituents of concern as described in Attachment I. The report shall be completed in conformance with the following schedule.

Task	Compliance Date
i. Submit Work Plan and Time Schedule	No later than 18 months from adoption of this Order
ii. Conduct quarterly monitoring	During third or fourth year of permit term
iii. Submit Final Report	6 months following completion of final monitoring event

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

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

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

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

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

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

6. Annual Pretreatment Reporting Requirements. The Discharger shall submit annually a report to the Central Valley Water Board, with copies to USEPA Region 9 and the State Water Board, describing the Discharger's pretreatment activities over the previous 12 months (1 January through 31 December). In the event that the Discharger is not in compliance with any conditions or requirements of this Order, including noncompliance with pretreatment audit/compliance inspection requirements, then the Discharger shall also include the reasons for noncompliance and state how and when the Discharger shall comply with such conditions and requirements.

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

a. A summary of analytical results from representative, flow proportioned, 24-hour composite sampling of the POTW's influent and effluent for those pollutants USEPA has identified under section 307(a) of the CWA which are known or suspected to be discharged by 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 Part 136 and amendments thereto.

b. A discussion of Upset, Interference, or Pass-Through incidents, if any, at the treatment plant, which the Discharger knows or suspects were caused by 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 significant industrial users (SIUs) including their names and addresses, or a list of deletions, additions and SIU name changes keyed to a previously submitted list. The Discharger shall provide a brief explanation for each change. The list shall identify the SIUs subject to federal categorical standards by specifying which set(s) of standards are applicable to each SIU. The list shall indicate which SIUs, or specific pollutants from each industry, are subject to local limitations. Local limitations that are more stringent than the federal categorical standards shall also be identified.

e. The Discharger shall characterize the compliance status through the year of record of each SIU by employing the following descriptions:

i. complied with baseline monitoring report requirements (where applicable);

ii. consistently achieved compliance;

iii. inconsistently achieved compliance;

iv. significantly violated applicable pretreatment requirements as defined by 40 CFR 403.8(f)(2)(vii);

v. complied with schedule to achieve compliance (include the date final compliance is required);

vi. did not achieve compliance and not on a compliance schedule; and

vii. compliance status unknown.

f. If any of the conditions in items e.iii through e.vii, above, occurred during the quarter, a report describing the compliance status of each SIU characterized by the descriptions in items iii through vii, above, shall be submitted for each calendar quarter. The report shall identify the specific compliance status of each such SIU and shall also identify the compliance status of the POTW with regards to audit/pretreatment compliance inspection requirements. If none of the aforementioned conditions exist, the annual report shall indicate that all industries are in compliance and no violations or changes to the pretreatment program have occurred.

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

i. The names and addresses of the SIUs subjected to surveillance and an explanation of whether they were inspected, sampled, or both and the frequency of these activities at each user; and

ii. The conclusions or results from the inspection or sampling of each industrial user.

h. The Discharger shall characterize the compliance status of each SIU by providing a list or table which includes the following information:

i. Name of SIU;

ii. Category, if subject to federal categorical standards;

iii. The type of wastewater treatment or control processes in place;

iv. The number of samples taken by the POTW during the year;

v. The number of samples taken by the SIU during the year;

vi. For an SIU subject to discharge requirements for total toxic organics, whether all required certifications were provided;

vii. A list of the standards violated during the year. Identify whether the violations were for categorical standards or local limits.

viii. Whether the facility is in significant noncompliance (SNC) as defined at 40 CFR 403.8(f)(2)(viii) at any time during the year; and

ix. A summary of enforcement or other actions taken during the year to return the SIU to compliance. Describe the type of action (e.g., warning letters or notices of violation, administrative orders, civil actions, and criminal actions), final compliance date, and the amount of fines and penalties collected, if any. Describe any proposed actions for bringing the SIU into compliance;

x. Restriction of flow to the POTW.

xi. Disconnection from discharge to the POTW.

i. A brief description of any programs the POTW implements to reduce pollutants from nondomestic users that are not classified as SIUs;

j. A brief description of any significant changes in operating the pretreatment program which differ from the previous year including, but not limited to, changes concerning: the program's administrative structure, local limits, monitoring program or monitoring frequencies, legal authority, enforcement policy, funding levels, or staffing levels;

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

I. A summary of activities to involve and inform the public of the program including a copy of the newspaper notice, if any, required under 40 CFR 403.8(f)(2)(viii).

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

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

and the

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

ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described in the Findings in section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order. This 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	5B070101001
Discharger	City of Brentwood
Name of Facility	Wastewater Treatment Plant
Facility Address	2251 Elkins Way
	Brentwood, CA 94513
	Contra Costa County
Facility Contact, Title and Phone	Casey Wichert, Wastewater Operations Manager, (925) 516-6060
Authorized Person to Sign and Submit Reports	Casey Wichert, Wastewater Operations Manager, (925) 516-6060
Mailing Address	2251 Elkins Way, Brentwood, CA 94513
Billing Address	Same as mailing address
Type of Facility	Publicly Owned Treatment Works
Major or Minor Facility	Major
Threat to Water Quality	2
Complexity	B
Pretreatment Program	Yes
Reclamation Requirements	Producer of Title 22 reclaimed water (WDR Order R5-2004-0132)
Facility Permitted Flow	5.0 million gallons per day (mgd)
Facility Design Flow	5.0 mgd ADWF
Watershed	Sacramento-San Joaquin Delta
Receiving Water	Marsh Creek
Receiving Water Type	Sacramento-San Joaquin Delta

A. The City of Brentwood (hereinafter Discharger) is the owner and operator of the City of Brentwood Wastewater Treatment Plant (hereinafter Facility), a publicly owned treatment works (POTW).

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

The Facility discharges wastewater to Marsh Creek a water of the United States, and tributary to the San Joaquin River within the Sacramento-San Joaquin Delta (Delta). The Discharger was regulated by Order R5-2008-0006-01 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0082660, which was adopted on 25 January 2008 and expired on 31 December 2012. The Discharger filed a report of waste discharge and submitted an application for renewal of its WDRs and NPDES permit on 21 June 2012. Supplemental information was submitted on 25 July 2012. A site visit was conducted on 15 August 2012, to observe operations. The terms and conditions of the previous Order were automatically continued and remained in effect until new Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit were adopted pursuant to this Order.

B. This Order regulates the discharge of treated municipal wastewater from the Facility to Marsh Creek. As discussed below, as part of its treatment train the Discharger utilizes unlined ponds, which discharge wastes to groundwater. The Discharger also produces Title 22 reclaimed for reclamation on City parks, medians, etc. WDR Order R5-2004-0132 regulates the reclaimed water use. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

II. FACILITY DESCRIPTION

The Discharger provides sewerage service for the City of Brentwood and serves a population of approximately 52,000. The design average dry weather flow capacity of the Facility is 5.0 million gallons per day (mgd). In the Order R5-00-171 the Discharger was required to send a portion of the effluent to the ponds for effluent percolation. Thus, the unlined ponds were part of the Facility's treatment's system. In Order R5-2008-006-01 the requirement for percolation was removed and replaced by flow limits that could be disposed into the ponds. Because of these limits the City diverted secondary effluent only in emergency situations. Currently, the Discharger no longer utilizes the ponds as part of their treatment system and the Discharger plans to line Pond 6 and decommission Ponds 7 and 8. Pond 7 was disconnected from the system on 31 May 2012 and is the current location for the City of Brentwood's new solid waste transfer station.

A. Description of Wastewater and Biosolids Treatment or Controls

The treatment system at the Facility consists of headworks (screening and grit removal), oxidation ditches and denitrification basins providing biological treatment, secondary clarification, tertiary filtration, chlorine disinfection, dechlorination, and a cascade aeration system. Sludge is dewatered using a belt filter press. Dried biosolids are hauled to a landfill.

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 6, T1N, R3E, MDB&M, as shown in Attachment B (Figure B-2), a part of this Order.

2. Treated municipal wastewater is discharged at Discharge Point No. 001 (see table on cover page) to Marsh Creek, a water of the United States and tributary to the San Joaquin River within the Delta at Latitude 37° 57' 46.10" N and Longitude 121° 41' 02.59" W.

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

Effluent limitations for discharge to Marsh Creek contained in Order R5-2008-0006-01 for discharges from Discharge Point No. 001 (Monitoring Location EFF-001) and representative monitoring data from the term of Order R5-2008-0006-01 are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (From 3/10/2008 To 2/13/2012)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Aluminum (Total Recoverable)	µg/L	76.5	200 (Annual Average)	126	60	35 (Annual Average)(1)	60
Ammonia (as N)(2) (3)	mg/L	0.8	--	2.1	0.2	--	0.5
	lbs/day	33		87.6	5.6		12.3
BOD 5-day 20°C (3) (4)	mg/L	7	12	15	1.7	2.16	5.2
	lbs/day	292	500	625	46.33	57.4	134
BOD % removal	%	85			99.3 (min)-99.64(max)		
Chloride	mg/L	226		246	442		442
Copper	µg/L			10.4			17
Dissolved Oxygen(5)	mg/L			5.5 (Instantaneous Minimum)			6.1 (Instantaneous Minimum)
Flow	MGD			5.0			3.6
Iron (Total Recoverable)	µg/L			300			190
Oil and Grease	mg/L	10		15	13		6.1
Selenium	µg/L	4.4		7.3	4		4
	lbs/day	0.18		0.3	0.11		0.11
4, 4'-DDT	µg/L			ND (Instantaneous Maximum)			ND
Alpha-Endosulfan	µg/L			ND (Instantaneous Maximum)			ND

Parameter	Units	Effluent Limitation			Monitoring Data (From 3/10/2008 To 2/13/2012)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Gamma - BHC	µg/L			ND (Instantaneous Maximum)			ND
Mercury, Total	lbs/year			0.083			0.051
Temperature	ºF			(6)			(7)
Turbidity(8)	NTU			10 (Instantaneous Maximum)			10
Total Coliform Organisms	MPN/ 100 mL	2.2(9)	23(10)	240 (Instantaneous Maximum)	<2	<2	<2

(1) Highest annual average based on complete data from March 2008 through February 2012.
(2) Based on pH and temperature
(3) Calculated by multiplying the monthly average ammonia concentration by the average daily flow [lbs/day = flow (as mgd) x 8.34 (conversion factor) x pollutant concentration (as mg/L)].
(4) Facility capacity 5.0 MGD (average dry weather flow)
(5) The daily average effluent DO concentration shall not be less than 5.5 mg/L.
(6) The maximum temperature of the discharge shall not exceed the natural receiving water temperature by more than 20° F.
(7) The maximum observed difference between the discharge and natural receiving water was28° F. Compliance schedule provided in TSO R5-2012-0114.
(8) Turbidity shall not exceed 5 NTUs 5% of the time or 10 NTUs at any given time.
(9) 7-day median based on previous seven daily sample results.
(10) Exceed no more than one-time in average 30-day period.

D. Compliance Summary

In general, the Discharger has been in compliance with the permit requirements with the exception of temperature. For temperature, Time Schedule Order (TSO) R5-2012-0114 was issued on 6 December 2012 extending the compliance schedule that was included in TSO R5-2008-0007. In this Order, the temperature effluent and receiving water limitations have been modified in accordance with an approved Thermal Plan Exception. The Discharger can immediately comply with the revised limits. Therefore, TSO R5-2012-0114 was no longer necessary and was rescinded.

E. Planned Changes

The Discharger no longer utilizes ponds for effluent disposal. The ponds are only used for maintenance and emergencies. Pond No.7 was disconnected from the system on 31 May 2012 and is currently being used for a new solid waste transfer station.

The Discharger is planning to line Pond No.6and decommission Pond No. 8. More details regarding the pond lining are included in Section VII.C.7.c (Compliance Schedule for Groundwater Limitations) of this Fact Sheet.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

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

A. Legal Authorities

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

B. California Environmental Quality Act (CEQA)

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

C. State and Federal Regulations, Policies, and Plans

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

   a. ***Water Quality Control Plan, Fourth Edition (Revised February 2007), for the Sacramento and San Joaquin River Basins (Basin Plan)***

   The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, State Water Board Resolution No. 88-63 requires that, with certain exceptions, the Central Valley Water Board assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in the Basin Plan.

   Table II-1 of the Basin Plan identifies the beneficial uses of certain specific water bodies. The Sacramento-San Joaquin Delta is listed in Table II-1 and footnote 9 to Table II-1 provides specific beneficial uses for Marsh Creek. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, "Sources of Drinking Water Policy," which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. However, because Marsh Creek has designated beneficial uses specified in the Basin Plan, Resolution No. 88-63 is not applicable. The beneficial uses of Marsh Creek downstream of the discharge are water contact recreation; non-contact water recreation; warm freshwater habitat; wildlife habitat; and rare, threatened, or endangered species.

   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." A review of the State Water Board Division of Water Rights' Electronic Water Rights Information Management System (eWRIMS) indicated that there are no agricultural or municipal water diversions in Marsh Creek downstream of the discharge.

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 Central Valley 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.B.2.

b. *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California* (Thermal Plan)

The State Water Board adopted a Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters 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 inland surface waters. The Thermal Plan is applicable to this discharge. For purposes of the Thermal Plan, the Discharger is considered to be an Existing Discharger of Elevated Temperature Waste. The Thermal Plan in section 5.A., requires the following:

"*5. Estuaries*

A. Existing discharge

(1) Elevated temperature waste discharges shall comply with the following:

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

b. Elevated temperature waste discharges either individually or combined with other discharges shall not create 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 a main river channel at any point.

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

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

(2) Thermal waste discharges shall comply with the provisions of 5A (1) above and, in addition, the maximum temperature of thermal waste discharges shall not exceed 86°F."

On January 2010 the Discharger submitted a Thermal Plan Exception request. The Thermal Plan Exception Justification report was submitted to the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) and the United States Fish and Wildlife Service (USFWS) for review. Approval of the Thermal Plan exception was provided by NMFS on 19 August 2011 and USFWS on 31 January 2013. USFWS recommended that for future permit renewals additional temperature monitoring and/or analysis would be useful to evaluate the thermal effects of the discharge to Delta Smelt in lower Marsh Creek near Big Break. Therefore, this Order requires a temperature study to implement USFWS's recommendation and includes effluent and receiving water limitations implementing the Thermal Plan exception as described below:

i. Exception to section 5.A(1)a:

(a) Effluent Limitations IV.A.1.d states the following:

"**d.** ***Temperature.*** *The maximum temperature of the discharge shall not exceed the natural receiving water temperature by more than:*

i. 20º F from 1 February through 30 November; or

ii. 24 º F from 1 December through 31 January."

ii. Exception to section 5.A(1)b and c:

(b) Receiving Surface Water Limitations V.A.16 states the following:

16. **Temperature**

"*a. Surface water temperature, as measured at the RSW-002 monitoring station, to raise greater than 5 º F above the natural temperature of the receiving water on a monthly average basis for the months of March through September.*

b. The receiving water temperature, as measured at the RSW-002 monitoring station, to exceed:

i. 74 º F as monthly average for October;

ii. 72 º F as monthly average for November;

iii. 65 º F as a period average for 1 December through 28 February."

c. *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (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 was last updated on 13 December 2006. The Bay-Delta Plan identifies the beneficial uses of the estuary and includes objectives for flow, salinity, and endangered species protection.

The State Water Board adopted Decision 1641 (D-1641) on 29 December 1999, and revised on 15 March 2000. 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 specifically implemented as part of this Order.

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

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

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

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

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

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

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

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

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

8. **Storm Water Requirements**

   USEPA promulgated federal regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from wastewater treatment facilities. Wastewater treatment plants are applicable industries under the storm water program and are obligated to comply with the federal regulations.

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

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

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

30 November 2006 USEPA gave final approval to California's 2006 section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of Water Quality Limited Segments (WQLSs), which are defined as "…*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources* (40 CFR Part 130, et seq.)." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be 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 2010 303(d) list for Marsh Creek (Marsh Creek Reservoir to San Joaquin River) includes mercury. In addition, Marsh Creek in the vicinity of the discharge is within the Delta. The Delta Waterways (western portion) is 303(d) listed for chlorpyrifos, DDT, diazinon, electrical conductivity, invasive species, group A pesticides, mercury, and unknown toxicity.

2. **Total Maximum Daily Loads (TMDLs).** USEPA requires the Central Valley Water Board to develop TMDLs for each 303(d) listed pollutant and water body combination. The status of each TMDL and applicable effluent limitations are discussed in Tables F-3a and F-3b, for each specific pollutant.

Table F-3a. 303 (d) List for Marsh Creek (Marsh Creek Reservoir to San Joaquin River; partly in Delta Waterways, western portion)

Pollutant	Potential Sources	Proposed TMDL Completion
Diazinon	Agriculture	Approved 10 October 2007
Escherichia coli (E. coli)	Source Unknown	2021
Mercury	Urban Runoff/Storm Sewers/Source Unknown/Resource Extraction	2015
Sediment Toxicity	Urban Runoff/Storm Sewers/Agriculture/ Source Unknown	2021
Unknown Toxicity	Urban Runoff/Storm Sewers/Agriculture/ Source Unknown	2021

Table F-3b. 303 (d) List for the Sacramento-San Joaquin Delta Waterways, southern portion

Pollutant	Potential Sources	Proposed TMDL Completion
Chlorpyrifos	Agriculture/Urban Runoff/Storm Sewers	Approved 10 October 2007

DDT (Dichlorodiphenyltrichloroethane)	Agriculture	(1)
Diazinon	Agriculture//Urban Runoff/Storm Sewers	Approved 10 October 2007
Electrical Conductivity	Agriculture	2019
Invasive Species	Unknown	2019
Organo-chlorine Group A Pesticides	Agriculture	(1)
Mercury	Resource Extraction	Approved 20 October 2011
Unknown Toxicity	Unknown	2019

[1] TMDL completion date will be updated when the next 303(d) list is updated.

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

E. Other Plans, Policies and Regulations

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

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

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

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

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 C.F.R. section 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 C.F.R. section 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.

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

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

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 CFR 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 CFR 122.44(d) requires that permits include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan, page IV-17.00, contains an implementation policy, "*Policy for Application of Water Quality Objectives,*" that specifies that the Central Valley Water Board "*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives*." This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) USEPA's published water quality criteria, (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (i.e., the Central Valley Water Board's "*Policy for Application of Water Quality Objectives*")(40 CFR 122.44(d)(1)(vi)(A), (B) or (C)), or (3) an indicator parameter.

The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, discoloration, radionuclides, and tastes and odors. The narrative toxicity objective states: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*." (Basin Plan at III-8.00) The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the

narrative toxicity objective. The narrative chemical constituents objective states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)" in Title 22 of CCR.* The Basin Plan further states that, to protect all beneficial uses, the Central Valley Water Board may apply limits more stringent than MCLs. The narrative tastes and odors objective states: *"Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses*."

A. Discharge Prohibitions

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

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

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

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

B. Technology-Based Effluent Limitations

1. Scope and Authority

Section 301(b) of the CWA and implementing USEPA permit regulations at 40 CFR 122.44 require that permits include conditions meeting applicable

technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at 40 CFR Part 133.

Regulations promulgated in 40 CFR 125.3(a)(1) require technology-based effluent limitations for municipal Dischargers to be placed in NPDES permits based on Secondary Treatment Standards or Equivalent to Secondary Treatment Standards.

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

Based on this statutory requirement, USEPA developed secondary treatment regulations, which are specified in 40 CFR Part 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of 5-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

2. Applicable Technology-Based Effluent Limitations

a. BOD_5 and TSS. Federal regulations, 40 CFR Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD_5 and TSS. Tertiary treatment is necessary to protect the beneficial uses of the receiving stream and the final effluent limitations for BOD_5 and TSS are based on the technical capability of the tertiary process. BOD_5 is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The secondary and tertiary treatment standards for BOD_5 and TSS are indicators of the effectiveness of the treatment processes. The principal design parameter for wastewater treatment plants is the daily BOD_5 and TSS loading rates and the corresponding removal rate of the system. In applying 40 CFR Part 133 for weekly and monthly average BOD_5 and TSS limitations, the application of tertiary treatment processes results in the ability to achieve lower levels for BOD_5 and TSS than the secondary standards currently prescribed; the 30-day average BOD_5 and TSS limitations have been revised to 10 mg/L, which is technically based on the capability of a tertiary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD_5 and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities. In addition, 40 CFR 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. If 85 percent removal of BOD_5 and TSS must be achieved by a secondary treatment plant, it must also be achieved by a tertiary (i.e., treatment beyond

secondary level) treatment plant. This Order contains a limitation requiring an average of 85 percent removal of BOD_5 and TSS over each calendar month.

b. Flow. The Facility was designed to provide a tertiary level of treatment for a design average dry weather flow of 5.0 mgd. Therefore, this Order contains an average dry weather discharge flow effluent limit of 5.0 mgd.

