2. Applicable Technology-Based Effluent Limitations

a. **BOD_5 and TSS.** Federal Regulations, 40 CFR, Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD_5 and TSS. Tertiary treatment is necessary to protect the beneficial uses of the receiving stream and the final effluent limitations for BOD_5 and TSS are based on the technical capability of the tertiary process. BOD_5 is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The secondary and tertiary treatment standards for BOD_5 and TSS are indicators of the effectiveness of the treatment processes. The principal design parameter for wastewater treatment plants is the daily BOD_5 and TSS loading rates and the corresponding removal rate of the system. In applying 40 CFR Part 133 for weekly and monthly average BOD_5 and TSS limitations, the application of tertiary treatment processes results in the ability to achieve lower levels for BOD_5 and TSS than the secondary standards currently prescribed; the 30-day average BOD_5 and TSS limitations have been revised to 10 mg/L, which is technically based on the capability of a tertiary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD_5 and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities. See Table F-3 for final technology-based effluent limitations required by this Order. In addition, 40 CFR 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. If 85 percent removal of BOD_5 and TSS must be achieved by a secondary treatment plant, it must also be achieved by a tertiary (i.e., treatment beyond secondary level) treatment plant. This Order contains a limitation requiring an average of 85 percent removal of BOD_5 and TSS over each calendar month.

   In addition, 40 CFR Part 133 also requires a pH effluent limitation range of 6.0 – 9.0 s.u.

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

c. **Flow.** The Facility was designed to provide the equivalent to a tertiary level of treatment for up to a design flow of 0.69 mgd. Therefore, this Order contains an Average Daily Discharge Flow effluent limit of 0.69 mgd.

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

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
BOD 5-day @ 20°C	mg/L	10	15	20	--	--
	lbs/day[1]	57.55	86	115.1	--	--
pH	s.u.	--	--	--	6.0	9.0
Total Suspended Solids	mg/L	10	15	20	--	--
	lbs/day[1]	57.55	86	115.1	--	--

[1] Based on an average dry weather flow of 0.69 mgd.

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

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

As specified in section 122.44(d)(1)(i), permits are required to include WQBELs for pollutants (including toxicity) that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an in-stream excursion above any state water quality standard. The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the CTR and NTR.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

a. **Receiving Water.** The receiving stream is Deer Creek, which is tributary to the Yuba River below Englebright Dam. The applicable beneficial uses of Deer Creek are described above in Attachment F, Section III.C.1.

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

Effluent limitations for the discharge must be set to protect the beneficial uses of the receiving water for all discharge conditions. In the absence of the option of including condition-dependent, "floating" effluent limitations that are reflective of actual hardness conditions at the time of discharge, effluent limitations must be

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

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

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

Where:

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

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

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

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

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

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

For those contaminants where the regulatory criteria exhibit a concave downward relationship as a function of hardness, use of the lowest recorded effluent hardness for establishment of water quality objectives is fully protective of all beneficial uses regardless of whether the effluent or receiving water hardness is higher. Use of the lowest recorded effluent hardness is also protective under all possible mixing conditions between the effluent and the receiving water (i.e., from high dilution to no dilution). Therefore, for cadmium (chronic), chromium (III), copper, nickel, and zinc, the reasonable worst-case ambient hardness can be estimated by using the lowest effluent hardness. The water quality criteria for these metals were calculated for this Order using Equation 1 and a reported minimum effluent hardness of 21 mg/L as CaCO3, based on 69 samples obtained by the Discharger between May 2002 and December 2006.

c. **Assimilative Capacity/Mixing Zone.** Based on the available information, the worst-case dilution is assumed to be zero to provide protection for the receiving water beneficial uses. The impact of assuming zero assimilative capacity within the receiving water is that discharge limitations are end-of-pipe limits with no allowance for dilution within the receiving water

3. Determining the Need for WQBELs

a. CWA section 301 (b)(1) requires NPDES permits to include effluent limitations that achieve technology-based standards and any more stringent limitations necessary to meet water quality standards. Water quality standards include Regional Water Board Basin Plan beneficial uses and narrative and numeric water quality objectives, State Water Board-adopted standards, and federal standards, including the CTR and NTR. The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, and tastes and odors. The narrative toxicity objective states: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00.) With regards to the narrative chemical constituents objective, the Basin Plan states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, "*...water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)*" in Title 22 of CCR. The narrative tastes and odors objective states: "*Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.*"

b. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies,

and as directed by monitoring and reporting programs, the Regional Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for ammonia, copper, zinc, cyanide, carbon tetrachloride, trihalomethanes, and dichlorobromomethane. Water quality-based effluent limitations (WQBELs) for these constituents are included in this Order. A summary of the reasonable potential analysis (RPA) is provided in Table F-5, and a detailed discussion of the RPA for each constituent is provided below.

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

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

e. Ammonia. Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. The Discharger 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 would violate the Basin Plan narrative toxicity objective. Applying 40 CFR section122.44(d)(1)(vi)(B), it is appropriate to use USEPA's Ambient National Water Quality Criteria for the Protection of Freshwater Aquatic Life for ammonia, which was developed to be protective of aquatic organisms.

USEPA's *Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life*, for total ammonia, recommends acute (1-hour average; criteria maximum concentration) standards based on pH and chronic (30-day average, criteria continuous concentration) standards based on pH and temperature. It also recommends a maximum four-day average concentration of 2.5 times the criteria continuous concentration. USEPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature. Because the Deer Creek has a beneficial use of cold freshwater

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

habitat and the presence of salmonids (i.e. trout) is well-documented, therefore, the recommended criteria for waters where salmonids are present were used. USEPA's recommended criteria are show below:

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

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

where T is in degrees Celsius

The previous Order contained "floating" effluent limitations for ammonia. In the absence of the option of including condition-dependant, "floating" effluent limitations, effluent limitations must be set using a reasonable worst-case condition in order to protect beneficial uses.

The maximum permitted effluent pH is 8.0. The Basin Plan objective for pH in the receiving stream is 6.5 to 8.5. In their comments to the proposed permit, the Discharger requested a maximum permitted effluent pH of 8.0. In order to protect against the worst-case short-term exposure of an organism, a pH value of 7.5 was used to derive the acute criterion. The resulting acute criterion is 5.62 mg/L.

Because Deer Creek can be dominated by the effluent, the maximum observed rolling 30-day average temperature and the maximum observed pH of the effluent during the period when the maximum observed rolling 30-day average temperature occurred were used to calculate the 30-day CCC. The maximum observed effluent 30-day rolling average temperature was 22.8°C, for the 30-day period ending 31 July 2006. The maximum observed effluent pH value during the period when the maximum observed rolling 30-day average temperature occurred was 6.9.

