LATE REVISIONS
El Dorado Irrigation District
El Dorado Hills Wastewater Treatment Plant
Proposed Tentative NPDES Permit
Regional Water Quality Control Board, Central Valley Region
21/22 June 2007 Board Meeting
ITEM No. 28

1. In Section II.H. Table 5, make the following correction:

Table 5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Carson Creek, a tributary of Cosumnes River, via ~~Dear~~ Deer Creek	Existing: Municipal and domestic water supply (MUN); Agricultural supply (AGR); contact (REC-1) and non-contact (REC-2) water recreation; Warm freshwater habitat (WARM); Cold freshwater habitat (COLD); Warm and cold freshwater migration of aquatic organisms (MIGR); Warm and cold freshwater spawning, reproduction, and/or early development (SPWN); and wildlife habitat (WILD). Existing Groundwater: Municipal and domestic water supply (MUN); Industrial service supply (IND); Industrial process supply (PRO); Agricultural supply(AGR).

2. In Section II.K. First Paragraph, make the following clarification:

K. Compliance Schedules and Interim Requirements. In general, an NPDES permit must include final effluent limitations that are consistent with Clean Water Act section 301 and with 40 CFR 122.44(d). There are exceptions to this general rule. The State Water Board has concluded that where the Regional Water Board's Basin Plan allows for schedules of compliance and the Regional Water Board is newly interpreting a narrative standard, it may include schedules of compliance in the permit to meet effluent limits that implement a narrative standard. See In the Matter of Waste Discharge Requirements for Avon Refinery (State Board Order WQ 2001-06 at pp. 53-55). See also Communities for a Better Environment et al. v. State Water Resources Control Board, 34 Cal.Rptr.3d 396, 410 (2005). The Basin Plan for the Sacramento and San Joaquin Rivers includes a provision that authorizes the use of compliance schedules in NPDES permits for water quality objectives that are adopted after the date of adoption of the Basin Plan, which was 25 September 1995 (See Basin Plan at page IV-16). Consistent with the State Water Board's Order in the CBE matter, the Regional Water Board has the discretion to include compliance schedules in NPDES permits when it is including an effluent limitation that is a "new interpretation" of a narrative water quality

objective. This conclusion is also consistent with the United States Environmental Protection Agency policies and administrative decisions. See, e.g., Whole Effluent Toxicity (WET) Control Policy. Any effluent limit based upon a narrative water quality objective is a "new interpretation" that will allow a time schedule to be placed in an NPDES permit when that effluent limit is first applied to the Discharger. The Regional Water Board, however, is not required to include a schedule of compliance, but may issue a Time Schedule Order pursuant to Water Code section 13300 or a Cease and Desist Order pursuant to Water Code section 13301 where it finds that the discharger is violating or threatening to violate the permit. The Regional Water Board will consider the merits of each case in determining whether it is appropriate to include a compliance schedule in a permit, and, consistent with the Basin Plan, should consider feasibility of achieving compliance, and must impose a schedule that is as short as practicable to achieve compliance with the objectives, criteria, or effluent limit based on the objective or criteria.

3. In Section IV.A., Tables 6b. and 6c., make the following revisions:

Table 6b. Concentration and Mass-Based Final Effluent Limitations (based on 3.0 mgd ADWF)

Parameter	Units	Final Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Aluminum, Total Recoverable	µg/L	59.0	---	161.0	---	---
	lbs/day[1]	1.5	---	4.0	---	---
Ammonia (as N)	mg/L	1.1~~07~~	---	2.1~~4~~	---	---
	lbs/day[1]	2~~5.0~~7.5	---	5~~3.5~~2.5	---	---
When flow in Carson Creek provides less than a ~~minimum~~ daily average stream flow-to-effluent dilution of 20:1[2]:						
Biochemical Oxygen Demand (BOD) 5-day @ 20°C	mg/L	10	15	30	---	---
	lbs/day[1]	250	375	750	---	---
Total Suspended Solids (TSS)	mg/L	10	15	30	---	---
	lbs/day[1]	250	375	750	---	---
When flow in Carson Creek provides a minimum daily average stream flow-to-effluent dilution of 20:1[2]:						
Biochemical Oxygen Demand (BOD) 5-day @ 20°C	mg/L	30	45	60	---	---
	lbs/day[1]	750	1130	1500	---	---
Total Suspended Solids (TSS)	mg/L	30	45	60	---	---
	lbs/day[1]	750	1130	1500	---	---

[1] Based on an ADWF of 3.0 mgd (see Section VII.J. for compliance determination regarding ADWF).

[2] The coagulation system and filters shall be used to the maximum extent possible on a year-round basis.