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

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

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

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Flow	mgd	5.0	--	--	--	--
Biochemical oxygen demand, 5-day @ 20°C (BOD_5)[1,3]	mg/L	10	15	20	--	--
	lbs/day[2]	417	625	834	--	--
Total suspended solids (TSS) [1]	mg/L	10	15	20	--	--
	lbs/day[2]	417	625	834	--	--
pH[4]	SU	--	--	--	6.0	9.0

[1] The average monthly percent removal of BOD 5-day 20°C and total suspended solids shall not be less than 85 percent.
[2] Based on a design capacity of 5.0 mgd.
[3] More stringent water quality-based effluent limitations are required for BOD_5 based on the Basin Plan's dissolved oxygen water quality objectives, as discussed in Section IV.C.3, below.
[4] More stringent water quality-based effluent limitations are required for pH based on the Basin Plan's water quality objective for pH, as discussed in Section IV.C.3.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

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

40 CFR 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable

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

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

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

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

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

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

a. **Receiving Water and Beneficial Uses.** The receiving stream is Marsh Creek, a tributary to the San Joaquin River within the Delta. The beneficial uses of Marsh Creek are described above in Section III.C.1 of this Fact Sheet.

b. **Effluent and Ambient Background Data.** The reasonable potential analysis (RPA), as described in section IV.C.3 of this Fact Sheet, was based on data from March 2008 through February 2012, which includes effluent and ambient background data submitted in SMRs, eSMRs, and the Report of Waste Discharge (ROWD). When determining reasonable potential for constituents using alternate data periods, it will be discussed in the Fact Sheet (IV.C.3.).

d. **Conversion Factors.** The CTR contains aquatic life criteria for arsenic, cadmium, chromium III, chromium VI, copper, lead, nickel, silver, and zinc which are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The default USEPA conversion factors contained in Appendix 3 of the SIP were used to convert the applicable dissolved criteria to total recoverable criteria.

e. **Hardness-Dependent CTR Metals Criteria.** The *California Toxics Rule* and the *National Toxics Rule* contain water quality criteria for seven metals that vary as a function of hardness. The lower the hardness the lower the water quality criteria. The metals with hardness-dependent criteria include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

This Order has established the criteria for hardness-dependent metals based on the reasonable worst-case ambient hardness as required by the SIP[1], the CTR[2] and State Water Board Order No. WQO 2008-0008 (City of Davis). The SIP and the CTR require the use of “receiving water” or “actual ambient” hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(4)) The CTR does not define whether the term “ambient,” as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions. Therefore, where reliable, representative data are available, the hardness value for calculating criteria can be the downstream receiving water hardness, after mixing with the effluent (Order WQO 2008-0008, p. 11). The Central Valley Water Board thus has considerable discretion in determining ambient hardness (*Id.*, p.10).

As discussed below, scientific literature provides a reliable method for calculating protective hardness-dependent CTR criteria, considering all discharge conditions. This methodology produces hardness-dependent CTR criteria based on the reasonable worst-case downstream ambient hardness

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

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

that ensure these metals do not cause receiving water toxicity under any downstream receiving water condition. Under this methodology, the Central Valley Water Board considers all hardness conditions that could occur in the ambient downstream receiving water after the effluent has mixed with the water body[3]. This ensures that effluent limitations are fully protective of aquatic life in all areas of the receiving water affected by the discharge under all flow conditions, at the fully mixed location, and throughout the water body including at the point of discharge into the water body.

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

a) The SIP requires water quality-based effluent limitations (WQBELs) if the MEC is equal to or exceeds the applicable criterion, adjusted for hardness. For comparing the MEC to the applicable criterion, the "fully mixed" reasonable worst-case downstream ambient hardness was used to adjust the criterion. In this evaluation the portion of the receiving water affected by the discharge is analyzed. For hardness-dependent criteria, the hardness of the effluent has an impact on the determination of the applicable criterion in areas of the receiving water affected by the discharge. Therefore, for comparing the MEC to the applicable criterion, the reasonable worst-case downstream ambient hardness was used to adjust the criterion. For this situation it is necessary to consider the hardness of the effluent in determining the applicable hardness to adjust the criterion. The procedures for determining the applicable criterion after proper adjustment using the reasonable worst-case downstream ambient hardness is outlined in subsection ii, below.

b) The SIP requires WQBELs if the receiving water is impaired upstream (outside the influence) of the discharge, i.e., if the Maximum Ambient Background Concentration of a pollutant exceeds the applicable criterion, adjusted for hardness[4]. For comparing the Maximum Ambient Background Concentration to the applicable criterion, the

[3] All effluent discharges will change the ambient downstream metals concentration and hardness. It is not possible to change the metals concentration without also changing the hardness.
[4] The pollutant must also be detected in the effluent.

reasonable worst-case upstream ambient hardness was used to adjust the criteria. This is appropriate, because this area is outside the influence of the discharge. Since the discharge does not impact the upstream hardness, the effect of the effluent hardness was not included in this evaluation.

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

A 2006 Study[5] developed procedures for calculating the effluent concentration allowance (ECA)[6] for CTR hardness-dependent metals. The 2006 Study demonstrated that it is necessary to evaluate all discharge conditions (e.g. high and low flow conditions) and the hardness and metals concentrations of the effluent and receiving water when determining the appropriate ECA for these hardness-dependent metals. This method is superior to relying on downstream receiving water samples alone because it captures all possible mixed conditions in the receiving water. Both receiving water and effluent hardness vary based on flow and other factors, but the variability of receiving water and effluent hardness is sometimes independent. Using a calculated hardness value ensures that the Central Valley Water Board considers all possible mixed downstream values that may result from these two independent variables. Relying on receiving water sampling alone is less likely to capture all possible mixed downstream conditions.

The equation describing the total recoverable regulatory criterion, as established in the CTR[7], is as follows:

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

Where:

H = hardness (as $CaCO_3$)[8]
WER = water-effect ratio
m, b = metal- and criterion-specific constants

In accordance with the CTR, the default value for the WER is 1. A WER study must be conducted to use a value other than 1. The constants “m”

[5] Emerick, R.W.; Borroum, Y.; & Pedri, J.E., 2006. California and National Toxics Rule Implementation and Development of Protective Hardness Based Metal Effluent Limitations. WEFTEC, Chicago, Ill.
[6] The ECA is defined in Appendix 1 of the SIP (page Appendix 1-2). The ECA is used to calculate WQBELs in accordance with Section 1.4 of the SIP.
[7] 40 CFR § 131.38(b)(2).
[8] For this discussion, all hardness values are in mg/L as $CaCO_3$.

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

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

$$ECA = C \qquad (\text{when } C \leq B)^{9} \qquad \text{(Equation 2)}$$

Where:

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

B = the ambient background concentration

The 2006 Study demonstrated that the relationship between hardness and the calculated criteria is the same for some metals, so the same procedure for calculating the ECA may be used for these metals. The same procedure can be used for chronic cadmium, chromium III, copper, nickel, and zinc. These metals are hereinafter referred to as "Concave Down Metals". "Concave Down" refers to the shape of the curve represented by the relationship between hardness and the CTR criteria in Equation 1. Another similar procedure can be used for determining the ECA for acute cadmium, lead, and acute silver, which are referred to hereafter as "Concave Up Metals".

ECA for Chronic Cadmium, Chromium III, Copper, Nickel, and Zinc – For Concave Down Metals (i.e., chronic cadmium, chromium III, copper, nickel, and zinc) the 2006 Study demonstrates that when the effluent is in compliance with the CTR criteria and the upstream receiving water is in compliance with the CTR criteria, any mixture of the effluent and receiving water will always be in compliance with the CTR criteria[10]. The 2006 Study proves that regardless of whether the effluent hardness is lower or greater than the upstream hardness, the reasonable worst-case flow condition is the effluent dominated condition (i.e., no receiving water flow)[11]. Consequently, for Concave Down Metals, the CTR criteria have been calculated using the downstream ambient hardness under this condition.

[9] The 2006 Study assumes the ambient background metals concentration is equal to the CTR criterion (i.e. C ≤ B)
[10] 2006 Study, p. 5700
[11] There are two typographical errors in the 2006 Study in the discussion of Concave Down Metals when the effluent hardness is less than the receiving water hardness. The effluent and receiving water hardness were transposed in the discussion, but the correct hardness values were used in the calculations. The typographical errors were confirmed by the author of the 2006 Study, by email dated 1 April 2011, from Dr. Robert Emerick to Mr. James Marshall, Central Valley Water Board.

The effluent hardness ranged from 189 mg/L to 543 mg/L, based on 9 samples from June 2008 to February 2012. The upstream receiving water hardness varied from 157 mg/L to 534 mg/L, based on 30 samples from May 2006 to February 2012. Under the effluent dominated condition, the reasonable worst-case downstream ambient hardness is 157 mg/L. As demonstrated in the example shown in Table F-5a, below, using this hardness to calculate the ECA for all Concave Down Metals will result in WQBELs that are protective under all flow conditions, from the effluent dominated condition to high flow condition. This example for zinc assumes the following conservative conditions for the upstream receiving water:

- Upstream receiving water always at the lowest observed upstream receiving water hardness (i.e., 157 mg/L)

- Upstream receiving water zinc concentration always at the CTR criteria (i.e., no assimilative capacity).

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

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

Where:

C_{MIX} = Mixed concentration (e.g. metals or hardness)
C_{RW} = Upstream receiving water concentration
C_{Eff} = Effluent concentration
EF = Effluent Fraction

In this example, for zinc, for any receiving water flow condition (high flow to low flow), the fully-mixed downstream ambient zinc concentration is in compliance with the CTR criteria.[12].

[12] This method considers the actual lowest observed upstream hardness and actual lowest observed effluent hardness to determine the reasonable worst-case ambient downstream hardness under all possible receiving water flow conditions. Table F-5a demonstrates that the receiving water is always in compliance with the CTR criteria at the fully-mixed location in the receiving water. It also demonstrates that the receiving water is in compliance with the CTR criteria for all mixtures from the point of discharge to the fully-mixed location. Therefore, a mixing zone is not used for compliance.

Table F-5a: Zinc ECA Evaluation

Lowest Observed Effluent Hardness					**189 mg/L (as $CaCO_3$)**
Lowest Observed Upstream Receiving Water Hardness					**157 mg/L (as $CaCO_3$)**
Highest Assumed Upstream Receiving Water Zinc Concentration					**175.6 µg/L[1]**
Zinc $ECA_{chronic}$[2]					**205.5 µg/L**
Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness[3] (mg/L)	**CTR Criteria[4] (µg/L)**	**Zinc[5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	157.32	175.9	175.9	**Yes**
	5%	158.6	177.1	177.1	**Yes**
	15%	161.8	180.1	180.1	**Yes**
	25%	165	183.1	183.1	**Yes**
	50%	173	190.6	190.5	**Yes**
	75%	181	198.1	198.0	**Yes**
Low Flow	100%	189	205.5	205.5	**Yes**

1 Highest assumed upstream receiving water zinc concentration calculated using Equation 1 for chronic criterion at a hardness of **157 mg/L**.

2 ECA calculated using Equation 1 for chronic criterion at a hardness of **189 mg/L**.

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

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

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

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

The receiving water at times contains concentrations of copper that exceed water quality criteria associated with the hardness condition previous to the discharge. The 2006 study procedures remain applicable under these conditions. The discharge cannot cause or contribute to a violation of water quality criteria/objectives in the receiving water. Although metals concentrations downstream of the discharge exceed CTR criteria, the cause of the exceedance is not due to the discharge, it is due to the elevated metals concentrations upstream of the discharge. Implementing the procedures of the 2006 study does not result in an increase in toxicity downstream of the discharge, and in fact reduces the amount of toxicity already present in the receiving water. This is demonstrated in the example below for copper (see Table F-5b).

As shown in Table F-5b for copper, prior to the discharge the copper has been observed to exceed water quality criteria by up to 46%. When the receiving water contains some fraction of effluent, the mixed copper concentration and percent by which the criterion is exceeded is reduced. The greater the amount of effluent in the receiving water, the lower the percent exceedance, until a fully compliant

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

Table F-5b: Copper ECA Evaluation

Lowest Observed Effluent Hardness	**189 mg/L (as $CaCO_3$)**
Lowest Observed Upstream Receiving Water Hardness	**157 mg/L (as $CaCO_3$)**
Highest Observed Upstream Receiving Water Copper Concentration	**20 µg/L[1]**
Copper $ECA_{chronic}$[2]	**16.1 µg/L**

Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness[3] (mg/L)	**CTR Criteria[4] (µg/L)**	**Copper[5] (µg/L)**	**Percent Exceeding Criterion**
High Flow	0%	157	13.7	20.0	46%
	1%	157.32	13.7	20.0	45%
	5%	158.6	13.8	19.8	43%
	15%	161.8	14.1	19.4	38%
	25%	165	14.3	19.0	33%
	50%	173	14.9	18.0	21%
	75%	181	15.5	17.1	10%
Low Flow	100%	189	16.1	16.1	0%

1 Highest measured copper concentration in the receiving water..

2 ECA calculated using Equation 1 for chronic criterion at a hardness of **189 mg/L**.

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

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

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

6 The effluent fraction ranges from 0% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

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

The ECA, as calculated using Equation 4, is based on the reasonable worst-case upstream receiving water hardness, the lowest observed effluent hardness, and assuming no receiving water assimilative capacity for metals (i.e., ambient background metals concentrations are at their respective CTR criterion). Equation 4 is not used in place of the CTR equation (Equation 1). Rather, Equation 4, which is derived using the CTR equation, is used as a direct approach for calculating the ECA. This replaces an iterative approach for calculating the ECA. The CTR equation has been used to evaluate the receiving water downstream of the discharge at all discharge and flow conditions to ensure the ECA is protective (e.g., see Table F-5).

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

Where:

m, b	=	criterion specific constants (from CTR)
H_e	=	lowest observed effluent hardness
H_{rw}	=	reasonable worst-case upstream receiving water hardness

An example similar to the Concave Down Metals is shown for lead**,** a Concave Up Metal, in Table F-6, below. As previously mentioned, the lowest effluent hardness is 189 mg/L, while the upstream receiving water hardness ranged from 157mg/L to 534 mg/L, based on 30 samples from May 2006 to February 2012. In this case, the reasonable worst-case upstream receiving water hardness to use in Equation 4 to calculate the ECA is 157mg/L.

Using the procedures discussed above to calculate the ECA for all Concave Up Metals will result in WQBELs that are protective under all potential effluent/receiving water flow conditions (high flow to low flow) and

under all known hardness conditions, as demonstrated in Table F-6, for lead.

Table F-6: Lead ECA Evaluation

Lowest Observed Effluent Hardness					**189 mg/L**
Reasonable Worst-case Upstream Receiving Water Hardness					**400 mg/L**
Reasonable Worst-case Upstream Receiving Water Lead Concentration					**18.5 µg/L[1]**
Lead $ECA_{chronic}$[2]					**6.10 µg/L**
Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness[3] (mg/L) (as $CaCO_3$)	**CTR Criteria[4] (µg/L)**	**Lead[5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	397.9	18.5	18.5	**Yes**
	5%	389.5	18.0	18.0	**Yes**
	15%	368.4	16.7	16.7	**Yes**
	25%	347.3	15.5	15.5	**Yes**
	50%	294.5	12.6	12.3	**Yes**
	75%	241.8	9.8	9.2	**Yes**
Low Flow	100%	189.0	7.2	6.1	**Yes**

1 Reasonable worst-case upstream receiving water lead concentration calculated using Equation 1 for chronic criterion at a hardness of **400 mg/L**. The maximum receiving water hardness was 534 mg/L; however the CTR criteria calculation is design for a maximum hardness of 400 mg/L.

2 ECA calculated using Equation 4 for chronic criteria.

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

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

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

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

Based on the procedures discussed above, Table F-7 lists all the CTR hardness-dependent metals and the associated ECA used in this Order.

Table F-7. Summary of ECA Evaluations for CTR Hardness-dependent Metals

CTR Metals	ECA (µg/L, total recoverable)	
	acute	chronic
Copper	25.5	16.1
Chromium III	2924.8	348.6
Cadmium	8.1	4.1
Lead	156.6	6.1
Nickel	803.9	89.4
Silver	11.9	
Zinc	205.5	205.5

3. Determining the Need for WQBELs

a. The Central Valley Water Board conducted the reasonable potential analysis (RPA) in accordance with section 1.3 of the SIP. Although the SIP applies directly to the control of CTR priority pollutants, the State Water Board has held that the Regional Water Boards may use the SIP as guidance for water quality-based toxics control.[13] The SIP states in the introduction "*The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency*." Therefore, in this Order the RPA procedures from the SIP were used to evaluate reasonable potential for both CTR and non-CTR constituents based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs.

b. Constituents with No Data. Reasonable potential cannot be determined for the following constituents because effluent data and ambient background concentrations are not available.

i. Diazinon and Chlorpyrifos

(a) WQO. A TMDL was adopted for chlorpyrifos and diazinon for the Delta and established site-specific Basin Plan water quality objectives for

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

chlorpyrifos of 0.025 µg/L as a 1-hour average and 0.015 µg/L as a 4-day average and diazinon of 0.16 µg/L as a 1-hour average and 0.10 µg/L as a 4-day average for Delta Waterways as specified in, Appendix 42 of Basin Plan, which includes Marsh Creek. The TMDL also established waste load allocations for NPDES dischargers that are included in the Basin Plan on page IV-36.03.01 and states that "[C]*ompliance with the applicable water quality objectives, load allocations, and waste load allocations for diazinon and chlorpyrifos in the Delta Waterways is required by December 1, 2011.*"

(b) RPA Results. The Discharger has not sampled the effluent or receiving water for diazinon or chlorpyrifos, therefore, a RPA cannot be conducted for these constituents.

(c) WQBELs. Although an RPA cannot be conducted due to no data, in accordance with 40 CFR 122.44(d)(1)(vii)(B), WQBELs for chlorpyrifos and diazinon are required based on the TMDL for diazinon and chlorpyrifos for the Delta . Therefore, this Order includes effluent limits calculated based on the waste load allocations contained in the TMDL, as follows:

Effluent chlorpyrifos and diazinon concentrations shall not exceed the sum of one as defined below:

i. Average Monthly Effluent Limit

$$S_{AMEL} = \frac{C_{D\text{-}avg}}{0.08} + \frac{C_{C\text{-}avg}}{0.012} \leq 1.0$$

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

ii. Maximum Daily Effluent Limit

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

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

(d) Plant Performance and Attainability. There is no expectation that diazinon and chlorpyrifos will be in the Facility's discharge because these pesticides have been banned. The Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible.

c. Constituents with No Reasonable Potential. WQBELs are not included in this Order for constituents that do not demonstrate reasonable potential (i.e. constituents were not detected in the effluent or receiving water); however, monitoring for those pollutants is established in this Order as required by the SIP. If the results of effluent monitoring demonstrate reasonable potential, this Order may be reopened and modified by adding an appropriate effluent limitation.

Most constituents with no reasonable potential are not discussed in this Order. However, the following constituents were found to have no reasonable potential after assessment of the data:

i. Aluminum

Aluminum is the third most abundant element in the earth's crust and is ubiquitous in both soils and aquatic sediments. When mobilized in surface waters, aluminum has been shown to be toxic to various fish species. However, the potential for aluminum toxicity in surface waters is directly related to the chemical form of aluminum present, and the chemical form is highly dependent on water quality characteristics that ultimately determine the mechanism of aluminum toxicity. Surface water characteristics, including pH, temperature, colloidal material, fluoride and sulfate concentrations, and total organic carbon, all influence aluminum speciation and its subsequent bioavailability to aquatic life. Calcium [hardness] concentrations in surface water may also reduce aluminum toxicity by competing with monomeric aluminum (Al^{3+}) binding to negatively charged fish gills.

(a) WQO. The Code of Federal Regulations promulgated criteria for priority toxic pollutants for California's surface waters as part of section 131.38 Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California (California Toxics Rule or CTR), including metals criteria. However, aluminum criteria were not promulgated as part of the CTR. Absent numeric aquatic life criteria for aluminum, WQBEL's in the Central Valley Region's NPDES permits are based on the Basin Plans' narrative toxicity objective. The Basin Plans' *Policy for Application of Water Quality Objectives* requires the Central Valley Water Board to consider, "*on a case-by-case basis, direct evidence of beneficial use impacts, all material and relevant information submitted by the discharger and other interested parties, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations. In considering such criteria, the Board evaluates whether the specific numerical criteria which are available through these sources and through other information supplied to the Board, are relevant and appropriate to the situation at hand and, therefore, should be used in determining compliance with the narrative objective.*" Relevant information includes, but is not limited to (1) USEPA National Ambient Water Quality Criteria (NAWQC) and subsequent Correction,

(2) site-specific conditions of the receiving water, and (3) site-specific aluminum studies conducted by dischargers within the Central Valley Region. (Basin Plan, p. IV.-17.00; see also, 40 CFR 122.44(d)(vi).)

USEPA NAWQC. USEPA recommended the NAWQC aluminum chronic criterion at 87 µg/L based upon the following two toxicity tests. All tests were conducted in water that contained pH range of 6.0 to 6.6 and hardness at 12 mg/L as $CaCO_3$.

(1) Acute toxicity tests at various aluminum doses were conducted in various acidic waters (pH 6.0 – 6.5) on 159- and 160-day old striped bass. The 159-day old striped bass showed no mortality in waters with pH at 6.5 and aluminum doses at 390 µg/L, and the 160-day old striped bass showed a 58% mortality at a dose of 174.4 µg/L in same pH waters. However, the 160-day old striped bass showed 98% mortality at an aluminum dose of 87.2 µg/L in waters with pH at 6.0, which is USEPA's basis for the 87 µg/L chronic criterion. The varied results draw into question this study and the applicability of the NAWQC chronic criterion of 87 µg/L.

