CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2004-0092

NPDES NO. CA0083771

WASTE DISCHARGE REQUIREMENTS FOR CITY OF RIO VISTA AND ECO RESOURCES, INC TRILOGY WASTEWATER TREATMENT PLANT NORTHWEST WASTEWATER TREATMENT FACILITY SOLANO COUNTY

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

1. The City of Rio Vista submitted a Report of Waste Discharge, dated 26 January 2004, and applied for a permit (renewal) for the existing discharge of waste under the National Pollutant Discharge Elimination System (NPDES) from the Trilogy Wastewater Treatment Plant (formerly Summerset WWTP).

2. The discharge is presently governed by Waste Discharge Requirements Order No. R5-2002-0099, adopted by the Regional Board on 7 June 2002. The City of Rio Vista owns a wastewater collection, treatment, and disposal system, and provides sewerage service to a small development northwest of the City of Rio Vista, consisting of residential units for retired couples, an 18-hole golf course, and a clubhouse restaurant. The treatment facility is operated by ECO Resources, Inc. under contract with the City of Rio Vista. The City of Rio Vista and ECO Resources, Inc., are hereafter jointly referred to as Discharger. The treatment plant is located in the SE ¼ of the SW ¼ of Section 13, T4N, R3E, MDB&M, as shown on **Attachment A**, a part of this Order. The treatment plant and the service area are on property owned by the City of Rio Vista (Assessor's Parcel Nos. 048-110-350 and Blackhawk Rio Vista Venture Group, L.P., a California limited partnership (Assessor's Parcel Nos. 048-110-190, 310, 360). On November 7, 1996, Blackhawk Rio Vista Venture Group, L.P entered into an agreement with the City of Rio Vista, resulting in the City of Rio Vista accepting full responsibility for the operations, maintenance and repairs of the Trilogy Wastewater Treatment Plant.

3. Treated wastewater is discharged to land during irrigation months and to an unnamed ephemeral stream that is tributary to the Sacramento River within the legal boundaries of the Sacramento-San Joaquin Delta, a water of the United States, at the point latitude 38° 9' 15" N and longitude 121° 40' 40" W (outfall 001) during non-irrigation months. The method of effluent disposal is to a storage irrigation reservoir and subsequent golf

course irrigation. The plant effluent is blended with well water before it is reclaimed for golf course irrigation.

4. The Trilogy WWTP is equipped with flow equalization, primary clarification, trickling filtration, secondary clarification, chemical addition, tertiary filtration, chlorine disinfection, and emergency storage, as shown on **Attachment B**. The Report of Waste Discharge describes the current discharge as follows:

Annual Average Dry Weather Flow	0.10	million gallons per day (mgd)
Design Average Dry Weather Flow	0.20	mgd
Daily Peak Wet Weather flow	0.22	mgd
Design Daily Peak Wet Weather Flow	0.44	mgd

Constituent	Concentration
BOD[1]	(<1-63)[2] mg/l
Total Suspended Solids	(<1-44)[2] mg/l
Total Dissolved Solids (TDS)	(600-1100)[3] mg/l
Electrical Conductivity @ 25°C	(1100 – 1400)[3] µmhos/cm
Hardness, Total (mg $CaCO_3$/L)	(79.4)[4] mg/l
pH	(6.0 – 7.9)[2] pH units
Aluminum (total)	(2.5 - 2400)[3] µg/l
Ammonia (mg/L as N)	(1.1 – 27)[3] mg/L
Bis (2-ethylhexyl) phthalate	(<2.0 – 4.2)[3] µg/L
Chloride	(100 – 220)[3] mg/L
Chlorodibromomethane	(<0.18 – 3.4)[3] µg/L
Chloroform	(0.5 – 10)[3] µg/L
Copper	(2.3 – 12)[3] µg/L
Cyanide	(<0.6 – 6)[3] µg/L
Dichlorobromomethane	(<0.2 – 7.9)[3] µg/L
1,2-Diphenylhydrazine	(<0.13 – 0.44)[3] µg/L
Iron	(<18 – 320)[3] µg/L
Manganese	(14 – 76)[3] µg/L
Foaming Agents (MBAS)	(50 – 2300)[3] µg/L
Mercury	(0.002 – 0.0072)[3] µg/l
Nitrite	(<0.03 – 3.6)[3] mg/L

1. 5-day, 20°C biochemical oxygen demand.
2. Range from 1999-2000 data.
3. Range from 2002 – 2003 data.
4. Worst case (i.e., lowest) observed hardness.