Table 6c. Concentration and Mass- Based Final Effluent Limitations (based on 4.0 mgd ADWF)

Parameter	Units	Final Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Ammonia (as N)	mg/L	1.1~~07~~	---	2.1~~4~~	---	---
	lbs/day[1]	3~~5.7~~6.7	---	7~~0.11.4~~	---	---
When flow in Carson Creek provides less than a ~~minimum~~daily average stream flow-to-effluent dilution of 20:1[2]:						

Parameter	Units	Final Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
BOD 5-day @ 20°C	mg/L	10	15	30	---	---
	lbs/day[1]	334	500	1000	---	---
TSS	mg/L	10	15	30	---	---
	lbs/day[1]	334	500	1000	---	---
When flow in Carson Creek provides a minimum daily average stream flow-to-effluent dilution of 20:1[2]:						
Biochemical Oxygen Demand (BOD) 5-day @ 20°C	mg/L	30	45	60	---	---
	lbs/day[1]	1000	1500	2000	---	---
Total Suspended Solids (TSS)	mg/L	30	45	60	---	---
	lbs/day[1]	1000	1500	2000	---	---

[1] Based on an ADWF of 4.0 mgd (see Section VII.J. for compliance determination regarding ADWF).

[2] The coagulation system and filters shall be used to the maximum extent possible on a year-round basis.

4. In sections IV.A.1.e. and f., make the following revisions:

e. **Turbidity[1].** When flow in Carson Creek provides less than a ~~minimum~~ daily average stream flow-to-effluent dilution of 20:1, effluent total coliform organisms shall not exceed:

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

1 The coagulation system and filters shall be used to the maximum extent possible on a year-round basis.

f. **Total Coliform Organisms[1].** When flow in Carson Creek provides ~~less than~~ a minimum daily average stream flow-to-effluent dilution of 20:1, effluent total coliform organisms shall not exceed:

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

When flow in Carson Creek provides a minimum daily average stream flow-to-effluent dilution of 20:1, effluent total coliform organisms shall not exceed:

iv. 23 MPN/100 mL, as a monthly median, and
v. 500 MPN/100 mL, as a daily maximum.

1 The coagulation system and filters shall be used to the maximum extent possible on a year-round basis.

5. In sections IV.A.1.j., make the following revisions:

   j. **Manganese, Total Recoverable.** The Average Annual Effluent Limitation (AAEL) concentration for total recoverable manganese shall not exceed 50 µg/L. The average annual mass discharge of total recoverable manganese shall not exceed 1.25 lbs/day. ~~at 3.0 mgd ADWF. The average annual mass discharge of total recoverable manganese shall not exceed 1.67 lbs/day at 4.0 mgd ADWF.~~

6. In section IV.A.2.b., make the following revisions:

   b. **Electrical Conductivity (EC)**: During the period beginning with the permit effective date and ending upon expiration of the permit the maximum ~~daily~~ annual average electrical conductivity (EC) shall not exceed ~~1041~~ 867 µmhos/cm.

7. In section VI.C.2.a.iii., make the following clarification:

   iii. **Numeric Monitoring Trigger.** The numeric toxicity monitoring trigger is a statistically significant reduction in the 100% effluent test concentration response relative to the laboratory control test response. The toxicity threshold that determines a statistically significant difference between the two tests mentioned above is established in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition,* EPA/821-R-02-013, October 2002 (Appendix H), and its subsequent amendments or revisions. Determination of statistical significance is subject to a review of test variability as detailed in Section 10.2.8.2 of the Test Method. 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.

8. In section VII., add the following section:

   K. Turbidity and Total Coliform (20:1 Receiving Water to Effluent Flow Ratio). Compliance with effluent turbidity and total coliform limitations will be determined based on the average daily flow of the receiving water and effluent.

9. In Attachment E, section V.B.5., add the following clarification:

   5. *Methods* – The presence of chronic toxicity shall be estimated using statistical analyses specified in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition,* EPA/821-R-02-013, October 2002 (Appendix H), and its subsequent amendments or revisions. Determination of statistical significance is subject to a review of test variability as detailed in Section 10.2.8.2 of the Test Method.

10. In the NPDES Permit, Attachment E, section IV.A.1. Table E-3, make the following revision:

    1. The Discharger shall monitor 001 at EFF-001 as follows. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level:

Table E-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and (Minimum Level, units), respectively
BOD 5-day @ 20°C	mg/L, lbs/day	24-hr Composite[8]	~~5 days/week~~Daily	
TSS	mg/L, lbs/day	24-hr Composite[8]	~~5 days/week~~Daily	
Total Coliform Organisms[0]	MPN/100 mL	Grab	~~5 days/week~~Daily	
Settleable Solids	mL/L	Grab	~~5 days/week~~Daily	
Ammonia (as N) [3, 4]	mg/L, lbs/day	Grab	~~5 days/week~~Daily[4] 1/week[4]	

[0] Total coliform organisms must be monitored downstream of the disinfection process and may be monitored prior to the dechlorination process.

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

[2] Effluent Temperature monitoring shall be at the Outfall location.

[3] Concurrent with biotoxicity monitoring.

[4] Daily a~~A~~mmonia effluent monitoring shall be conducted ~~5 days/week~~ at the same time as pH and Temperature grab sampling to determine compliance with interim ammonia limitations. Upon effective date of final fixed ammonia limitations, ammonia effluent monitoring shall be conducted 1/week.