(2) Chronic toxicity effects on 60-day old brook trout were evaluated in acidic pH waters (6.5-6.9 pH) in five cells at various aluminum doses (4, 57, 88, 169, and 350 µg/L). Chronic evaluation started upon hatching of eyed eggs of brook trout, and their weight and length were measured after 45 days and 60 days. The 60-day old brook trout showed 24% weight loss at 169 µg/L of aluminum and 4% weight loss at 88 µg/L of aluminum, which is the basis for USEPA's chronic criteria. Though this test study shows chronic toxic effects of a 4% reduction in weight after exposure for 60-days, the chronic criterion is based on 4 day exposure; so again, the applicability of the NAWQC chronic criterion of 87 µg/L is questionable.

Site-specific Conditions. Effluent and receiving water data from Marsh Creek indicate that the pH and hardness values are not similar to the low pH and hardness conditions under which the chronic criterion for aluminum was developed, as shown in the table below, and therefore, the Central Valley Water Board does not expect aluminum to be as reactive in Marsh Creek as in the previously described toxicity tests. The pH in Marsh Creek ranged from 7.2 to 8.4 based on 199 monitoring results obtained between March 2008 and February 2012. Hardness data for Marsh Creek ranged from 157 mg/L to 534 mg/L (as $CaCO_3$) based on 20 samples during the same period, which is above the conditions, and thus less toxic, than the tests used to develop the chronic criterion. Brook trout and striped bass have not been surveyed nor expected to be present (http://bios.dfg.ca.gov/) since striped bass is non-native to California and brook trout is present in higher elevation lakes and streams.

Table F-8. Summary of pH and Hardness at EFF-001 and RSW-001

Parameter	Units	Test Conditions for Applicability of Chronic Criterion	Effluent	Marsh Creek
pH	standard units	6.0 – 6.5	7.6[1]	7.7[1]
Hardness, Total (as $CaCO_3$)	mg/L	12	278[2]	305[2]

[1] Median pH
[2] Average hardness

Local Environmental Conditions and Studies. Twenty-one site-specific aluminum toxicity tests have been conducted within the Central Valley Region. The pH and hardness of Marsh Creek are similar, as shown in the table below, and thus the results of these site-specific aluminum toxicity tests is relevant and appropriate for Marsh Creek. As shown in the following table, all EC_{50} toxicity study result values are at concentrations of aluminum above 5000 µg/L. Thus, the toxic effects of aluminum in surface waters within the Central Valley Region, including Marsh Creek, is less toxic (or less reactive) to aquatic species than demonstrated in the toxicity tests that USEPA used for the basis of establishing the chronic criterion of 87 µg/L. This new information, and review of the toxicity tests USEPA used to establish the chronic criterion, indicates that 87 µg/L is overly stringent and not applicable to Marsh Creek.

Table F-9. Central Valley Region Site-Specific Toxicity Data

Discharger (City)	Species	Test Waters	Hardness Value	Total Aluminum EC_{50} Value	pH	WER
Auburn	*Ceriodaphnia dubia*	Effluent	99	>5270	7.44	>19.3
	" "	Surface Water	16	>5160	7.44	>12.4
Manteca	" "	Surface Water/Effluent	124	>8800	9.14	N/C
	" "	Effluent	117	>8700	7.21	>27.8
	" "	Surface Water	57	7823	7.58	25.0
	" "	Effluent	139	>9500	7.97	>21.2
	" "	Surface Water	104	>11000	8.28	>24.5
	" "	Effluent	128	>9700	7.78	>25.0
	" "	Surface Water	85	>9450	7.85	>25.7
	" "	Effluent	106	>11900	7.66	>15.3
	" "	Surface Water	146	>10650	7.81	>13.7
Modesto	" "	Surface Water/Effluent	120/156	31604	8.96	211
Yuba City	" "	Surface Water/Effluent	114/164[1]	>8000	7.60/7.46	>53.5
Placer County	" "	Effluent	150	>5000	7.4 – 8.7	>13.7
Manteca	*Daphnia magna*	Surface Water/Effluent	124	>8350	9.14	N/C
Modesto	" "	Surface Water/Effluent	120/156	>11900	8.96	>79.6
Yuba City	" "	Surface Water/Effluent	114/164[1]	>8000	7.60/7.46	>53.5
Manteca	*Oncorhynchus mykiss* (rainbow trout)	Surface Water/Effluent	124	>8600	9.14	N/C
Auburn	" "	Surface Water	16	>16500	7.44	N/C

Discharger (City)	Species	Test Waters	Hardness Value	Total Aluminum EC_{50} Value	pH	WER
Modesto	" "	Surface Water/Effluent	120/156	>34250	8.96	>229
Yuba City	" "	Surface Water/Effluent	114/164[1]	>8000	7.60/7.46	>53.5

[1] Hardness values may be biased high because the EDTA titrimetic method is subject to interferences that measure as hardness (barium, cadmium, lead, manganese, strontium, and zinc will be measured as hardness) producing hardness numbers that are likely to be greater than the calculation of hardness based upon the ICP analysis of calcium and magnesium. Upstream receiving water hardness ranged from 30 to 50.9 mg/L as $CaCO_3$ between January 2008 and August 2011. Furthermore, the upstream receiving water hardness was 37 mg/L as $CaCO_3$ on 4 October 2005, 7 days prior to the Feasibility Assessment (first phase of a Water Effects Ratio study) sample collection date of 11 October 2005. It is likely that matrix interferences from other metals were responsible for the unexpected hardness values reported by Pacific EcoRisk.

The Discharger has not conducted a toxicity test for aluminum; however, the Cities of Manteca and Modesto conducted toxicity tests in the San Joaquin River. As shown, the test water quality characteristics of the San Joaquin River near Manteca and Modesto are similar for pH and more critical than Marsh Creek for hardness, with the hardness ranging from 57 to 156 mg/L as $CaCO_3$ in comparison to the hardness of Marsh Creek that averages 305 mg/L as $CaCO_3$. Thus results of site-specific studies conducted on the San Joaquin River would represent conservative assumptions for Marsh Creek since the hardness of Marsh Creek is higher, and therefore, aluminum is less toxic to aquatic life in Marsh Creek. Based on these two primary water quality characteristics (pH and hardness) that drive aluminum speciation, the aluminum toxicity within San Joaquin River is expected to be higher than in Marsh Creek. Therefore, the Cities of Manteca and Modesto aluminum toxicity test studies are relevant and represent conservative assumptions in this case for use in determining the specific numerical criteria to be used in determining compliance with the Basin Plan's narrative toxicity objective. The Cities of Manteca and Modesto aluminum toxicity study resulted in a minimum site-specific aluminum objective of 7,823 µg/L. Thus, these results support the conclusion that the 87 µg/L chronic criterion is overly stringent for Marsh Creek.

DPH has established Secondary MCLs to assist public drinking water systems in managing their drinking water for aesthetic conditions such as taste, color, and odor. The Secondary MCL for aluminum is 200 µg/L, but is not applicable in Marsh Creek, because MUN is not a beneficial use. USEPA has also adopted an NAWQC acute criterion of 750 µg/L for the protection of aquatic life.

(b) RPA Results. The maximum effluent concentration for aluminum was 60 µg/L, based on 42 samples collected between March 2008 and February 2012. The maximum annual average effluent concentration during this period was 35 µg/L. Therefore, aluminum in the discharge does not demonstrate reasonable potential to cause or contribute to an

in-stream excursion above the USEPA acute criterion of 750 µg/L, and the effluent limitations for aluminum have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

ii. Bromodichloromethane (Dichlorobromomethane)

(a) WQO. The CTR includes a bromodichloromethane criterion of 46 µg/L for the protection of human health based on a one-in-a-million cancer risk for waters from which organisms are consumed.

(b) RPA Results. The MEC was 45.7 µg/L, based on five samples collected between February 2011 and February 2012. The range of bromodichloromethane concentrations varied between 0.8 µg/L and 45.6 µg/L, averaging 31.6 µg/L. All results of upstream receiving water bromodichloromethane concentrations were below the method detection limit, based on 4 samples collected between May 2011 and February 2012. Therefore, in accordance with Section 1.3 of the SIP, the discharge does not have reasonable potential to cause or contribute to an exceedance of the CTR criterion in the receiving water and WQBELs are not required. However, due to use of chlorine for disinfection and the presence of bromodichloromethane in the discharge near the CTR criterion, this Order includes quarterly effluent monitoring.

iii. Selenium.

(a) WQO. The California Toxics Rule (CTR) 4-day average (chronic) water quality criterion for the protection of aquatic life is 5 µg/L and the 1-hr (acute) water quality criterion is 20 µg/L.

(b) RPA Results. The MEC for selenium is 4.0 µg/L based on 46 samples collected by the Discharger between 10 March 2008 and 13 February 2012. Selenium concentrations in the receiving water were non-detect based on 3 samples collected between 9 May 2011 and 7 November 2011. Therefore, selenium in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR water quality criteria and the effluent limitations for selenium have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

iv. Persistent Chlorinated Hydrocarbon Pesticides. 4,4'-DDT, alpha endosulfan, and lindane (gamma BHC)

(a) WQO. The Basin Plan requires that no individual pesticides shall be present in concentrations that adversely affect beneficial uses; discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses; total chlorinated hydrocarbon pesticides shall not be present in the water column at detectable concentrations; and pesticide concentrations shall not exceed those allowable by applicable antidegradation policies. The CTR contains numeric criteria for alpha BHC, aldrin, beta BHC, heptachlor, and lindane of 0.013 µg/L, 0.00014 µg/L, 0.046 µg/L, 0.00021 µg/L, and 0.063 µg/L, respectively, for freshwaters from which organisms only are consumed. The CTR contains numeric criteria for beta endosulfan of 0.056 µg/L as a four-day average (chronic) and 0.22 µg/L as a one-hour average (acute) for the protection of freshwater aquatic life.

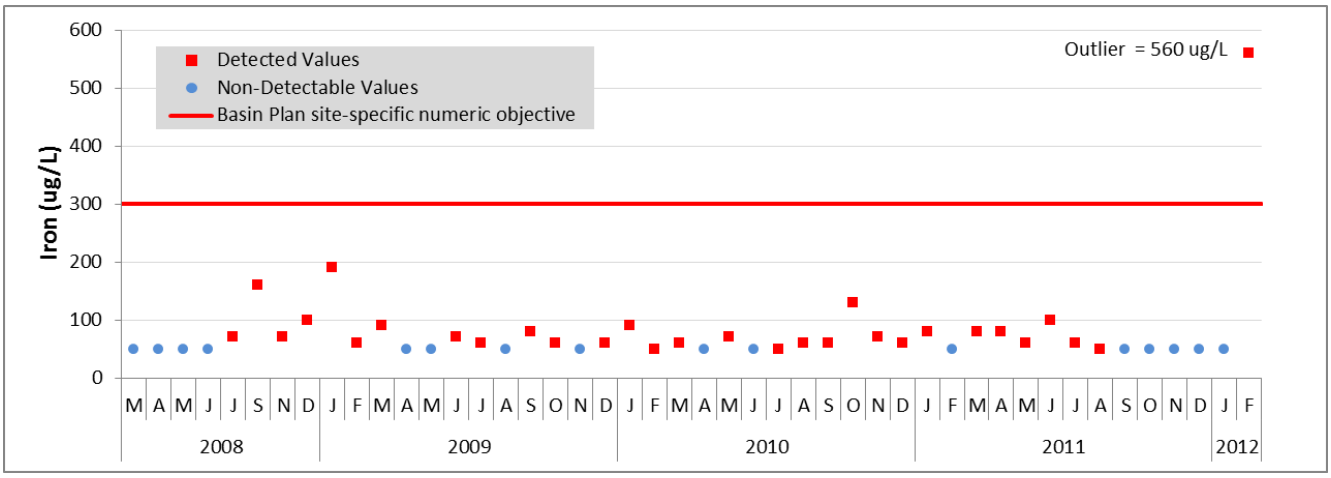
(b) RPA Results. Based on the results from 19 effluent samples collected by the Discharger between March 2008 and May 2012, the concentrations of Persistent Chlorinated Hydrocarbon Pesticides including 4,4'-DDT, alpha endosulfan, and lindane (gamma BHC) have been non-detect, with reporting levels in accordance with the minimum levels (ML's) specified by the SIP. Therefore, the discharge does not have reasonable potential to cause or contribute to an instream exceedance of the Basin Plan water quality objective or the CTR criteria. The Non-Detect Instantaneous Maximum effluent limits for 4,4'-DDT, alpha endosulfan, and lindane (gamma BHC) have not been retained in this Order. Removal of the effluent limitations is consistent federal antibacksliding regulations (see section IV.D.3 of the Fact Sheet).

v. Iron

(a) WQO. The Basin Plan contains a site-specific numeric objective for the Delta of 300 µg/L (maximum concentration) for iron, expressed as dissolved metal.

(b) RPA Results. 46 effluent iron samples were collected between March 2008 and January 2012. The maximum effluent concentration for iron was 560 µg/L, based on one effluent sample collected on 13 February 2012. However, the MEC appears to be an outlier and does not appear to be representative of the discharge. As shown in Figure F-1, below, the remaining 45 effluent samples had low concentrations of iron. There were no QA/QC issues identified for the 13 February 2012 sample, but this one sample had unusual results for other constituents as well.

Figure F-1. Iron results of samples collected at EFF-001



For priority pollutants, the SIP dictates the procedures for conducting the RPA. Iron is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used its judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

The most stringent objective is the Delta site-specific objective that is based on the DPH Secondary MCL, which is derived from human welfare considerations (e.g., taste, odor, laundry staining), not for toxicity. Although the receiving water contains iron exceeding the site-specific objective, Marsh Creek does not have the MUN beneficial use, is not listed as impaired on the 303(d) list for iron, and iron is not a constituent of concern in the development of the Drinking Water Policy. Additionally, the effluent iron concentrations are consistently less than the concentrations in the receiving water and below the site-specific objective. Therefore, the Central Valley Water Board finds the discharge does not have reasonable potential to cause or contribute to an exceedance in the receiving water and the Facility is adequately controlling the discharge of iron.

vi. Oil and Grease

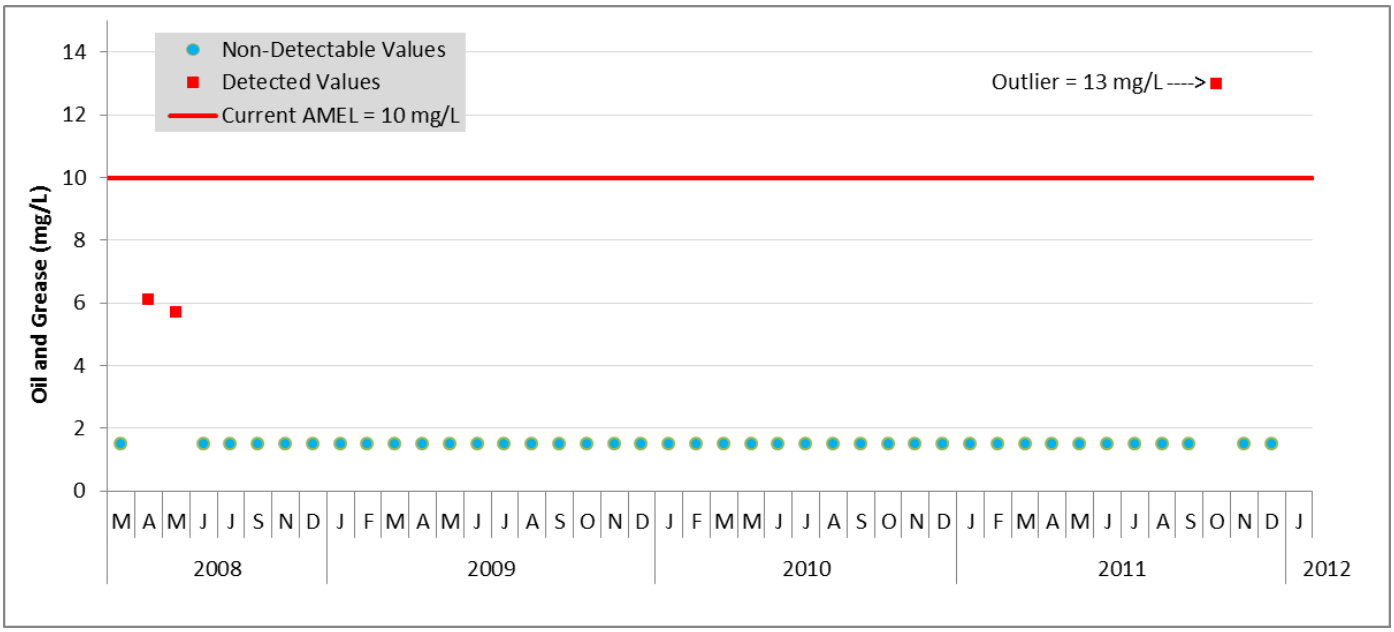
(a) WQO. The Basin Plan contains a narrative water quality objective for oil and grease , that states: "*Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.*"

(b) RPA Results. Monthly average and maximum daily effluent limitations for oil and grease of 10 mg/L and 15 mg/L, respectively, were contained in Order 5-00-171; however, the monitoring and reporting program failed to contain an effluent monitoring requirement

for oil and grease. Therefore, effluent data was not available to reassess the reasonable potential analysis when developing the next permit renewal in 2008. Consequently, although the Facility was upgraded to Title 22, or equivalent, tertiary filtration and the Discharger maintains a Fats, Oils, and Grease (FOG) program, the effluent limitations for oil and grease were carried forward in the renewed permit due to federal antibacksliding regulations.

During the term of Order R5-2008-0006-01, the discharger collected 44 effluent samples for oil and grease between March 2008 and January 2012. As shown in Figure F-2, below, oil and grease was non-detect in all but three effluent samples. The maximum observed effluent concentration for oil and grease was 13 mg/L, based on an effluent sample collected on 4 October 2011. There were no identified QA/QC issues by the laboratory for this elevated sample. However, this sample appears to be an outlier and not representative of the discharge, based on review of the remaining 43 samples and the fact that the Facility provides Title 22, or equivalent, tertiary filtration. Furthermore, the Discharger maintains a FOG program to control oil and grease and there are no significant industrial users in the service area. A visual examination of the data in the Figure F-2 below, clearly demonstrated that the sample identified above is not representative of the discharge, because the data point is significantly different than the remaining dataset.

Figure F-2. Oil and grease results of samples collected at EFF-001



Even if the 4 October 2011 oil and grease sample is considered in the RPA, based on the entire effluent dataset and based on receiving water observations conducted weekly, the Central Valley Water Board

finds the discharge does not have reasonable potential to cause or contribute to an exceedance of the applicable water quality objective in the receiving water and the Facility is adequately controlling the discharge of oil and grease. As a result, the effluent limits for oil and grease have not been retained in this Order. Removal of the effluent limitations is consistent with federal antibacksliding regulations (see section IV.D.3 of the Fact Sheet).

d. Constituents with Reasonable Potential. The Central Valley Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for ammonia, bis (2-ethylhexyl) phthalate, 5-day biochemical oxygen demand (BOD_5), chloride, dibromochloromethane, copper, dissolved oxygen, methylmercury, pathogens, pH, temperature, total residual chlorine, and toxicity. WQBELs for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

i. Ammonia

(a) WQO. The NAWQC for the protection of freshwater aquatic life for total ammonia, recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average; criteria continuous concentration or CCC) criteria based on pH and temperature. USEPA also recommends that the 4-day average concentration should not exceed 2.5 times the 30-day CCC. USEPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature. Steelhead (*Onchorynchus mykiss*) and winter and spring run chinook (*Onchorynchus tshawytsha)* are two of the of the five federally-listed species in Marsh Creek that belong to the salmon family. The recommended criteria for waters where salmonids and early life stages are present were used.

(b) RPA Results. The Facility is a POTW that treats domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that, without treatment, would be harmful to aquatic life and would violate the Basin Plan's narrative toxicity objective if discharged to the receiving water. Reasonable potential therefore exists and WQBELs are required.

Federal regulations at 40 C.F.R. §122.44(d)(1)(i) requires that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have*

the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." For priority pollutants, the SIP dictates the procedures for conducting the RPA. Ammonia is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used its judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

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

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

(c) WQBELs. Water quality-based effluent limitations for ammonia are included in this Order and are based on U.S. EPA's Ambient Water Quality Criteria for the protection of freshwater aquatic life. This Order contains final AMEL and MDEL for ammonia (as N) of 1.1 mg/L and 2.1 mg/L, respectively (See Attachment H for WQBEL calculations).

(d) Plant Performance and Attainability. Based on the analysis of the effluent data, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible.

ii. Bis(2-ethylhexyl)phthalate

(a) WQO. The CTR includes a criterion of 5.9 µg/L for bis (2-ethylhexyl) phthalate for the protection of human health for waters from which organisms only are consumed.