The Trilogy WWTP was designed for 0.2 million gallons per day (mgd) average dry weather flow (ADWF) and 0.44 mgd daily peak wet weather flow (PWWF) and is staffed by a Grade II operator 8 hours per day. The plant schematics are shown on **Attachment B.** Solids removed in the process are stabilized in an aerated sludge holding tank for up to 22 days at an average design flow and are then dewatered in a Dri-Med bagging unit that places the sludge into non-woven polyethylene bags to increase the solids content. The dewatered sludge is disposed off-site to a regulated Class III landfill. The City also intends to investigate future potential reuse opportunities of its biosolids.

5. The Trilogy WWTP has had problems complying with ammonia and aluminum regulatory criteria. Additionally, the organic load from the existing development has been observed to be higher than anticipated during design. The Discharger has proposed supplementing treatment capacity with either a package membrane bioreactor (i.e., an extended aeration activated sludge treatment process that makes use of membrane filtration for system solids maintenance in lieu of secondary clarification) or with in-kind expansion of the treatment processes already in place. The supplemental treatment will accommodate half the Trilogy WWTP flow (0.1 MGD), with the remaining flow to be treated using the existing treatment process. A schematic of the location and piping associated with the supplemental treatment options (e.g., package membrane bioreactor or in-kind process) is also illustrated in **Attachment B**. Use of the supplemental treatment at the Trilogy WWTP is intended only to ensure compliance with BOD and TSS regulatory criteria, and will not increase treatment and/or disposal capacity.

6. Order No. R5-2002-0099 required (1) compliance with effluent limitations related to ammonia and aluminum, (2) groundwater monitoring at the site to establish appropriate groundwater limits associated with the golf course irrigation practice, (3) required a Salinity Source Control Study to reduce concentrations of salt in the Trilogy effluent to levels consistent with agricultural use, and (4) required a trihalomethane corrective action plan. The Discharger has stated that the Trilogy WWTP has not been designed and cannot comply with effluent limitations regarding ammonia and aluminum specified in Order No. R5-2002-0099 and the most appropriate means for addressing these effluent limitations in addition to concerns related to groundwater degradation, salinity control, and trihalomethane corrective action is to close the Trilogy WWTP and replace its treatment capacity with a new Northwest WWTP specifically designed to address all concerns. This Order considers the closure of the Trilogy WWTP coinciding with the start-up of the Northwest WWTF as a change in treatment process, and location rather than as a new treatment plant. The use of a new Northwest WWTF, will (1) make use of UV disinfection in lieu of chlorination/dechlorination to prevent the formation of disinfection byproducts (trihalomethanes) and reduce the salt concentration of the effluent, (2) discharge to the Sacramento River in lieu of continued

discharge to the unnamed tributary stream to prevent elevated salts from adversely affecting local agriculture, and (3) eliminate continued discharge to the golf course irrigation reservoir and irrigation of the golf course to prevent groundwater impacts. Closure of the trilogy facility and elimination of discharge to land and an effluent dominated stream is considered adequate for addressing the requirements associated with the groundwater monitoring requirements, the trihalomethane correction action plan, and the salinity source control study. As a result, this Order does not require a Salinity Source Control Study, a trihalomethane corrective action plan, or continued groundwater monitoring.

7. The Discharger's proposed new Northwest Wastewater Treatment Facility (WWTF) will serve the existing Trilogy community while allowing continued growth in the northwestern portion of Rio Vista. The new Northwest WWTF will be located on the SW ¼ of Section 18, T4N, R3E, MDB&M, as shown on **Attachment C**, a part of this Order. The treatment plant is on property owned by the City of Rio Vista (Assessor's Parcel Nos. 177-10-02 and 177-09-01). The City of Rio Vista will be fully responsible for the operations, maintenance and repairs of the Northwest WWTF. Upon completion of the Northwest WWTF construction, estimated to be by the end of 2005 or early part of 2006, the Discharger will cease discharging to the golf course irrigation reservoir and to the unnamed tributary to the Sacramento River and initiate discharge directly into the Sacramento River.

8. The Northwest WWTF has been designed for 1 million gallons per day (mgd) average dry weather flow (ADWF) start-up capacity, with peak hydraulic capacity at 3 mgd. Any flow in excess of 3 MGD will automatically spill into a 2 million gallon lined emergency storage basin. The Northwest WWTF has been designed to accommodate an expansion to accommodate an average dry weather flow capacity of 2 MGD, with peak hydraulic capacity at 6 mgd. The plant expansion to 2 MGD average dry weather flow is anticipated to occur sometime after 2010. This Order limits the average dry weather flow to 1 mgd per the start-up capacity. Expansion of flow beyond 1 MGD will require revisions to this Order.

9. The Northwest WWTF will be equipped with extended aeration activated sludge biological treatment with nitrogen removal (nitrification and denitrification), ultrafiltration (i.e., membrane filtration), and UV disinfection. A two-day (2 million gallon) emergency storage basin lined with a 60 millimeter high density polyethylene liner is also being provided to accommodate process failure and/or flows in excess of the peak hydraulic capacity of 3 MGD. The Discharger has proposed discharging treated wastewater from the Northwest WWTF directly to the Sacramento River, a water of the United States, rather than to the unnamed tributary to the Sacramento River. Because the unnamed tributary already discharged into the Sacramento River, this request is considered a change in discharge location rather than a new discharge.