Using a pH value of 6.9 and the worst-case temperature value of 22.8°C on a rolling 30-day basis, the resulting 30-day CCC is 3.59 mg/L (as N). The 4-day average concentration is derived in accordance with the USEPA criterion as 2.5 times the 30-day CCC. Based on a 30-day CCC of 3.59 mg/L (as N), the 4-day average concentration that should not be exceeded is 8.98 mg/L (as N).

The MEC for ammonia was 24.3 mg/L, based on 448 samples collected. Therefore, ammonia in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a level necessary to protect aquatic life resulting in a violation of the Basin Plan's narrative toxicity objective.

The SIP procedure assumes a 4-day averaging period for calculating the long term average discharge condition (LTA). However, USEPA recommends modifying the procedure for calculating permit limits for ammonia using a 30-day

averaging period for the calculation of the LTA corresponding to the 30-day chronic criteria. Therefore, while the LTAs corresponding to the acute and 4-day chronic criteria were calculated according to SIP procedures, the LTA corresponding to the 30-day chronic criteria was calculated assuming a 30-day averaging period. The lowest LTA representing the acute, 4-day, and 30-day chronic criteria is then selected for deriving the AMEL and the MDEL. The remainder of the WQBEL calculation for ammonia was performed according to the SIP procedures.

This Order contains a final AMEL and MDEL for ammonia of 2.0 mg/L and 5.8 mg/L, respectively, based on USEPA's National Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life and to assure the treatment process adequately nitrifies the waste stream to protect the aquatic habitat beneficial uses (see Attachment F, Table F-6 for WQBEL calculations).

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

   The MEC for bis (2-ethylhexyl) phthalate was 4 µg/L reported as detected, but not quantifiable or DNQ, based on 5 samples collected between April 2002 and April 2004, while the maximum observed upstream receiving water bis (2-ethylhexyl) phthalate concentration was 4 µg/L reported as DNQ, based on 5 samples collected between April 2002 and April 2004.

   Since bis (2-ethylhexyl) phthalate is a common contaminant of sample containers, sampling apparatus, and analytical equipment, and sources of the detected bis (2-ethylhexyl) phthalate may be from plastics used for sampling or analytical equipment, the Regional Water Board is not establishing effluent limitations for bis (2-ethylhexyl) phthalate at this time. Instead of limitations, additional monitoring has been established for bis (2-ethylhexyl) phthalate; should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, then this Order may be reopened and modified by adding an appropriate effluent limitation.

g. **Carbon Tetrachloride.** Based on information submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for carbon tetrachloride. The CTR includes

standards for the protection of human health based on a one-in-a-million cancer risk for carbon tetrachloride. Municipal and domestic supply is a beneficial use of the receiving stream. The standard for waters from which both water and organisms are consumed is 0.25 µg/L.

The MEC for carbon tetrachloride was 1.5 µg/L, based on 5 samples collected (with three detections) between April 2002 and April 2004, while the maximum observed upstream receiving water carbon tetrachloride concentration was not detected or ND, based on 5 samples collected between April 2002 and April 2004. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the NTR criterion for carbon tetrachloride. This Order includes an AMEL and MDEL for carbon tetrachloride of 0.25 µg/L and 0.5 µg/L, respectively, based on the CTR standard for the protection of human health (See Attachment F, Table F-9 for WQBEL calculations).

A time schedule for compliance with the carbon tetrachloride final effluent limitations is established in Time Schedule Order (TSO) No. R5-2008-0178 in accordance with CWC sections 13300 and 13385. Order No. R5-2008-0178 also requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3.

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

   The USEPA Technical Support Document for Water Quality-Based Toxics Control [EPA/505/2-90-001] contains statistical methods for converting chronic (four-day) and acute (one-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 one-hour limitation is considered more appropriate than an average daily limitation. Average one-hour and four-day limitations for chlorine, based on these criteria, are included in this Order. The Discharger can immediately comply with these new effluent limitations for chlorine residual.

   The chlorine residual limitations required in this Order are protective of aquatic organisms in the undiluted discharge. If compliance is maintained, the Regional Water Board does not anticipate residual chlorine impacts to benthic organisms.

i. **Copper**. The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. The criteria for copper are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The USEPA default conversion

factors for copper in freshwater are 0.96 for both the acute and the chronic criteria. Using the worst-case measured hardness from the effluent (20.6 mg/L) and receiving water (15 mg/L), the applicable chronic criterion (maximum four-day average concentration) is 2.42 µg/L and the applicable acute criterion (maximum one-hour average concentration) is 3.16 µg/L, as total recoverable.

The MEC for total copper was 4.1 µg/L, based on 5 samples collected between May 2002 and June 2004, while the maximum observed upstream receiving water total copper concentration was 1 µg/L, based on 5 samples collected between May 2002 and June 2004. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for copper. An AMEL and MDEL for total copper of 1.57 µg/L and 3.16 µg/L, respectively, are included in this Order based on CTR criteria for the protection of freshwater aquatic life (See Attachment F, Table F-7 for WQBEL calculations).

A time schedule for compliance with the copper final effluent limitations is established in Time Schedule Order (TSO) No. R5-2008-0178 in accordance with CWC sections 13300 and 13385. Order No. R5-2008-0178 also requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3.

j. **Dichlorobromomethane.** Based on information submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for dichlorobromomethane. The CTR includes standards for the protection of human health based on a one-in-a-million cancer risk for carbon tetrachloride. Municipal and domestic supply is a beneficial use of the receiving stream. The standard for waters from which both water and organisms are consumed is 0.56 µg/L.

The MEC for dichlorobromomethane was 8.4 µg/L, based on 5 samples collected between April 2002 and April 2004, while the maximum observed upstream receiving water dichlorobromomethane concentration was not detected or ND, based on 5 samples collected between April 2002 and April 2004. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the NTR criterion for dichlorobromomethane. This Order includes an AMEL and MDEL for dichlorobromomethane of 0.56 µg/L and 1.12 µg/L, respectively, based on the CTR standard for the protection of human health (See Attachment F, Table F-10 for WQBEL calculations).