(b) RPA Results. The MEC for bis (2-ethylhexyl) phthalate was 7 µg/L based on 4 effluent samples collected between February 2011 and November 2011. The remaining three samples were non-detect (MDL = 2 µg/L). Bis (2-ethylhexyl) phthalate was not detected in the ambient background receiving water based 3 samples between May 2011 and November 2011 (MDL = 2 µg/L) .Since the MEC exceeds the CTR criterion, bis (2-ethylehxyl) phthalate has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion and WQBELs are required.

(c) WQBELs. This Order establishes WQBELs for bis (2-ethylhexyl) phthalate of 5.9 µg/L and 12 µg/L, as an AMEL and MDEL, respectively, based on the CTR criterion for consumption of organisms only.

(d) Plant Performance and Attainability. The MEC for bis (2-ethylhexyl) phthalate exceeds the AMEL. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations may not be feasible.

iii. Copper

(a) WQO. The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. These criteria for copper are presented in dissolved concentrations, as 1-hour acute criteria and 4-day chronic criteria. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The default USEPA translators (i.e., 0.96 for acute and chronic criteria) were used in this Order.

The Basin Plan (BP) includes a site-specific objective for the Sacramento-San Joaquin Delta of 10 µg/L (dissolved) as a maximum concentration. Using the default USEPA translator, the BP objective is 10.4 µg/L (total recoverable).

(b) RPA Results. Footnote 4, page 3, of the Introduction of the SIP states, *"If a water quality objective and a CTR criterion are in effect for the same priority pollutant, the more stringent of the two applies."* The BP objective cannot be directly compared to the CTR criteria to determine which is the most stringent objective because they have different averaging periods and the CTR criteria vary with hardness. In this situation, the RPA has been conducted considering both the CTR criteria and the BP water quality objectives.

Section IV.C.2 of this Fact Sheet includes procedures for conducting the RPA for hardness-dependent CTR metals, such as copper. The RPA was conducted using the upstream receiving water hardness to calculate the criteria for comparison to the maximum ambient background concentration, and likewise using the reasonable worst-case downstream hardness to compare the maximum effluent concentration. The table below shows the specific criteria used for the RPA.

Table F-10. Copper specific criteria used for the RPA.

	CTR Hardness Dependent Chronic Criteria (Total Recoverable)	Site-Specific BP Objective (Total Recoverable)	Maximum Concentration	Reasonable Potential? (Y/N)
Receiving Water	14 µg/L[1]	10.4 µg/L	20.0 µg/L[3]	Yes
Effluent	16 µg/L[2]	10.4 µg/L	17.0 µg/L[4]	Yes

[1] Based on lowest observed upstream receiving water hardness of 157 mg/L (as $CaCO_3$)
[2] Based on reasonable worst-case downstream receiving water hardness of 189 mg/L (as $CaCO_3$)
[3] Maximum ambient background receiving water copper concentration based on 3 samples from May 2011 through November 2012.
[4] MEC for copper based on 47 samples from April 2008 to February 2012

As shown in the table above, the MEC and the ambient background receiving water concentration exceed both the CTR criteria and the BP objective, therefore the discharge has a reasonable potential to cause or contribute to an in-stream excursion and WQBELs are required.

(c) WQBELs. In this case, reasonable potential was triggered by both the CTR criteria and the BP objective, the resulting WQBELs that are calculated based on the CTR criteria result in WQBELs exceeding the BP Objective (see table below).

Table F-11. Copper CTR Criteria and Basin Plan Objective

WQBELs	Average Monthly Effluent Limit (AMEL)	Maximum Daily Effluent Limit (MDEL)
CTR Criteria	14 µg/L	22 µg/L
Basin Plan Objective	--	10.4 µg/L

Consequently, the WQBELs have been developed using the BP objective resulting in a MDEL of 10.4 µg/L (total recoverable), which is consistent with the previous Order. The SIP requires average monthly and maximum daily effluent limits for CTR constituents. The site-specific objective for copper is established as a maximum concentration. Therefore, it is impracticable to calculate average monthly effluent limitations for copper using the BP objective. Therefore, an average monthly effluent limitation of 14 µg/L was calculated using the CTR criteria. This Order includes a MDEL of 10.4 µg/L and an AMEL of 14 µg/L, as total recoverable copper.

(d) Plant Performance and Attainability. Based on facility performance the Central Valley Water Board finds the Discharger can comply immediately with these limits.

iv. Dibromochloromethane (Chlorodibromomethane)

(a) WQO. The CTR includes a dibromochloromethane criterion of 34 µg/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which organisms are consumed.

(b) RPA Results. The MEC for dibromochloromethane was 42.1µg/L, based on 5 samples collected between February 2011 and February 2012. The MEC exceeds the CTR criterion, therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for dibromochloromethane. All Marsh Creek upstream monitoring results from 4 samples collected between May 2011 and February 2012 were below the method detection limit.

(c) WQBELs. This Order contains final AMEL and MDEL for dibromochloromethane of 34 µg/L and 62 µg/L, respectively (See Attachment H for WQBEL calculations).

(d) Plant Performance and Attainability. Based on the analysis of the effluent, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible.

v. Chlorine, Total Residual

(a) WQO. USEPA developed NAWQC for protection of freshwater aquatic life for chlorine residual. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for chlorine residual are 0.011 µg/L and 0.019 µg/L, respectively. These criteria are protective of the Basin Plan's narrative toxicity objective.

(b) RPA Results. The concentrations of chlorine used to disinfect wastewater are high enough to harm aquatic life and violate the Basin Plan's narrative toxicity objective if discharged to the receiving water. Reasonable potential therefore exists and WQBELs are required.

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

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

The Discharger uses chlorine (hypochlorite) for disinfection, which is extremely toxic to aquatic organisms. Although the Discharger uses a sodium bisulfate process to dechlorinate the effluent prior to discharge to Mash Creek, the existing chlorine use and the potential for chlorine to be discharged provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC.

(c) WQBELs. The USEPA *Technical Support Document for Water Quality-Based Toxics Control* [EPA/505/2-90-001] contains statistical methods for converting chronic (4-day) and acute (1-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. However, because chlorine is an acutely toxic constituent that can and will be monitored continuously, an average 1-hour limitation is considered more appropriate than an average daily limitation. This Order contains a 4-day average effluent limitation and 1-hour average effluent limitation for chlorine residual of 0.011 µg/L and 0.019 µg/L, respectively, based on USEPA's NAWQC, which implements the Basin Plan's narrative toxicity objective for protection of aquatic life.

(d) Plant Performance and Attainability. Based on the analysis of the effluent, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible.

vi. Dissolved Oxygen (DO) and Biochemical Oxygen Demand (BOD)

(a) WQO. The Basin Plan contains a water quality objective for dissolved oxygen for the Delta of 5 mg/L.

(b) RPA. Marsh Creek is a shallow, warm stream and has known issues with low DO. During the development of the 2000 NPDES permit (Order 5-00-171) a Streeter-Phelps DO sag analysis was performed to determine if DO and/or BOD WQBELs were needed to ensure compliance with the Basin Plans' water quality objective for DO. Based on conservative assumptions, the analysis showed that WQBELs for BOD and DO were necessary. Order 5-00-171 required effluent limits for BOD of 7 mg/L, 12 mg/L, and 15 mg/L, as a monthly average, weekly average, and daily maximum, respectively, and effluent limits for DO of 5.5 mg/L as an instantaneous minimum. The Discharger was also required to conduct a new DO sag analysis to confirm the re-aeration coefficient and other assumptions used in the original analysis, and after the new facility was constructed and began discharging, to conduct a final analysis based on the upgraded Facility.

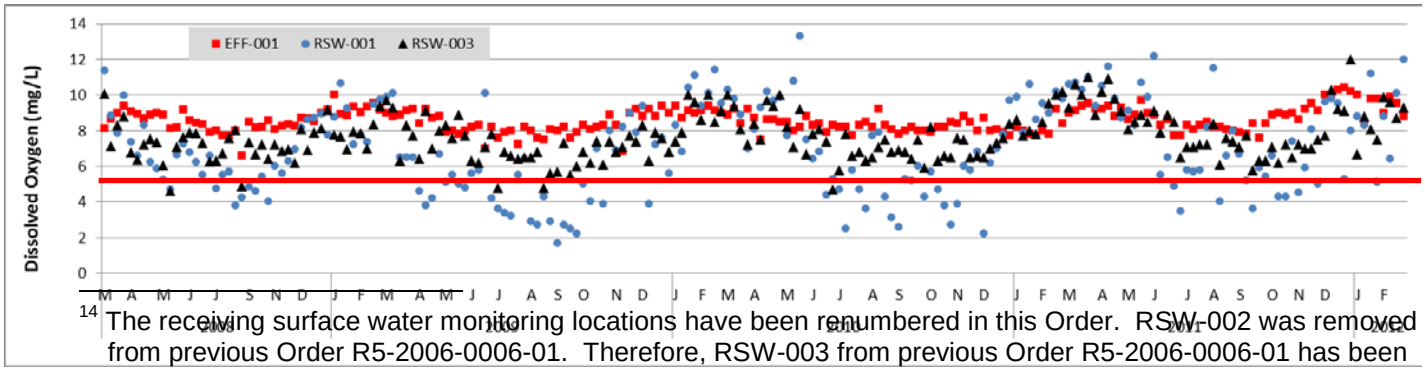
In June 2002, the Discharger submitted the City of *Brentwood Wastewater Treatment Plant Effluent and Receiving Water Study,*

which included a DO sag analysis. The updated study confirmed that the assumptions were correct and BOD effluent limits were necessary. Furthermore, it was found that the effluent DO should not fall below 5 mg/L, unless background ambient DO concentrations were already below 5 mg/L, which then required the effluent to not fall below 5.5 mg/L to ensure downstream DO was always at least 5 mg/L. A final study based on the upgraded Facility does not appear to have been completed. Based on this information, the 2008 NPDES permit (Order R5-2008-0006-01) carried forward the BOD and DO effluent limits from Order 5-00-171.

Based on 199 receiving water samples collected between March 2008 through February 2012 at RSW-003[14] (300 feet downstream of the discharge), the DO concentrations have been consistently above the water quality objective of 5 mg/L, averaging 7.7 mg/L (Figure F-3). The range of DO concentrations of the upstream receiving water samples collected between March 2008 through February 2012 at RSW-001 varied between 1.7 mg/L and 13.3 mg/L with an average of 7.0 mg/L (Figure F-3). Based on the effluent sampling for DO and oxygen-demanding substances (i.e., biochemical oxygen demand and ammonia) the effluent discharge did not cause or contribute to the DO violations in the receiving water. The effluent daily average DO in the discharge during those periods was between 6.0 mg/L and 11.9 mg/L (Figure F-3), while the effluent biochemical oxygen demand ranged from 0.5 mg/L to 5.2 mg/L and the MEC for ammonia was 0.83 mg/L.

The DO sag analysis was based on a maximum daily effluent BOD of 15 mg/L. As discussed above, the effluent BOD is very low for this Facility, so the conditions on which the analysis was based have not occurred. The Discharger has not provided a new DO sag analysis. Therefore, although the DO data does not demonstrate reasonable potential, based on the existing DO sag analysis, WQBELs for BOD and DO are needed to ensure compliance with the Basin Plan's DO objective.

Figure F-3. Dissolved Oxygen results of samples collected at EFF-001, RSW-001, and RSW-003



[14] The receiving surface water monitoring locations have been renumbered in this Order. RSW-002 was removed from previous Order R5-2006-0006-01. Therefore, RSW-003 from previous Order R5-2006-0006-01 has been renamed RSW-002 in this Order.

(c) WQBELs. The WQBELs for BOD and DO from the previous Order have been carried forward in this Order.

(d) Plant Performance and Attainability. Based on the analysis of the effluent, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible.

vii. Mercury and Methylmercury

(a) WQO. The Basin Plan contains fish tissue objectives for all Delta waterways listed in Appendix 43 of the Basin Plan that states, "…*the average methylmercury concentrations shall not exceed 0.08 and 0.24 mg methylmercury/kg, wet weight, in muscle tissue of trophic level 3 and 4 fish, respectively (150-500 mm total length). The average methylmercury concentrations shall not exceed 0.03 mg methylmercury/kg, wet weight, in whole fish less than 50 mm in length.*" The Delta Mercury Control Program contains aqueous methylmercury waste load allocations that are calculated to achieve the fish tissue objectives. Methylmercury reductions are assigned to discharges with concentrations of methylmercury greater than 0.06 ng/l (the concentration of methylmercury in water to meet the fish tissue objectives).

The CTR contains a human health criterion (based on a threshold dose level causing neurological effects in infants) of 50 ng/L for total mercury for waters from which both water and aquatic organisms are consumed. However, 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.

(b) RPA Results. Section 1.3 of the SIP states, "*The RWQCB shall conduct the analysis in this section for each priority pollutant with an applicable criterion or objective,* ***excluding priority pollutants for which a Total Maximum Daily Load (TMDL) has been developed****, to determine if a water quality-based effluent limitation is required in the discharger's permit.*" (emphasis added) Although a RPA is not required, based on the available effluent and receiving water methylmercury data, it appears the discharge is causing or contributing

to an exceedance of the concentration of methylmercury in water to meet the site-specific fish tissue objectives in the Basin Plan. The maximum observed effluent methylmercury concentration was 0.1ng/L, and all Marsh Creek upstream monitoring results from 3 samples collected between May 2011 and November 2011 were below the method detection limit.

(c) WQBELs. The Basin Plan's Delta Mercury Control Program includes wasteload allocations for POTWs in the Delta, including for the Discharger. In accordance with 40 CFR 122.44(d)(1)(vii)(B) and the SIP, this Order contains final WQBELs for methylmercury based on the wasteload allocation. The total calendar annual methylmercury load shall not exceed 0.14 grams.

(d) Plant Performance and Attainability. Based on available effluent methylmercury data, the Central Valley Water Board finds the Discharger is unable to immediately comply with the final WQBELs for methylmercury. Therefore, a compliance schedule in accordance with the State Water Board's Compliance Schedule Policy and the Delta Mercury Control Program has been established in this Order.

viii. Pathogens

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

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

the entire treatment train and the effectiveness of removing other pathogens.

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

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

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

The beneficial uses of Marsh Creek include water contact and non-contact recreation, warm fresh habitat and wildlife, preservation of rare, threatened or endangered species, and commercial and sport fishing. To protect these beneficial uses, the Central Valley Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease. Although the Discharger provides disinfection, inadequate or incomplete disinfection creates the potential for

pathogens to be discharged and provides the basis for the discharge to have a reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for pathogens and WQBELs are required.

(c) WQBELs. 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 accordance with the requirements of Title 22, this Order includes effluent limitations for total coliform organisms of 2.2 MPN/100 mL as a 7-day median; 23 MPN/100 mL, not to be exceeded more than once in a 30-day period; and 240 MPN/100 mL as an instantaneous maximum. 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.

In addition to coliform limitations, an operational specification for turbidity has been included as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. The Title 22 tertiary treatment process, or equivalent, is capable of reliably meeting a turbidity limitation of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations. In accordance with DPH recommendations, this Order includes operational specifications for turbidity of 2 NTU as a daily average; 5 NTU, not to be exceeded more than 5% of the time within a 24-hour period; and 10 NTU as an instantaneous maximum.

Final WQBELs for BOD_5 and TSS are based on the technical capability of the tertiary process, which is necessary to protect the beneficial uses of the receiving water. BOD_5 is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The tertiary treatment standards for BOD_5 and TSS are indicators of the effectiveness of the tertiary treatment process. The principal design parameter for wastewater treatment plants is the daily BOD_5 and TSS loading rates and the corresponding removal rate of the system. The application of tertiary treatment processes results in the ability to achieve lower levels for BOD_5 and TSS than the secondary standards currently prescribed. Therefore, this Order requires AMELs for BOD_5 and TSS of 7 mg/L and 10 mg/L, respectively, which is technically based on the capability of a tertiary system. In addition to

the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD_5 and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities.

This Order contains effluent limitations for BOD_5, total coliform organisms, and TSS and requires a Title 22 tertiary level of treatment, or equivalent, necessary to protect the beneficial uses of the receiving water. The Central Valley Water Board has previously considered the factors in Water Code section 13241 in establishing these requirements.

(d) Plant Performance and Attainability. The Facility includes disinfection facilities that can comply with the WQBELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

ix. pH

(a) WQO. The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the "…pH shall not be depressed below 6.5 nor raised above 8.5."

(b) RPA Results. Raw domestic wastewater inherently has variable pH. Additionally, some wastewater treatment processes can increase or decrease wastewater pH which if not properly controlled, would violate the Basin Plan's numeric objective for pH in the receiving water. Therefore, reasonable potential exists for pH and WQBELs are required.

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

USEPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require,*

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

The Facility is a POTW that treats domestic wastewater. Based on 1369 samples taken from 1 March 2008 to 29 February 2012, the maximum pH reported was 8.5 and the minimum was 7.6. Therefore, pH in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan water quality objectives. Although the Discharger has proper pH controls in place, the pH for the Facility's influent varies due to the nature of municipal sewage, which provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's numeric objective for pH in the receiving water. Therefore, WQBELs for pH are required in this Order.

(c) WQBELs. Effluent limitations for pH of 6.5 as an instantaneous minimum and 8.5 as an instantaneous maximum are included in this Order based on protection of the Basin Plan objectives for pH.

(d) Plant Performance and Attainability. Based on the analysis of the effluent, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible.

x. Salinity (Chloride)

(a) WQO. 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. However, MUN and AGR are not beneficial uses of Marsh Creek, therefore, the most critical beneficial use affected by the salinity of the discharge is WARM, for the protection of aquatic life. There are no water quality

criteria for protection of aquatic life for EC, TDS, and sulfate. However, water quality criteria for chloride are available for interpretation of the Basin Plan's narrative toxicity objective.

Previous Order R5-2008-0006-01 interpreted the narrative toxicity objective using USEPA's 1988 National Ambient Water Quality Criteria for chloride for the protection of freshwater aquatic life, which includes a chronic (4-day average) criterion of 230 mg/L and an acute (1-hour) criterion of 860 mg/L. There are no USEPA water quality criteria for the protection of aquatic life for electrical conductivity, total dissolved solids, and sulfate.

Since adoption of the previous permit, in 2009 the state of Iowa, in coordination with USEPA, developed and adopted new chloride criteria for Iowa. The chloride criteria were developed in accordance with USEPA criteria development guidelines. The new chloride criteria (see Table F-12) account for the water hardness- and sulfate-dependent toxicity to chloride in sensitive aquatic organisms ("Alternative Water Quality Criteria for Chloride for the Protection of Aquatic Life," State of Iowa Department of Natural Resources (2009)). USEPA is in the process of updating its National Ambient Water Quality Criteria for chloride based on Iowa's criteria.

Table F-12. Iowa Chloride Criteria

Criteria Type	Criteria Equations	Design Hardness (mg/L as $CaCO_3$)	Design Sulfate (mg/L)	Chloride Criteria (mg/L)
Criteria Maximum Concentration (CMC)	$287.8x(Hardness)^{0.205797}x(Sulfate)^{-0.07452}$	189	172	577
Criteria Continuous Concentration (CCC)	$177.87x(Hardness)^{0.205797}x(Sulfate)^{-0.07452}$	189	172	356

(b) RPA Results. Effluent chloride ranged from 304 to 442 based on 45 data points from 10 March 2008 to 13 February 2012. The background ambient receiving water chloride ranged from 46 to 184 based on 19 data points during 6 September 2011 to 4 April 2012. The effluent and receiving water exceed the applicable chloride criteria, therefore, the discharge has reasonable potential to cause or contribute to an instream exceedance of the narrative toxicity objective and WQBELs are required.

(c) WQBELs. This Order includes WQBELs for chloride based on the Iowa Chloride Criteria, of 344 mg/L and 398 mg/L, as the AMEL and MDEL, respectively. Previous Order R5-2008-0006-01 included performance-based effluent limits for EC to cap the salinity of the discharge due to concerns with salinity in the Delta. The effluent limits for EC have not been retained in this Order, because the salinity of the discharge is effectively capped with the interim and final effluent limits

for chloride. Removal of the EC effluent limits is not considered backsliding, therefore, complies with federal antibacksliding regulations.

(d) Plant Performance and Attainability. Based on Facility performance the Central Valley Water Board concludes that immediate compliance with these effluent limitations is not feasible. The Discharger provided an infeasibility analysis and requested a compliance schedule, which is provided in this Order.

xi. Temperature

(a) WQO. The Thermal Plan requires that, "The maximum temperature shall not exceed the natural receiving water temperature by more than 20°F."

(b) RPA Results. Treated domestic wastewater is an elevated temperature waste, which could cause or threaten to cause the receiving water temperature to exceed temperature objectives established in the Thermal Plan. Therefore, reasonable potential exists for temperature and WQBELs are required.

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

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

a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data." (TSD, p. 50)

The Facility is a POTW that treats domestic wastewater. Domestic wastewater is an elevated temperature waste, which provides the basis for the discharge to have a reasonable potential to cause or contribute to an excursion above Thermal Plan requirements. Therefore, WQBELs for temperature are required in this Order.