Once the Northwest WWTF becomes operational, irrigation of the golf course with treated effluent will cease. The plant schematics are shown on **Attachment D.** Solids removed in the process will be stabilized using passive solar drying, a process that will produce Class A biosolids. The digested sludge will be disposed off-site to a regulated Class III landfill. The City also intends to investigate future potential reuse opportunities of its biosolids.

10. Treated wastewater from the Northwest WWTF will be discharged to the Sacramento River within the legal boundaries of the Sacramento-San Joaquin Delta, a water of the United States, at the point latitude 38° 10' 6" N and longitude 121° 40' 42" W (outfall 002) on a year-round basis.

11. The U.S. Environmental Protection Agency (USEPA) and the Regional Board have classified this discharge as a major discharge.

Recycled Water Discharge

12. The California Department of Health Services (DHS) requires that the American Water Works Association (AWWA) *Guidelines for Distribution of Non-Potable Water* and *Guidelines for the On-site Retrofit of Facilities Using Disinfected Tertiary Recycled Water* be implemented in design and construction of recycling equipment. The guidelines require installation of purple pipe, adequate signs, etc. Adequate separation between the recycled water lines and domestic water lines and sewer lines is also required. The Discharger will submit either an engineering report attesting to the full compliance with these requirements or a time schedule for the retrofit of facilities in accordance with the DHS guidelines.

13. DHS has established statewide water recycling criteria in Title 22, CCR, Section 60301 et. seq. (hereafter Title 22). DHS revised the water recycling criteria contained in Title 22 on 2 December 2000. The Discharger will treat to tertiary standards and disinfect the tertiary effluent per Title 22 requirements because of the potential for human contact with the reclaimed wastewater when it is used to irrigate the golf course and other landscaping.

14. Section 60303 of Title 22 states that water recycling requirements shall not apply to the use of recycled water onsite at a water recycling plant, or wastewater treatment plant, provided access by the public to the area of onsite recycled water use is restricted.

15. Section 60323(a) of Title 22 states that no person shall produce or supply reclaimed water for direct reuse from a proposed water reclamation plant unless an engineering report is submitted for review and approval by DHS and the Regional Board. Irrigation

of golf courses and other landscaping is considered a beneficial reuse, for which DHS has granted approval.

16. The Basin Plan encourages water recycling.

17. The Basin Plan *Wastewater Reuse Policy* states: "…The Regional Board … requires as part of a Report of Waste Discharge an evaluation of reuse and land disposal options as alternative disposal methods. Reuse options should include consideration of the following, where appropriate, based on the quality of the wastewater and the required quality of the specific reuses: industrial and municipal supply, crop irrigation, landscape irrigation, ground water recharge, and wetland restoration."

18. The State Water Resources Control Board has also issued Resolution 77-1 (Policy with Respect to Water Reclamation in California).

19. Currently the tertiary effluent from the Trilogy WWTP is being recycled to irrigate the Trilogy Golf Course, which comprises 165 acres of turf grass and other landscaping and approximately 40 acres of non-irrigated open space surrounding the planted area.

20. The golf course is irrigated per a golf course turf management plan that describes fertilizer management, pesticide management, water conservation practices, and a water quality monitoring plan designed to minimize potential water quality impacts.

21. The Trilogy WWTP does not generate enough effluent to meet all irrigation needs at the golf course, and therefore, treated effluent is being supplemented with raw water from the local wells as needed.

22. Most of the irrigated portions of the golf course are relatively flat. However, some areas adjacent to the irrigated areas are relatively steep. Although the system is designed to minimize runoff during irrigation, there is currently no system to capture irrigation runoff before it leaves the golf course area. In some cases, uncontrolled irrigation runoff appears to enter the Stream or other natural drainage courses. Such runoff cannot occur except under an NPDES permit, and the Discharger is required to provide all runoff controls necessary to keep irrigation runoff out of drainage channels and within the boundaries of the golf course property.

23. The Discharger had previously stated that the Trilogy golf course was not designed to contain recycled water to the use area under all foreseeable environmental conditions. In addition, there is the possible long term impact to the groundwater due to the use of effluent at the golf course. Therefore, the Discharger has proposed to eliminate the reuse of recycled water on the golf course during the life of this Order.

Groundwater Considerations

24. The beneficial uses of the underlying ground water, as identified in the Basin Plan, are municipal and domestic, industrial service, industrial process, and agricultural supply.