A time schedule for compliance with the dichlorobromomethane final effluent limitations is established in Time Schedule Order (TSO) No. R5-2008-0178 in accordance with CWC sections 13300 and 13385. Order No. R5-2008-0178 also requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3.

k. **Electrical Conductivity. (see Subsection p. Salinity)**

l. **Lead.** The CTR includes hardness-dependent standards for the protection of freshwater aquatic life for lead. The standards for metals are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for lead in freshwater are 1.46203-[0.145712 X ln(hardness)] for both the acute and the chronic criteria. Using the worst-case measured hardness from the effluent (20.6 mg/L) and receiving water (15 mg/L), the applicable chronic criterion (maximum four-day average concentration) is 0.34 µg/L and the applicable acute criterion (maximum one-hour average concentration) is 10.78 µg/L, as total recoverable.

The MEC for total lead was 0.5 µg/L, based on 5 samples collected between May 2002 and June 2004, while the maximum observed upstream receiving water total lead concentration was 0.7 µg/L, based on 5 samples collected between May 2002 and June 2004. However, all but one of the detected values for the effluent was reported as DNQ (detected not quantified), therefore, the discharge was deemed to not have a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for lead. Instead of limitations, additional monitoring has been established for lead; should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, then this Order may be reopened and modified by adding an appropriate effluent limitation.

m. **Nitrite and Nitrate.** Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. Nitrate and nitrite are known to cause adverse health effects in humans. The California DHS has adopted Primary MCLs at Title 22 of the California Code of Regulations (CCR), Table 64431-A, for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (measured as nitrogen), respectively. Title 22 CCR, Table 64431-A, also includes a primary MCL of 10,000 µg/L for the sum of nitrate and nitrite, measured as nitrogen.

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

Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. The conversion of ammonia to nitrites and the conversion of nitrites to nitrates present a reasonable potential for the discharge to cause or contribute to an in-stream excursion above the Primary MCLs for nitrite and nitrate. AMELs for nitrite and nitrate of 1 mg/L and 10 mg/L, respectively, are carried forward from the existing Order and included in this

Order based on the MCLs. These effluent limitations are included in this Order to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the beneficial use of municipal and domestic supply.

n. **Persistent Chlorinated Hydrocarbon Pesticides.** Aldrin, alpha-BHC (alpha-benzene hexachloride), beta-BHC, lindane (gamma-BHC), delta-BHC, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, alpha-endosulfan, beta-endosulfan, endosulfan sulfate, endrin, heptachlor, and heptachlor epoxide were detected in the effluent in concentrations as high as 0.115 µg/L, 0.15 µg/L, 0.05 µg/L, 0.22 µg/L, 0.189 µg/L, 0.43 µg/L, 0.33 µg/L, 0.4 µg/L, 0.2 µg/L, 0.11 µg/L, 0.32 µg/L, 0.37 µg/L, 0.35 µg/L, 0.33 µg/L, and 0.15 µg/L, respectively. Each of these constituents is a chlorinated hydrocarbon pesticide. These constituents are persistent chlorinated hydrocarbon pesticides. 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 also contains numeric criteria for Aldrin, alpha-BHC (alpha-benzene hexachloride), beta-BHC, lindane (gamma-BHC), 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, alpha-endosulfan, beta-endosulfan, endosulfan sulfate, endrin, heptachlor, and heptachlor epoxide. However, given the fact that the only detection for each of these parameters occurred during the same, single sampling event of 21 February 2003, while all other sampling events were non-detect, it is likely that the detected concentrations are erroneous. So the 21 February 2003 data will not be used in a reasonable potential determination. Without the 21 February data, there is no reasonable potential for these constituents. This Order establishes quarterly monitoring for persistent chlorinated hydrocarbon pesticides. Persistent chlorinated hydrocarbon pesticides include aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, chlordane, 4,4-DDT, 4,4-DDE, 4,4-DDD, dieldrin, alpha-endosulfan, beta-endosulfan, endosulfan sulfate, endrin, endrin aldehyde, heptachlor, heptachlor epoxide, and toxaphene. This Order may be reopened and effluent limitations established if monitoring data exhibit reasonable potential.

o. **Pathogens**. The beneficial uses of the receiving water include municipal and domestic supply and water contact recreation, and there is less than 20:1 dilution of the Facility effluent provided by Deer Creek. To protect these beneficial uses, the Regional Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease. The principal infectious agents (pathogens) that may be present in raw sewage may be classified into three broad groups: bacteria, parasites, and viruses. Tertiary treatment, consisting of chemical coagulation, sedimentation, and filtration, has been found to remove approximately 99.5% of viruses. Filtration is an effective means of reducing viruses and parasites from the waste stream. The wastewater must be treated to tertiary standards (filtered), or equivalent, to protect contact recreational and food crop irrigation uses.

The California Department of Public Heath (DPH) (formally the Department of Health Services) has developed reclamation criteria, CCR, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Provision G.1 of the previous Order required the Discharger to treat wastewater to Title 22 treatment requirements (or equivalent) by 1 May 2006, which was extended to 25 September 2007 by State Water Board Stay Order and the Court Order. The Discharger has complied with Provision G.1 and currently treats effluent to Title 22 treatment requirements. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, schoolyards, and other areas of similar public access, wastewater be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 mL as a 7-day median. As coliform organisms are living and mobile, it is impracticable to quantify an exact number of coliform organisms and to establish weekly average limitations. Instead, coliform organisms are measured as a most probable number and regulated based on a 7-day median limitation.

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

In addition to coliform testing, turbidity specifications have been included as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. The previous Order established effluent limitations for turbidity. Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations. The limitations in the previous Order were solely an operational check to ensure the treatment system was functioning properly and could meet the limits for total coliform organisms. The effluent limitations were not intended to regulate turbidity in the receiving water. Rather, turbidity should be an operational parameter to determine proper system function and not a WQBEL. Therefore, to ensure compliance with the DPH recommended Title 22

disinfection criteria, this Order contains operational turbidity specifications to be met prior to disinfection in lieu of effluent limitations.

p. **pH.** The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the "*...pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses.*" Effluent Limitations for pH are included in this Order based on the Basin Plan objectives for pH.

q. **Salinity.** The discharge contains total dissolved solids (TDS), chloride, sulfate, and electrical conductivity (EC). These are water quality parameters that are indicative of the salinity of the water. Their presence in water can be growth limiting to certain agricultural crops and can affect the taste of water for human consumption. The Basin Plan contains a chemical constituent objective that incorporates State MCLs and contains a narrative objective for EC, TDS, Sulfate, and Chloride. In addition, there are USEPA water quality criteria for the protection of aquatic organisms for chloride.
See Table F-4, below, for the applicable water quality objectives.