(c) WQBELs. The Discharger developed a temperature study titled, "Thermal Plan Exception Justification for the City of Brentwood Wastewater Treatment Plant" (January 2010). The Thermal Plan Exception Justification report was submitted to the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) and the United States Fish and Wildlife Service (USFWS) for review. Approval of the proposed Thermal Plan exception was provided by NMFS on 19 August 2011, and the USFWS approved the Thermal Plan Exception on 31 January 2013. The Central Valley Water Board approved the Thermal Plan exception through adoption of Resolution No. R5-2013-0106 and the WQBELs for temperature are consistent with the exception, as follows:

The maximum temperature of the discharge shall not exceed the natural receiving water temperature by more than 20º F from 1 February through 30 November, nor more than 24 º F from 1 December through 31 January.

Under the current permitted discharge flow, the WQBELs described above are suitable for supporting the indigenous aquatic organism and does not have an adverse effect on the opportunistic use by Steelhead (*Onchorynchus mykiss*) and winter and spring run chinook (*Onchorynchus tshawytsha)*. In the future, if the Discharger requests an increase of the design flow, additional thermal studies and/or modeling efforts to predict the effects of final discharge volume on temperature conditions for the delta smelt critical habitat in Marsh Creek will be required.

(d) Plant Performance and Attainability. Based on existing Facility performance it appears the Discharger can immediately comply with the temperature effluent limits.

xii. Whole Effluent Toxicity (See Section IV.C.5)

4. WQBEL Calculations

a. In this Order WQBELs are calculated for: ammonia, copper, dibromochloromethane, bis(2-ethylhexyl) phthalate, dissolved oxygen, total residual chlorine, diazinon, and chlorpyrifos. The general methodology for calculating WQBELs based on the different criteria/objectives is described in subsections IV.C.4.b through e, below. See Attachment H for the WQBEL calculations.

b. Effluent Concentration Allowance. For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from Section 1.4 of the SIP:

$$ECA = C + D(C - B) \qquad \text{where } C>B, \text{ and}$$
$$ECA = C \qquad \text{where } C \leq B$$

where:

ECA = effluent concentration allowance
D = dilution credit
C = the priority pollutant criterion/objective
B = the ambient background concentration.

According to the SIP, the ambient background concentration (B) in the equation above shall be the observed maximum with the exception that an ECA calculated from a priority pollutant criterion/objective that is intended to protect human health from carcinogenic effects shall use the arithmetic mean concentration of the ambient background samples. For ECAs based on MCLs, which implement the Basin Plan's chemical constituents objective and are applied as annual averages, an arithmetic mean is also used for B due to the long-term basis of the criteria.

c. Basin Plan Objectives and MCLs. For WQBELs based on site-specific numeric Basin Plan objectives or MCLs, the effluent limitations are applied directly as the ECA as either an MDEL, AMEL, or average annual effluent limitations, depending on the averaging period of the objective.

d. Aquatic Toxicity Criteria. WQBELs based on acute and chronic aquatic toxicity criteria are calculated in accordance with Section 1.4 of the SIP. The ECAs are converted to equivalent long-term averages (i.e. LTAacute and LTAchronic) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers.

e. Human Health Criteria. WQBELs based on human health criteria, are also calculated in accordance with Section 1.4 of the SIP. The ECAs are set equal to the AMEL and a statistical multiplier was used to calculate the MDEL.

LTA_{acute}

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

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

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

where:

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

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

Table F-13. Summary of Water Quality-Based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand (BOD) (5-day @ 20 Deg. C)	mg/L	7	12	15	--	--
	lbs/day[1]	292	500	625	--	--
pH	standard units	--	--	--	6.5	8.5
Ammonia	mg/L	1.1	--	2.1	--	--
	lbs/day[1]	46	--	88	--	--
Bis(2-ethylhexyl) phthalate	µg/L	5.9	--	12	--	--
Chloride	mg/L	344		398		
Copper (total recoverable)	µg/L	14	--	23	--	--
Dibromochloromethane	µg/L	34	--	62	--	--
Methylmercury	grams	0.14[2]	--	--	--	--
Diazinon and Chlorpyrifos	µg/L	[3]	--	[4]	--	--
Chlorine, Total Residual	mg/L	--	0.011[5]	0.019[6]	--	--
Total Coliform Organisms	MPN/ 100 mL	--	2.2[7]	23[8]	--	240

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum

[1] Based on an existing permitted average dry weather flow of 5 mgd
[2] The total calendar annual load of methylmercury shall not exceed 0.14 grams.
[3] $S_{AMEL} = \frac{C_{D-avg}}{0.079} + \frac{C_{C-avg}}{0.012} \leq 1.0$
$C_{D\text{-}avg}$ = average monthly diazinon effluent concentration in µg/L
$C_{C\text{-}avg}$ = average monthly chlorpyrifos effluent concentration in µg/L
[4] $S_{MDEL} = \frac{C_{D-max}}{0.16} + \frac{C_{C-max}}{0.025} \leq 1.0$
[5] Applied as a 4-day average effluent limitation.
[6] Applied as a 1-hour average effluent limitation.
[7] Applied as a 7-day median effluent limitation.
[8] Not to be exceeded more than once in any 30-day period.

5. Whole Effluent Toxicity (WET)

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

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

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

limitations, the Facility is a POTW that treats domestic wastewater containing ammonia and other acutely toxic pollutants**.** Acute toxicity effluent limits are required to ensure compliance with the Basin Plan's narrative toxicity objective.

USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc." Accordingly, effluent limitations for acute toxicity have been included in this Order as follows:

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

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

b. Chronic Aquatic Toxicity. The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at page III-8.00 for discharges in the Sac/SJ Basins). Based on chronic WET testing performed by the Discharger from June 2008 through February2012, there was one exceedance of the numeric monitoring trigger, as shown in Table F-13 below. The Discharger conducted bi-weekly accelerated monitoring in accordance with the permit and the results did not exceed the trigger. Based on the exceedance of the monitoring trigger during accelerated monitoring, the Discharger subsequently entered into a Toxicity Reduction Evaluation (TRE) and pursued identification of the causative agent of the observed reproductive toxicity. Subsequent to frequent bioassay testing, Toxicity Identification Evaluation (TIE) testing, a facility performance review, and Facility optimizations, the *C. dubia* toxicity has not been observed during accelerated or routine bioassay monitoring since mid-December 2009. Thus, the Discharger concluded the TRE based on the findings that toxicity is no longer present and submitted the final report, *Final Report - Ceriodaphnia dubia Toxicity Reduction Evaluation*, to the Central Valley Water Board in June 2011. Based on the exceedances of the trigger, however, the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

Table F-14: Whole Effluent Chronic Toxicity Testing Results

Date	**Fathead Minnow** *Pimephales promelas*		**Water Flea** *Ceriodaphnia dubia*		**Green Algae** *Selenastrum capricornutum*
	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
06/12/2008	1	1	1	1	1
09/08/2008	1	1	1	1	8
12/12/2008	>1	>1	--	--	1
01/07/2009	--	--	--	--	1
04/20/2009	1	1	1	>8	1
06/02/2009	1	3	3	8	1
06/15/2009 (accelerated)	--	--	--	1	--
06/24/2009 (accelerated)	--	--	--	2	--
06/29/2009 (accelerated)	--	--	--	1	--
07/13/2009 (accelerated)	--	--	--	>8	--
08/10/2009 (accelerated)	--	--	--	1	--
08/24/2009 (accelerated)	--	--	--	>8	--
09/15/2009	1	1	--	--	1
11/17/2009	--	--	--	1	--
12/04/2009	--	--	1	1	--
12/09/2009	1	1	--	--	2
12/11/2009	--	--	1	1	--
12/28/2009	--	--	1	1	--
02/25/2010 (accelerated)	--	--	--	--	1
03/09/2010 (accelerated)	--	--	--	--	1
03/23/2010	1	1	1	1	1
06/14/2010	1	1	1	1	1
09/13/2010	1	1	1	1	1
11/30/2010	1	1	1	1	1
02/14/2011	1	1	1	1	1
05/09/2011	1	1	1	1	1
08/09/2011	1	1	1	1	1
11/07/2011	1	1	1	1	1
02/18/2011	1	1	1	1	1

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.

The Monitoring and Reporting Program of this Order requires, quarterly chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, the Special Provision in section VI.C.2.a of the Order includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated.

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[15] that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012, "*In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits."* The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. Since the toxicity control provisions in the SIP are under revision it is infeasible to develop numeric effluent limitations for chronic toxicity. Therefore, this Order requires that the Discharger meet best management practices for compliance with the Basin Plan's narrative toxicity objective, as allowed under 40 CFR 122.44(k).

To ensure compliance with the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic WET testing, as specified in the Monitoring and Reporting Program (Attachment E section V.). Furthermore, the Special Provision contained at VI.C.2.a. of this Order requires the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge demonstrates toxicity exceeding the numeric toxicity monitoring trigger, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE) in accordance with an approved TRE workplan. The numeric toxicity monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if effluent toxicity has been demonstrated.

[15] 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)

D. Final Effluent Limitations

1. Mass-based Effluent Limitations

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

Mass-based effluent limitations were calculated based upon the design flow (Average Dry Weather Flow) permitted in section IV.A.1 of this Order.

2. Averaging Periods for Effluent Limitations

40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. However, for toxic pollutants and pollutant parameters in water quality permitting, USEPA recommends the use of a maximum daily effluent limitation in lieu of average weekly effluent limitations for two reasons. "*First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed.*" (TSD, pg. 96) This Order uses maximum daily effluent limitations in lieu of average weekly effluent limitations for ammonia, bis(2-ethylhexyl)phthalate, copper, and dibromochloromethane as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Furthermore, for pH, total coliform organisms, and total residual chlorine, weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in section IV.C.3 of this Fact Sheet.

3. Satisfaction of Anti-Backsliding Requirements

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

The effluent limitations in this Order are at least as stringent as the effluent limitations in Order R5-2008-0006-1, with the exception of effluent limitations for aluminum, alpha-endosulfan, 4,4-DDT, lindane (gamma-BHC), chloride, iron, oil and grease, selenium, and temperature. The effluent limitations for these pollutants are less stringent than those in Order R5-2008-0006-01. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

CWA section 303(d)(4) has two parts: paragraph (A) which applies to nonattainment waters and paragraph (B) which applies to attainment waters.

a. CWA section 402(o)(1) and 303(d)(4). CWA section 402(o)(1) specifies that, in the case of effluent limitations established on the basis of CWA section 301(b)(1)(C) (i.e., WQBELs), a permit may not be renewed, reissued, or modified to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit except in compliance with CWA section 303(d)(4). The effluent limitations for aluminum, chloride, iron, oil and grease, alpha-endosulfan, 4,4-DDT, lindane (gamma-BHC), selenium, and temperature established in Order R5-2008-0006-01 are WQBELs and may be relaxed if the requirements of CWA section 303(d)(4) are satisfied.

i. For waters where standards are not attained, CWA section 304(d)(4)(A) specifies that any effluent limit based on a TMDL or other WLA may be revised only if the cumulative effect of all such revised effluent limits based on such TMDLs or WLAs will assure the attainment of such water quality standards. The 303(d) listings applicable to Marsh Creek, as described in section III.D.1 of this Fact Sheet, include diazinon, Escherichia coli (E.coli), mercury, sediment toxicity, and unknown toxicity.

ii. For attainment waters, CWA section 303(d)(4)(B) specifies that a limitation based on a water quality standard may be relaxed where the action is consistent with the antidegradation policy. The 303(d) listings for Marsh Creek, as described in section III.D.1 of this Fact Sheet, do not include aluminum, chloride, iron, oil and grease, alpha-endosulfan, 4,4-DDT, lindane (gamma-BHC), selenium, or temperature. Thus the receiving water is an attainment water for these constituents[16]. The removal or relaxation of WQBELs for these parameters is consistent with CWA sections 402(o)(1) and 303(d)(4) and, as described in section IV.D.4 of this Fact Sheet, the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Therefore, the modifications to these effluent limitations do not violate anti-backsliding requirements.

[16] "The exceptions in Section 303(d)(4) address both waters in attainment with water quality standards and those not in attainment, i.e. waters on the section 303(d) impaired waters list." State Water Board Order WQ 2008-0006, Berry Petroleum Company, Poso Creek/McVan Facility.

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

As described further in section IV.C.3.b of this Fact Sheet, updated information that was not available at the time Order R5-2008-0006-01 was issued indicates that for aluminum, iron, oil and grease, alpha-endosulfan, 4,4-DDT, lindane (gamma-BHC), selenium, and temperature do not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. Additionally, updated information that was not available at the time Order R5-2008-0006-01 was issued indicates that less stringent effluent limitations for aluminum and chloride, based on alternative proposed criteria to implement the Basin Plan's narrative toxicity objective, and for temperature, based on a temperature study and approved Thermal Plan Exception, satisfies requirements in CWA section 402(o)(2). The updated information that supports the relaxation of effluent limitations for these constituents includes the following:

i. **Aluminum.** As discussed in Section IV.C.3 of the Fact Sheet, based on new aluminum toxicity studies developed by other dischargers in the Delta, the Central Valley Water Board finds that based on site-specific conditions of Marsh Creek, the chronic criterion (87 µg/L) recommended in USEPA's National Ambient Water Quality Criteria for aluminum is not applicable and applied the acute criterion (750 µg/L) to interpret the Basin Plan's narrative toxicity objective. Based on effluent monitoring data collected between March 2008 and February 2012 indicates that aluminum in the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the applicable criteria.

ii. **Chloride.** Previous Order R5-2008-0006-01 includes effluent limits for chloride based on USEPA's 1988 National Ambient Water Quality Criteria for chloride which were used to interpret the Basin Plan's narrative toxicity objective. In this Order, the Central Valley Water Board has used updated chloride criteria to interpret the narrative toxicity objective. 2009 chloride criteria developed by the state of Iowa with the assistance of USEPA was used and results in less stringent WQBELs for chloride.

iii. **Iron.** Based on effluent monitoring data collected between March 2008 and February 2012, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Basin Plan's site-specific water quality objective for the Delta of 300µg/L for dissolved iron.

iv. **Oil and Grease.** Based on effluent monitoring data collected between March 2008 and February 2012 the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Basin Plan's

narrative objective. The effluent has been consistently below the previous effluent limitations contained in R5-2008-0006-01, the Discharger's compliance with the requirements of WQO 2006-0003 will ensure minimal amounts of oil and grease are discharged into the Facility, and Facility provides tertiary filtration which produces high quality effluent with low concentrations of oil and grease.

v. **Alpha-endosulfan, 4,4-DDT, lindane (gamma-BHC).** Effluent and receiving water monitoring data collected between March 2008 and May 2012 for these persistent chlorinated hydrocarbon pesticides indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Basin Plan objective or the CTR criteria for individual persistent chlorinated hydrocarbon pesticides.

vi. **Selenium.** Based on effluent and receiving water monitoring data collected between March 2008 and February 2012 for selenium the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR criteria.

vii. **Temperature.** As discussed in more detail in section III.C.1.b of this Fact Sheet, the Discharger submitted a temperature study and requested a Thermal Plan exception. The study was reviewed and approved by fisheries staff with the National Marine Fisheries Service (NMFS) and the United States Fish and Wildlife Service (USFWS) for impacts to salmon and delta smelt. The Central Valley Water Board adopted Resolution No. R5-2013-0106 approving the Thermal Plan exception and this Order includes effluent and receiving water limits based on the approved Thermal Plan exception. Consequently, the effluent limits from the previous Order R5-2008-0006-01 have been modified in this current Order to meet the requirements of the approved Thermal Plan Exception.

Thus, removal or relaxation of the effluent limitations for aluminum, chloride, iron, oil and grease, alpha-endosulfan, 4,4-DDT, lindane (gamma-BHC), selenium, and temperature from Order R5-2008-0006-01 is in accordance with CWA section 402(o)(2)(B)(i), which allows for the removal of effluent limitations based on information that was not available at the time of permit issuance.

c. **Turbidity.** Order R5-2008-0006-01 contained effluent limitations for turbidity. The prior limitations were solely an operational check to ensure the treatment system was functioning properly and could meet the limits for solids and pathogens. The prior 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 turbidity specifications to be met in lieu of effluent limitations. The revised Order does not include effluent limitations for turbidity. However, the performance-based specification in this Order is an

equivalent limit that is not less stringent, and therefore does not constitute backsliding.

The revised operational specifications for turbidity are the same as the effluent limitations in Order R5-2008-0006-01. 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 R5-2008-0006-01 and therefore does not allow degradation.

d. **Ammonia.** The ammonia effluent limits have changed from the previous permit. However, the effluent limits are not less stringent. In this case, the waste load allocations (WLA)[17] in this Order and the previous Order are identical. The WLA provides a definition of effluent quality that is necessary to meet the water quality standards of receiving water and is used to derive water quality-based effluent limits (WQBELs) that are used to enforce the WLA.

The TSD warns that, "*Direct use of a WLA as a permit limit creates a significant risk that the WLA will be enforced incorrectly, since effluent variability and the probability basis for the limit are not considered specifically.*" (TSD, p. 96) The SIP and TSD include identical procedures for calculating WQBELs that use the statistical variability of the effluent to convert the WLA to average monthly and maximum daily effluent limits.

The new effluent data used to calculate WQBELs for this Order has different statistical variability (i.e., coefficient of variation is different) than used in the previous Order. Changes in the coefficient of variation can result in small changes to the effluent limits. However, the slight changes in effluent limits do not allow for an increase in the pollutants discharged. The TSD states, "*Since effluents are variable and permit limits are developed based on a low probability of exceedence, the permit limits should consider effluent variability and ensure that the requisite loading from the WLA is not exceeded under normal conditions. In effect then, the limits must "force" treatment plant performance, which, after considering acceptable effluent variability, will only have a low statistical probability of exceeding the WLA and will achieve the desired loadings.*" (TSD, p. 97) Therefore, although there are slight differences in the effluent limits, the WLA are identical, so the level of treatment needed to maintain compliance with the effluent limits remains the same. Consequently, the effluent limits are not less stringent than the previous Order, and there is no backsliding.

WQBELs for Ammonia were calculated based on 199 effluent monitoring samples collected between March 2008 through February 2012. This dataset

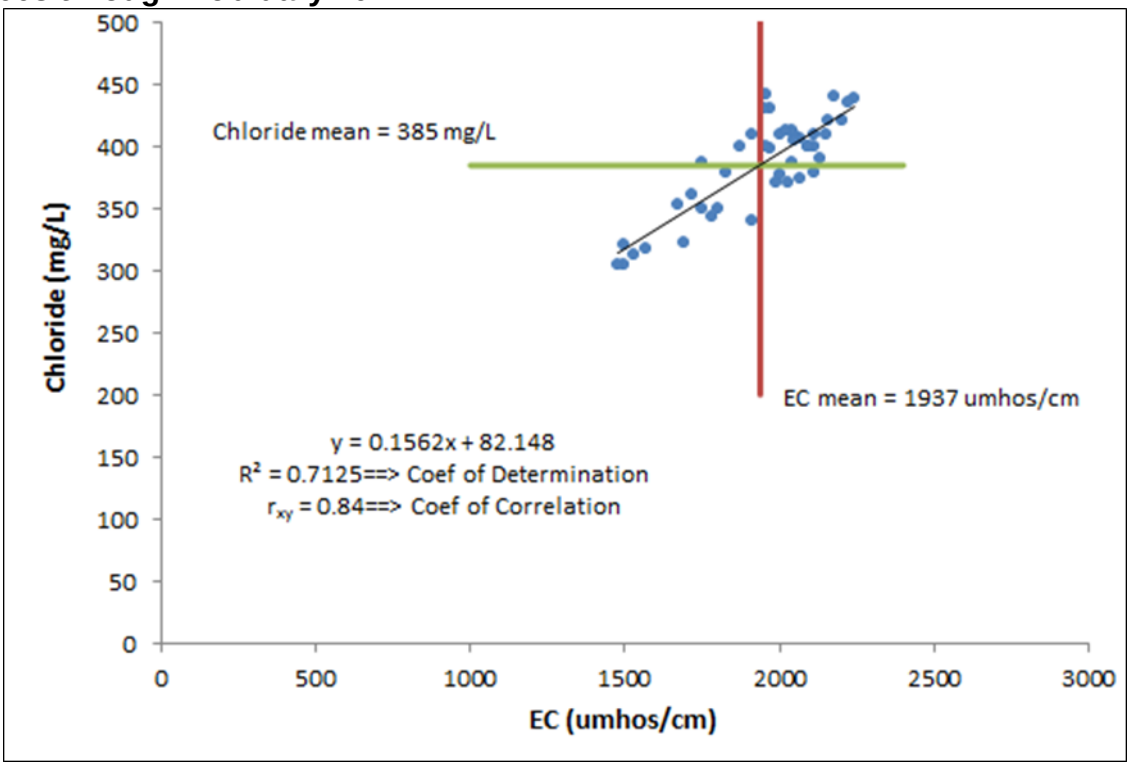
[17] The WLA is equivalent to the Effluent Concentration Allowance used in the SIP (Section 1.4) for water quality-based effluent limit calculations.

is representative of the Facility effluent and required monitoring frequency to meet the effluent limits in the previous permit.