11. In Attachment E, section VIII.A.1. and Table E-6.a., make the following correction:

    1. The Discharger shall monitor Carson Creek at RSW-001 and RSW-002 (simultaneously)~~-~~, when discharging to Carson Creek~~, and at RSW-001 when not discharging to Carson Creek~~, as follows:

Table E-6a. Surface Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	mgd	Meter	Continuous	
Dissolved Oxygen	mg/L	Grab	1/week	
pH	Standard Units	Grab	1/week	
Temperature	°F (°C)	Grab	1/week	
Radionuclides[4]	Pci/l	Grab	Annually	
Standard Minerals[2,4] (RSW-001 Only)	mg/L	Grab	Annually	

Priority Pollutants[1, 3 ,4] (RSW-001 Only)	µg/L	Grab	Annually	
Turbidity	NTU	Grab	1/Week	
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/week	
Fecal coliform	MPN/100 ml	Grab	~~5/~~Monthly[4]	
Floating or suspended matter	Narrative	Visual	1/Week	
Discoloration	Narrative	Visual	1/Week	
Bottom deposits	Narrative	Visual	1/Week	
Aquatic life	Narrative	Visual	1/Week	
Visible films, sheens or coatings	Narrative	Visual	1/Week	
Fungi, slimes, or objectionable growths	Narrative	Visual	1/Week	
Potential nuisance conditions	Narrative	Visual	1/Week	
Foam	Narrative	Visual	1/Week	

[1] For priority pollutant constituents with effluent limitations, detection limits shall be below the effluent limitations. If the lowest minimum level (ML) published in Appendix 4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Plan or SIP) is not below the effluent limitation, the detection limit shall be the lowest ML. For priority pollutant constituents without effluent limitations, the detection limits shall be equal to or less than the lowest ML published in Appendix 4 of the SIP.

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

[3] Concurrent with effluent water sampling.

[4] ~~In accordance with page III-3.0 of Basin Plan.~~

12. In the Fact Sheet, Attachment F, section IV.C.2.a, third paragraph, make the following correction:

The receiving water is considered a Tier II waterbody per federal antidegradation policy 40 CFR Section 131.12 with the exception of two pollutants aluminum and manganese which are currently listed on California's 200~~2~~6 Section 303(d) List of Water Quality Limited Segments as required by the 1972 Clean Water Act. The quality of the receiving water exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water. Table 5b lists receiving water constituents with detectable results.

13. In the Fact Sheet, Attachment F, section IV.C.3.b, third paragraph, make the following correction:

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 criteria/objectives for settleable solids, pH, nitrate,

chlorine residual, temperature, turbidity, total coliform, aluminum, ammonia, bis (2-Chloroethyl) ether, bis (2-ethyhexyl) phthalate, carbon tetrachloride, copper, cyanide, dibromochloromethane, dichlorobromomethane, ~~specific conductance~~electrical conductivity (EC), persistent chlorinated hydrocarbon pesticides, total trihalomethanes, and zinc. Additionally, receiving water concentrations of iron and manganese have exceeded water quality objectives and have been detected in the effluent. Therefore, 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-6, and a detailed discussion of the RPA for each constituent is provided below

14. In the Fact Sheet, Attachment F, section IV.C.3.e. Aluminum, second paragraph, make the following clarification:

The Maximum Effluent Concentration (MEC) for aluminum was 760 µg/L, based on 21 samples collected between 27 March 2001 and 1 May 2006, while the maximum observed upstream receiving water aluminum concentration was 2110 µg/L, based on 11 samples collected between 27 March 2001 and 13 February 2002. Therefore, aluminum in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a level necessary to protect aquatic life resulting in a violation of the Basin Plan's narrative toxicity objective. Since the receiving water exceeds the acute and chronic toxicity criteria, no assimilative capacity for aluminum is available and a dilution credit cannot be allowed. No dilution is allowed due to periods of no flow in the receiving water. This Order contains new final Average Monthly Effluent Limitations (AMEL) and Maximum Daily Effluent Limitations (MDEL) for aluminum of 59 µg/L and 161 µg/L, respectively, based on USEPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life (See Attachment F, Table F-6 for WQBEL calculations). Additionally, Carson Creek is identified as an impaired waterbody for aluminum on the 2006 303(d) list. Therefore, mass limitations for aluminum are included in this Order.

15. In the Fact Sheet, Attachment F, section IV.C.3.e. Aluminum, fourth paragraph, make the following clarification:

Based on the sample results in the effluent, it appears that the Discharger may be in immediate non-compliance upon issuance of the permit. New or modified control measures may be necessary in order to comply with the new effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. The Basin Plan for the Sacramento and San Joaquin River Basins includes a provision that authorizes the use of compliance schedules in NPDES permits for water quality objectives adopted after 25 September 1995 (See Basin Plan at page IV-16). The new water quality-based effluent limitations for aluminum are based on new monitoring data that allowed a reasonable potential analysis to be conducted with the numerical interpretation of the narrative standard for protection of receiving water beneficial uses. A new effluent limitation based upon a narrative water quality objective is a "new interpretation" and a time schedule in an NPDES permit is allowed when that effluent limitation is first applied to the Discharger.