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

26. State Water Resources Control Board (SWRCB) Resolution No. 68-16 (hereafter Resolution 68-16) requires the Regional Board in regulating discharges of waste to maintain high quality waters of the State until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the policies of the State Board or Regional Board (e.g., quality that exceeds water quality objectives). Resolution 68-16 requires that the discharge be regulated to meet best practicable treatment or control to assure that pollution or nuisance will not occur and the highest water quality consistent with the maximum benefit to the people of the State be maintained.

27. Domestic wastewater contains constituents and parameters such as total dissolved solids (TDS), specific conductivity, pathogens, nitrates, organics, metals and oxygen demanding substances (BOD). The current short term discharge to land from the Trilogy WWTP, with disposal by percolation, may result in an increase in the concentration of these constituents in groundwater. The increase in the concentration of these constituents in groundwater must be consistent with Resolution 68-16. Any increase in pollutant concentrations in groundwater must be shown to be consistent with maximum benefit to the people of the state of California, e.g., necessary to allow wastewater utility service necessary to accommodate housing and economic expansion

in the area. Some degradation of groundwater may be consistent with Resolution 68-16 provided that:

a. the degradation is limited in extent;

b. the degradation after effective source control, treatment, and control is limited to waste constituents typically encountered in municipal wastewater as specified in the groundwater limitations in this Order;

c. the Discharger minimizes the degradation by fully implementing, regularly maintaining, and optimally operating best practicable treatment and control (BPTC) measures; and

d. the degradation does not result in water quality less than that prescribed in the Basin Plan.

28. Some degradation of groundwater by some of the typical waste constituents released with discharge from a municipal wastewater utility after effective source control, treatment, and control is consistent with maximum benefit to the people of California. The technology, energy, water recycling, and waste management advantages of municipal utility service far exceed any benefits derived from a community otherwise reliant on numerous concentrated individual wastewater systems, and the impact on water quality will be substantially less. Degradation of groundwater by constituents (e.g., toxic chemicals) other than those specified in the groundwater limitations in this Order (Finding E.1), and by constituents that can be effectively removed by conventional treatment (e.g., total coliform bacteria) is prohibited. When allowed, the degree of degradation permitted depends upon many factors (i.e., background water quality, the waste constituent, the beneficial uses and most stringent water quality objective, source control measures, waste constituent treatability).

29. The Discharger has requested year-round discharge to the Sacramento River in lieu of continuing the irrigation of the golf course to address concerns related to groundwater degradation and runoff if applied effluent enters into surface water drainage courses. The Discharger has reported that it expects the discharge to the Sacramento River to be initiated in late 2005 or early 2006. Upon initiation of the discharge, continued irrigation of the golf course with treated effluent will cease. **Provision H3** of this Order includes a compliance schedule to **28 February 2006**, to allow for construction of the new Northwest WWTF and outfall diffuser to the Sacramento River.

30. The discharge authorized herein and the treatment and storage facilities associated with the discharge of treated municipal wastewater, except for discharges of residual sludge

and solid waste, are exempt from the requirements of Title 27, California Code of Regulations (CCR), section 20005 et seq. (hereafter Title 27). The exemption, pursuant to Title 27 CCR section 20090(a), is based on the following:

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

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

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

31. This Order establishes groundwater limitations that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan.

Basin Plan, Beneficial Uses, and Regulatory Considerations

32. The Regional Board adopted a *Water Quality Control Plan; Fourth Edition, for the Sacramento and San Joaquin River Basins* (hereafter Basin Plan). The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters of the Basin. These requirements implement the Basin Plan. USEPA adopted the National Toxics Rule (NTR) on 22 December 1992 (amended on 4 May 1995 and 9 November 1999) and the California Toxics Rule (CTR) on 18 May 2000 (amended 13 February 2001). These Rules contain water quality standards applicable to this discharge. The State Water Resources Control Board (SWRCB) adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* known as the State Implementation Plan (SIP), which contains requirements for implementation of the NTR and the CTR.

33. 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. **Provision H4** of this Order:

a. Requires the Discharger to conduct a study to provide information as to whether the levels of NTR, CTR or other pollutants in the discharge of the Northwest WWTF have the reasonable potential to cause or contribute to an in-stream excursion above a water quality standard, including Basin Plan numeric and narrative objectives and NTR and CTR criteria;

b. If the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard, requires the Discharger to submit information to calculate effluent limitations for those constituents; and

c. Allows the Regional Board to reopen this Order and include effluent limitations for those constituents.