Table F-4. Salinity Water Quality Criteria/Objectives and Effluent

Parameter	Agricultural WQ Goal[1]	Secondary MCL[3]	USEPA Water Quality Criteria	Effluent	
				Maximum	Average
EC (µmhos/cm)	Varies[2]	900, 1600, 2200	N.A.	707	381
TDS (mg/L)	Varies	500, 1000, 1500	N.A.	269	209
Sulfate (mg/L)	Varies	250, 500, 600	N.A.	34.6	27.5
Chloride (mg/L)	Varies	250, 500, 600	230 (4-day) 860 (1-hr)	47.5	42.5

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

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

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

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

quality goal is intended to protect against adverse effects on sensitive crops when irrigated via sprinklers.

Chloride concentrations in the effluent ranged from 38.9 mg/L to 47.5 mg/L, with an average of 42.5 mg/L, for 4 samples collected by the Discharger from April 2002 through January 2003. Background concentrations in Deer Creek ranged from 1.88 mg/L to 2.31 mg/L, with an average of 2.13 mg/L, for 4 samples collected by the Discharger from April 2002 through January 2003. There is no reasonable potential for the discharge to cause or contribute to an exceedance of the applicable water quality objectives in the receiving water for chloride.

ii. **Electrical Conductivity (EC)**. The secondary MCL for EC is 900 µmhos/cm as a recommended level, 1600 µmhos/cm as an upper level, and 2200 µmhos/cm as a short-term maximum. The agricultural water quality goal, that is used as a screening value for the reasonable potential analysis, is 700 µmhos/cm. Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985) recommends a 700 µmhos/cm agricultural water quality goal that is intended to prevent reduction in crop yield, i.e. a restriction on use of water, for salt-sensitive crops, such as beans, carrots, turnips, and strawberries. It is not know whether these or other salt-sensitive crops are either currently grown in the area or may be grown in the future. Most other crops can tolerate higher EC concentrations without harm, however, as the salinity of the irrigation water increases, more crops are potentially harmed by the EC, or extra measures must be taken by the farmer to minimize or eliminate any harmful impacts. Without site-specific studies to determine an appropriate numeric salinity receiving water objective to implement the Basin Plan narrative chemical constituents objective, and to evaluate the impact of salt discharges on downstream MUN use, a final effluent limitation for salinity cannot be determined.

A review of the Discharger's monitoring reports from May 2002 through December 2006 shows an average effluent EC of 381 µmhos/cm, with a range from 204 µmhos/cm to 707 µmhos/cm for 236 samples. The background receiving water EC averaged 53.4 µmhos/cm in 227 sampling events collected by the Discharger from May 2002 through December 2006. There is no reasonable potential for the discharge to cause or contribute to an exceedance of the applicable water quality objectives in the receiving water for EC.

iii. **Sulfate**. The secondary MCL for sulfate is 250 mg/L as recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. Sulfate concentrations in the effluent ranged from 23.2 mg/L to 34.6 mg/L, with an average of 27.5 mg/L, for 4 samples collected by the Discharger from April 2002 through January 2003. Background concentrations in Deer Creek ranged from 2.1 mg/L to 2.8 mg/L, with an average of 2.5 mg/L, for 4 samples collected by the Discharger from April 2002 through January 2003. There is

no reasonable potential for the discharge to cause or contribute to an exceedance of the applicable water quality objectives in the receiving water for sulfate.

iv. **Total Dissolved Solids (TDS).** The secondary MCL for TDS is 500 mg/L as a recommended level, 1000 mg/L as an upper level, and 1500 mg/L as a short-term maximum. The recommended agricultural water quality goal for TDS, that is used as a screening value for the reasonable potential analysis, is 450 mg/L as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). Water Quality for Agriculture evaluates the impacts of salinity levels on crop tolerance and yield reduction, and establishes water quality goals that are protective of the agricultural uses. The 450 mg/L water quality goal is intended to prevent reduction in crop yield, i.e. a restriction on use of water, for salt-sensitive crops. Only the most salt sensitive crops require irrigation water of 450 mg/L or less to prevent loss of yield. Most other crops can tolerate higher TDS concentrations without harm, however, as the salinity of the irrigation water increases, more crops are potentially harmed by the TDS, or extra measures must be taken by the farmer to minimize or eliminate any harmful impacts.

The average TDS effluent concentration was 209 mg/L and a ranged from 146 mg/L to 269 mg/L for 56 samples collected by the Discharger from May 2002 through December 2006. The background receiving water TDS ranged from 18 mg/L to 53 mg/L, with an average of 39.5 mg/L in 4 sampling events performed by the Discharger from April 2002 through January 2003. There is no reasonable potential for the discharge to cause or contribute to an exceedance of the applicable water quality objectives in the receiving water for TDS.

v. **Effluent Limitations.** Based on the low reported salinity in the effluent, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion of water quality objectives for salinity. However, since the receiving water is tributary to the Sacramento-San Joaquin Delta, of additional concern is the salt contribution to Delta waters. Therefore, this Order requires the Discharger to develop a salinity evaluation and minimization plan to address sources of salinity from the domestic wastewater treatment system and includes an effluent limitation for EC of the municipal water supply EC plus an increment of 500 µmhos/cm, not to exceed 700 µmhos/cm.

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

s. Zinc. The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for zinc. The criteria for zinc are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for zinc in

freshwater are 0.978 for the acute criteria and 0.986 for the chronic criteria. Using the worst-case ambient measured hardness of the effluent (20.6 mg/L), the applicable chronic criterion (maximum 4-day average concentration) and the applicable acute criterion (maximum 1-hour average concentration) are both 31.42 µg/L, as total recoverable.

The MEC for total zinc was 41 µg/L, based on 5 samples collected between May 2002 and June 2004, while the maximum observed upstream receiving water total zinc concentration was 13 µg/L, based on 5 samples collected between May 2002 and June 2004. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for zinc. An AMEL and MDEL for total zinc of 15.66 µg/L and 31.42 µg/L, respectively, are included in this Order based on CTR criteria for the protection of freshwater aquatic life (See Attachment F, Table F-8 for WQBEL calculations).

A time schedule for compliance with the zinc final effluent limitations is established in Time Schedule Order (TSO) No. R5-2008-0178 in accordance with CWC sections 13300 and 13385. Order No. R5-2008-0178 also requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3.

