DILUTION ALTERNATIVE NO. 1

SACRAMENTO COUNTY SANITATION DISTRICT
SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT
SACRAMENTO COUNTY

Proposed Waste Discharge Requirements Renewal and Time Schedule Order
(NPDES No. CA0077682)

Regional Water Quality Control Board, Central Valley Region
Board Meeting – 9 December 2010
ITEM # 6

State and Federal regulations allow consideration of dilution in establishing effluent limits. If dilution is allowed, the discharge does not have to meet water quality standards at the point of discharge, but water quality standards must be met in the river after some mixing of effluent and river water has occurred. The part of the river where mixing occurs and water quality objectives are not met is termed the "mixing zone". Within the mixing zone water quality standards are not met, so there could be an impact to organisms if the organisms stayed in the mixing zone long enough. Effluent limitations and the size and shape of the mixing zone are set to prevent impacts on aquatic life and other beneficial uses. There are several criteria that must be met before a mixing zone can be granted, as described in the Fact Sheet. SRCSD has conducted extensive studies of dilution available in the Sacramento River and the size and shape of the possible mixing zones. The alternative mixing zones being considered in this permit renewal meet the required technical criteria, however, granting of mixing zones is discretionary and need not be granted even if all technical criteria are met.

DILUTION ALTERNATIVE NO. 1

NO DILUTION GRANTED

This alternative does not allow any mixing zones, so all water quality criteria must be met at the "end of the pipe." This will result in the most stringent water quality-based effluent limits being considered, and result in the lowest discharge of waste materials to the river. However, because of the increased levels of treatment needed to achieve these effluent limits, the costs of treatment, usage of chemicals and power, and generation of sludge is greatest for this alternative.

This permit alternative results in the following changes to the NPDES Permit and Time Schedule Order:

1. NPDES Permit. Modify Table 6 of the Limitations and Discharge Requirements as shown in underline/strikeout format below:

Table 6. Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand, 5-day @ 20°C[2]	mg/L	10	15	20	--	--
	lbs/day[1]	15,100	22,700	30,200	--	--
Total Suspended Solids[2]	mg/L	10	15	20	--	--
	lbs/day[1]	15,100	22,700	30,200	--	--
pH	standard units	--	--	--	6.5~~0~~	8.0
Priority Pollutants						
Bis(2-ethylhexyl)phthalate	µg/L	~~--~~ 1.8	--	~~13~~ 3.4	--	--
Carbon Tetrachloride	µg/L	~~--~~ 0.25	--	~~5.3~~ 0.46	--	--
Chlorodibromomethane	µg/L	~~--~~ 0.41	--	~~2.2~~ 0.85	--	--
Copper, Total Recoverable	µg/L	7.3	--	9.3	--	--
Cyanide	µg/L	~~--~~ 4.3	--	~~11~~ 8.3	--	--
Dibenzo(ah)anthracene	µg/L	~~0.2~~ 0.004	--	~~0.4~~ 0.01	--	--
Dichlorobromomethane	µg/L	~~--~~ 0.56	--	~~3.4~~ 1.1	--	--
Methylene Chloride	µg/L	4.7	--	11	--	--
N-nitrosodimethylamine	µg/L	0.00069	--	0.0014	--	--
Pentachlorophenol	µg/L	~~--~~ 6	--	~~--~~ ~~18~~	--	--
Tetrachloroethylene	µg/L	~~--~~ 0.8	--	~~4.4~~ 1.7	--	--
Non-Conventional Pollutants						
Settleable Solids	ml/L	0.1	--	0.2	--	--
Aluminum, Total Recoverable	µg/L	503	--	750	--	--
Ammonia Nitrogen, Total (as N)[2]	mg/L	1.8	--	2.2	--	--
	lbs/day[1]	2720	--	3320	--	--
Nitrate, Total (as N)	mg/L	10	--	--	--	--
~~Manganese, Total Recoverable~~	~~µg/L~~	~~--~~	~~--~~	~~85~~	~~--~~	~~--~~
~~Methyl Tertiary Butyl Ether~~	~~µg/L~~	~~--~~	~~--~~	~~18~~	~~--~~	~~--~~

[1] Based on a design average dry weather flow of 181 MGD.

[2] This Order includes interim effluent limitations for BOD_5, TSS, and Total Ammonia Nitrogen (section IV.A.2.). Effective immediately, the interim effluent limitations shall apply in lieu of final effluent limitations for these constituents. The final effluent limitations for BOD_5, TSS, and Total Ammonia Nitrogen become effective when the Discharger complies with Special Provisions section VI.C.7. or 1 December 2020, whichever is sooner.

2. NPDES Permit. Add new subsections m and n to section IV.A.1. of the Limitations and Discharge Requirements as follows:

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

n. **Methyl Tertiary Butyl Ether (MTBE).** Effluent MTBE concentrations shall not exceed 5 µg/L as a calendar annual average.

3. NPDES Permit. Modify section VI.C.2.a.iii of the Limitations and Discharge Requirements as shown in underline/strikeout format below:

iii. Numeric Toxicity Monitoring Trigger. The numeric toxicity monitoring trigger to initiate a TRE is ~~8~~ 1 TU_C (where TU_C = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE when the effluent exhibits toxicity.

4. NPDES Permit. Modify section IV.C.2.d.iv of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

iv. Evaluation of Available Dilution for Chronic Aquatic Life Criteria. The chronic aquatic life mixing zone is sized to protect the water body as a whole and is generally larger than the acute mixing zone. The SRCSD has requested a chronic mixing zone for compliance with chronic aquatic life water quality criteria for ammonia, copper, cyanide, and chlorpyrifos. ~~A mixing zone for chronic aquatic life criteria has been allowed in this Order for development of the WQBELs for cyanide.~~

The requested chronic aquatic life mixing zone is 400 feet wide and extends 350 feet downstream of the diffuser. The proposed chronic mixing zone meets the requirements of the SIP as follows:

(1) *Shall not compromise the integrity of the entire waterbody* - The TSD states that, "*If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats.*"[1] The Sacramento River is approximately 600 feet wide at the surface. The chronic mixing zone is approximately 400 ft x 350 ft. The Sacramento River is a very large waterbody. Except as noted for ammonia in subsection vi., below, the chronic mixing zone would not compromise the integrity of the entire waterbody.

[1] TSD, pg. 33

(2) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* – The chronic mixing zone does not allow acute aquatic life criteria to be exceeded and this Order requires acute bioassays to be conducted using 100% effluent. Compliance with these requirements ensures that acutely toxic conditions to aquatic life passing through the chronic mixing zone do not occur.

(3) *Shall not restrict the passage of aquatic life* – The SRCSD developed a dynamic model to evaluate the near-field effects of the discharge. The dynamic model was used to evaluate the zone of passage around the mixing zone where water quality objectives are met. The dynamic model indicates there is a zone of passage for aquatic life, which was verified through dye testing. The size of the zone of passage varies on either side of the river depending on the river geometry[2]. The surface of the river is approximately 600 feet across and the bottom of the river is approximately 400 feet across. Based on the model the zone of passage at the surface of the river is generally at least 100 feet on both sides of the river, while the zone of passage at the bottom of the river is greater than 40 feet from both sides of the river.

(4) *Shall not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws* – The chronic mixing zone will not cause acutely toxic conditions, allows adequate zones of passage, and, except as noted for ammonia in subsection vi., below, is sized appropriately to ensure that there will be no adverse impacts to biologically sensitive or critical habitats.