On 10 September 2001 the Executive Officer issued a letter, in conformance with State Water Code, Section 13267, requiring the Discharger prepare a technical report assessing effluent and receiving water quality. A copy of that letter, including its attachments I through IV, is incorporated into this Order as **Attachment F**. A provision contained in this Order is intended to be consistent with the requirements of **Attachment F** in requiring sampling for National Toxics Rule (NTR), California Toxics Rule (CTR) and additional constituents to determine if the discharge has a reasonable potential to cause or contribute to water quality impacts. The requirements contained in **Attachment F** list specific constituents, detection levels, acceptable time frames and report requirements. **Provision H4** of this Order is intended to duplicate the requirements of the technical report request.

34. Based on information submitted as part of the application describing the quality of the Trilogy WWTP effluent, in studies, and as directed by monitoring and reporting programs, the Regional Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality objective for **aluminum**, **ammonia, bis (2-ethylhexyl) phthalate, chloride, chlorodibromomethane, chloroform, copper, cyanide, dichlorobromomethane, 1,2-diphenylhydrazine, electrical conductivity, iron, manganese, foaming agents (MBAS), mercury, nitrite, total coliform, BOD, and TSS.** Effluent limitations for these constituents are included in this Order. A discussion of each constituent's water quality standard is found in the following findings, the attached Information Sheet, and **Attachment E**.

35. Section 2.1 of the SIP provides that: "Based on an existing discharger's request and demonstration that it is infeasible for the discharger to achieve immediate compliance with a CTR [or NTR] criterion, or with an effluent limitation based on a CTR [or NTR] criterion, the RWQCB [Regional Water Quality Control Board] may establish a compliance schedule in an NPDES permit." Section 2.1 further states that compliance schedules may be included in NPDES permits provided that the following justification has been submitted:…."(a) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream; (b) documentation of source control measures and/or pollution minimization measures currently underway or completed; (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e.,

facility upgrades); and (d) a demonstration that the proposed schedule is a short as practicable."

The Discharger qualifies for the assignment of interim effluent limitations, where warranted. On 10 September 2001, the Executive Officer issued a letter, in conformance with State Water Code, Section 13267, which required that the Discharger prepare a technical report assessing effluent and receiving water quality. A copy of that letter, including its attachments is incorporated into this Order as **Attachments F through F-4**. The Discharger, on 28 February 2003, submitted a technical report which fulfilled its obligation under this request. Additionally, the Discharger reports that current wastewater is municipal in origin. The contaminants, therefore, originate from the municipal water supply and/or municipal use. The monitoring and source identification fulfills the requirements of (a). The Discharger has stated its intent in the Report of Waste Discharge to make use of an ultrafiltration based biological treatment system (i.e., membrane bioreactor) with UV disinfection to replace the current trickling filter/granular medium filtration with chlorination/dechlorination system at the Northwest WWTF. This replacement treatment system complies with "best practicable treatment or control," thus fulfilling requirements associated with (b) and (c). Because of the availability of assimilative capacity in the Sacramento River for bis (2-ethylhexyl) phthalate, chlorodibromomethane, chloroform, cyanide, dichlorobromomethane, and 1,2-diphenylhydrazine, a compliance schedule, to **28 February 2006**, has been provided in this Order to allow for design completion, project bidding, construction, and start-up of the Northwest WWTF and outfall diffuser with a direct discharge to the Sacramento River. Because of the lack of assimilative capacity in the Sacramento River for copper, a five-year compliance schedule, to **30 June 2009**, has been included in this Order to allow for the additional task of process monitoring and further action/process modifications to ensure compliance with the copper effluent limitations. These time schedules are considered as short as practicable.

36. Section 1.3 of the SIP requires the Regional Board to conduct an analysis for each priority pollutant with an applicable criterion or objective to determine if a water quality based effluent limitation is required. In evaluating compliance with the CTR and SIP for this Order, Regional Board staff utilized ambient surface water quality data from the San Francisco Regional Monitoring Program (SFRMP) monitoring station BG20, located approximately 12 miles downstream of the future Northwest WWTF discharge point and data submitted by the Discharger from upstream monitoring station R1 (located approximately 2 miles downstream of the future Northwest WWTF discharge point), associated with the City of Rio Vista Main Wastewater Treatment Plant that currently discharges into the Sacramento River. **Attachment E** summarizes maximum effluent concentrations (MECs) and Sacramento River concentrations and includes aquatic life and human health criteria and Basin Plan objectives for each priority pollutant.

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

    USEPA's Toxics Release Inventory database does not show any constituent as being discharged to the Trilogy WWTP. Therefore, effluent limitations are not included in this Order pursuant to CWC Section 13263.6(a).

38. The Basin Plan at page II-2.00 states: "Existing and potential beneficial uses which currently apply to surface waters of the basins are presented in Figure II-1 and Table II-1." The Basin Plan does not specifically identify any beneficial uses for the unnamed tributary ephemeral stream, but the Basin Plan does identify present and potential uses for the Sacramento – San Joaquin River Delta, that includes the section of the Sacramento River to which the ephemeral stream is tributary.