The average monthly effluent limit (AMEL) for ammonia in this Order was calculated as a higher value than in previous Order R5-2008-0006-01. However, the maximum daily effluent limit (MDEL) remained the same. The WQBELs in both Orders are based on the same WLA (i.e., the WLA is based on the acute criterion of 2.14 mg/L (as N) from USEPA's National Ambient Water Quality Criteria for Ammonia. The reason for the change in the AMEL is due to a change in the variability of the effluent data for ammonia. The coefficient of variation for the recent effluent data is lower than for the data used in the previous Order. Using the procedures for calculating WQBELs in Section 1.4 of the SIP for aquatic life criteria, a lower coefficient of variation results in a higher AMEL. The WQBELs, however, are equally protective of the beneficial uses. The level of treatment needed to maintain compliance with the effluent limits remains the same. Consequently, the effluent limits are not less stringent than the previous permit, and there is no backsliding.

e. **Electrical Conductivity (EC).** Although there was no reasonable potential for EC, the previous Order included an interim performance-based effluent limitation of 2,495 µmhos/cm for EC to cap the salinity of the discharge at current levels. This interim performance-based effluent limitation is no longer required because this Order includes interim and final effluent limitations for chloride that will effectively control the discharge of salinity, including EC. Therefore, in this case, chloride is used as an indicator for salinity. Chloride ions are the main constituents in waters and saline soils that directly affect the EC values; therefore it is possible to find a strong correlation between EC and chloride data concentrations. An example of this correlation is provided in Figure F-4 for the City of Brentwood EC and chloride for which the coefficient of correlation r_{xy} (or Pearson Coefficient) is 0.84. This demonstrates that there is a strong correlation between EC and chloride. Therefore, chloride is a good indicator parameter for salinity. Since this Order continues to implement and performance-based chloride limit, the removal of the EC effluent limit is not backsliding and complies with antibacksliding regulations. Additionally, this Order requires continued implementation of the Salinity Source Control Program.

Figure F-4. Linear dependence between EC and chloride data from March 2008 through February 2012



R^2 Coefficient of Determination = An R^2 near 1.0 indicates that a regression line fits the data well.
r_{xy} = Pearson or Coefficient of Correlation. Is a measure of the strength of linear dependence between two variables (e.g. chloride and EC).

4. Satisfaction of Antidegradation Policy

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

This Order removes existing effluent limitations for constituents in which updated monitoring data demonstrates that the effluent does not cause or contribute to an exceedance of the applicable water quality criteria or objectives in the receiving water. The Central Valley Water Board finds that the removal of the effluent limitations does not result in an allowed increase in pollutants or any additional

degradation of the receiving water. Thus, the removal of effluent limitations is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16.

The permitted surface water discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

5. Stringency of Requirements for Individual Pollutant

This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on Flow, biochemical oxygen demand (BOD), total suspended solids, and pH. The WQBELs consist of restrictions on ammonia, bis(2-ethylhexyl)phthalate, dibromochloromethane, copper, chloride, diazinon, chlorpyrifos, BOD, dissolved oxygen, pH, total coliform organisms, total residual chlorine, temperature, and methylmercury. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements.

This Order does not contain pollutant restrictions that are more stringent than applicable federal requirements and standards.

Summary of Final Effluent Limitations
Discharge Point No. 001 and Discharge Point No. 002

Table F-15. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Flow	MGD	--	--	5	--	--	PF
Biochemical Oxygen Demand	mg/L	7	12	15	--	--	TTC
	lbs/day	292	500	625	--	--	
	% Removal	85	--	--	--	--	CFR
Total Suspended Solids	mg/L	10	15	20	--	--	TTC
	lbs/day	417	625	834	--	--	
	% Removal	85	--	--	--	--	CFR
pH	standard units	--	--	--	6.5	8.5	BP, PB
Dissolved Oxygen	mg/L	--	--	--	5.5	--	BP
Ammonia (as N)	mg/L	1.1	--	2.1	--	--	NAWQC
	lbs/day	46	--	88	--	--	

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Bis(2-ethylhexyl)Phthalate	µg/L	5.9	--	12	--	--	CTR
Chloride	mg/L	344		398			BP
Chlorine, Total Residual	mg/L	--	0.011[2]	0.019[3]	--	--	NAWQC
Dibromochloromethane	µg/L	34	--	62	--	--	CTR
Copper, Total Recoverable	µg/L	14	--	10.4	--	--	CTR, BP
Diazinon and Chlorpyrifos	µg/L	[4]	--	[5]	--	--	BP
Methylmercury	grams	0.14[6]	--	--	--	--	BP
Total Coliform Organisms	MPN/100 mL	--	2.2[7]	23[8]	--	240	Title 22
Acute Toxicity							
Chronic Toxicity							
Temperature							

1 PF – Based on permitted average dry weather flow of the Facility of 5.0 MGD.
TTC – Based on tertiary treatment capability. These effluent limitations reflect the capability of a properly operated tertiary treatment plant.
CFR – Based on secondary treatment standards contained in 40 CFR Part 133.
BP – Based on water quality objectives contained in the Basin Plan.
PB – Performance Based.
CTR – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.
NAWQC – Based on USEPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life.
SEC MCL – Based on the Secondary Maximum Contaminant Level.
TMDL – Based on the TMDL for salinity and boron in the lower San Joaquin River.
MCL – Based on the Primary Maximum Contaminant Level.
Title 22 – Based on CA Department of Public Health Reclamation Criteria, CCR, Division 4, Chapter 3 (Title 22).

2 Applied as a 4-day average effluent limitation.

3 Applied as a 1-hour average effluent limitation.

4 $$S_{AMEL} = \frac{C_{D-avg}}{0.08} + \frac{C_{C-avg}}{0.012} \leq 1.0$$
$C_{D\text{-}avg}$ = average monthly diazinon effluent concentration in µg/L
$C_{C\text{-}avg}$ = average monthly chlorpyrifos effluent concentration in µg/L

5 $$S_{MDEL} = \frac{C_{D-max}}{0.16} + \frac{C_{C-max}}{0.025} \leq 1.0$$
$C_{D\text{-}max}$ = maximum daily diazinon effluent concentration in µg/L
$C_{C\text{-}max}$ = maximum daily chlorpyrifos effluent concentration in µg/L

6 The total calendar annual load of methylmercury shall not exceed 0.14 grams.

7 Applied as a 7-day median effluent limitation.

8 Not to be exceeded more than once in any 30-day period.

E. Interim Effluent Limitations

1. **Constituents.** The SIP, section 2.2.1, requires that if a compliance schedule is granted for a CTR or NTR constituent, the Regional Water Board shall establish interim requirements and dates for their achievement in the NPDES permit. The interim limitations must be based on current treatment plant performance or existing permit limitations, whichever is more stringent. The State Water Board has held that the SIP may be used as guidance for non-CTR constituents. Therefore, the SIP requirement for interim effluent limitations has been applied to both CTR and non-CTR constituents in this Order. The SIP allows for compliance schedules for CTR criteria based-effluent limitations to extend up to 5 years (however does not require 5 years be granted) from the date of permit issuance, reissuance, or modification. The SIP further states that in no case shall a compliance schedule exceed 10 years from the effective date of the SIP for CTR criterion-based effluent limitations.

2. **Compliance Schedule for Chloride**

   The WQBELs for chloride are based on a new interpretation of water quality objective. Therefore, a schedule for compliance with chloride was established in the Order R5-2008-0006-01 on 6 December 2012. Due to the difficulty of removing chloride, the compliance schedule was extended for an additional five years to implement compliance alternatives for the reduction of chloride. The Discharger must achieve compliance with the final effluent limitations for chloride by **1 January 2018**.

   The interim limitations for chloride in this Order are based on the current treatment plant performance. In developing the interim limitation, where there are 10 sampling data points or more, sampling and laboratory variability is accounted for by establishing interim limits that are based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (*Basic Statistical Methods for Engineers and Scientists, Kennedy and Neville, Harper and Row*). Therefore, the interim limitations in this Order are established as the mean plus 3.3 standard deviations of the available data.

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

The Central Valley Water Board finds that the Discharger can undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. Interim limitations are established when compliance with effluent limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final effluent limitations, but in compliance with the interim effluent limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the effluent limitation can be achieved.

A summary of the calculations of the interim effluent limitations for chloride is provided in Table F-16 below:

Table F-16. Interim Chloride Effluent Limitation Calculation Summary

Parameter	Units	Maximum Effluent Concentration	Mean	Standard Deviation	Number of Samples	Interim Limitation
Chloride	mg/L	442	384.4	38.3	45	517

3. **Compliance Schedule for Mercury.** The permit limitations for methylmercury are more stringent than the limitations previously imposed. These new limitations are based on the Basin Plan's Delta Mercury Control Program that became effective on 20 October 2011**.** The Discharger has complied with the application requirements in paragraph 4 of the State Water Board's Compliance Schedule Policy, and the Discharger's application demonstrates the need for additional time to implement actions to comply with the new limitations, as described below. Therefore, a compliance schedule for compliance with the effluent limitations for methylmercury is established in this Order.

   A compliance schedule is necessary because the Discharger must implement actions, including a Phase 1 Methylmercury Control Study and possible facility upgrades to comply with the final effluent limitations.

   The Discharger has made diligent efforts to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and the results of those efforts. The Discharger is currently implementing a pollution prevention plan for mercury that was submitted to the Central Valley Water Board on 21 June 2012.

   The compliance schedule is as short as possible. The Central Valley Water Board will use the Phase 1 Control Studies' results and other information to consider amendments to the Delta Mercury Control Program during the Phase 1 Delta Mercury Control Program Review. Therefore, at this time it is uncertain what measures must be taken to consistently comply with the waste load allocation for

methylmercury. The interim effluent limits and final compliance date may be modified at the completion of Phase 1.

Interim performance-based limitations have been established in this Order in accordance with the Delta Mercury Control Program. The interim limitations were determined as described in section IV.E.2., below, and are in effect through until the final limitations take effect.

4. **Interim Limits for Total Mercury.** During Phase 1, the Delta Mercury Control Program requires POTWs to limit their discharges of inorganic (total) mercury to facility performance-based levels. The interim inorganic (total) mercury effluent mass limit is to be derived using current, representative data and shall not exceed the 99.9th percentile of 12-month running effluent inorganic (total) mercury loads (lbs/year). At the end of Phase 1, the interim inorganic (total) mercury mass limit will be re-evaluated and modified as appropriate.

   The interim limitations for total mercury in this Order are based on the current treatment plant performance. In developing the interim limitation, where there are 10 sampling data points or more, sampling and laboratory variability is accounted for by establishing interim limits that are based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (Basic Statistical Methods for Engineers and Scientists, Kennedy and Neville, Harper and Row). Therefore, the 99.9th percentile was determined using the mean plus 3.3 standard deviations of the available data.

   Total mercury effluent data collected since the operation of tertiary filtration, from August 2008 through December 2011, was used in the determination of the performance-based interim effluent limits. 12-month running mercury loads were calculated, the average and standard deviation of the 12-month running mercury loads were determined, and used to calculate the 99.9th percentile.

   The Central Valley Water Board finds that the Discharger can undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. Interim limitations are established when compliance with final effluent limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final effluent limitations, but in compliance with the interim effluent limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the effluent limitation can be achieved.

   The following table summarizes the calculations of the interim effluent limitations for total mercury:

Table F-17. Interim Mercury Effluent Limitation Calculation Summary

Parameter	Units	Maximum Annual Effluent Loading	Mean	Standard Deviation	Number of Samples	Interim Limitation
Total Mercury	g/yr	23.6	8.5	7.91	46	34

F. Land Discharge Specifications

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

2. The discharge specifications and groundwater limitations contained in this Order are applied to ensure proper operation of the emergency ponds, and to protect groundwater quality. Pond disposal limitations have been included to assure the ponds do not cause a nuisance (odors, mosquitoes production) and that the wastewater is contained within the appropriate disposal area (minimum freeboard, flood protection).

3. The flow limitations for discharge into the ponds has not been carried over from the previous Order, because the ponds are no longer used for disposal. The ponds are only used for emergencies and maintenance.

G. Reclamation Specifications (Set forth in WDR Order No. R5-2004-0132)

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

Receiving Water Limitations for temperature are included in this Order and are based on the City of Brentwood Thermal Plan Exception requirements submitted on January 2010. The Thermal Plan Exception was also reviewed and approved by the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) and the United States Fish and Wildlife Service (USFWS) for review. This Order may be reopened to modify limitations for Thermal Plan compliance. The Thermal Plan Exception includes a thermal and aquatic life study on Marsh Creek, conducted by the Discharger, to examine whether alternative receiving water temperature limitations were justified. Although the results of the study indicate that alternative temperature limitations would adequately protect designated uses of Marsh Creek, the study was based on compliance with current flow design conditions limitations. Thus, in the future, if the Discharger requests an increase on the design flow, additional thermal study or modeling efforts to predict the effects of final discharge volume on temperature conditions for the delta smelt critical habitat in Marsh Creek will be required.

a. **Temperature.** The 2010 City of Brentwood approved Thermal Plan Exception is applicable to this discharge. The Thermal Plan Exception requires that the discharge shall not cause the following:

(1) Surface water temperature, as measured at the RSW-002 monitoring station, to raise greater than 5 º F above the natural temperature of the receiving water on a monthly average basis for the months of March through September.

(2) The receiving water temperature, as measured at the RSW-002 monitoring station, to exceed:

The receiving water temperature, as measured at the RSW-002 monitoring station, to exceed:

i. 74 º F as monthly average for October;

ii. 72 º F as monthly average for November;

iii. 65 º F as a period average for 1 December through 28 February.

B. Groundwater

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

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

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

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

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

A. Influent Monitoring

1. Influent monitoring is required to collect data on the characteristics of the wastewater and to assess compliance with effluent limitations (e.g., BOD_5 and TSS reduction requirements). The monitoring frequency for flow (continuous) has been retained from Order R5-2008-0006-01. The monitoring frequencies for BOD_5 and TSS have been reduced from 5 days /week to 1 day/week to be consistent with other similar POTWs, and EC (1/week) has been retained from Order R5-2008-0006-01.

B. Effluent Monitoring

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

2. Effluent monitoring frequencies and sample types for flow (continuous), dissolved oxygen (1/day), copper (1/month), pH (1/day), mercury (1/month), ammonia (1/week), total residual chlorine (continuous), chloride (1/month), oil and grease (1/month), sulfate (1/month), temperature (1/day), total coliform organisms (5 days/week), and turbidity (continuous) have been retained from Order R5-2008-0006-01 to determine compliance with effluent limitations or the Facility's impact on the beneficial uses of the receiving water.

3. The effluent monitoring frequency for EC was decreased from the previous permit (daily to weekly) because the Discharger will be addressing compliance with EC through the chloride compliance strategy that is currently being developed and implemented by the Discharger. Effluent monitoring frequency for BOD_5 and TSS was decreased from the previous permit (5 days/Week to 2/Week) because the data collected between March 2008 and February 2012 is consistently below the required limits and the monitoring frequency is consistent with other similar POTWs. Effluent monitoring frequency for total nitrate nitrogen was decreased from the previous permit (1/week to 1/quarter) because MUN is not a beneficial use of Marsh Creek, and there are no water quality criteria available for protection of aquatic life for total nitrate nitrogen. Effluent monitoring frequency for standard minerals was decreased from the previous permit (1/year to quarterly/3rd or 4th year) because the data collected between March 2008 and February 2012 is consistently below the required limits and the monitoring frequency is consistent with other similar POTWs.

4. Monthly effluent monitoring for hardness (as $CaCO_3$) has been included in this Order to evaluate compliance with CTR hardness dependent metals.

5. Quarterly effluent monitoring for total nitrite nitrogen has been included in this Order because nitrate and nitrite are nutrients that stimulate algal growth so the concentration in the wastewater effluent are important to understanding nutrient

dynamics in the Delta. Additionally, DPH includes a primary MCL for nitrate plus nitrite (total as N). Although MUN is not a beneficial use of Marsh Creek, downstream drinking water agencies are concerned about possible drinking water impacts downstream in the Delta. This data will allow a more complete assessment of the impacts.

6. Monthly effluent monitoring for Settleable Solids has been removed because there are no effluent limitations for Settleable Solids. Additionally, the tertiary treatment process provides a consistent and high level of treatment with respect to Settleable Solids. Furthermore, automated monitoring of similar parameters (e.g., turbidy) is designed to control treatment processes and detect potential release of inadequately treated or disinfected effluent provides information to support the Discharger's operations and protection of receiving water quality.

7. Monthly effluent monitoring data collected over the existing permit term for aluminum, iron, 4,4'-DDT, alpha endosulfan, gamma-BHC, selenium, and TDS did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for these parameters will only be required as part of the Effluent and Receiving Water Characterization Study (1/quarter during the third year of this permit term). See the Monitoring and Reporting Program (Attachment E) of this Order and Attachment I for the list of priority pollutants and other constituents of concern.

8. Based on the data collected during the term of Order R5-2008-0006-01 for bis(2-ethylhexyl)phthalate, and dibromochloromethane it was determined that these constituents have reasonable potential to impact on the beneficial uses of the receiving water. Thus, the frequencies of monitoring for these constituents have increased. See the Monitoring and Reporting Program (Attachment E) of this Order.

9. Based on the data collected during the term of Order R5-2008-0006-01 for dichlorobromomethane the results did not exceeded the CTR criterion. However, because chlorine is used for disinfection and the discharge contains dichlorobromomethane near the CTR criterion of 46 µg/L, it was determined that increased monitoring for dichlorobromomethane is warranted to evaluate reasonable potential for the next permit renewal. Thus, the frequencies of monitoring for dichlorobromomethane have increased. See the Monitoring and Reporting Program (Attachment E) of this Order.

10. An effluent and receiving water monitoring study is required to ensure adequate information is available for the next permit renewal. During the third or fourth year of this permit term, the Discharger shall conduct quarterly monitoring of the effluent at EFF-001 and of the receiving water at RSW-001 for all priority pollutants and other constituents of concern as described in Attachment I.

11. Chlorpyrifos and Diazinon. This Order requires that pollutants be analyzed using the analytical methods described in 40 CFR Part 136 or an EPA approved Alternate Testing Procedure. However, where no methods are specified for a

given pollutant that meets a specific reporting limit or method performance standard, an alternate method can be approved by the Central Valley Water Board. This Order requires either EPA 8141A, EPA 625M, or EPA 8270 C for chlorpyrifos and diazinon. These alternate analytical methods are necessary to determine compliance with the effluent limits for these constituents. Basin Plan water quality objectives for chlorpyrifos and diazinon are 0.015 µg/L and 0.1 µg/L, respectively (as a 4-day average. See Attachment F, Section IV.C.3.b.i.(a) for more information). Therefore, chlorpyrifos and diazinon must be analyzed using analytical methods that have a lower MDL than the Basin Plan water quality objectives.

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

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

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Monthly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity. This is consistent with previous Order R5-2008-0006-01.

2. **Chronic Toxicity.** Quarterly chronic whole effluent toxicity testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective. This is consistent with previous Order R5-2008-0006-01.

D. Receiving Water Monitoring

1. Surface Water

a. Weekly receiving water monitoring frequencies and sample types for dissolved oxygen, electrical conductivity, pH, temperature, turbidity, hardness, and quarterly during the third year for priority pollutants have been retained from Order R5-2008-0006-01 to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.

2. Groundwater

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

b. Monitoring of the groundwater must be conducted to determine if the discharge has caused an increase in constituent concentrations, when compared to background. The monitoring must, at a minimum, require a complete assessment of groundwater impacts including the vertical and lateral extent of degradation, an assessment of all wastewater-related constituents which may have migrated to groundwater, an analysis of whether additional or different methods of treatment or control of the discharge are necessary to provide best practicable treatment or control to comply with Resolution No. 68-16. Economic analysis is only one of many factors considered in determining best practicable treatment or control. If monitoring indicates that the discharge has incrementally increased constituent concentrations in groundwater above background, this permit may be reopened and modified. Until groundwater monitoring is sufficient, this Order contains Groundwater Limitations that allow groundwater quality to be degraded for certain constituents when compared to

background groundwater quality, but not to exceed water quality objectives. If groundwater quality has been degraded by the discharge, the incremental change in pollutant concentration (when compared with background) may not be increased. If groundwater quality has been or may be degraded by the discharge, this Order may be reopened and specific numeric limitations established consistent with Resolution No. 68-16 and the Basin Plan.

c. This Order requires the Discharger to continue groundwater monitoring and includes a regular schedule of groundwater monitoring in the attached Monitoring and Reporting Program. The groundwater monitoring reports are necessary to evaluate impacts to waters of the State to assure protection of beneficial uses and compliance with Central Valley Water Board plans and policies, including Resolution No. 68-16. Evidence in the record includes effluent monitoring data that indicates the presence of constituents that may degrade groundwater and surface water. The Discharger shall monitor groundwater in accordance with the MRP until the Executive Officer verifies compliance with Special Provisions VI.C.7.c.vi and approves the request to cease groundwater monitoring and reduce land discharge monitoring (See Fact Sheet, Section VII.7.c.).