Therefore, a compliance schedule for compliance with the new aluminum effluent limitations is established in the Order.

16. In the Fact Sheet, Attachment F, section IV.C.3.f. Ammonia, make the following revisions:

f. **Ammonia.** Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. The Discharger does currently use 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, or CMC) standards based on pH and chronic (30-day average, criteria continuous concentration, or CCC) standards based on pH and temperature. It also recommends a maximum four-day average concentration of 2.5 times the ~~criteria continuous concentration~~30-day CCC. USEPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature. Because the Carson Creek has a beneficial use of cold freshwater habitat and the presence of salmonids and early fish life stages in the Cosumnes River, to which Carson Creek, via Deer Creek, is a tributary is well-documented, the recommended criteria for waters where salmonids and early life stages are present were used. USEPA's recommended criteria are show below:

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

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

where T is in degrees Celsius

The maximum permitted effluent pH is 8.5. The Basin Plan objective for pH in the receiving stream is the range of 6.5 to 8.5. In order to protect against the worse-case short-term exposure of an organism, a pH value of 8.5 was used to derive the acute criterion. The resulting acute criterion is 2.1 mg/l.

~~In calculating the average monthly effluent limitation the maximum observed 30-day average temperature is typically used. The Discharger has historically not discharged to the receiving water during summer months between June and October although there is currently no prohibition to do so. The Discharger may in the future discharge during warmer periods when effluent and receiving water temperatures are higher than seasonal lows observed during winter months. Historically, the maximum observed 30-day average temperature was 66.7ºF (19.3 C) during the month of May 2001. However, historical data has also shown observed 30-day average effluent temperatures rising prior to the Discharger discontinuing discharge to the receiving water during May in previous years. The maximum observed daily effluent temperature was 78.3ºF (25.7 C) on 15 May 2001. Without a prohibition in this Order to discharge to the receiving water during summer months when effluent temperatures are higher and the receiving water exhibits the characteristics of an ephemeral stream, there is reasonable potential that the 30-day average effluent temperature during summer months will meet or exceed the maximum observed daily effluent temperature of 78.3ºF (25.7 C). Therefore, in order to be protective of the receiving water during periods of potential discharge, the maximum observed daily temperature was used instead of the maximum observed 30-day average effluent temperature in calculating the average monthly effluent limitation. The maximum observed 30-day R-1 temperature was 66.6ºF (19.2 C), for the 30-day periods ending 23 May 2003.~~ Because Carson Creek is an ephemeral stream and is may be effluent dominated, the maximum observed 30-day rolling average temperature and the maximum observed pH of the effluent were used to calculate the 30-day CCC. The maximum observed running 30-day average effluent temperature (during months of actual discharge) was 68.8 ^{o}F (20.4 ^{o}C), for the 30-day period ending 31 May 2002. The maximum observed effluent pH value was 7.7 on 27 March 2004.

Using a pH value of ~~8.5~~7.7 and the worst-case temperature value~~s~~ of ~~78.3~~68.8 ºF (~~25.7~~20.4 C) on a ~~daily~~ rolling 30-day average basis, the resulting ~~effluent limitation~~30-day CCC is ~~0.43~~2.5 mg/L (as N) ~~. for the average monthly effluent limitation. Using a pH value of 8.5, the resulting average one-hour effluent limitation is 0.87 mg/L (as N). (See Attachment F, Table F-7 for WQBEL calculations).~~ 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 2.45 mg/l (as N), the 4-day average concentration that should not be exceeded is 6.13 mg/l (as N).

The MEC for ammonia was 3.4 mg/l, based on 27 samples collected between 3 November 2004 and 20 April 2005. Ammonia was not detected in the upstream receiving water, based on 8 samples collected between 19 July 2001 and 14 February 2002. ~~Thus, the receiving water concentration has not exceeded the criterion; therefore, there is assimilative capacity for ammonia.~~ Therefore, ammonia in the discharge has a reasonable potential to cause or contribute to an in-stream excursion oaboe a level necessary to protect aquatic life resulting in a violation of the Basin Plan's narrative toxicity objective.

The Regional Water Board calculates WQBELs in accordance with SIP procedures for non-CTR constituents, and ammonia is a non-CTR constituent. 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 limitations 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 the SIP procedures, the LTA corresponding to the 30-day chronic criteria were calculated assuming a 30-day average period. The lowest LTA representing the acute, 4-day, and 30-day chronic criteria was then selected for deriving the average monthly effluent limitation (AMEL) and the maximum daily effluent limitation (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 1.1 mg/l and 2.1 mg/l, respectively, based on USEPA's National Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life ~~Effluent Limitations for ammonia are included in this Order~~ to assure the treatment process adequately nitrifies the waste stream to protect the aquatic habitat beneficial uses (see Table F-7 for WQBEL calculations).