    As identified in Table II-1 of the Basin Plan, the beneficial uses of the Sacramento – San Joaquin River Delta include: municipal and domestic water supply (MUN), agricultural irrigation and stock watering (AGR), industrial process water supply (PRO), industrial service supply (IND), body contact water recreation (REC-1), other non-body contact water recreation (REC-2), warm freshwater aquatic habitat (WARM), cold freshwater aquatic habitat (COLD), warm and cold fish migration habitat (MIGR), warm spawning habitat (SPWN), wildlife habitat (WILD), and navigation (NAV).

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

    The Basin Plan recognizes that some uses may not currently exist and may not be able to be supported in the probable future for at least certain portions of a receiving water. Thus, the Regional Board recognizes that considering removing some of the beneficial uses may be appropriate. The Regional Board, however, is not authorized to remove

such uses unless it follows the public process as required by state law and the federal regulations, i.e., by amending the Basin Plan.

Upon review of the flow conditions, habitat values, and beneficial uses of the ephemeral stream that is tributary to the Sacramento River, and based on hydraulic continuity, aquatic life migration, and existing and potential water rights, the Regional Board finds that the following beneficial uses identified in the Basin Plan for the Sacramento - San Joaquin River Delta are applicable to the ephemeral stream.

a. *Domestic Supply and Agricultural Supply*

The Regional Board is required to apply the beneficial use of MUN to the ephemeral stream based on State Board Resolution 88-63, which was incorporated into the Basin Plan pursuant to Regional Board Resolution 89-056. In addition, the State Water Resources Control Board (SWRCB) has issued water rights to existing water users of the Sacramento River downstream of the discharge for domestic and irrigation uses. The main beneficial use of the stream waters is for irrigation supply. The stream is an ephemeral water body, fully charged in the irrigation season and containing little or no water during non-irrigation season. The stream may also provide minimal amounts of groundwater recharge. The groundwater is a source of drinking water. In addition to the existing water uses, growth in the area, downstream of the discharge is expected to continue, which presents a potential for increased domestic and agricultural uses of the water in the stream.

b. *Water Contact and Noncontact Recreation and Esthetic Enjoyment*

The Regional Board finds that the stream discharge flows through rural areas, there is ready public access to the stream, exclusion of the public are unrealistic and although not encouraged, potential for contact recreational activities exist along the stream and downstream waters and these uses are likely to increase as the population in the area grows. Prior to discharge into the Sacramento River, the stream flows through areas of general public access, fields, and commercial areas, to the Sacramento River. The Sacramento River also offers recreational opportunities.

c. *Groundwater Recharge*

In areas where groundwater elevations are below bottom of the stream or the Sacramento River, water may percolate to groundwater. Since the stream is at times semi-dry, it is reasonable to assume that the stream water is lost by evaporation, flow downstream and percolation to groundwater providing a source

of municipal and irrigation water supply.

d. *Freshwater Replenishment*

When water is present in the stream, there is hydraulic continuity between the stream and the Sacramento River. During periods of hydraulic continuity, the stream adds to the water quantity and may impact the quality of water flowing down stream in the Sacramento River.

e. *Preservation and Enhancement of Fish, Wildlife and Other Aquatic Resources.*

The Basin Plan (Table II-1) designates the Sacramento-San Joaquin Rivers as having both cold and warm freshwater beneficial uses, which include: warm freshwater habitat (WARM); cold freshwater habitat (COLD), cold and warm habitat migration of aquatic organisms (MIGR) including salmon, striped bass, sturgeon, shad, and steelhead; warm habitat spawning, reproduction, and/or early development (SPWN), and wildlife habitat (WILD). Therefore, pursuant to the Basin Plan (Table II-1, Footnote (2)), the cold water habitat designation applies to the ephemeral stream. The cold-water habitat designation necessitates that the in-stream dissolved oxygen concentration be maintained at, or above, 7.0 mg/l. This approach recognizes that, if the naturally occurring in-stream dissolved oxygen concentration is below 7.0 mg/l, the Discharger is not required to improve the naturally occurring level.

The Regional Board also finds that based on the available information and on the Discharger's application, that the stream, absent the discharge, is an ephemeral stream. The ephemeral nature of the stream means that the designated beneficial uses must be protected, but that no credit for receiving water dilution is available. Although the discharge, at times, maintains the aquatic habitat, constituents may not be discharged that may cause harm to aquatic life. At other times, natural flows within the stream help support the cold-water aquatic life. Both conditions may exist within a short time span, where the stream would be dry without the discharge and periods when sufficient background flows provide hydraulic continuity with the Sacramento River.