E. Other Monitoring Requirements

1. Biosolids Monitoring

Biosolids monitoring is required to ensure compliance with the biosolids disposal requirements contained in the Special Provision contained in section VI.C.5.b. of this Order. Biosolids disposal requirements are imposed pursuant to 40 CFR Part 503 to protect public health and prevent groundwater degradation.

2. Water Supply Monitoring

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

3. Effluent Monitoring for Discharges to Emergency Storage Ponds

Monitoring of discharges to the Emergency Storage Ponds is required to evaluate compliance with land discharge specifications. Monitoring requirements for flow, BOD_5, pH, EC, settleable solids, and TDS have been carried over from Order R5-2008-0006-01. Monitoring requirements for title 22 metals and standard minerals are not included in this Order as a result of the source control strategies for ground water described in the compliance schedule section. The Discharger shall continue emergency storage ponds monitoring in accordance with the MRP until the Executive Officer verifies compliance with Special Provisions VI.C.7.c.vi and approves the request to cease groundwater monitoring and reduce land discharge monitoring (See Fact Sheet, Section VII.7.c.).

4. Land Discharge Monitoring

Land discharge monitoring is required to ensure that the discharge to the land disposal area complies with the Storage Pond and Land Disposal Operating Requirements in section VI.C.4 of this Order. Monitoring frequencies of 1/event and sample types for flow, BOD_5, pH, EC, settleable solids, and TDS have been retained from Order No R5-2008-0006-01. The Discharger shall continue the land discharge monitoring in accordance with the MRP until the Executive Officer verifies compliance with Special Provisions VI.C.7.c.vi and approves the request to cease groundwater monitoring and reduce land discharge monitoring (See Fact Sheet, Section VII.7.c.).

5. Effluent and Receiving Water Characterization Study.

An effluent and receiving water monitoring study is required to ensure adequate information is available for the next permit renewal. During the third or fourth year of this permit term, the Discharger is required to conduct quarterly monitoring of the effluent at EFF-001 and of the receiving water at RSW-001 for all priority pollutants and other constituents of concern as described in Attachment I.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

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

40 CFR 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. 40 CFR 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 CFR 123.25, this Order omits federal conditions that address enforcement authority specified in 40 CFR 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

a. Mercury. The Delta Mercury Control Program was designed to proceed in two phases. Phase 1 spans a period of approximately nine years. Phase 1 emphasizes studies and pilot projects to develop and evaluate management

practices to control methylmercury. At the end of Phase 1, the Central Valley Water Board will conduct a Phase 1 Delta Mercury Control Program Review that considers: modification of methylmercury goals, objectives, allocations and/or the Final Compliance Date; implementation of management practices and schedules for methylmercury controls; and adoption of a mercury offset program for dischargers who cannot meet their load and waste load allocations after implementing all reasonable load reduction strategies. The fish tissue objectives, the linkage analysis between objectives and sources, and the attainability of the allocations will be re-evaluated based on the findings of Phase 1 control studies and other information. The linkage analysis, fish tissue objectives, allocations, and time schedules may be adjusted at the end of Phase 1, or subsequent program reviews, as appropriate. Therefore, this Order may be reopened to address changes to the Delta Mercury Control Program.

b. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a Toxicity Reduction Evaluation (TRE). This Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if a numeric chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened to include a numeric chronic toxicity limitation based on that objective.

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

d. **Chloride Compliance Schedule (Special Provisions VI.C.1).** This Order includes a compliance schedule for chloride with final compliance required by 1 January 2018. The compliance schedule requires submittal of a Compliance Alternative Investigation report to identify the preferred compliance alternative(s) and implementation schedule by 31 December 2013. The implementation of subsequent tasks will depend on the selected preferred compliance alternative(s). Therefore, this reopener provision allows the Central Valley Water Board to reopen this Order for addition and/or modification of the specific tasks and due dates for the chloride compliance schedule (Section VI.C.7.b.i.).

e. **Temperature.** This Order requires the Discharger to complete and submit a report on the results of the supplemental thermal study to evaluate potential temperature effects about one mile upstream from the confluence of Marsh Creek and Big Break area. The studies shall be completed and submitted to

the Central Valley Water Board as specified in the Fact Sheet section VII.B.2.c of this Order. This reopener allows the Central Valley Water Board to reopen this Order for revision of the receiving and effluent water limitations for temperature based on a review of the supplemental thermal study results. Additionally, any request for an increased in the design flow will required further evaluation to predict the effects of final discharge volume on the temperature conditions for the for the delta smelt critical habitat in Marsh Creek will be required.

f. CV Salts. Numeric values to implement the Basin Plan's narrative chemical constituents objective for the protection of the agricultural water supply and municipal and domestic water supply beneficial uses are typically based on site specific conditions. The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. This Order may be reopened to implement the CV-SALTS initiative.

g. Biosolids Disposal Plan. This Order may be reopened for future modification or changes in biosolids operations, which ultimately may result in a change from Class B Biosolids Technology to Class A Biosolids Technology.

2. Special Studies and Additional Monitoring Requirements

a. Chronic Whole Effluent Toxicity Requirements. The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at page III-8.00)**.** Based on whole effluent chronic toxicity testing performed by the Discharger from June 2008 through February 2011, the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

This provision provides a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if 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 toxicity at 100% effluent.

Accelerated Monitoring. The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

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

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

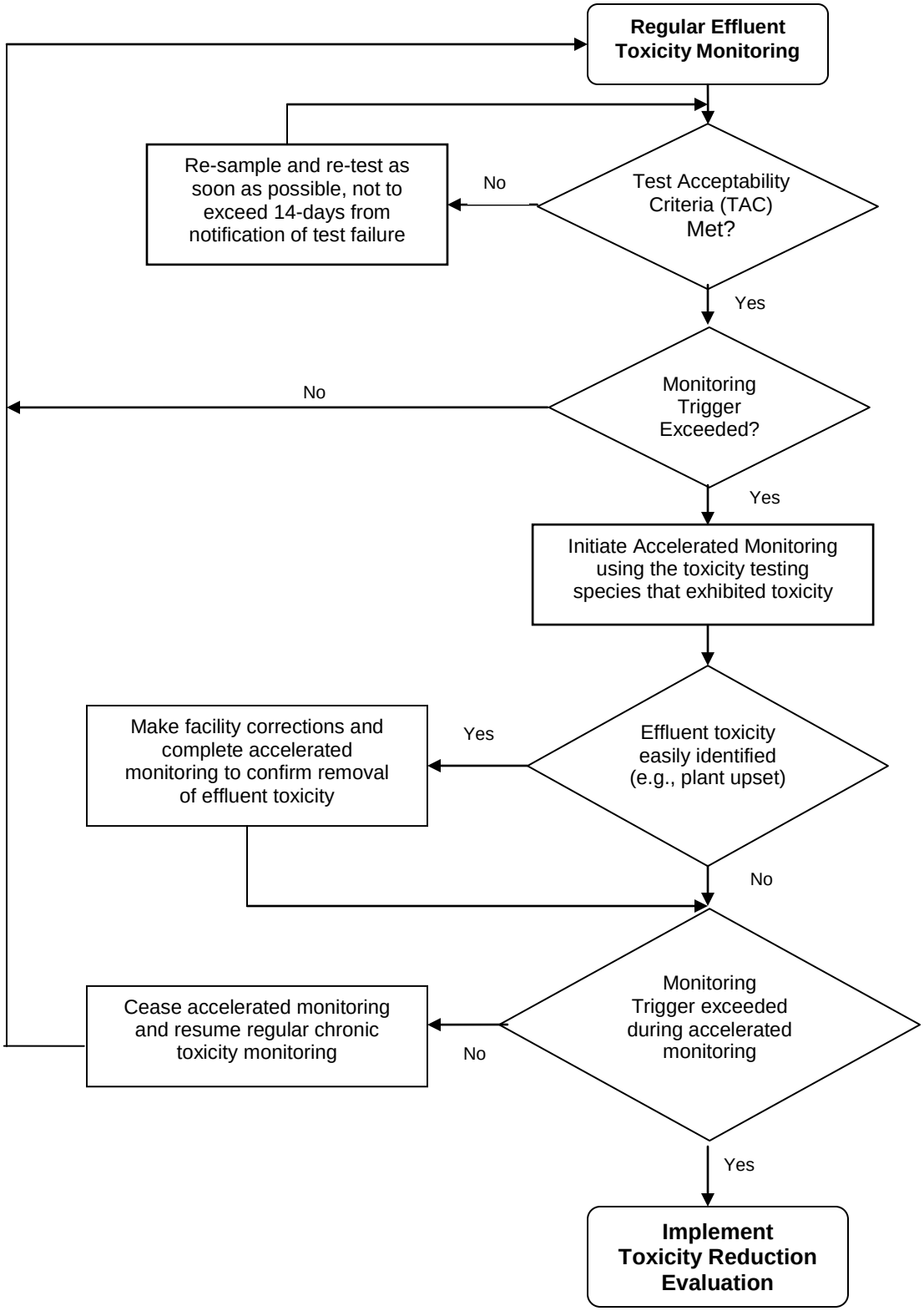
TRE Guidance. The Discharger is required to prepare a TRE Workplan in accordance with USEPA guidance. Numerous guidance documents are available, as identified below:

- Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, EPA/833-B-99/002, August 1999.
- Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs), EPA/600/2-88/070, April 1989.
- Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, Second Edition, EPA 600/6-91/003, February 1991.
- Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I, EPA/600/6-91/005F, May 1992.
- Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA/600/R-92/080, September 1993.
- Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA 600/R-92/081, September 1993.
- 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-5
WET Accelerated Monitoring Flow Chart



b. Phase 1 Methylmercury Control Study. The Basin Plan's Delta Mercury Control Program requires NPDES dischargers, working with other stakeholders, to conduct methylmercury control studies (Control Studies) to evaluate existing control methods and, as needed, develop additional control methods that could be implemented to achieve their methylmercury load and waste load allocations. Control Studies can be developed through a stakeholder group approach or other collaborative mechanism, or by individual dischargers. By letter dated 16 April 2012, the Discharger agreed to participate in the Central Valley Clean Water Association (CVCWA) Coordinated Methylmercury Control Study (Study).

The Central Valley Water Board will use the Phase 1 Control Studies' results and other information to consider amendments to the Delta Mercury Control Program during the Phase 1 Delta Mercury Control Program Review. The objective of the Control Studies is to evaluate existing control methods and, as needed, develop additional control methods that could be implemented to achieve the methylmercury load and waste load allocation. In accordance with the Delta Mercury Control Plan, a work plan was submitted on **20 April 2013** by the Central Valley Clean Water Association on behalf of a group of POTWs in the region. The Central Valley Water Board commits to supporting an Adaptive Management approach. The adaptive management approach includes the formation of a Stakeholder Group(s) and a Technical Advisory Committee (TAC).

The study work plan will be reviewed and approval by the TAC and subsequently approved by the Executive Officer. The Discharge shall immediately implement the work plan upon Executive Officer approval, and a progress report shall be submitted by **20 October 2015.**

The Study shall evaluate the feasibility of reducing sources more than the minimum amount needed to achieve the methylmercury allocation. The Study also may include an evaluation of innovative actions, watershed approaches, offsets projects, and other short and long-term actions that result in reducing inorganic (total) mercury and methylmercury to address the accumulation of methylmercury in fish tissue and to reduce methylmercury exposure. The Study may evaluate the effectiveness of using inorganic (total) mercury controls to control methylmercury discharges.

The Study shall include a description of methylmercury and/or inorganic (total) mercury management practices identified in Phase 1; an evaluation of the effectiveness, and costs, potential environmental effects, and overall feasibility of the control actions. The Study shall also include proposed implementation plans and schedules to comply with methylmercury allocations as soon as possible. The Study shall be submitted by **20 October 2018.**

The Executive Officer may authorize extending the Study due date. The Executive Officer may, after public notice, extend the due date up to two years if the Discharger demonstrates it is making significant progress towards

developing, implementing and/or completing the Study and reasonable attempts have been made to secure funding for the Study, but the Discharger has experienced severe budget shortfalls.

c. **Temperature Study.** On January 2010 the Discharger submitted a Thermal Plan Exception request that was reviewed by the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) and the United States Fish and Wildlife Service (USFWS). Approval of the Thermal Plan exception was provided by NMFS on 19 August 2011 and USFWS on 31 January 2013. USFWS recommended that for future permit renewals additional temperature monitoring and/or analysis would be useful to more thoroughly evaluate the thermal effects of the discharge to Delta Smelt in lower Marsh Creek near Big Break, especially if the Discharger increases its discharge flow. To improve the evaluation of thermal impacts to Delta Smelt, this Order requires the Discharger to prepare and submit a study to evaluate potential temperature effects of the discharge in Marsh Creek approximately one mile upstream from the confluence of Marsh Creek and Big Break. A workplan and schedule is required by **1 April 2014**. The Discharger shall consult with USFWS staff during the preparation of the workplan to ensure the study will provide the necessary information. A draft study is due by **31 May 2017** for review by Central Valley Water Board staff, and the final study is due by **30 November 2017**.

3. Best Management Practices and Pollution Prevention

a. **Pollution Prevention Plan for Mercury.** The Basin Plan's Delta Mercury Control Plan requires NPDES permitted facilities to submit and implement pollutant minimization programs for mercury. The Discharger submitted a pollution prevention plan for mercury dated 17 July 2012. The Discharger shall update and implement a pollution prevention plan for mercury in accordance with Water Code section 13263.3(d)(3), per the compliance schedule in this Order for methylmercury (Section VI.C.7.a). The minimum requirements for the pollution prevention plan are outlined in the Fact Sheet (Attachment F section VII.B.3.d). Progress reports shall be submitted annually in accordance with the Monitoring and Reporting Program *(Attachment E section X.D.1.).* The progress reports shall discuss the effectiveness of the PPP in the reduction of mercury in the discharge, include a summary of mercury and methylmercury monitoring results, and discuss updates to the PPP.

b. **Mercury Exposure Reduction Program.** The Basin Plan's Delta Mercury Control Program requires dischargers to participate in a mercury Exposure Reduction Program. The Exposure Reduction Program is needed to address public health impacts of mercury in Delta fish, including activities that reduce actual and potential exposure of and mitigate health impacts to those people and communities most likely to be affected by mercury in Delta caught fish, such as subsistence fishers and their families.

The Exposure Reduction Program must include elements directed toward:

- Developing and implementing community-driven activities to reduce mercury exposure;
- Raising awareness of fish contamination issues among people and communities most likely affected by mercury in Delta-caught fish such as subsistence fishers and their families;
- Integrating community-based organizations that serve Delta fish consumers, Delta fish consumers, tribes, and public health agencies in the design and implementation of an exposure reduction program;
- Identifying resources, as needed, for community-based organizations and tribes to participate in the Program;
- Utilizing and expanding upon existing programs and materials or activities in place to reduce mercury, and as needed, create new materials or activities; and
- Developing measures for program effectiveness.

This Order requires the Discharger participate in a mercury Exposure Reduction Program in accordance with the Delta Mercury Control Program. The Discharger, either individually or collectively with other Delta dischargers, shall submit an exposure reduction work plan for Executive Officer approval by **20 October 2013**. The objective of the Exposure Reduction Program is to reduce mercury exposure of Delta fish consumers most likely affected by mercury. The work plan shall address the Exposure Reduction Program objective, elements, and the Discharger's coordination with other stakeholders. The Discharger shall integrate or, at minimum, provide good-faith opportunities for integration of community-based organizations, tribes, and consumers of Delta fish into planning, decision making, and implementation of exposure reduction activities. **The Discharger shall implement the work plan within six months of Executive Officer Approval of the work plan.**

c. Salinity Source Control Program. The Discharger shall continue to implement the Salinity Source Control Program and update as necessary. Annual progress reports shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

d. Water Code Section 13263.3(d)(3) Pollution Prevention Plans. A pollution prevention plans for mercury and salinity are required in this Order per Water Code section 13263.3(d)(1)(C). The minimum requirements for the pollution prevention plans include the following:

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

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

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

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

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

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

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

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

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

4. Construction, Operation, and Maintenance Specifications

a. Title 22, or Equivalent, Disinfection Requirements. To protect public health and safety, wastewater discharged to Marsh Creek shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the Department of Public Health (DPH) reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent.

b. Turbidity Operational Requirements. Turbidity specifications have been included in this Order as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. 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. These operational turbidity specifications are necessary to assess compliance with the DPH recommended Title 22 disinfection criteria, or equivalent.

5. Special Provisions for Municipal Facilities (POTWs Only)

a. Pretreatment Requirements.

i. The federal CWA section 307(b), and federal regulations, 40 CFR Part 403, require publicly owned treatment works to develop an acceptable industrial pretreatment program. A pretreatment program is required to prevent the introduction of pollutants, which will interfere with treatment plant operations or sludge disposal, and prevent pass through of pollutants that exceed water quality objectives, standards or permit limitations. Pretreatment requirements are imposed pursuant to 40 CFR Part 403.

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

b. Collection System. The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order No. 2006-0003-DWQ (General Order) on 2 May 2006. The General Order requires public agencies that own or operate sanitary sewer systems with greater than one mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order requires agencies to develop sanitary sewer management plans (SSMPs) and report all sanitary sewer overflows (SSOs), among other requirements and prohibitions.

Furthermore, the General Order contains requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows. Inasmuch that the Discharger's collection system is part of the system that is subject to this Order, certain standard provisions are applicable as specified in Provisions, section VI.C.5. For instance, the 24-hour reporting requirements in this Order are not included in the General Order. The Discharger must comply with both the General Order and this Order. The Discharger and public agencies that are discharging wastewater into the facility were required to obtain enrollment for regulation under the General Order by 1 December 2006.

6. Other Special Provisions – Not Applicable

7. Compliance Schedules

a. Compliance Schedule for Methylmercury. The State Water Board adopted the Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits (Resolution 2008-0025), which is the governing Policy for compliance schedules in NPDES permits (hereafter "Compliance Schedule Policy"). In accordance with the Compliance Schedule Policy and 40 C.F.R. § 122.47, a Discharger who seeks a compliance schedule must demonstrate additional time is necessary to implement actions to comply with a more stringent permit limitation. The Discharger must provide the following documentation as part of the application requirements:

i. Diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and the results of those efforts;

ii. Source control efforts are currently underway or completed, including compliance with any pollution prevention programs that have established;

iii. A proposed schedule for additional source control measures or waste treatment;

iv. Data demonstrating current treatment facility performance to compare against existing permit effluent limits, as necessary to determine which is the more stringent interim, permit effluent limit to apply if a schedule of compliance is granted;

v. The highest discharge quality that can reasonably be achieved until final compliance is attained;

vi. The proposed compliance schedule is as short as possible, given the type of facilities being constructed or programs being implemented, and industry experience with the time typically required to construct similar facilities or implement similar programs; and

vii. Additional information and analyses to be determined by the Regional Water Board on a case-by-case basis.

Based on information submitted with the Report of Waste Discharge, self-monitoring reports, pollution prevention plans, and other miscellaneous submittals, it has been demonstrated to the satisfaction of the Central Valley Water Board that the Discharger needs time to implement actions to comply with the new effluent limitations for methylmercury.

The Delta Mercury Control Program is composed of two phases. Phase 1 spans from 20 October 2011 through the Phase I Delta Mercury Control Program Review, expected to conclude by October 2020. Phase 1 emphasizes

studies and pilot projects to develop and evaluate management practices to control methylmercury. Phase 1 includes provisions for: implementing pollution minimization programs and interim mass limits for inorganic (total) mercury point sources in the Delta and Yolo Bypass; controlling sediment-bound mercury in the Delta and Yolo Bypass that may become methylated in agricultural lands, wetland, and open-water habitats; and reducing total mercury loading to San Francisco Bay, as required by the Water Quality Control Plan for the San Francisco Bay Basin.

At the end of Phase 1, the Central Valley Water Board will conduct a Phase 1 Delta Mercury Control Program Review that considers: modification of methylmercury goals, objectives, allocations and/or the Final Compliance Date; implementation of management practices and schedules for methylmercury controls; and adoption of a mercury offset program for dischargers who cannot meet their load and waste load allocations after implementing all reasonable load reduction strategies. The review also will consider other potential public and environmental benefits and negative impacts (e.g., habitat restoration, flood protection, water supply, fish consumption) of attaining the allocations. The fish tissue objectives, the linkage analysis between objectives and sources, and the attainability of the allocations will be re-evaluated based on the findings of Phase 1 control studies and other information. The linkage analysis, fish tissue objectives, allocations, and time schedules shall be adjusted at the end of Phase 1, or subsequent program reviews, if appropriate.

Phase 2 begins after the Phase 1 Delta Mercury Control Program Review or by 20 October 2022, whichever occurs first, and ends in 2030. During Phase 2, dischargers shall implement methylmercury control programs and continue inorganic (total) mercury reduction programs. Compliance monitoring and implementation of upstream control programs also shall occur in Phase 2. Any compliance schedule contained in an NPDES permit must be "…*an enforceable sequence of actions or operations leading to compliance with an effluent limitation…*" per the definition of a compliance schedule in CWA Section 502(17). *See also* 40 C.F.R. § 122.2 (definition of schedule of compliance). The compliance schedule for methylmercury meets these requirements.