Table F-5. Summary of Reasonable Potential Analysis

CTR No.	Pollutant	Units	Maximum Effluent Concentration	Maximum Receiving Water Concentration	Most Stringent Criteria	Reasonable Potential
1	Antimony	ug/L	0.2 DNQ	ND	6	N
2	Arsenic	ug/L	1.9	3.1	10	N
4	Cadmium	ug/L	0.03 DNQ	0.007	0.53	N
5a	Chromium (III)	ug/L	0.3 DNQ	0.4	44	N
6	Copper	ug/L	4.1	1	1.8	Y
7	Lead	ug/L	0.5	0.7	0.34	N*
8	Mercury	ug/L	0.012 7	0.007 18	0.05	N
	Methylmercury	ug/L	0.000 146	0.000 129	0.07	N
9	Nickel	ug/L	2	0.4	10	N
10	Selenium	ug/L	0.3 DNQ	0.1	5	N
12	Thallium	ug/L	0.02 DNQ	0.01 DNQ	1.7	N
13	Zinc	ug/L	41	13	24	Y
14	Cyanide	ug/L	ND	3 DNQ	5.2	N
21	Carbon tetrachloride	ug/L	1.5	ND	0.25	Y
27	Dichlorobromomethane	ug/L	8.4	ND	0.56	Y
39	Toluene	ug/L	8.6	ND	42	N
68	Bis (2-ethylhexyl) phthalate	ug/L	4 DNQ	4 DNQ	1.8	N
77	1,4-Dichlorobenzene	ug/L	0.4 J	ND	5	N
102	Aldrin	ug/L	0.115	0.188	ND	N
103	Alpha-BHC	ug/L	0.15	0.18	ND	N
104	beta-BHC	ug/L	0.05	0.173	ND	N
105	gamma-BHC	ug/L	0.22	0.27	ND	N
106	delta-BHC	ug/L	0.189	0.322	ND	N
108	4,4-DDT	ug/L	0.43	0.8	ND	N
109	4,4-DDE	ug/L	0.33	0.7	ND	N

CTR No.	Pollutant	Units	Maximum Effluent Concentration	Maximum Receiving Water Concentration	Most Stringent Criteria	Reasonable Potential
110	4,4-DDD	ug/L	0.4	0.94	ND	N
111	Dieldrin	ug/L	0.2	0.38	ND	N
112	Alpha-Endosulfan	ug/L	0.11	0.24	ND	N
113	beta-Endosulfan	ug/L	0.32	0.56	ND	N
114	Endosulfan Sulfate	ug/L	0.37	0.59	ND	N
115	Endrin	ug/L	0.35	0.69	ND	N
117	Heptachlor	ug/L	0.33	0.39	ND	N
118	Heptachlor Epoxide	ug/L	0.15	0.29	ND	N
	Fluoride, Total	ug/L	160	60 DNQ	1000	N
	Ammonia	ug/L	21000	110 DNQ	640	Y
	Chloride	ug/L	47500	2310	106000	N
	Methylene blue active substances	ug/L	260	160	500	N
	Electrical Conductivity @ 20 °C	Umhos/cm	707	107	Varies	Y
	Sulfate	mg/L	34.6	2.76	250	N
	Sulfide	ug/L	20	ND	NA	N
	Sulfite	ug/L	8	ND	NA	N
	Total Dissolved Solids	mg/L	251	53	450	N
	Aluminum	ug/L	83.9	59.7	87	N
	Barium, Total Recoverable	ug/L	14.5	31.2	1000	N
	Iron	ug/L	57	303	300	N
	Manganese	ug/L	26.7	31.4	50	N
	Methoxychlor	ug/L	ND	0.72	0.03	N
	Tributyltin	ug/L	0.005	0.005	0.063	N

* Four of five detected values were DNQ, therefore the discharge was deemed to not have reasonable potential.

4. WQBEL Calculations

a. As discussed in Section IV.C.3 above, effluent limitations based on secondary MCLs were applied as annual averages EC. Effluent limitations for dissolved oxygen, chlorine residual, pathogens, pH, and temperature were based on Basin Plan objectives and applied directly as effluent limitations.

b. Effluent limitations for cyanide, carbon tetrachloride, ammonia, chloride, dichlorobromomethane, and trihalomethanes were calculated in accordance with section 1.4 of the SIP. The following paragraphs describe the methodology used for calculating effluent limitations.

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

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

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

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

where:

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

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

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

CMC = criteria maximum concentration (one-hour average)

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

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

D = dilution credit

B = maximum receiving water concentration

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

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

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

(LTA_{acute})

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

($LTA_{chronic}$)

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

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

Water quality-based effluent limitations were calculated for ammonia, copper, zinc, cyanide, carbon tetrachloride, dichlorobromomethane, and total trihalomethanes as follows in Tables F-6 through F-10, below.

Table F-6 WQBEL Calculations for Ammonia

	Acute	Chronic
Criteria (mg/L)	5.62	3.59
Dilution Credit	No Dilution	No Dilution
ECA	5.62	3.59
ECA Multiplier	0.15	0.56
LTA	0.84	2.01
AMEL Multiplier (95th%)	2.38	(1)
AMEL (µg/L)	2.0	(1)
MDEL Multiplier (99th%)	6.86	(1)
MDEL (µg/L)	5.8	(1)

(1) Limitations based on acute LTA (Chronic LTA > Acute LTA)

Table F-7 WQBEL Calculations for Copper

	Acute	Chronic	Human Health
Criteria, dissolved (µg/L) (1)	3.16	2.42	--
Dilution Credit	No Dilution	No Dilution	No Dilution
Translator (2)	0.96	0.96	0.96
ECA, total recoverable (3)	3.16	2.42	200
ECA Multiplier (4)	0.32	0.53	2.01
LTA	1.01	1.28	401.2
AMEL Multiplier (95th%) (5)(6)	1.55	(8)	(8)
AMEL (µg/L)	1.57	(8)	(8)
MDEL Multiplier (99th%) (7)	3.11	(8)	(8)
MDEL (µg/L)	3.16	(8)	(8)

(1) CTR aquatic life criteria, based on a hardness of 20.6 mg/L as $CaCO_3$.
(2) EPA Translator used as default.
(3) ECA calculated per section 1.4.B, Step 2 of SIP. This allows for the consideration of dilution.
(4) Acute and Chronic ECA Multiplier calculated at 99th percentile per section 1.4.B, Step 3 of SIP or per sections 5.4.1 and 5.5.4 of the TSD.
(5) Assumes sampling frequency n=>4.
(6) The probability basis for AMEL is 95th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.
(7) The probability basis for MDEL is 99th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.
(8) Limitations based on acute LTA (Chronic LTA > Acute LTA>HH)