Surface Water Quality Objectives

39. The SIP requires submission of monitoring data prior to the issuance of a permit. The Discharger has submitted Trilogy WWTP effluent data for fulfillment of this requirement, with explanation as to how the Northwest WWTF design and disposal method will ensure compliance with water quality objectives. Although interim effluent limitations will be applied based on the Trilogy monitoring results of which this discharge is replacing, **Provision H4** included in this Order requires additional

monitoring of the discharge in order to verify the Northwest WWTF design intent. Upon review of the additional monitoring data, this permit can be reopened and the effluent limitations may be removed. This change would be consistent with Federal anti-backsliding provisions of 40 CFR 122.44(1)12 and 122.62(a)(16).

40. The Discharger submitted a diffuser design whereby effluent is discharged through diffuser ports over a distance of approximately 150 feet to 250 feet from shore. Cormix modeling was used to assess whether the proposed diffuser would provide greater than 20:1 dilution. The modeling effort consisted of finding a steady state solution with effluent and river flow conditions being those that occur within one hour of a flow reversal (i.e., two hours total = one hour before and one hour after flow reversal). In addition, because the Cormix model results are reported as being accurate to only plus or minus fifty percent, a safety factor was applied. The results of the mixing zone study associated with the diffuser indicate that a zone of initial mixing achieves a Sacramento River water to effluent dilution of 20:1 within 150 feet (inclusive of a safety factor) of the discharge. This dilution credit (termed "D" in the SIP) of 20 is applied whenever the effluent limitation constituent's ambient background Sacramento River concentration is less than the water quality objective or criterion (i.e., assimilative capacity exists). In accordance with Section 1.4 of the SIP, the ambient background concentration (termed "B" in the SIP) is the observed maximum concentration whenever the applicable criterion is for the protection of aquatic life and the arithmetic mean concentration for the protection of human health or other long-term water quality objective (e.g., agricultural use).

41. This Order contains effluent limitations associated with ammonia, bis (2-ethylhexyl) phthalate, chlorodibromomethane, chloride, chloroform, cyanide, dichlorobromomethane, 1,2-diphenylhydrazine, electrical conductivity, foaming agents (MBAS), and nitrite that the current Trilogy WWTP could potentially comply with should it take advantage of assimilative capacity available in the Sacramento River in lieu of discharging to the unnamed tributary stream. This Order allows for a discharge of effluent from the Trilogy WWTP directly to the Sacramento River (**Attachment A**) should it be necessary to ensure compliance with effluent limitations in accordance with the associated time schedules.

42. Technology-based treatment requirements under section 301 (b) of the CWA represent the minimum level of control that must be imposed in a permit issued under section 402 of the CWA. Technology based secondary treatment standards for Municipal Point-Source Dischargers are contained in 40 CFR Section 133. For secondary treatment, the 30-day average BOD_5 and total suspended solids (TSS) concentrations each shall not exceed 30 mg/l, the 7-day average BOD_5 and suspended solids concentrations each shall not exceed 40 mg/l, and the 30-day average BOD_5 and suspended solids percent removal each shall not be less than 85 percent. This permit contains more restrictive 7-

day average and 30-day average effluent limitations for **BOD** and **TSS** than are required by the technology based secondary treatment standards. The reason for the more restrictive BOD and TSS limitations is due to the type of treatment process being implemented with the new Northwest WWTF. The Northwest WWTF makes use of ultrafiltration membranes for mixed liquor separation within the biological treatment process. The membranes serve the role of both secondary clarification and final effluent filtration. Effluent from this process is, based on experience, capable of complying with these more restrictive limits. Under the requirements associated with "best practicable treatment or control," the limits are assigned to ensure proper operation and maintenance of the facility.

43. **Aluminum** was detected in the effluent with a total recoverable concentration ranging between 2.5 µg/l and 2400 µg/l. The primary and secondary MCLs for aluminum are 1000 µg/l and 200 µg/l respectively. USEPA developed National Recommended Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life for total recoverable aluminum; 87 µg/l as a four-day average (chronic) and 750 µg/l as a one-hour average (acute). USEPA's 2002 National Recommended Water Quality Criteria summary document notes that these criteria were developed at low hardness values. It also states that aluminum is substantially less toxic at higher hardness, but the effects of hardness on the criteria are not well quantified at this time. Aluminum exists as aluminum silicate in suspended clay particles, which USEPA acknowledges might be less toxic than other forms of aluminum. Correspondence with US EPA indicates that the criterion is not intended to apply to aluminum silicate. Therefore, a monitoring method that excludes aluminum silicate is likely to be more appropriate. According to correspondence contained in Regional Board files, the use of acid-soluble analysis for compliance with the aluminum criteria appears to satisfy USEPA. Background concentrations of aluminum in the Sacramento River exceed these numerical criteria (as shown in Attachment E). This Order and the Basin Plan prohibit the discharge of toxic constituents in toxic amounts and USEPA's criteria for prevention of acute and chronic toxicity are numerical criteria, which may be used to apply the Basin Plan's narrative objective to protect aquatic life from toxicity. Based on the maximum observed effluent concentration, the Regional Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above water quality criteria for aluminum in both the unnamed tributary stream and the Sacramento River. As a result, this Order establishes a final effluent limitation for aluminum. The Discharger is unable to immediately comply with the final effluent limitations for aluminum. A compliance time schedule and interim limits will be considered in a separate Cease and Desist Order.