Federal Regulations at 40 C.F.R. § 122.47(a)(1) requires that, "*Any schedules of compliance under this section shall require compliance as soon as possible*…" The Compliance Schedule Policy also requires that compliance schedules are as short as possible and may not exceed 10 years, except when *"…a permit limitation that implements or is consistent with the waste load allocations specified in a TMDL that is established through a Basin Plan amendment, provided that the TMDL implementation plan contains a compliance schedule or implementation schedule.*" As discussed above, the Basin Plan's Delta Mercury Control Program includes compliance schedule provisions and allows compliance with the waste load allocations for methylmercury by 2030. Until the Phase 1 Control Studies are complete and the Central Valley Water Board conducts the Phase 1 Delta Mercury Control Program Review, it is not possible to determine the appropriate compliance

date for the Discharger that is as soon as possible. Therefore, this Order establishes a compliance schedule for the new, final, WQBELs for methylmercury with full compliance required by **31 December 2030**, which is consistent with the Final Compliance Date of the TMDL. At completion of the Phase 1 Delta Mercury Control Program Review, the final compliance date for this compliance schedule will be re-evaluated to ensure compliance is required as soon as possible. Considering the available information, the compliance schedule is as short as possible in accordance with federal regulations and the Compliance Schedule Policy.

b. Compliance Schedule for Final Effluent Limitations for Chloride.

i. In accordance with the SIP and the Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits (Resolution 2008 0025), which is the governing Policy for compliance schedules in NPDES permits (hereafter "Compliance Schedule Policy"), the Discharger submitted an Infeasibility Analysis and Time Schedule Justification (May 2012) describing feasible alternatives and the process for evaluating and selecting the most appropriate alternative to comply with the final effluent limitations. As part of the Compliance Strategy Work Plan described in the Infeasibility Analysis the Discharger is proposing to: 1) investigate water supply control options; 2) investigate regulatory feasibility and cost effective alternative disposal options; and 3) develop and implement a control program for customers to minimize the use of Self-Regenerating Water Softeners. The compliance schedule justification included all items specified in Paragraph 3, items (a) through (d), of Section 2.1 of the SIP and Item 4 of the Compliance Schedule Policy. This Order establishes a compliance schedule for the final WQBELs for these constituents. Full compliance with the chloride WQBELs is required by **1 January 2018**. The justification in the Infeasibility Analysis provides for a time schedule for the Discharger to comply with the new limitation for chloride limitation in five years from the effective date of this Order. Allowance of an additional compliance schedule beyond the dates specified above may be granted in a subsequent enforcement order or within the permit as appropriate, as the Central Valley Water Board deems necessary.

ii. Since the adoption of WDR Order R5 2008-0006 the discharger implemented a pollution prevention plan for chloride (March 2011) that identified possible alternatives to control chloride in order to comply with the final effluent limitations. The Discharger submitted an infeasibility analysis (June 2012) that included a Compliance Strategy Work Plan to: 1) investigate water supply control options; 2) investigate regulatory feasibility and cost effective alternative disposal options; and 3) develop and implement a control program for customers to minimize the use of Self Regenerating Water Softeners. Based on the results of pollution prevention and the identified compliance strategy, more time is needed to comply with the final limits. The infeasibility study adequately demonstrated that the Discharger cannot immediately comply with the final effluent limits for

chloride, and included a request and justification for an extension of the compliance schedule for chloride that met the requirements of the Compliance Schedule Policy. This Order establishes a compliance schedule for the final WQBELs for chloride. Full compliance with the chloride WQBELs is required by 1 January 2018. Federal Regulations at 40 C.F.R. § 122.47(a)(1) requires that, "Any schedules of compliance under this section shall require compliance as soon as possible…" The Compliance Schedule Policy also requires that compliance schedules are as short as possible and may not exceed 10 years. The final compliance date is as soon as possible in accordance with federal regulations and the Compliance Schedule Policy.

iii. Any compliance schedule contained in an NPDES permit must be "…*an enforceable sequence of actions or operations leading to compliance with an effluent limitation…*" per the definition of a compliance schedule in CWA Section 502(17). *See also* 40 C.F.R. § 122.2 (definition of schedule of compliance). The compliance schedule for chloride meets these requirements. The compliance schedule requires submittal of the Compliance Alternative Investigation report by 31 December 2013, to identify the preferred compliance alternative(s) and preliminary implementation schedule. Upon identification of the selected alternative(s), by 30 June 2014, the Discharger will develop an agenda item for consideration by the City Council of the selected compliance alternative(s) and schedule. The Discharger shall then implement the selected project alternative and submit a report by 1 October 2014. The compliance schedule also requires development of a Rate Study to identify funding alternatives and sources by1 June 2015 and a Project Funding with a financing plan for the selected compliance project(s) by 1 December 2016. The compliance schedule also requires submit a final implementation schedule by 1 February 2016, and requires the Discharger implement expanded recycled water usage by 31 December 2016. Specific construction milestones cannot be established at this time, because the compliance alternative(s) has not been selected. Until the Discharger identifies the selected compliance alternative(s), some specific milestone tasks cannot be identified. This Order includes a reopener provision that allows the Central Valley Water Board to reopen the permit for addition and/or modification of the specific tasks and due dates for the chloride compliance schedule upon completion of the Compliance Alternative Investigation report.

c. Compliance Schedule for Groundwater Limitations

The Facility includes two Emergency Storage Ponds (Pond Nos. 006 and 008). Prior to the Facility upgrading to Title 22, or equivalent, tertiary filtration, the Emergency Storage Ponds were used as a filtration system prior to discharge to Marsh Creek. The ponds have sandy bottoms that percolate rapidly. The Discharger used extraction wells that pumped the groundwater after filtering through the soil and discharged to Marsh Creek. Since upgrading the Facility,

the Discharger has abandoned the extraction wells and discharges directly to Marsh Creek. The ponds are now only used for emergencies and during maintenance when compliance with the final effluent limitations is a concern.

The Discharger sends secondary treated wastewater to the ponds approximately twice a month. Based on self-monitoring reports, the Facility averages approximately 6 million gallons per year discharged to the ponds. Due to the change in use of the ponds (e.g., no longer extracting affected groundwater) there are concerns the discharge is violating the groundwater limitations. The Discharger is in the process of evaluating the cost-effective project to comply with the groundwater limitations. The preliminary project includes lining of Pond No. 006, and abandoning Pond No 8. Pond No. 7 is already disconnected from the system and is being used as a new solid waste transfer station. This Order includes a compliance schedule for implementation of a project to fully comply with the groundwater limitations.

The Compliance Schedule requires the Discharger to submit a report confirming Pond 6 lining and decommissioning of Ponds 7 and 8. The Discharger shall maintain compliance with the land discharge limitations for the discharge of effluent into Emergency Storage Pond Nos. 006 and 008, with compliance measured at Monitoring Location No. LND-001, as described in Section IV.B (Table 8) and groundwater monitoring requirements until the Executive Officer verifies compliance with Special Provisions VI.C.7.c.vi and approves the request to cease groundwater monitoring and reduce land discharge monitoring.

VIII. PUBLIC PARTICIPATION

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

A. Notification of Interested Parties

The Central Valley Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through through posting of a Notice of Public Hearing at the Facility, local City Hall, and local post office. The Notice of Public Hearing was also posted on the Central Valley Water Board’s website.

B. Written Comments

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

To be fully responded to by staff and considered by the Central Valley Water Board, written comments must be received at the Central Valley Water Board offices by 5:00 p.m. on **13 June 2013**.

C. Public Hearing

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

Date:	26 July 2013
Time:	8:30 a.m.
Location:	Regional Water Quality Control Board, Central Valley Region 11020 Sun Center Dr., Suite #200 Rancho Cordova, CA 95670

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

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

D. Waste Discharge Requirements Petitions

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

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

E. Information and Copying

The Report of Waste Discharge, related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday

through Friday. Copying of documents may be arranged through the Central Valley Water Board by calling (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 Central Valley Water Board, reference this Facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to **Dania Jimmerson** at **916-464-4742**.

ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS FOR CONSTITUENTS OF CONCERN

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Alpha-Endosulfan	µg/L	ND	ND				--	240	ND	--	No
Aluminum	µg/L	60	--	87	750	750	--	--	--	--	No
Ammonia (as N)	mg/L	0.83	--	2.1	2.1	1.5	--	--	--	--	Yes
Bis(2-ethylhexyl)phthalate	µg/L	7	ND	5.9	N/A	N/A	--	5.9	N/A	--	Yes
Dibromochloromethane	µg/L	42	ND	34	N/A	N/A	--	34	N/A	--	Yes
Chlorpyrifos	µg/L	--	--	0.1	0.025	0.015	N/A	N/A	0.1	N/A	No Data
Chloride	mg/L	442	184	398	577	356	--	--	--	--	Yes
Copper (total recoverable)	µg/L	17	20	23	26	16	--	N/A	10	--	Yes
Diazinon	µg/L			0.015	0.08	0.05	N/A	N/A	0.015	N/A	No Data
Dichlorobromomethane	µg/L	45.7	ND	46	N/A	N/A	--	46	N/A	--	No
Dissolved Oxygen	mg/L	11.9	13.3				--	--	--	--	Yes
Iron (total recoverable)	µg/L	560	--	300	N/A	N/A	N/A	N/A	300	--	No
Electrical Conductivity (EC)	umhos/cm	2280	2430	--	--	--	--	--	--	--	No
Mercury (total recoverable)	ng/L	1.85	ND	50	N/A	N/A	50	N/A	N/A	2000	No
Methylmercury	ng/L	0.134	ND				--	--	--	--	Yes
Oil and Grease	mg/L	13	--	10	N/A	N/A	--	--	--	--	No

General Note: All inorganic concentrations are given as a total recoverable.

Footnotes:

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

ATTACHMENT H – CALCULATION OF WQBELS

Parameter	Units	Most Stringent Criteria			Dilution Factors			HH Calculations			Aquatic Life Calculations									Final Effluent Limitations	
		HH	CMC	CCC	HH	CMC	CCC	ECA_{HH} = $AMEL_{HH}$	AMEL/MDEL $Multiplier_{HH}$	$MDEL_{HH}$	ECA $Multiplier_{acute}$	LTA_{acute}	ECA $Multiplier_{chronic}$	$LTA_{chronic}$	Lowest LTA	AMEL $Multiplier_{95}$	$AMEL_{AL}$	MDEL $Multiplier_{99}$	$MDEL_{AL}$	Lowest AMEL	Lowest MDEL
Ammonia Nitrogen, Total (as N)	mg/L	--	2.14	1.50	--	--	--	--	--	--	0.28	0.6	0.75	1.13	0.6	1.64	1.0	3.52	2.1	1.0	2.1
Bis (2-ethylhexyl) phthalate	µg/L	5.9	--	--	--	--	--	5.9	2.01	12	--	--	--	--	--	--	--	--	--	5.9	12
Copper, Total Recoverable	µg/L	--	26	16	--	--	--	--	--	--	0.50	12.7	0.69	11.12	11.12	1.29	14	2.01	22	14	22
Chloride	mg/L	--	577	356	--	--	--	--	--	--	--	--	--	--	--	--	344	--	398	344	398
Dibromochloromethane	µg/L	34	--	--	--	--	--	34	1.83	62	--	--	--	--	--	--	--	--	--	34	62

ATTACHMENT I – EFFLUENT AND RECEIVING WATER CHARACTERIZATION STUDY

I. Background. Sections 2.4.1 through 2.4.4 of the SIP provide minimum standards for analyses and reporting. (Copies of the SIP may be obtained from the State Water Resources Control Board, or downloaded from http://www.waterboards.ca.gov/iswp/index.html). To implement the SIP, effluent and receiving water data are needed for all priority pollutants. Effluent and receiving water pH and hardness are required to evaluate the toxicity of certain priority pollutants (such as heavy metals) where the toxicity of the constituents varies with pH and/or hardness. In addition to specific requirements of the SIP, the Central Valley Water Board is requiring the following monitoring:

A. Drinking water constituents. Constituents for which drinking water Maximum Contaminant Levels (MCLs) have been prescribed in the California Code of Regulation are included in the *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (Basin Plan). The Basin Plan defines virtually all surface waters within the Central Valley Region as having existing or potential beneficial uses for municipal and domestic supply. The Basin Plan further requires that, at a minimum, water designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the MCLs contained in the California Code of Regulations.

B. Effluent and receiving water temperature. This is both a concern for application of certain temperature-sensitive constituents, such as fluoride, and for compliance with the Basin Plan's thermal discharge requirements.

C. Effluent and receiving water hardness and pH. These are necessary because several of the CTR constituents are hardness and pH dependent.

II. Monitoring Requirements.

A. Quarterly Monitoring. Quarterly samples of priority pollutant and constituents listed in Table I-1 shall be collected from the effluent and upstream receiving water (EFF-001 and RSW-001) and analyzed. Quarterly monitoring shall be conducted for 1 year, during the third or 4th year after adoption of the permit (4 consecutive samples, evenly distributed throughout the year) and the results of such monitoring be submitted to the Central Valley Water Board 6 months following completion of the final monitoring event. Each individual monitoring event shall provide representative sample results for the effluent and upstream receiving water.

B. Concurrent Sampling. Effluent and receiving water sampling shall be performed at approximately the same time, on the same date.

C. Sample type. The effluent sample collection type and rationale shall be defined in the study work plan. All receiving water samples shall be taken as grab samples.

Table I-1. Priority Pollutants and Other Constituents of Concern

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
28	1,1-Dichloroethane	75343	1
30	1,1-Dichloroethene	75354	0.5
41	1,1,1-Trichloroethane	71556	2
42	1,1,2-Trichloroethane	79005	0.5
37	1,1,2,2-Tetrachloroethane	79345	0.5
75	1,2-Dichlorobenzene	95501	2
29	1,2-Dichloroethane	107062	0.5
	cis-1,2-Dichloroethene	156592	
31	1,2-Dichloropropane	78875	0.5
101	1,2,4-Trichlorobenzene	120821	1
76	1,3-Dichlorobenzene	541731	2
32	1,3-Dichloropropene	542756	0.5
77	1,4-Dichlorobenzene	106467	2
17	Acrolein	107028	2
18	Acrylonitrile	107131	2
19	Benzene	71432	0.5
20	Bromoform	75252	2
34	Bromomethane	74839	2
21	Carbon tetrachloride	56235	0.5
22	Chlorobenzene (mono chlorobenzene)	108907	2
24	Chloroethane	75003	2
25	2- Chloroethyl vinyl ether	110758	1
26	Chloroform	67663	2
35	Chloromethane	74873	2
23	Dibromochloromethane	124481	0.5
27	Dichlorobromomethane	75274	0.5
36	Dichloromethane	75092	2
33	Ethylbenzene	100414	2
88	Hexachlorobenzene	118741	1
89	Hexachlorobutadiene	87683	1
91	Hexachloroethane	67721	1

[1] The reporting levels required in these tables for priority pollutant constituents are established based on Section 2.4.2 and Appendix 4 of the SIP.

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
94	Naphthalene	91203	10
38	Tetrachloroethene	127184	0.5
39	Toluene	108883	2
40	trans-1,2-Dichloroethylene	156605	1
43	Trichloroethene	79016	2
44	Vinyl chloride	75014	0.5
	Methyl-tert-butyl ether (MTBE)	1634044	
	Trichlorofluoromethane	75694	
	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	
	Styrene	100425	
	Xylenes	1330207	
60	1,2-Benzanthracene	56553	5
85	1,2-Diphenylhydrazine	122667	1
45	2-Chlorophenol	95578	5
46	2,4-Dichlorophenol	120832	5
47	2,4-Dimethylphenol	105679	2
49	2,4-Dinitrophenol	51285	5
82	2,4-Dinitrotoluene	121142	5
55	2,4,6-Trichlorophenol	88062	10
83	2,6-Dinitrotoluene	606202	5
50	2-Nitrophenol	25154557	10
71	2-Chloronaphthalene	91587	10
78	3,3'-Dichlorobenzidine	91941	5
62	3,4-Benzofluoranthene	205992	10
52	4-Chloro-3-methylphenol	59507	5
48	4,6-Dinitro-2-methylphenol	534521	10
51	4-Nitrophenol	100027	10
69	4-Bromophenyl phenyl ether	101553	10
72	4-Chlorophenyl phenyl ether	7005723	5
56	Acenaphthene	83329	1
57	Acenaphthylene	208968	10
58	Anthracene	120127	10
59	Benzidine	92875	5
61	Benzo(a)pyrene (3,4-Benzopyrene)	50328	2
63	Benzo(g,h,i)perylene	191242	5
64	Benzo(k)fluoranthene	207089	2

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
65	Bis(2-chloroethoxy) methane	111911	5
66	Bis(2-chloroethyl) ether	111444	1
67	Bis(2-chloroisopropyl) ether	39638329	10
68	Bis(2-ethylhexyl) phthalate	117817	5
70	Butyl benzyl phthalate	85687	10
73	Chrysene	218019	5
81	Di-n-butylphthalate	84742	10
84	Di-n-octylphthalate	117840	10
74	Dibenzo(a,h)-anthracene	53703	0.1
79	Diethyl phthalate	84662	10
80	Dimethyl phthalate	131113	10
86	Fluoranthene	206440	10
87	Fluorene	86737	10
90	Hexachlorocyclopentadiene	77474	5
92	Indeno(1,2,3-c,d)pyrene	193395	0.05
93	Isophorone	78591	1
98	N-Nitrosodiphenylamine	86306	1
96	N-Nitrosodimethylamine	62759	5
97	N-Nitrosodi-n-propylamine	621647	5
95	Nitrobenzene	98953	10
53	Pentachlorophenol	87865	1
99	Phenanthrene	85018	5
54	Phenol	108952	1
100	Pyrene	129000	10
	Aluminum	7429905	50
1	Antimony	7440360	5
2	Arsenic	7440382	10
15	Asbestos	1332214	
	Barium	7440393	
3	Beryllium	7440417	2
4	Cadmium	7440439	0.5
5a	Chromium (III)	7440473	50
5b	Chromium (VI)	18540299	10
6	Copper	7440508	10
14	Cyanide	57125	5
	Fluoride	7782414	

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
	Iron	7439896	
7	Lead	7439921	0.5
8	Mercury	7439976	0.5
	Manganese	7439965	
	Molybdenum	7439987	
9	Nickel	7440020	50
10	Selenium	7782492	5
11	Silver	7440224	2
12	Thallium	7440280	1
	Tributyltin	688733	
13	Zinc	7440666	20
110	4,4'-DDD	72548	0.05
109	4,4'-DDE	72559	0.05
108	4,4'-DDT	50293	0.01
112	alpha-Endosulfan	959988	0.02
103	alpha-Hexachlorocyclohexane (BHC)	319846	0.01
	Alachlor	15972608	
102	Aldrin	309002	0.005
113	beta-Endosulfan	33213659	0.01
104	beta-Hexachlorocyclohexane	319857	0.005
107	Chlordane	57749	0.1
106	delta-Hexachlorocyclohexane	319868	0.005
111	Dieldrin	60571	0.01
114	Endosulfan sulfate	1031078	0.05
115	Endrin	72208	0.01
116	Endrin Aldehyde	7421934	0.01
117	Heptachlor	76448	0.01
118	Heptachlor Epoxide	1024573	0.01
105	Lindane (gamma-Hexachlorocyclohexane)	58899	0.02
119	PCB-1016	12674112	0.5
120	PCB-1221	11104282	0.5
121	PCB-1232	11141165	0.5
122	PCB-1242	53469219	0.5
123	PCB-1248	12672296	0.5
124	PCB-1254	11097691	0.5
125	PCB-1260	11096825	0.5

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
126	Toxaphene	8001352	0.5
	Atrazine	1912249	
	Bentazon	25057890	
	Carbofuran	1563662	
	2,4-D	94757	
	Dalapon	75990	
	1,2-Dibromo-3-chloropropane (DBCP)	96128	
	Di(2-ethylhexyl)adipate	103231	
	Dinoseb	88857	
	Diquat	85007	
	Endothal	145733	
	Ethylene Dibromide	106934	
	Glyphosate	1071836	
	Methoxychlor	72435	
	Molinate (Ordram)	2212671	
	Oxamyl	23135220	
	Picloram	1918021	
	Simazine (Princep)	122349	
	Thiobencarb	28249776	
16	2,3,7,8-TCDD (Dioxin)	1746016	
	2,4,5-TP (Silvex)	93765	
	Diazinon	333415	0.015 µg/L*
	Chlorpyrifos	2921882	0.014 µg/L*
	Ammonia (as N)	7664417	
	Chloride	16887006	
	Flow		
	Hardness (as $CaCO_3$)		
	Foaming Agents (MBAS)		
	Mercury, Methyl	22967926	0.06 ng/L*
	Nitrate (as N)	14797558	2,000
	Nitrite (as N)	14797650	400
	pH		0.1
	Phosphorus, Total (as P)	7723140	
	Specific conductance (EC)		
	Sulfate		500
	Sulfide (as S)		

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
	Sulfite (as SO_3)		
	Temperature		
	Total Dissolved Solids (TDS)		
	Total Kjeldahl Nitrogen (TKN)		
	Total Organic Carbon		
	Dissolved Organic Carbon		

[1] The reporting levels required in these tables for priority pollutant constituents are established based on Section 2.4.2 and Appendix 4 of the SIP.