Based on the sample results in the effluent, it appears that the Discharger may be in immediate non-compliance upon issuance of the permit. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. The Basin Plan for the Sacramento and San Joaquin River Basins includes a provision that authorizes the use of compliance schedules in NPDES permits for water quality objectives adopted after September 25, 1995 (See Basin Plan at page IV-16). The water quality-based effluent limitations for ammonia are based on a new interpretation of the narrative standard for protection of receiving water beneficial uses, establishing a final "fixed" year-round effluent limitation. Effluent limitations for the discharge must be set to protect the beneficial uses of the receiving water for all discharge conditions. The previous Order included condition-dependent, "floating" effluent limitations that are reflective of actual conditions at the time of discharge.

This Order establishes effluent limitations for ammonia using a reasonable worst-case condition in order to protect beneficial uses for all discharge conditions which would be considered a new effluent limit based on a stricter standard to protect beneficial uses for all discharges. Any effluent limit based upon a narrative water quality objective is a "new interpretation" that will allow a time schedule to be placed in an NPDES permit when that effluent limit is first applied to the Discharger. Therefore, a compliance schedule for compliance with the ammonia effluent limitation is allowable under provisions of the Basin Plan in this Order.

17. In the Fact Sheet, Attachment F, section IV.C.3.q. Manganese, fourth paragraph, make the following revisions:

The SIP Section 1.3 step 6 states that if the background concentration of a pollutant in the receiving water exceeds the WQO/WQC, and the pollutant is detected in the effluent an effluent limitation will be established to limit further degradation of the receiving water. Therefore, this Order establishes effluent limitations for manganese. This Order includes an ~~AAEL~~ annual average effluent limitation for manganese of 50 µg/L (based on protection of the Basin Plan's narrative chemical constituents

objective). A manganese mass limitation is also included in this Order since Carson Creek is identified as an impaired waterbody for manganese on the 2006 303(d) list. Based on the sample results in the effluent, it appears the Discharger can meet this new limitation. Therefore no interim limits are established for manganese and the Discharger will comply immediately with effluent limitations for manganese upon adoption of this Order.

18. In the Fact Sheet, Attachment F, section IV.C.3.s. Nitrite and Nitrate, fourth paragraph, make the following revisions:

Ten out of the 13 samples for nitrite in the effluent were non-detect. The maximum nitrite effluent concentration of 0.950 mg/l (950 ug/l) is below the primary MCL of 1.0 mg/l; therefore there is no reasonable potential for nitrites. ~~AMELs~~ The Order includes, however, an average monthly effluent limitation of 10 mg/l for ~~for nitrite and~~ nitrate ~~of 1 mg/L and 10 mg/L, respectively, are 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. The previous Order contained an effluent limitation for nitrate. In accordance with anti-backsliding provisions contained in the Code of Federal Regulations this Order maintains the effluent limitation for nitrate.

19. In the Fact Sheet, Attachment F, section IV.C.3.w.ii. Electrical Conductivity, third and fourth paragraph, make the following revisions:

~~Since t~~The average effluent EC concentration of 751 µmhos/cm exceeds the agricultural water quality screening value applied as a screening value (interpreted as 700 µmhos/cm as a long-term average based on the Ayers and Westcot, 1985 Study). ~~, this Order includes a performance-based maximum daily interim effluent limitation of 1041 µmhos/cm (See Section IV.D.1 of this Fact Sheet).~~
To protect the receiving water from further salinity degradation, an annual average interim performance-based effluent limitation of ~~1041~~ 867 µmhos/cm for EC is included in this Order. ~~(See Section IV.D.1 of this Fact Sheet).~~ Additionally, t~~T~~his Order requires the Discharger to conduct site-specific salinity/EC studies to determine the appropriate salinity/EC levels to protect beneficial uses. It is the intent of the Regional Water Board to include final salinity/EC effluent limitations, in a subsequent permit renewal or amendment, based on the results of approved site-specific studies.

20. In the Fact Sheet, Attachment F, section IV.C.4.b. Effluent Limitation Calculations, Table F-7, make the following revisions:

Table F-7. WQBEL Calculations for Ammonia

	~~June – October~~		~~November – May~~	
	Acute	Chronic (30-day)	~~Acute~~	Chronic (4-day)
pH	8.5	~~8.5~~7.7	~~8.5~~	~~8.5~~N/A
Temperature	N/A	~~25.7~~20.4[(2)]	~~N/A~~	~~19.3~~N/A
Criteria (mg/L)	2.14	~~1.32~~2.45	~~2.14~~	~~2.00~~6.13[(3)]
Dilution Credit	~~0~~No Diliution	~~0~~No Dilution	~~0~~	~~0~~No Dilution
ECA	2.14	~~1.32~~2.45	~~2.14~~	~~2.00~~6.13
ECA Multiplier	0.32~~1~~	~~0.527~~0.78	~~0.321~~	0.53~~27~~
LTA[(4)]	0.68~~7~~	~~0.696~~1.91	~~0.687~~	~~1.05~~3.25