Table F-8 WQBEL Calculations for Zinc

	Acute	Chronic	Human Health
Criteria, dissolved (µg/L) (1)	31.42	31.42	2000
Dilution Credit	No Dilution	No Dilution	No Dilution
Translator (2)	0.96	0.96	0.96
ECA, total recoverable (3)	31.42	31.42	--
ECA Multiplier (4)	0.32	0.53	2.01
LTA	10.09	16.57	4012.38
AMEL Multiplier (95th%) (5)(6)	1.55	(8)	(8)
AMEL (µg/L)	15.66	(8)	(8)
MDEL Multiplier (99th%) (7)	3.11	(8)	(8)
MDEL (µg/L)	31.42	(8)	(8)

(9) CTR aquatic life criteria, based on a hardness of 20.6 mg/L as $CaCO_3$.
(10) EPA Translator used as default.
(11) ECA calculated per section 1.4.B, Step 2 of SIP. This allows for the consideration of dilution.
(12) Acute and Chronic ECA Multiplier calculated at 99th percentile per section 1.4.B, Step 3 of SIP or per sections 5.4.1 and 5.5.4 of the TSD.
(13) Assumes sampling frequency n=>4.
(14) The probability basis for AMEL is 95th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.
(15) The probability basis for MDEL is 99th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.
(16) Limitations based on acute LTA (Chronic LTA > Acute LTA>HH)

Table F-9 WQBEL Calculations for Carbon Tetrachloride

	Acute / Chronic	Human Health
Criteria (µg/L)	N/A	0.25
Dilution Credit	N/A	No Dilution
ECA	N/A	0.25
AMEL (µg/L) (1)	**N/A**	**0.25**
MDEL/AMEL Multiplier(2)	N/A	2.01
MDEL (µg/L)	**N/A**	**0.5**

(1) AMEL = ECA per section 1.4.B, Step 6 of SIP
(2) Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier from Table 2 of SIP.

Table F-10 WQBEL Calculations for Dichlorobromomethane

	Acute/ Chronic	Human Health
Criteria, dissolved (µg/L)	N/A	0.56
Dilution Credit	N/A	No Dilution
Translator (1)	N/A	1.07
ECA, total recoverable (2)	N/A	0.56
ECA Multiplier (3)	N/A	2.01
LTA	N/A	--
AMEL Multiplier (95th%) (4)(5)	N/A	1.55
AMEL (µg/L)	**N/A**	**0.56**
MDEL Multiplier (99th%) (6)	N/A	3.11
MDEL (µg/L)	**N/A**	**1.12**

(1) EPA Translator used as default; hardness dependent based on 15 mg/L as $CaCO_3$.
(2) ECA calculated per section 1.4.B, Step 2 of SIP. This allows for the consideration of dilution.
(3) Acute and Chronic ECA Multiplier calculated at 99th percentile per section 1.4.B, Step 3 of SIP or per sections 5.4.1 and 5.5.4 of the TSD.
(4) Assumes sampling frequency n=>4.
(5) The probability basis for AMEL is 95th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.
(6) The probability basis for MDEL is 99th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.

Table F-11. Summary of Water Quality-based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Ammonia (as N) [2]	mg/L	4.7	--	13.7	--	--
Copper	µg/L	1.57	--	3.16	--	--
Zinc	µg/L	15.66	--	31,42	--	--
Carbon Tetrachloride	µg/L	0.25	--	0.50	--	--
Dichlorobromomethane	µg/L	0.56	--	1.12	--	--

5. Whole Effluent Toxicity (WET)

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

a. **Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00) The Basin Plan also states that, "*...effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate...*". USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "*In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. "* Accordingly, effluent limitations for acute toxicity have been included in this Order as follows:

> **Acute Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:
>
> Minimum for any one bioassays ---------- 70%
> Median for any three or more consecutive bioassays --------- 90%

b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at III-8.00) Available WET data was used to

determine that the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective. Attachment E of this Order requires quarterly chronic WET monitoring for demonstration of compliance with the narrative toxicity objective.

In addition to WET monitoring, Special Provisions VI.C.2.a. requires the Discharger to submit to the Regional Water Board an Initial Investigative TRE Work Plan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity is demonstrated.

D. Final Effluent Limitations

1. Mass-based Effluent Limitations.

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

Mass-based effluent limitations were calculated based upon the permitted average daily discharge flow allowed.

2. Averaging Periods for Effluent Limitations.

Title 40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. However, for toxic pollutants and pollutant parameters in water quality permitting, the US EPA recommends the use of a maximum daily effluent limitation in lieu of average weekly effluent limitations for two reasons. "*First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed.*" (TSD, pg. 96) This Order utilizes maximum daily effluent limitations in lieu of average weekly effluent limitations for ammonia, copper, zinc, cyanide, carbon tetrachloride, dichlorobromomethane,

chlorine residual[3], and dissolved oxygen as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Furthermore, for BOD, TSS, pH, and coliform, weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in Attachment F, Section IV.C.3., above.

3. Satisfaction of Anti-Backsliding Requirements.

Some effluent limitations in this Order are less stringent that those in the previous Order. As discussed below this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

Order No. R5-2002-0050 requires that the discharger achieve 95 percent removal for TSS and BOD. These removal requirements are technically incorrect as the secondary treatment standard for removal of BOD and TSS is 85 percent. As per 40 CFR 122.44(l)(2)(i)(B)(2), the 95 percent removal standard for BOD and TSS will be relaxed to 85 percent removal as the existing standard in Order No. R5-2002-0050was established in error. The 85 percent removal requirement for BOD and TSS is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16. Any impact on existing water quality will be insignificant.

The previous permit 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 coliform. 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 water quality based limitation.

The revised Order contains performance based operational turbidity specifications to be met prior to disinfection 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 proposed revised operational specifications for turbidity are the same as the effluent limitations in the previous permit, with the inclusion of a more stringent requirement for an instantaneous maximum limit at any time. (See Special Provisions C.4. System Operating Specifications for turbidity specifications.) The proposed revised permit moves the point of compliance from the final effluent after disinfection to an internal compliance point prior to disinfection. These revisions are consistent with state regulations implementing recycled water requirements.

---

[3] This Order applies the USEPA National Ambient Water Quality Criteria for chlorine directly as effluent limitations (1 hour average, acute, and 4-day average, chronic). See Section IV.C.3., above, for rational regarding the chlorine residual effluent limitations.

The revision in the turbidity limitation is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16 because this Order imposes equivalent or more stringent requirements than the prior permit and therefore does not allow degradation.