(5) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – The current discharge has not been shown to result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance. This Order requires the discharge meets Title 22 (or equivalent) tertiary filtration, which will ensure continued compliance with these mixing zone requirements. There is concern that the high ammonia concentrations in the discharge create undesirable or nuisance aquatic life (see subsection vi. for ammonia, below), therefore, a chronic mixing zone for ammonia is not allowed. With these requirements the chronic mixing zone will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance.

(6) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls* – The chronic mixing zone is small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zone does not

2 Model Verification Results for FLOWMOD Simulations of SRCSD Effluent Discharge to the Sacramento River at Freeport, November 2007 Field Study, Flow Science

overlap mixing zones from other outfalls. There are no outfalls or mixing zones in the vicinity of the discharge.

(7) *Shall not be allowed at or near any drinking water intake* – The chronic mixing zone is not near a drinking water intake. The nearest downstream drinking water intake is the Barker Slough Pumping Plant, which is approximately 40 miles downstream of the discharge.

Although ~~T~~the chronic aquatic life mixing zone ~~therefore~~ complies with the SIP and~~. The mixing zone also complies with~~ the Basin Plan~~, which requires that the mixing zone not adversely impact beneficial uses~~, due to concerns with aquatic toxicity in the Delta, the Central Valley Water Board has denied the allowance of a chronic aquatic life mixing zone in this Order. Section 1.4.2 of the SIP states, in part, "…*The allowance of mixing zones is discretionary and shall be determined on a discharge-by-discharge basis."* In this case, the Delta is impaired for unknown toxicity and has experienced a significant pelagic organism decline. Therefore, the Central Valley Water Board finds that the allowance of a chronic aquatic life mixing zone is not acceptable for this discharge. ~~Beneficial uses will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Central Valley Water Board considered the procedures and guidelines in the EPA's Water Quality Standards Handbook, 2d Edition (updated July 2007), Section 5.1, and Section 2.2.2 of the Technical Support Document for Water Quality-based Toxics Control (TSD). The SIP incorporates the same guidelines.~~

5. NPDES Permit. Modify section IV.C.2.d.v of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

v. Evaluation of Available Dilution for Human Health Criteria. The Discharger's dynamic model is useful in determining the mixing and dilution near the discharge (i.e., near-field) and the model domain extends 700 feet downstream. Human health-based criteria are generally based long-term exposures, such as safe levels for lifetime exposure (e.g., for carcinogens, consumption of 1 liter/day for 70 years) and the mixing zones typically extend beyond the near-field mixing estimated by the Discharger's dynamic model. Since the human health mixing zone extends beyond the model domain of the dynamic model, the Discharger conducted a study titled "Sacramento River Harmonic Mean Mixing Zone Report"(June 2010) to establish the human health mixing zone and dilution. The June 2010 study identified the point downstream of the discharge where complete mixing occurs. Based on the results of the June 2010 study, the discharge is completely mixed approximately 3 miles downstream. The Discharger has requested the human health mixing zone extend to this point.

In determining the available receiving water dilution for compliance with human carcinogen criteria, the SIP, section 1.4.2.1 requires that the harmonic

mean of the receiving water flow be compared against the arithmetic mean of the effluent flow of the observed discharge period. Based on Sacramento River flow data at Freeport from 1 January 1970 to 31 December 2009 the harmonic mean river flow is 15,733 cfs. The permitted average dry weather flow for the Facility is 181 mgd (280 cfs). Therefore, a dilution ratio of 56:1 is available for compliance with human carcinogen criteria. This Order allows a dilution credit for human carcinogen criteria of 56:1 and the mixing zone extends 3 miles downstream of the discharge. For non-human carcinogen human health criteria, the TSD recommends dilution based on a 30Q5 receiving water flow[3], which is the lowest 30 day average flow with a recurrence frequency of once in five years. Based on Sacramento River flow data at Freeport from 1 January 1970 to 31 December 2009 the 30Q5 flow is 8234 cfs, resulting in a dilution credit of 29:1.

The requested human health mixing zone meets the requirements of the SIP as follows:

(1) *Shall not compromise the integrity of the entire waterbody* - The TSD states that, "*If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats.*"[4] The Sacramento River is a very large waterbody and the human health mixing zone is not applicable to aquatic life criteria. Except as noted for nitrate in subsection vi., below, the human health mixing zone does not compromise the integrity of the entire waterbody.

(2) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* –The human health mixing zone is not applicable to aquatic life criteria. Therefore, acutely toxic conditions will not occur in the mixing zone.

(3) *Shall not restrict the passage of aquatic life* – The human health mixing zone is not applicable to aquatic life criteria. Therefore, the mixing zone will not restrict the passage of aquatic life.

(4) *Shall not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws* – The human health mixing zone is not applicable to aquatic life criteria. Except as noted for nitrate in subsection vi., below, the mixing zone will not impact biologically sensitive or critical habitats.

(5) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – Except as noted for

3 USEPA Water Quality Handbook, Section 5.2
4 TSD, pg. 33

nitrate (see subsection vi, below), the allowance of a human health mixing zone will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance.

(6) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls* – The human health mixing zone is small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zone does not overlap mixing zones from other outfalls. There are no outfalls or mixing zones in the vicinity of the discharge.

(7) *Shall not be allowed at or near any drinking water intake* – There are no drinking water intakes within the human health mixing zone. The nearest drinking water intake is the Freeport Regional Water Authority intake one mile upstream of the discharge at Freeport, which is owned and operated by East Bay Municipal Utility District (EBMUD). An operating agreement between the EBMUD and the Discharger dated 2006 will prevent diversion of river water containing diluted treated wastewater at the Freeport water intake. The nearest downstream drinking water intake is the Barker Slough Pumping Plant, which is approximately 40 miles downstream of the discharge.

Although ~~T~~the human health mixing zone ~~therefore~~ complies with the SIP~~.~~ ~~The mixing zone also complies with~~ and the Basin Plan, ~~which requires that the mixing zone not adversely impact beneficial uses~~ due to concerns with pollutant loadings in the Delta, the Central Valley Water Board has denied the allowance of human health dilution in this Order. Section 1.4.2 of the SIP states, in part, "…*The allowance of mixing zones is discretionary and shall be determined on a discharge-by-discharge basis."* In this case, the Delta is impaired for several pollutants and is a drinking water source for more than 25 million Californians. Therefore, the Central Valley Water Board finds that the allowance of a human health mixing zone is not acceptable for this discharge. ~~Beneficial uses will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Central Valley Water Board considered the procedures and guidelines in the EPA's Water Quality Standards Handbook, 2d Edition (updated July 2007), Section 5.1, and Section 2.2.2 of the Technical Support Document for Water Quality-based Toxics Control (TSD). The SIP incorporates the same guidelines.~~

6. NPDES Permit. Modify section IV.C.2.d.vi of the Fact Sheet (Attachment F) as shown in underline/strikeout format below for cyanide, carbon tetrachloride, chlorodibromomethane, dichlorobromomethane, methylene chloride, tetrachloroethylene, pentachlorophenol, bis(2-ethylhexyl)phthalate, dibenzo(ah)anthracene, manganese, and MTBE:

Cyanide – Table F-12, below, shows the WQBELs for cyanide calculated using SRCSD's dynamic model with the allowance of acute and chronic aquatic life dilution, WQBELs calculated using SRCSD's dynamic model with the allowance of only chronic aquatic life dilution, end-of-pipe effluent limitations using a reasonable worst-case steady-state approach, and the Facility's performance. This information demonstrates the Facility cannot meet end-of-pipe effluent limits, but can meet WQBELs calculated with the allowance of chronic aquatic life dilution. Acute aquatic life dilution is not needed for cyanide. Assimilative capacity is available for cyanide in the receiving water. ~~, and, as discussed above, the~~ If a chronic aquatic life mixing zone is authorized ~~meets the requirements of the SIP and Basin Plan. Therefore,~~ the WQBELs for cyanide ~~have been~~ could be developed considering the allowance of chronic aquatic life dilution.