AMEL Multiplier (95%)	1.552	(5)	~~1.552~~	(6)
AMEL	**1.107**	(5)	**~~1.07~~**	(6)
LTA	0.6877	----	~~0.687~~	----
MDEL Multiplier (99%)	3.114	(5)	~~3.114~~	(6)
MDEL	**2.114**	(5)	**~~2.14~~**	(6)

(1) Acute design pH = 8.5 (max. allowed effluent pH), Chronic design pH = 8.5 (max. allowed effluent pH) for ephemeral stream

(2) Temperature = maximum observed ~~daily~~ rolling 30-day average effluent temperature of ~~25.7~~ 20.4°C. ~~See Section IV.C.3.f for rationale for using maximum observed daily effluent temperature as opposed to maximum 30-day average temperature.~~

(3) USEPA Ambient Water Quality Criteria; Basis of Chronic criteria is 4-day exposure. 4-day chronic criteria equals 30-day criteria times 2.5; (30-day criteria of ~~0.529~~2.45)x(2.5)=~~1.326~~6.13

(4) LTA developed based on Acute and Chronic ECA Multipliers calculated at 99th percentile level per sections 5.4.1 and 5.5.4 of TSD.

(5) Limitations based on chronic LTA ~~(LTA$_{chronic}$ < LTA$_{acute}$)~~ (LTA$_{acute}$ < LTA$_{chronic(30-day)}$)

(6) Limitations based on chronic LTA (LTA$_{acute}$ < LTA$_{chronic(4-day)}$)

21. In the Fact Sheet, Attachment F, section IV.C.4.b., Table F-16, make the following revisions:

Summary of Water Quality-based Effluent Limitations
Discharge Point EFF-001

Table F-16. Summary of Water Quality-based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Mass Based Effluent limits @ 3.0 mgd ADWF						
Ammonia (as Nitrogen)	mg/L	~~0.43~~1.1	---	~~See IV.A.1.f~~2.1	---	---
	lbs/day	~~10.8~~27.5	---	~~21.8~~52.5	---	---
Mass Based Effluent limits @ 4.0 mgd ADWF						
Ammonia (as Nitrogen)	mg/L	~~0.43~~1.1	---	~~See IV.A.1.f~~2.1	---	---
	lbs/day	~~14.4~~36.7	---	~~29.0~~70.1	---	---

22. In the Fact Sheet, Attachment F, section IV.C.5.b., make the following revisions:

b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at III-8.00) Adequate WET data is not available to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective. Three species chronic toxicity monitoring results in the previous permit indicated that the receiving water used in the dilution series in many instances was toxic to *Pimephales promelas*, and *Ceriodaphnia dubia*. Furthermore, no dilution credit is allowed for the receiving water since it has been determined to be an ephemeral stream. The previous Order required monitoring four times per year using a dilution series that is not applicable to the discharge. The dilution series for the three species chronic toxicity monitoring has been modified to reflect the results from the previous Order. The dilution series specified in Attachment E will replace the dilution series specified in the previous Order. The dilution series for the initial standard chronic toxicity testing will consist of, at minimum, 100% effluent, 100%

receiving water, and 100% lab control water. The~~e~~is Order maintains the ~~previous Order~~ required testing frequency (four times per year for chronic toxicity ~~(4 times per year~~) as in the previous permit. ~~However, since the Discharger typically discharges six months out of the year between November and April (6 months) monthly testing will produce seven sets of data in a six-month period. The requirement of monthly monitoring instead of previously required four times per year will not cause additional cost to the Discharger but is estimated to save the Discharger testing costs due to a reduced number of tests per species. Therefore, no additional burden is placed on the Discharger by requiring monthly testing.~~ Attachment E of this Order requires monthly chronic WET monitoring for demonstration of compliance with the narrative toxicity objective.

23. In the Fact Sheet, Attachment F, section IV.D.4.e. Table F-17, make the following revisions:

Table F-17. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations					Basis
		Average Monthly	Average Weekly	Maximum Daily	Instan-taneous Minimum	Instan-taneous Maximum	
~~Electric Conductivity (EC) @ 25° C~~	~~µmhos/cm~~	~~700~~	~~---~~	~~---~~	~~---~~	~~---~~	~~Basin Plan~~

Mass Based Effluent limits @ 3.0 mgd ADWF							
Ammonia (as Nitrogen)	mg/L	~~0.43~~1.1	---	~~See IV.A.1.f~~2.1	---	---	WQO
	lbs/day	~~10.8~~27.5	---	~~21.8~~52.5	---	---	
Mass Based Effluent limits @ 4.0 mgd ADWF							
	lbs/day	2.0		5.4			
Ammonia (as Nitrogen)	mg/L	~~0.43~~1.1	---	~~See IV.A.1.f~~2.1	---	---	WQO
	lbs/day	~~14.4~~36.7	---	~~29.0~~70.1	---	---	