4. Satisfaction of Antidegradation Policy

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

Summary of Final Effluent Limitations
Discharge Point 001

Parameter	Units	Effluent Limitations					Basis
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Average Dry Weather Flow	mgd	--	--	0.69	--	--	DC
Biochemical Oxygen Demand (BOD) (5-day @ 20 Deg. C)	mg/L	10	15	20	--	--	TTC
	lbs/day[1]	58	86	115	--	--	
Biochemical Oxygen Demand (BOD) (5-day @ 20 Deg. C)	% removal	85[2]	--	--	--	--	CFR
Total Suspended Solids (TSS)	mg/L	10	15	25	--	--	TTC
	lbs/day[1]	58	86	115	--	--	
Total Suspended Solids (TSS)	% removal	85[2]	--	--	--	--	CFR
pH	standard units	--	--	--	6.5	8.0	BP
Copper	µg/L	1.57	--	3.16	--	--	CTR
Zinc	µg/L	15.66	--	31.42	--	--	CTR
Carbon Tetrachloride	µg/L	0.25	--	0.50	--	--	CTR
Di-chlorobromomethane	µg/L	0.56	--	1.1	--	--	CTR
Ammonia Nitrogen, Total (as N)	mg/L	2.0	--	5.8	--	--	NAWQC
	lbs/day[1]	12	--	33			
Chlorine, Total Residual	mg/L	--	0.01[3]	--	--	0.02[5]	BP
Electrical Conductivity @ 25 Deg. C	µmhos/cm	415[3]	--	--	--	--	TBEL
Nitrite (as N)	mg/L	1	--	--	--	--	MCL
Nitrate + Nitrite (as N)	mg/L	10	--	--	--	--	MCL
Settleable Solids	mL/L-hr	0.1	--	0.2	--	--	BP

Parameter	Units	Effluent Limitations					Basis
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Total Coliform	MPN/100 mL	23[4]	2.2[5]	--	--	240	TITLE 22

AGR – Based on water quality criteria for protection of agriculture.
DC- Based on the design capacity of the Facility.
CFR – 40 CFR Part 133 (Secondary treatment standards).
BPJ – Best professional judgment.
CTR- Based on water quality criteria contained in the California Toxics Rule, and applied as specified in the SIP.
BP- Based on water quality objectives contained in the Basin Plan.
NAWQC- Based on USEPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life.
SEC MCL-Based on California Secondary Maximum Contaminant Level.
MCL- Based on California Primary Maximum Contaminant Level.
TITLE 22- Based on CA Dept. of Health Services Reclamation Criteria, CCR, Division 4, Chapter 3 (Title 22).
TTC- Tertiary treatment capability. These limitations reflect the level of treatment that is capable of a properly operated tertiary treatment facility.

1 Based upon a dry weather design treatment capacity of 0.69 mgd.
2 The average monthly percent removal of BOD 5-day 20°C and total suspended solids shall not be less than 85%.
3 Applied as annual averages.
4 Not to be exceeded more than once in any 30-day period.
5 Expressed as a 7-day median.

E. Interim Effluent Limitations

Not applicable

F. Land Discharge Specifications

Not applicable

G. Reclamation Specifications

Not applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

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

A. Surface Water

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

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

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

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

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

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

   e. **Dissolved Oxygen.** The Deer Creek has been designated as having the beneficial use of cold freshwater aquatic habitat (COLD). For water bodies designated as having COLD as a beneficial use, the Basin Plan includes a water quality objective of maintaining a minimum of 7.0 mg/L of dissolved oxygen.

Since the beneficial use of COLD does apply to the Deer Creek, a receiving water limitation of 7.0 mg/L for dissolved oxygen was included in this Order.

For surface water bodies outside of the Delta, the Basin Plan includes the water quality objective that "*...the monthly median of the mean daily dissolved oxygen (DO) concentration shall not fall below 85 percent of saturation in the main water mass, and the 95 percentile concentration shall not fall below 75 percent of saturation.*" This objective was included as a receiving water limitation in this Order.

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

g. **Oil and Grease**. The Basin Plan includes a water quality objective that *"[W]aters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses."* Receiving Water Limitations for oil and grease are included in this Order and are based on the Basin Plan objective.

h. **pH.** The Basin Plan includes water quality objective that *"[T]he pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses*" This Order includes receiving water limitations for both pH range and pH change.

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

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

j. **Radioactivity**. The Basin Plan includes a water quality objective that *"[R]adionuclides shall not be present in concentrations that are harmful to human, plant, animal or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life."* The Basin Plan states further that *"[A]t a minimum, waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations..."* Receiving Water Limitations for

radioactivity are included in this Order and are based on the Basin Plan objective.

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

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

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

n. **Taste and Odors.** The Basin Plan includes a water quality objective that *"[W]ater shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses."* Receiving Water Limitations for taste- or odor-producing substances are included in this Order and are based on the Basin Plan objective.

o. **Temperature.** The Deer Creek has the beneficial uses of both COLD and WARM. The Basin Plan includes the objective that "[a]*t no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature*." This Order includes a receiving water limitation based on this objective.

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

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

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

- *Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.*

- *Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.*
- *Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.*"

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

B. Groundwater

All processes are contained in concrete basins. There is no reasonable potential for pollutatns to migrate to groundwater. This Order contains a limitation requiring no degradation of groundwater.

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

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

A. Influent Monitoring

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

B. Effluent Monitoring

1. Pursuant to the requirements of 40 CFR §122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream.

C. Whole Effluent Toxicity Testing Requirements

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

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

D. Receiving Water Monitoring

1. Surface Water

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

2. Groundwater

Not applicable

E. Other Monitoring Requirements

1. Biosolids Monitoring

Biosolids monitoring is required to ensure compliance with the biosolids disposal requirements (Special Provisions VI.C.6.a.). 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.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

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

Section 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with section 123.25, this Order omits federal conditions that address enforcement authority specified in sections 122.41(j)(5) and (k)(2) because the enforcement authority under

the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

a. **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.

b. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents. 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.

c. **Mixing Zone Study.** The Discharger may elect to conduct a mixing zone study to evaluate any available assimilative capacity in the receiving water. If the Discharger performs such studies, and if warranted, this Order may be reopened to make appropriate changes to the effluent limitations.

2. Special Studies and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00.)

This provision requires the Discharger to develop a Toxicity Reduction Evaluation (TRE) Work Plan in accordance with EPA guidance. In addition, the provision provides a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity has been demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of > 1 TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does not allow any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits a pattern of toxicity at 100% effluent.