Carbon tetrachloride - Based on existing effluent data from June 2005-October 2009, it appears that the Facility cannot meet end-of-pipe effluent limitations for carbon tetrachloride of 0.25 µg/L and 0.50 µg/L, as an average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL), respectively. The Discharger collected 101 samples during this time period resulting in 95 non-detect samples (i.e., ranging from <0.06 µg/L to <0.5 µg/L), three J-flagged estimates of 0.1 µg/L, 0.1 µg/L, and 0.2 µg/L, and three samples above the reporting level at 0.5 µg/L, 1.4 µg/L, and 1.7 µg/L. The effluent sampling was part of the three times per year sampling required in the previous permit, which required daily sampling for one week three times per year. Assimilative capacity is available for carbon tetrachloride in the receiving water. ~~, and, as discussed above, the~~ If a human health mixing zone is authorized, ~~meets the requirements of the SIP and Basin Plan. Therefore,~~ the WQBELs for carbon tetrachloride ~~have been~~ could be developed considering the allowance of human carcinogen dilution credits.

Chlorodibromomethane – Based on existing effluent data from June 2005 – October 2009, the Facility cannot meet end-of-pipe effluent limitations for chlorodibromomethane of 0.41 µg/L and 0.82 µg/L, as an AMEL and MDEL, respectively. Assimilative capacity is available for chlorodibromomethane in the receiving water. ~~, and, as discussed above, the~~ If a human health mixing zone is authorized, ~~meets the requirements of the SIP and Basin Plan. Therefore,~~ the WQBELs for chlorodibromomethane ~~have been~~ could be developed considering the allowance of human carcinogen dilution credits.

Dichlorobromomethane – Based on existing effluent data from June 2005– October 2009, it appears that the Facility cannot meet end-of-pipe effluent

limitations for dichlorobromomethane of 0.56 µg/L and 1.1 µg/L, as an AMEL and MDEL, respectively. Assimilative capacity is available for dichlorobromomethane in the receiving water. ~~, and, as discussed above, the~~ If a human health mixing zone is authorized, ~~meets the requirements of the SIP and Basin Plan. Therefore,~~ the WQBELs for dichlorobromomethane ~~have been~~ could be developed considering the allowance of human carcinogen dilution credits.

Methylene chloride – Based on existing effluent data from June 2005- October 2009, the Facility cannot meet end-of-pipe effluent limitations for methylene chloride of 4.7 µg/L and 11 µg/L, as an AMEL and MDEL, respectively. Assimilative capacity is available for methylene chloride in the receiving water. ~~, and, as discussed above, the~~ If a human health mixing zone is authorized, ~~meets the requirements of the SIP and Basin Plan. Therefore,~~ the WQBELs for methylene chloride ~~have been~~ could be developed considering the allowance of human carcinogen dilution credits.

Tetrachloroethylene – Based on existing effluent data from June 2005- October 2009, the Facility cannot meet end-of-pipe effluent limitations for tetrachloroethylene of 0.8 µg/L and 1.6 µg/L, as an AMEL and MDEL, respectively. Assimilative capacity is available for tetrachloroethylene in the receiving water. ~~, and, as discussed above, the~~ If a human health mixing zone is authorized, ~~meets the requirements of the SIP and Basin Plan. Therefore,~~ the WQBELs for tetrachloroethylene ~~have been~~ could be developed considering the allowance of human carcinogen dilution credits.

Pentachlorophenol – Based on existing effluent data from June 2005- October 2009, it appears that the Facility cannot meet end-of-pipe effluent limitations for pentachlorophenol of 0.28 µg/L and 0.56 µg/L, as an AMEL and MDEL, respectively. Assimilative capacity is available for pentachlorophenol in the receiving water. ~~, and, as discussed above, the~~ If a human health mixing zone is authorized, ~~meets the requirements of the SIP and Basin Plan. Therefore,~~ the WQBELs for pentachlorophenol ~~have been~~ could be developed considering the allowance of human carcinogen dilution credits.

Bis(2-ethylhexyl)phthalate – Based on existing effluent data from June 2005- October 2009, it appears that the Facility cannot meet end-of-pipe effluent limitations for bis(2-ethylhexyl)phthalate of 1.8 µg/L and 3.4 µg/L, as an AMEL and MDEL, respectively. Assimilative capacity is available for bis(2-ethylhexyl)phthalate in the receiving water. ~~, and, as discussed above, the~~ If a human health mixing zone is authorized, ~~meets the requirements of the SIP and Basin Plan. Therefore,~~ the WQBELs for bis(2-ethylhexyl)phthalate ~~have been~~ could be developed considering the allowance of human carcinogen dilution credits.

Dibenzo(ah)anthracene – Based on existing effluent data from June 2005- October 2009, it appears that the Facility cannot meet end-of-pipe effluent limitations for dibenzo(ah)anthracene of 4 ng/L and 9 ng/L, as an AMEL and

MDEL, respectively. Assimilative capacity is available for dibenzo(ah)anthracene in the receiving water. ~~, and, as discussed above, the~~ If a human health mixing zone is authorized, ~~meets the requirements of the SIP and Basin Plan. Therefore,~~ the WQBELs for dibenzo(ah)anthracene ~~have been~~ could be developed considering the allowance of human carcinogen dilution credits.

Manganese – Based on existing effluent data from April 2009-June 2009, it appears that the Facility cannot meet an end-of-pipe AMEL for manganese of 50 µg/L. The Discharger collected 34 samples during this time period and the maximum effluent concentration was 82 µg/L and averaged 64 µg/L. Assimilative capacity is available for manganese in the receiving water. ~~, and, as discussed above, the~~ If a human health mixing zone is authorized, ~~meets the requirements of the SIP and Basin Plan. Therefore,~~ the WQBELs for manganese ~~have been~~ could be developed considering the allowance of non-human carcinogen dilution credits.

MTBE – Based on existing effluent data from June 2005- October 2009, it appears that the Facility cannot meet an end-of-pipe annual average effluent limitation for MTBE of 5 µg/L. Assimilative capacity is available for MTBE in the receiving water. ~~, and, as discussed above, the~~ If a human health mixing zone is authorized, ~~meets the requirements of the SIP and Basin Plan. Therefore,~~ the WQBELs for MTBE ~~have been~~ could be developed considering the allowance of non-human carcinogen dilution credits.