24. In the Fact Sheet, Attachment F, section IV.E.1. make the following revisions:

1. **Bis (2-Chloroethyl) ether, Bis (2-ethylhexyl) phthalate, Carbon Tetrachloride, Copper, Cyanide, Dibromochloromethane, Dichlorobromomethane, Total Trihalomethanes (TTHM), Zinc, Aluminum, Ammonia, Electrical Conductivity (EC), Persistent Chlorinated Hydrocarbon Pesticides .** The SIP, section 2.2.1, requires that if a compliance schedule is granted for a CTR or NTR constituent, the Regional Water Board shall establish interim requirements and dates for their achievement in the NPDES permit. The interim limitations must be based on current treatment plant performance or existing permit limitations, whichever is more stringent. The State Water Board has held that the SIP may be used as guidance for non-CTR constituents. Therefore, the SIP requirement for interim effluent limitations has been applied to both CTR and non-CTR constituents in this Order.

   The interim limitations for Bis (2-Chloroethyl) ether, Bis (2-ethylhexyl) phthalate,

Carbon Tetrachloride, Copper, Cyanide, Dibromochloromethane, Dichlorobromomethane, Total Trihalomethanes (TTHM), Zinc, Aluminum, ~~Ammonia,~~ Electrical Conductivity (EC), and Persistent Chlorinated Hydrocarbon Pesticides in this Order are based on the current treatment plant performance. The interim limitations for ammonia are the "floating" ammonia limitations established in the previous NPDES permit. The interim limitations do not change with the increase in regulated flow due to the proposed WWTP expansion. In developing the interim maximum daily effluent limitation, where there are ten 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 maximum daily interim limitations in this Order are established as the mean plus 3.3 standard deviations of the available data.

When there are less than ten sampling data points available, the *Technical Support Document for Water Quality- Based Toxics Control* ((EPA/505/2-90-001), TSD) recommends a coefficient of variation of 0.6 be utilized as representative of wastewater effluent sampling. The TSD recognizes that a minimum of ten 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 ten sampling points for a constituent, interim limitations are based on 3.11 times the maximum observed effluent concentration to obtain the daily maximum interim limitation (TSD, Table 5-2).

The Regional Water Board finds that the Discharger can undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. Interim limitations are established when compliance with effluent limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final effluent limitations, but in compliance with the interim effluent limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the effluent limitation can be achieved.

Table 6 summarizes the calculations of the interim effluent limitations for Bis (2-Chloroethyl) ether, Bis (2-ethylhexyl) phthalate, Carbon Tetrachloride, Copper, Cyanide, Dibromochloromethane, Dichlorobromomethane, Total Trihalomethanes (TTHM), Zinc, Aluminum, Ammonia, ~~Electrical Conductivity (EC),~~ and Persistent Chlorinated Hydrocarbon Pesticides:

Table F-18. Interim Effluent Limitation Calculation Summary

Parameter	Units	MEC	Mean (x)	Std. Dev. (sd)	# of Samples	# of Non-Detects	Formula used	Interim Limitation (max daily)
Aluminum, Total Recoverable	ug/L	760	168	204	21	2	x+3.3*sd	841

Bis (2-Chloroethyl) ether	ug/L	3.2	0.68	N/A	15	14	3.11*MEC	9.95
Bis (2-ethylhexyl) phthalate	ug/L	2.6	2.107	N/A	15	14	3.11*MEC	8.09
Carbon Tetrachloride	ug/L	0.42	0.257	N/A	23	22	3.11*MEC	1.31
Copper, Total Recoverable	ug/L	19.5	10.6	4.036	34	-	x+3.3*sd	23.88
Cyanide	ug/L	6.7	2.7	0.875	23	21	3.11*MEC	20.84
Dibromochloromethane	ug/L	3.1	1.15	0.64	23	2	x+3.3*sd	3.28
Dichlorobromomethane	ug/L	18	10.439	4.094	23	-	x+3.3*sd	23.95
~~Electrical Conductivity (EC)~~	~~umhos/cm~~	~~940~~	~~751~~	~~88~~	~~126~~	~~-~~	~~x+3.3*sd~~	~~1041~~
Total Trihalomethanes (TTHM)	ug/L	136.6	72.3	32.0	23	-	x+3.3*sd	178
Zinc, Total Recoverable	ug/L	330	42	63	23	-	NA	330[1]
4,4'-DDT	ug/L	0.047	0.009	N/A	15	14	3.11*MEC	0.146
Aldrin	ug/L	0.016	0.004	N/A	15	14	3.11*MEC	0.050
alpha-BHC	ug/L	0.013	0.006	0.002	15	13	3.11*MEC	0.040
alpha-Endosulfan	ug/L	0.053	0.012	0.012	15	12	3.11*MEC	0.165
beta-BHC	ug/L	0.018	0.004	N/A	15	14	3.11*MEC	0.056
beta-Endosulfan	ug/L	0.068	0.009	0.016	15	13	3.11*MEC	0.212
Chlorodane	ug/L	0.01	0.038	N/A	15	14	3.11*MEC	0.031
Dalapon	ug/L	7.4	7.4	N/A	13	12	3.11*MEC	23.1
delta-BHC	ug/L	0.049	0.006	0.012	15	13	3.11*MEC	0.152
Endrin	ug/L	0.017	0.006	N/A	15	14	3.11*MEC	0.053
Endrin aldehyde	ug/L	0.17	0.017	0.042	15	13	3.11*MEC	0.529
gamma-BHC	ug/L	0.067	0.013	0.015	15	12	3.11*MEC	0.208
Heptachlor	ug/L	0.078	0.013	0.022	15	12	3.11*MEC	0.243