Accelerated Monitoring. The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is a pattern of toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

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

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

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

- *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants,* (EPA/833B-99/002), August 1999.
- Generalized Methodology for Conducting Industrial TREs, *(EPA/600/2-88/070), April 1989.*
- *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures,* Second Edition, EPA 600/6-91/005F, February 1991.
- *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I*, EPA 600/6-91/005F, May 1992.

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

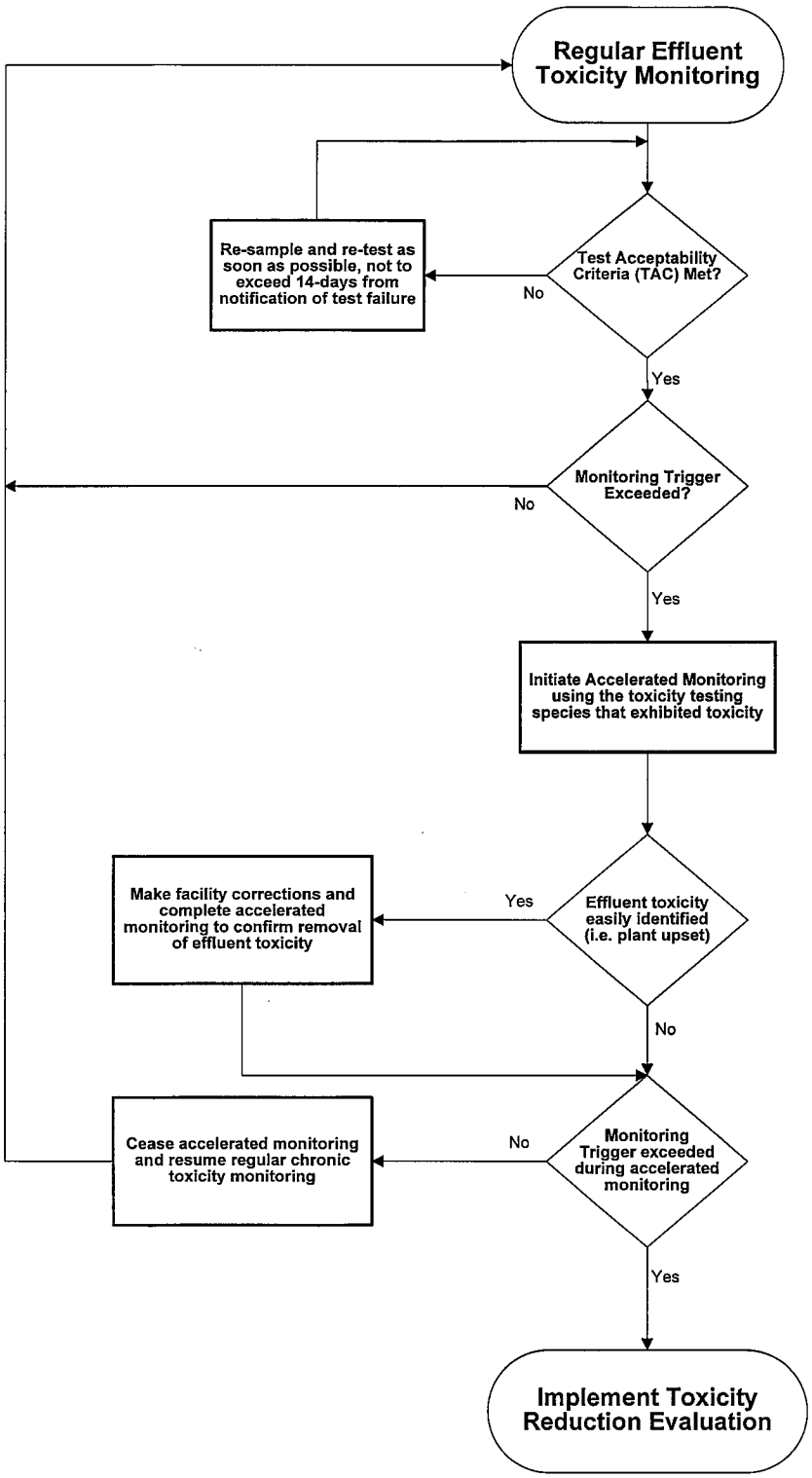
- *Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity*, Second Edition, EPA 600/R-92/081, September 1993.

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

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

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

Figure F-3
WET Accelerated Monitoring Flow Chart



3. Best Management Practices and Pollution Prevention

Salinity Evaluation and Minimization Plan. An Evaluation and Minimization Plan for salinity is required in this Order to ensure adequate measures are developed and implemented by the Discharger to reduce the discharge of salinity to Deer Creek.

4. Construction, Operation, and Maintenance Specifications

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

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

5. Special Provisions for Municipal Facilities (POTWs Only)

a. **Pretreatment Requirements.**

i. The Federal Clean Water Act, Section 307(b), and Federal Regulations, 40 CFR Part 403, require publicly owned treatment works to develop an acceptable industrial pretreatment program. A pretreatment program is required to prevent the introduction of pollutants, which will interfere with treatment plant operations or sludge disposal, and prevent pass through of pollutants that exceed water quality objectives, standards or permit limitations. Pretreatment requirements are imposed pursuant to 40 CFR Part 403.

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

6. Other Special Provisions

Not applicable

7. Compliance Schedules

Not applicable

VIII. PUBLIC PARTICIPATION

The California Regional Water Quality Control Board, Central Valley Region (Regional Water Board) is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for the City of

Nevada City Wastewater Treatment Plan. As a step in the WDR adoption process, the Regional Water Board staff has developed tentative WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

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

B. Written Comments

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

To be fully responded to by staff and considered by the Regional Water Board, written comments should be received at the Regional Water Board offices by 5:00 p.m. on 24 October 2008.

C. Public Hearing

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

Date:	4 December 2008
Time:	8:30 am
Location:	Regional Water Quality Control Board, Central Valley Region 11020 Sun Center Dr., Suite #200 Rancho Cordova, CA 95670

Interested persons are invited to attend. At the public hearing, the Regional Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our Web address is http://www.waterboards.ca.gov/rwqcb5/ where you can access the current agenda for changes in dates and locations.

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Regional Water Board's action to the following address:

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

E. Information and Copying

The Report of Waste Discharge (RWD), related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Regional Water Board by calling (916) 464-4620.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Regional Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Diana Messina at (916) 464-4828.