7. NPDES Permit. Modify section IV.C.3.d.ii.(c) of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

(c) Dilution Considerations. As discussed in Section IV.C.2.d of the Fact Sheet, ~~an allowance for~~ acute and chronic aquatic life dilution ~~may~~ have not been granted. Therefore, WQBELs for ammonia have been calculated without the allowance for dilution. ~~However~~ In addition, ~~based on~~ the considerations below and discussed in more detail in Attachment J, support the finding of no dilution ~~has been allowed~~ for ammonia. The Central Valley Water Board determines that the Discharger must fully nitrify and denitrify its wastewater to reduce ammonia and nitrogen for the following reasons:

8. NPDES Permit. Modify section IV.C.3.d.iii.(c) and (d) of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

(c) WQBELs. ~~The receiving water contains assimilative capacity for bis(2-ethylhexyl) phthalate, therefore, a dilution credit of 56:1 was allowed in the development of the WQBELs for bis(2-ethylhexyl) phthalate . Based on the allowable dilution credit, an AMEL of 94 µg/L and a MDEL of 180 µg/L is calculated. The Central Valley Water Board finds that granting of this~~

~~dilution credit could allocate an unnecessarily large portion of the receiving water's assimilative capacity of bis(2-ethylhexyl) phthalate and could violate the Antidegradation Policy. For this reason, a performance-based effluent limitation is calculated (see See Table F-20. Performance-based Effluent Limitations Statistics.).~~ As discussed in Section IV.C.2.d of the Fact Sheet, dilution has not been granted in this Order for human carcinogens. Therefore, ~~T~~this Order contains a final maximum daily effluent limitation (MDEL) for bis(2-ethylhexyl) phthalate of 3.4 ~~13~~ µg/L and an average monthly effluent limitation (AMEL) of 1.8 µg/L.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 8.1 µg/L exceeds ~~is less than~~ the applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for bis(2-ethylhexyl) phthalate are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the bis(2-ethylhexyl) phthalate effluent limitations is established in TSO No. R5-2010-XXXX in accordance with CWC section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3. ~~The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.~~

9. NPDES Permit. Modify section IV.C.3.d.iv.(c) and (d) of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

(c) WQBELs. ~~The receiving water contains assimilative capacity for carbon tetrachloride, therefore, a dilution credit of 56:1 was allowed in the development of the WQBELs for carbon tetrachloride. Based on the allowable dilution credit, an AMEL of 9 µg/L and a MDEL of 17 µg/L is calculated. The Central Valley Water Board finds that granting of this dilution credit could allocate an unnecessarily large portion of the receiving water's assimilation capacity of carbon tetrachloride and could violate the Antidegradation Policy. For this reason, a performance-based effluent limitation is calculated (See Table F-20. Performance-based Effluent Limitations Statistics).~~ As discussed in Section IV.C.2.d of the Fact Sheet, dilution has not been granted in this Order for human carcinogens. Therefore, ~~T~~this Order contains a maximum daily effluent limitation (MDEL) for carbon tetrachloride of 0.25 ~~5.3~~ µg/L and an average monthly effluent limitation (AMEL) of 0.46 µg/L.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 1.7 µg/L ~~is less than~~ exceeds the applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for carbon tetrachloride are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the carbon tetrachloride effluent limitations is established in TSO No. R5-2010-XXXX in accordance with CWC section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3. ~~The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.~~

10. NPDES Permit. Modify section IV.C.3.d.v.(c) of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

(c) WQBELs. ~~Assimilative capacity within a water body is determined using detected and non-detected receiving water samples. Sampling for dibenzo(ah)anthracene was conducted between January 1998 to July 2008. Several analytical laboratory methods were used to detect dibenzo(ah)anthracene with MDLs varying from 10 µg/L to 0.00029 µg/L. To determine assimilative capacity the detected and non-detected sample concentrations are averaged and the averaged number is subtracted from the water quality criterion. If all the non-detected samples are used in determined assimilative capacity calculations then no assimilative capacity for dibenzo(ah)anthracene exists in the receiving water. However, this calculation may not provide an accurate assessment of assimilative capacity. Since October 2003 EPA method 625 with a MDL of 0.001 µg/L was used to determine if dibenzo(ah) anthracene was detected in the receiving water. One sample was detected with a J-flagged estimate of 0.0021 µg/L. Using 23 samples with EPA method 625 to determine assimilative capacity for dibenzo(ah)anthracene appears to be reasonable without using the samples with greater MDLs. The receiving water contains assimilative capacity for dibenzo(ah)anthracene, therefore, a dilution credit of 56:1 based on the harmonic mean of the river flow was allowed in the development of the WQBELs for dibenzo(ah)anthracene. Based on the allowable dilution credit,~~ As discussed in Section IV.C.2.d of the Fact Sheet, dilution has not been granted in this Order for human carcinogens. Therefore, ~~an AMEL of 0.2 µg/L and a MDEL of 0.4 µg/L is calculated. T~~this Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for

dibenzo(ah)anthracene of 0.004 ~~0.2~~ µg/L and 0.01 ~~0.4~~ µg/L, respectively, based on the CTR criterion for the protection of human health.

11. NPDES Permit. Modify section IV.C.3.d.vi.(c) and (d) of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

(c) WQBELs. ~~The receiving water contains assimilative capacity for chlorodibromomethane, therefore, a dilution credit of 56:1 was allowed in the development of the WQBELs for chlorodibromomethane. Based on the allowable dilution credit, an AMEL of 12 µg/L and a MDEL of 25 µg/L is calculated. The Central Valley Water Board finds that granting of this dilution credit could allocate an unnecessarily large portion of the receiving water's assimilation capacity of chlorodibromomethane and could violate the Antidegradation Policy. For this reason, a performance-based effluent limitation is calculated (See Table F-20. Performance-based Effluent Limitations Statistics).~~ As discussed in Section IV.C.2.d of the Fact Sheet, dilution has not been granted in this Order for human carcinogens. Therefore, ~~T~~this Order contains a maximum daily effluent limitation (MDEL) for chlorodibromomethane of 0.85 ~~2.2~~ µg/L and an average monthly effluent limitation (AMEL) of 0.41 µg/L.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 0.7 µg/L ~~is less than to~~ exceeds the applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for chlorodibromomethane are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the chlorodibromomethane effluent limitations is established in TSO No. R5-2010-XXXX in accordance with CWC section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3. ~~The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible~~

12. NPDES Permit. Modify section IV.C.3.d.vii.(c) and (d) of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

(c) WQBELs. ~~The receiving water contains assimilative capacity for dichlorobromomethane, therefore, a dilution credit of 56:1 was allowed in the development of the WQBELs for dichlorobromomethane. Based on the allowable dilution credit, an AMEL of 27 µg/L and a MDEL of 47 µg/L~~

~~is calculated. The Central Valley Water Board finds that granting of this dilution credit could allocate an unnecessarily large portion of the receiving water's assimilation capacity of dichlorobromomethane and could violate the Antidegradation Policy. For this reason, a performance-based effluent limitation is calculated (See Table F-20. Performance-based Effluent Limitations Statistics). The performance-based effluent MDEL is 3.4 µg/L. Using the performance-based limit for the MDEL provides protection of the drinking water beneficial use and meets the antidegradation policy of no increase in concentration of dichlorobromomethane discharged by the Facility.~~ As discussed in Section IV.C.2.d of the Fact Sheet, dilution has not been granted in this Order for human carcinogens. Therefore, ~~T~~this Order contains a final MDEL for dichlorobromomethane of 1.1 ~~3.4~~ µg/L and an average monthly effluent limitation (AMEL) of 0.56 µg/L.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 2.5 µg/L ~~is less than to~~ exceeds the applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for dichlorobromomethane are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the dichlorobromomethane effluent limitations is established in TSO No. R5-2010-XXXX in accordance with CWC section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3. ~~The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible~~

13. NPDES Permit. Modify section IV.C.3.d.viii.(c) of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

(c) WQBELs. ~~Although the receiving water contains assimilative capacity for methylene chloride, the Discharger can immediately comply with the applicable WQBELs without dilution.~~ As discussed in Section IV.C.2.d of the Fact Sheet, dilution has not been granted in this Order for human carcinogens. Therefore, ~~T~~this Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for methylene chloride of 4.7 µg/L and 11 µg/L, respectively, based on the CTR criterion for the protection of human health.