[1] MEC exceeds calculated value. Therefore MEC used to establish performance-based interim limitation.

The interim EC effluent limitation is an annual average effluent limitation of 867 umhos/cm. This performance-based limitation was established using the maximum annual average effluent EC data for a calendar year from January 2001 to December 2004. The maximum annual average of 867 umhos/cm occurred during the calendar year of 2003.

25. In the Fact Sheet, Attachment F, section IV.F. make the following clarification:

F. Land Discharge Specifications

~~The~~ Land Discharge Specifications are necessary to protect the beneficial uses of the groundwater. The Discharger currently uses unlined storage ponds that are used for influent emergency storage, filter backwash flows, and secondary treated wastewater that can adversely affect the beneficial uses of groundwater. During the proposed expansion, the Discharger will clean out two existing unlined storage ponds and replace them with lined storage ponds to prevent percolation of wastewater into groundwater aquifers. The proposed changes are documented in Attachment C-1 of this Order.

Proper operation of the ponds is necessary to protect groundwater as well as to prevent adverse toxicity in the ponds and the e~~m~~mission of objectionable odors. Toxicity can be controlled if the pH in the ponds is maintained between 6.0 and

9.0. Objectionable odors can be prevented if the DO in the ponds remains above 1.0 mg/l. Therefore, discharge limits for pH and DO are established in this Order.

26. In the Fact Sheet, Attachment F, section V.B. Groundwater, second paragraph, make the following correction:

The Discharger uses unlined storage ponds that are used for influent emergency storage, filter backwash flows, and secondary treated wastewater that can adversely affect the beneficial uses of groundwater. The unlined storage ponds contain concentrations of Ammonia, TDS, Nitrates, and Nitrates that have reasonable potential to reach underlying groundwater.The Regional Water Board in the previous Order found that a monitoring point should be established as near the percolation area as possible. A monitoring point was not established. Thus, the adverse affect to groundwater is undetermined at this time. However, Basin Plan water quality objective prohibits coliform organisms at or above 2.2 MPN/100 ml in underlying groundwater. The Basin Plan also designated that all groundwater should be considered potentially suitable for municipal and domestic water supply (MUN). Therefore, groundwater limitations for ~~Ammonia,~~ TDS, Nitrates, Nitrates, and total coliform are required to protect the beneficial uses of the underlying groundwater.

27. In the Fact Sheet, Attachment F, section VI.C2., make the following revision:

2. **Chronic Toxicity.** ~~Monthly~~ Quarterly chronic whole effluent toxicity testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective. Three species chronic toxicity monitoring results in the previous permit indicated that the receiving water used in the dilution series in many instances was toxic to *Pimephales promelas*, and *Ceriodaphnia dubia*. Furthermore, no dilution credit is allowed for the receiving water since it has been determined to be an ephemeral stream. The previous Order required monitoring four times per year using a dilution series that is not applicable to the discharge. The dilution series for the three species chronic toxicity monitoring has been modified to reflect the results from the previous Order. The dilution series specified in Attachment E will replace the dilution series specified in the previous Order. The minimum dilution series for the initial standard chronic toxicity testing will consist of 100% effluent, 100% receiving water, and 100% lab control water. This Order maintains the testing frequency of the ~~e~~previous Order required testing four times per year for chronic toxicity (4 times per year). ~~However, since the Discharger typically discharges six months out of the year between November and April (6 months) monthly testing will produce seven sets of data in a six-month period. Requiring monthly monitoring instead of previously required four times per year will not cause additional cost to the Discharger but is estimated to save the Discharger testing costs due to a reduced number of tests per species. Therefore, no additional burden is placed on the Discharger by requiring monthly testing. Furthermore,~~ The reduced dilution series will continue to demonstrate compliance with the Basin Plan's narrative toxicity objective.

28. In the Fact Sheet, Attachment F, section VI.D.1.a. Receiving Water monitoring (Surface Water), make the following revision:

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

29. In the Fact Sheet, Attachment F, section VII.B.2.a., fifth paragraph, make the following correction:

Monitoring Trigger. A numeric toxicity monitoring trigger of a statistically significant ~~difference~~ reduction in the ~~between~~ 100% effluent test concentration response ~~and~~ relative to the laboratory control test response 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.