14. NPDES Permit. Modify section IV.C.3.d.x.(c) and (d) of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

(c) WQBELs. ~~The receiving water contains assimilative capacity for pentachlorophenol, therefore, a dilution credit of 56:1 was allowed in the development of the WQBELs for pentachlorophenol. Based on the allowable dilution credit, an AMEL of 12 µg/L and a MDEL of 24 µg/L is calculated. The Central Valley Water Board finds that granting of this dilution credit could allocate an unnecessarily large portion of the receiving water's assimilation capacity of pentachlorophenol and could violate the Antidegradation Policy. For this reason, a performance-based effluent limitation is calculated (See Table F-20. Performance-based Effluent Limitations Statistics).~~ As discussed in Section IV.C.2.d of the Fact Sheet, dilution has not been granted in this Order for human carcinogens. Therefore, ~~T~~this Order contains a final ~~MDEL~~ AMEL for pentachlorophenol of 6 ~~18~~ µg/L.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the projected MEC of 18 ~~5.7~~ µg/L ~~is less than~~ exceeds the applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for pentachlorophenol are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the pentachlorophenol effluent limitations is established in TSO No. R5-2010-XXXX in accordance with CWC section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3. ~~The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible~~

15. NPDES Permit. Modify section IV.C.3.d.xi.(c) and (d) of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

(c) WQBELs. ~~The receiving water contains assimilative capacity for pentachlorophenol, therefore, a dilution credit of 56:1 was allowed in the development of the WQBELs for tetrachloroethylene. Based on the allowable dilution credit, an AMEL of 37 µg/L and a MDEL of 75µg/L is calculated. The Central Valley Water Board finds that granting of this dilution credit could allocate an unnecessarily large portion of the receiving water's assimilation capacity of pentachlorophenol and could violate the Antidegradation Policy. For this reason, a performance-based effluent limitation is calculated (See Table F-20. Performance-based Effluent~~

~~Limitations Statistics).~~ As discussed in Section IV.C.2.d of the Fact Sheet, dilution has not been granted in this Order for human carcinogens. Therefore, ~~T~~this Order contains a final MDEL for tetrachloroethylene of 1.7 ~~4.4~~ µg/L and an average monthly effluent limitation (AMEL) of 0.8 µg/L.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 0.9 µg/L ~~is less than to~~ exceeds the applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for tetrachloroethylene are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the tetrachloroethylene effluent limitations is established in TSO No. R5-2010-XXXX in accordance with CWC section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3. ~~The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.~~

16. NPDES Permit. Modify section IV.C.3.d.xiv.(c) and (d) of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

(c) WQBELs. As discussed in Section IV.C.3.d.~~vi~~ of the Fact Sheet, dilution has not been granted in this Order for acute and chronic aquatic life criteria. Therefore, ~~based on Facility performance acute aquatic life dilution is not needed and has not been allowed for cyanide. However, chronic aquatic life dilution may be allowed for cyanide. Based on results of the Discharger's dynamic model for compliance with the CTR criteria for cyanide at the edge of the chronic aquatic life mixing zone, MDEL of 22 µg/L, and an AMEL of 11 µg/L is calculated. The Central Valley Water Board finds that granting of this dilution credit could allocate an unnecessarily large portion of the receiving water's assimilation capacity of cyanide and could violate the Antidegradation Policy. For this reason, a performance-based effluent limitation is calculated (See Table F-20. Performance-based Effluent Limitations Statistics). T~~this Order contains a maximum daily effluent limitation (MDEL) for cyanide of 8.3 ~~11~~ µg/L and an average monthly effluent limitation (AMEL) of 4.3 µg/L.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 10 µg/L ~~is less than~~ exceeds the MDEL. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent

limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for cyanide are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the cyanide effluent limitations is established in TSO No. R5-2010-XXXX in accordance with CWC section 13300 that requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3. ~~The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.~~

17. NPDES Permit. Modify section IV.C.3.d.xv.(c) and (d) of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

(c) WQBELs. ~~The receiving water contains assimilative capacity for manganese, therefore, a dilution credit of 56:1 was allowed in the development of the WQBELs for manganese. Based on the allowable dilution credit, an annual average effluent limit of 2700 µg/L is calculated. The Central Valley Water Board finds that granting of this dilution credit could allocate an unnecessarily large portion of the receiving water's assimilation capacity of manganese and could violate the Antidegradation Policy. For this reason, a performance-based effluent limitation is calculated (See Table F-20. Performance-based Effluent Limitations Statistics). The performance-based annual average effluent limit is 85 µg/L.~~ As discussed in Section IV.C.2.d of the Fact Sheet, dilution has not been granted in this Order for human health constituents. Therefore, ~~T~~this Order contains an annual average effluent limitation ~~MDEL~~ for manganese of 50 ~~85~~ µg/L.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 82 µg/L ~~is less than~~ exceeds the applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for manganese are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the manganese effluent limitations is established in TSO No. R5-2010-XXXX in accordance with CWC section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3. ~~The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.~~

18. NPDES Permit. Modify section IV.C.3.d.xvi.(c) and (d) of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

(c) WQBELs. ~~The receiving water contains assimilative capacity for MTBE, therefore, a dilution credit of 56:1 was allowed in the development of the WQBELs for MTBE. Based on the allowable dilution credit, an annual average effluent limit of 260 µg/L is calculated. The Central Valley Water Board finds that granting of this dilution credit could allocate an unnecessarily large portion of the receiving water's assimilation capacity of MTBE and could violate the Antidegradation Policy. For this reason, a performance-based effluent limitation is calculated (See Table F-20. Performance-based Effluent Limitations Statistics).~~ As discussed in Section IV.C.2.d of the Fact Sheet, dilution has not been granted in this Order for human health constituents. Therefore, ~~T~~this Order contains an annual average effluent limitation ~~MDEL~~ for MTBE of 5~~18~~ µg/L.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 5.8 µg/L ~~is less than~~ exceeds the applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for MTBE are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the MTBE effluent limitations is established in TSO No. R5-2010-XXXX in accordance with CWC section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3. ~~The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.~~

19. NPDES Permit. Modify section IV.C.3.d.xxi.(c) and (d) of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

(c) WQBELs. Effluent limitations for pH of 6.~~0~~5 as an instantaneous minimum and 8.0 as an instantaneous maximum are included in this Order. The instantaneous maximum effluent limit is more stringent than the Basin Plan objective and is based on Facility performance. ~~Based on modeling performed by the Discharger, an instantaneous minimum effluent limit of 6.0 ensures compliance with the Basin Plan's minimum objective within the chronic mixing zone.~~A chronic mixing zone is not allowed, therefore, the instantaneous minimum effluent limit has been set at the Basin Plan objective of 6.5.

(d) Plant Performance and Attainability. Analysis of the effluent data demonstrates that the Facility can~~not~~ immediately comply with the effluent limitations for pH.

20. NPDES Permit. Modify Table F-16 of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

Summary of Final Effluent Limitations
Discharge Point No. EFF- 001

Table F-16. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand, 5-day @ 20°C	mg/L	10	15	20	--	--
	lbs/day[1]	15,100	22,700	30,200	--	--
	% Removal	85	--	--	--	--
Total Suspended Solids	mg/L	10	15	20	--	--
	lbs/day[1]	15,100	22,700	30,200	--	--
	% Removal	85	--	--	--	--
pH	standard units	--	--	--	~~6.0~~6.5	8.0
Priority Pollutants						
Bis(2-ethylhexyl)phthalate	µg/L	~~--~~ 1.8	--	~~13~~ 3.4		
Carbon Tetrachloride	µg/L	~~--~~ 0.25	--	~~5.3~~ 0.46	--	--
Chlorpyrifos	µg/L	0.012	--	0.025	--	--
Chlorodibromomethane	µg/L	~~--~~ 0.41	--	~~2.2~~ 0.85	--	--
Copper, Total Recoverable	µg/L	7.3	--	9.3	--	--
Cyanide	µg/L	~~--~~ 4.3	--	~~11~~ 8.3	--	--
Dibenzo(ah)anthracene	µg/L	~~0.2~~ 0.004	--	~~0.4~~ 0.01		
Dichlorobromomethane	µg/L	~~--~~ 0.56	--	~~3.4~~ 1.1	--	--
Methylene Chloride	µg/L	4.7	--	11	--	--
N-nitrosodimethylamine	µg/L	0.00069	--	0.0014	--	--
Pentachlorophenol	µg/L	~~--~~ 6	--	~~--~~ ~~18~~	--	--
Tetrachloroethylene	µg/L	~~--~~ 0.8	--	~~4.4~~ 1.7	--	--
Non-Conventional Pollutants						
Settleable Solids	ml/L	0.1	--	0.2	--	--
Aluminum, Total	µg/L	503	--	750	--	--
Ammonia Nitrogen, Total (as N)	mg/L	1.8	--	2.2	--	--
	lbs/day[1]	2720	--	3320	--	--
Nitrate, Total (as N)	mg/L	0.26	--	--	--	--
Manganese, Total Recoverable	µg/L	50[2]~~--~~	--	~~--~~ ~~85~~	--	--
Methyl Tertiary Butyl Ether	µg/L	5[2]~~--~~	--	~~--~~ ~~18~~	--	--

[1] Based on a design average dry weather flow of 181 MGD.

[2] Annual Average Effluent Limitation

21. NPDES Permit. Modify section IV.D.3 of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

3. Satisfaction of Anti-Backsliding Requirements

The effluent limitations in this Order are at least as stringent as the effluent limitations in the existing Order, with the exception of effluent limitations for chloroform, lindane, silver, lead, and zinc ~~and cyanide~~. The effluent limitations for these pollutants are less stringent than those in Order No. 5-00-188. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

Order No. 5-00-188 included effluent limitations for chloroform, lindane, silver, lead, and zinc ~~and cyanide~~. Based on monitoring data collected from June 2005 – July 2008, the discharge does not indicate reasonable potential to exceed water quality objectives for chloroform, lindane, silver, lead and zinc. Therefore, effluent limitations for these parameters were not included in this Order. The lack of effluent limitations in this Order does not constitute backsliding.

~~Order No. 5-00-188 established effluent limitations for cyanide of 10.8 µg/L as a daily average with a trigger of 6.1 µg/L. The cyanide limitation of 10.8 µg/L was based on the MEC of 9.0 µg/L times a safety factor of 1.2 (which was proposed by the Discharger and accepted by the Central Valley Water Board). A trigger concentration exceedance results in an investigation and Central Valley Water Board notification with the Central Valley Water Board may require an action plan to address the cause of the exceedance. The Central Valley Water Board found that the trigger concentration would be protective and appropriate if established as the 95th percentile value assuming that historical data follows a lognormal probability distribution which was 6.1 mg/L. The Discharger performed a dynamic model for cyanide which resulted in a chronic LTA of 13.9 mg/L. The calculated limit is 11.0 mg/L as an AMEL with a MDEL of 22.0 mg/L. As discussed in Section IV.C.2.d, the dynamic model represents a more accurate picture of the mixing zone concentrations. This Order relaxes the effluent limitation for cyanide from Order No. 5-00-188. The dynamic model data submitted by the Discharger is considered new information by the Central Valley Water Board.~~

Order No. 5-00-188 established effluent limitations for oil and grease. As discussed further in section IV.C.3, monitoring data over the term of Order No. 5-00-188 indicated that the discharge no longer exhibits reasonable potential to exceed water quality objectives for oil and grease. Therefore, the effluent limitation is not retained in this Order. The monitoring data submitted by the Discharger is considered new information by the Central Valley Water Board.

The ~~revision of the cyanide limitation and the~~ removal of effluent limitations for oil and grease, chloroform, lindane, silver, lead and zinc are consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Any impact on existing water quality will be insignificant.

22. NPDES Permit. Modify section VII.B.2.a of the Fact Sheet (Attachment F) as shown in underline/strikeout format below:

Monitoring Trigger. As discussed in Section IV.C.2.d, above, this Order does not allow~~s~~ a chronic aquatic toxicity mixing zone. ~~The mixing zone extends 350 feet downstream of the outfall.~~ A numeric toxicity monitoring trigger of **> ~~8~~**1 TUc (where TUc = 100/NOEC) is applied in the provision. Therefore, a TRE is triggered when the effluent exhibits toxicity at ~~12.5~~100% effluent. ~~The numeric monitoring trigger represents the in-stream waste concentration at the edge of the chronic mixing zone. The in-stream waste concentration is the concentration of the effluent in the receiving water after mixing (i.e., inverse of the dilution factor). The Discharger has conducted extensive modeling of the discharge and has estimated the 4-day average dilution at the edge of the chronic mixing zone. Table F-20, below, shows modeling results for the percent effluent 350 feet from the diffuser that was provided by the Discharger as part of its comments on the Tentative Order.~~

~~**Table F-20. Dyntox Model Results for Percent Effluent 350 Feet from the SRWTP Diffuser at 181 mgd**~~

	~~4-Day Average 350 Feet from Diffuser~~	
~~Statistic~~	~~Percent Effluent~~	~~Dilution~~
~~*Mean*~~	~~3.93~~	~~25.5~~
~~*Median*~~	~~3.94~~	~~25.4~~
~~*95%-ile*~~	~~6.35~~	~~15.8~~
~~*99.91%-ile*~~	~~7.50~~	~~13.3~~
~~*5%-ile*~~	~~1.91~~	~~52.4~~

~~Based on the results of the modeling shown in Table F-20, above, the 4-day average effluent concentration at the edge of the chronic mixing zone, with a one-in-three year exceedance (i.e., 99.91 percentile), is 7.5 percent. This corresponds to a toxicity trigger of 13.3 TUc. Although the modeling demonstrates a chronic toxicity trigger of 13.3 TUc at the edge of the chronic mixing zone, the toxicity trigger has been set at 8 TUc, which is the toxicity trigger in Order 5-00-188 (previous Order). The Discharger has shown consistent compliance with this trigger and it will require proactive efforts to evaluate effluent toxicity before chronic toxicity is experienced outside the chronic toxicity mixing zone.~~

23. Time Schedule Order. Modify Finding 2 as shown in underline/strikeout format below:

2. WDR Order No. R5-2010-XXXX, contains Final Effluent Limitations IV.A.1, which reads, in part, as follows:

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

Table 6. Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Bis(2-ethylhexyl)phthalate	µg/L	1.8	--	3.4	--	--
Carbon Tetrachloride	µg/L	0.25	--	0.46	--	--
Chlorodibromomethane	µg/L	0.41	--	0.85	--	--
Cyanide	µg/L	4.3	--	8.3	--	--
Dichlorobromomethane	µg/L	0.56	--	1.1	--	--
Tetrachloroethylene	µg/L	0.8	--	1.7	--	--
Pentachlorophenol	µg/L	6	--	--	--	--
N-nitrosodimethylamine	µg/L	0.00069	--	0.0014	--	--
1,2-Diphenyl hydrazine	µg/L	0.04	--	0.08	--	--
Dibenzo(a,h)anthracene	µg/L	~~0.2~~ 0.004	--	~~0.4~~ 0.01	--	--
pH	su	--	--	--	6.5	8.0

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

m. **Methyl Tertiary Butyl Ether (MTBE).** Effluent MTBE concentrations shall not exceed 5 µg/L as a calendar annual average.

24. Time Schedule Order. Modify Finding 4 as shown in underline/strikeout format below:

4. The effluent limitations at Discharge Point No. 001 specified in Order No. R5-2010-XXXX for bis(2-ethylhexyl)phthalate, carbon tetrachloride, chlorodibromomethane, cyanide, dichlorobromomethane, tetrachloroethylene, N-nitrosodimethylamine, and dibenzo(a,h)anthracene are based on implementation of the California Toxics Rule (CTR). The effluent limitations for pH are based on water quality objective for pH contained in the *Water Quality Control Plan*, *Fourth Edition (Revised September 2009),* for the Sacramento and San Joaquin River Basins (hereinafter Basin Plan). The effluent limitations for chlorpyrifos and diazinon are based on water quality objectives contained in the Basin Plan. The effluent limitations for pentachlorophenol, manganese, and Methyl Tertiary Butyl Ether are based on implementation of the Basin Plan's narrative chemical constituents objective applying the primary maximum contaminant level (MCL) for pentachlorophenol and the secondary MCL for manganese, and Methyl Tertiary Butyl Ether. The effluent limitations for bis(2-ethylhexyl)phthalate, carbon tetrachloride, chlorodibromomethane, cyanide, dichlorobromomethane, tetrachloroethylene, pH, N-nitrosodimethylamine, 1,2-diphenyl hydrazine, ~~and~~ dibenzo(a,h)anthracene, pentachlorophenol, manganese, Methyl Tertiary Butyl Ether, chlorpyrifos and

diazinon are new limitations, which were not prescribed in previous WDR Order No. 5-00-188, adopted by the Central Valley Water Board on 4 August 2000.

25. Time Schedule Order. Modify Finding 8 as shown in underline/strikeout format below:

8. In accordance with CWC section 13385(j)(3), the Central Valley Water Board finds that, based upon results of effluent monitoring, the Discharger is not able to consistently comply with the new water quality-based effluent limitation for bis(2-ethylhexyl)phthalate, carbon tetrachloride, chlorodibromomethane, cyanide, dichlorobromomethane, tetrachloroethylene, pH, N-nitrosodimethylamine, 1,2-diphenyl hydrazine, ~~and~~ dibenzo(a,h)anthracene, pentachlorophenol, manganese, Methyl Tertiary Butyl Ether, chlorpyrifos and diazinon. These limitations are new requirements that become applicable to WDR Order No. R5-2010-XXXX after the effective date of adoption of the waste discharge requirement for which new or modified control measures are necessary in order to comply with the limitations, and the new or modified control measures cannot be designed, installed, and put into operation within 30 calendar days.

26. Time Schedule Order. Modify Finding 9 as shown in underline/strikeout format below:

9. Immediate compliance with the new effluent limitations for bis(2-ethylhexyl)phthalate, carbon tetrachloride, chlorodibromomethane, cyanide, dichlorobromomethane, tetrachloroethylene, pH, N-nitrosodimethylamine, 1,2-diphenyl hydrazine, ~~and~~ dibenzo(a,h)anthracene, pentachlorophenol, manganese, Methyl Tertiary Butyl Ether, chlorpyrifos and diazinon is not possible or practicable. The Clean Water Act and the California Water Code authorize time schedules for achieving compliance.

27. Time Schedule Order. Modify Finding 11 as shown in underline/strikeout format below:

11. By statute, a Time Schedule Order may provide protection from MMPs for no more than five years. Compliance with this Order only exempts the Discharger from mandatory penalties for violations of the final effluent limitations for bis(2-ethylhexyl)phthalate, carbon tetrachloride, chlorodibromomethane, cyanide, dichlorobromomethane, tetrachloroethylene, pH, N-nitrosodimethylamine, ~~and~~ dibenzo(a,h)anthracene, pentachlorophenol, manganese, Methyl Tertiary Butyl Ether, chlorpyrifos and diazinon in accordance with CWC section 13385(j)(3). Protection from MMPs for the final effluent limitations for bis(2-ethylhexyl)phthalate, carbon tetrachloride, chlorodibromomethane, cyanide, dichlorobromomethane, tetrachloroethylene, pH, N-nitrosodimethylamine, ~~and~~ dibenzo(a,h)anthracene, pentachlorophenol, manganese, and Methyl Tertiary Butyl Ether begins immediately, and may not extend beyond 1 December 2015. Protection from MMPs for the final

effluent limitations for chlorpyrifos and diazinon begins immediately, and may not extend beyond 1 December 2015.

28. Time Schedule Order. Modify Finding 12 as shown in underline/strikeout format below:

12. CWC section 13385(j)(3) requires the Discharger to submit and implement its pollution prevention plans for bis(2-ethylhexyl)phthalate, carbon tetrachloride, chlorodibromomethane, cyanide, dichlorobromomethane, tetrachloroethylene, pH, N-nitrosodimethylamine, ~~and~~ dibenzo(a,h)anthracene, pentachlorophenol, manganese, Methyl Tertiary Butyl Ether, chlorpyrifos and diazinon pursuant to section 13263.3 of the California Water Code.

29. Time Schedule Order. Modify Finding 13 as shown in underline/strikeout format below:

13. Since the time schedule for completion of action necessary to bring the waste discharge into compliance exceeds 1 year, this Order includes an interim requirement and date for achievement. The time schedule does not exceed 5 years.

    The compliance time schedule in this Order includes an interim maximum daily effluent limitations for bis(2-ethylhexyl)phthalate, carbon tetrachloride, chlorodibromomethane, cyanide, dichlorobromomethane, tetrachloroethylene, N-nitrosodimethylamine, ~~and~~ dibenzo(a,h)anthracene, pentachlorophenol, manganese, Methyl Tertiary Butyl Ether, and chlorpyrifos. Interim instantaneous minimum effluent limits are included for pH.

    In developing the performance-based effluent limitation, where there are 10 sampling data points or more, sampling and laboratory variability is accounted for by establishing interim limits that are based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (Basic Statistical Methods for Engineers and Scientists, Kennedy and Neville, Harper and Row). Therefore, the interim limitations in this Order are established as the mean plus 3.3 standard deviations of the available data. However, if the maximum effluent concentration (MEC) exceeds the mean plus 3.3 standard deviation, then the MEC is the used for the interim limitation. When there are less than 10 sampling data points available, the EPA *Technical Support Document for Water Quality-based Toxics Control* ((EPA/505/2-90-001), TSD) recommends a coefficient of variation of 0.6 be utilized as representative of wastewater effluent sampling. The TSD recognizes that a minimum of 10 data points is necessary to conduct a valid statistical analysis. The multipliers contained in Table 5-2 of the TSD are used to determine a maximum daily limitation based on a long-term average objective. In this case, the long-term average objective is to maintain, at a minimum, the current plant performance level. Therefore, when there are less than 10 sampling points for a constituent, interim limitations are based on 3.11 times the maximum observed effluent concentration to obtain the daily maximum interim limitation (TSD, Table 52).

Where a dataset includes data reported below the laboratory detection limits (non-detects) the statistics, described above, becomes uncertain. In these situations, the regression on order statistics (ROS) technique was used to develop summary statistics and probability distribution functions. The ROS method was chosen because numerous studies have found that substituting one-half the reporting limit "results in substantial bias unless the proportion of missing data is small, 10 percent or less"[5]. This technique is often used with water quality data and is a useful tool for evaluating data sets with at least 40% detected data[6]. Furthermore, the ROS method was chosen because imputation methods, such as ROS, depend less on assumptions of distributional shape than the maximum likelihood estimation (MLE) method[7]. The ROS technique develops probability plotting positions for each detected and non-detect data point based on the ordering of all data. A least squares line is fit by regressing the log transformed concentrations to the detected probability plotting positions. Fill-in concentrations are assigned to the non-detect data points for calculation of summary statistics based on the detected data probability plotting positions and the ordered statistics regression line equation. The summary statistics are calculated from the detected data points and the fill-in values for non-detect data. An estimated mean and standard deviation are used to calculate the 99.9th percentile performance-based effluent limitation, as described above. The ROS method was used to calculate in the interim effluent limit for cyanide.

The data set are based on data collected between 12 June 2005 and 10 October 2009. All the data collected for pentachlorophenol, Methyl Tertiary Butyl Ether, carbon tetrachloride, chlorodibromomethane, cyanide, tetrachloroethylene, N-nitrosodimethylamine, chlorpyrifos, and dibenzo(a,h)anthracene had less than 20 percent detection. ~~When at least 80% of the data points are reported as non detected values, interim limitations are based on 3.11 times the maximum observed effluent concentration (MEC) to obtain the daily maximum interim limitation.~~ The interim limitations for pH are set as the existing final instantaneous minimum effluent limitation prescribed in the previous WDR Order No. 5-00-188. The following table summarizes the calculations of the daily maximum interim effluent limitation for these constituents:

[5] Dennis R. Helsel, "More Than Obvious: Better Methods for Interpreting Nondetect Data," *Environmental Science and Technology* (15 October 2005): 419A
[6] Robert H. Shumway, Rahman S. Azari, and Masoud Kayhanian, "Statistical Approaches to Estimating Mean Water Quality Concentrations with Detection Limits," *Environmental Science and Technology* 36, no. 15 (2002): 3345-3353.
[7] Dennis R. Helsel, "More Than Obvious: Better Methods for Interpreting Nondetect Data," *Environmental Science and Technology* (15 October 2005): 420A

Parameter	Units	MEC	Mean (x)	Std. Dev. (sd)	Formula Used	Interim Limitation Maximum Daily
pH	su	--	--	--	--	6.0[1]
Chlorpyrifos	µg/L	0.039	--	--	3.11*MEC	0.12
N-nitrosodimethylamine	ng/L	0.082	--	--	3.11*MEC	0.26
Dibenzo(a,h)antracene	µg/L	0.51	--	--	3.11*MEC	1.6
Bis(2-ethylhexyl)phthalate	µg/L	8.1	0.854	0.506	Mean + 3.3*SD	12.5
Carbon Tetrachloride	µg/L	1.7	--	--	3.11*MEC	5.3
Chlorodibromomethane	µg/L	0.7	--	--	3.11*MEC	2.2
Cyanide	µg/L	10	4.85	1.89	Mean + 3.3*SD[2]	11
Dichlorobromomethane	µg/L	3.4	1.10	0.583	Mean + 3.3*SD	3.4
Tetrachloroethylene	µg/L	1.4	--	--	3.11*MEC	4.4
Pentachlorophenol	µg/L	5.7	--	--	3.11*MEC	18
Manganese	µg/L	82	4.16	0.0869	Mean + 3.3*SD	85
Methyl Tertiary Butyl Ether	µg/L	5.8	--	--	3.11*MEC	18

[1] Instantaneous minimum effluent limit.
[2] Regression on order statistics (ROS) method used.

30. Time Schedule Order. Modify Hereby Ordered #1 as shown in underline/strikeout format below:

1. The Discharger shall comply with the following time schedule to ensure compliance with the final effluent limitations for bis(2-ethylhexyl)phthalate, carbon tetrachloride, chlorodibromomethane, cyanide, dichlorobromomethane, tetrachloroethylene, pH, N-nitrosodimethylamine, ~~and~~ dibenzo(a,h)anthracene, pentachlorophenol, manganese, Methyl Tertiary Butyl Ether, chlorpyrifos and diazinon contained in WDR Order No. R5-2010-XXXX as described in the above Findings:

Task	Date Due
Submit Method of Compliance Workplan/Schedule.	**Within 6 months** of adoption of this Order
Submit and implement an updated, or new as appropriate, Pollution Prevention Plan (PPP) pursuant to CWC section 13263.3.	**Within 6 months** of adoption of this Order
Annual Progress Reports[1]	**1 December, annually**, after approval of workplan until final compliance
Full compliance with the final effluent limitations for bis(2-ethylhexyl)phthalate, carbon tetrachloride, chlorodibromomethane, cyanide, dichlorobromomethane, tetrachloroethylene, pH, N-nitrosodimethylamine, 1,2-diphenyl hydrazine, ~~and~~ dibenzo(a,h)anthracene, pentachlorophenol, manganese, and Methyl Tertiary Butyl Ether.	**1 December 2015**
Full compliance with the final effluent limitations for chlorpyrifos and diazinon.	**1 December 2015**

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

31. Time Schedule Order. Modify Hereby Ordered #2 as shown in underline/strikeout format below:

2. The following interim effluent limitations shall be effective immediately and until the date specified in the table for applicable parameter, or when the Discharger is able to come into compliance, whichever is sooner.

Effective immediately and until:	Parameter	Maximum Daily Effluent Limitation (µg/L)
1 December 2015	Bis(2-ethylhexyl)phthalate	12.5
1 December 2015	Carbon Tetrachloride	5.3
1 December 2015	Chlorodibromomethane	2.2
1 December 2015	Cyanide	11
1 December 2015	Dichlorobromomethane	3.4

Effective immediately and until:	Parameter	Maximum Daily Effluent Limitation (µg/L)
1 December 2015	Tetrachloroethylene	4.4
1 December 2015	Pentachlorophenol	18
1 December 2015	Manganese	85
1 December 2015	Methyl Tertiary Butyl Ether	18
1 December 2015	pH	6.0[1]
1 December 2015	N-nitrosodimethylamine (µg/L)	0.00026
1 December 2015	Dibenzo(a,h)antracene (µg/L)	1.6
1 December 2015	Chlorpyrifos	0.12

[1] Instantaneous minimum effluent limit.