44. **Ammonia** concentrations in the effluent from domestic wastewater treatment plants (without nitrification facilities), in general, range higher than USEPA recommended freshwater criteria. Because the Trilogy Plant is not designed to nitrify, the Discharger

has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan narrative toxicity objective, which prohibits toxic constituents in toxic concentrations in ambient waters. Ammonia concentrations in the Trilogy effluent have ranged from 1.1 mg/l to 27 mg/l. The USEPA has published revised ambient water quality criteria for Ammonia (1999 Ammonia Update), superseding all previous USEPA recommended freshwater criteria for ammonia. The new criteria incorporate revisions where the acute criterion (1-hour average) for ammonia is now dependent on pH and fish species and the chronic criterion (30-day average) is dependent on pH and temperature, and at temperatures lower than 15^{o}C is also dependent on the presence or absence of early life stages of aquatic organisms. USEPA found that as pH increased, both the acute and chronic toxicity of ammonia increased and salmonids were more sensitive to acute toxicity affects than any other species. USEPA also found that invertebrates and young fish experienced increasing chronic toxicity affects with increasing temperatures. USEPA has presented the acute ammonia criterion as an equation, in a table format, and in graphs. This Order contains final effluent limitations, which will vary with pH and temperature for fish early life stages and Salmonids present as shown on **Attachments F** (chronic) and **Attachment G** (acute). The Discharger is unable to comply with the final effluent limitations for ammonia when discharging to the unnamed tributary stream. A time schedule and interim limits will be considered in a separate Cease and Desist Order.

The Discharger reports in the Report of Waste Discharge that the Northwest WWTF has been designed to fully nitrify, resulting in effluent ammonia concentrations lower than 1 mg/L. Background data for ammonia at the Sacramento River ranged from 0.2 mg/L as N to 0.3 mg/L as N. Based on historical available receiving water data, since 1996, the worst-case scenarios in the Sacramento River have been when the pH was 8.1 and the temperature was 23 ^{o}C. Under these conditions, the USEPA's ambient water quality criteria for ammonia are 4.64 mg/L as N (Salmonids Present) as a 1-hour average (acute) and 1.22 mg/L as N (early life stages present) as a 30-day average (chronic). Therefore, if the Northwest WWTF is operated in accordance with its design, there should be no reasonable potential for the Northwest WWTF discharge to cause or contribute to ammonia toxicity in the Sacramento River. Effluent limitations related to ammonia have not been applied to the discharge to the Sacramento River. However, effluent monitoring will continue with the operation of the Northwest WWTF. If ammonia effluent concentrations are measured at greater than 1 mg/L, then this Order may be reopened and a new ammonia effluent limitation established.

45. **Bis (2-ethylhexyl) phthalate** was detected in the effluent with a total recoverable concentration ranging between <2.0 µg/l and 4.2 µg/l. The Office of Environmental Health Hazard Assessment and USEPA have determined that Bis (2-ethylhexyl) phthalate may reasonably be anticipated to be a carcinogen. The CTR human health criterion (for waters that are sources of drinking water and from which aquatic

organisms may be consumed) is 1.8 µg/L. Maximum effluent concentrations exceed the CTR criterion. Therefore, the discharge to the unnamed tributary stream has the potential to cause or contribute to excursions above the CTR criterion. Final effluent limitations for discharge to the unnamed tributary stream are included in this Order. Additionally, since these limits put the Trilogy WWTP in immediate non-compliance, a compliance schedule is included in the permit in accordance with SIP Section 2.1, to come into compliance by 1 March 2006 or upon a direct discharge into the Sacramento River, whichever occurs first. Therefore, **Provision H3** of this order allows time to complete construction of the Northwest WWTF and/or the effluent diffuser into the Sacramento River for direct discharge (where assimilative capacity exists) as the measure of compliance with these limitations.

Based on SIP Section 2.2.2, interim effluent limitations are required when compliance schedules are granted to allow the Discharger an opportunity to provide additional information or construct facilities to meet the specified CTR criteria. Interim effluent limitations, based on historical plant performance, are included in this Order.

Assimilative capacity is available in the Sacramento River for the discharge of bis (2-ethylhexyl) phthalate. Although the Discharger has reported in a Mixing Study that 20:1 dilution is available when discharging to the Sacramento River, the Anti-degradation Policy prevents assignment of all of the available assimilative capacity. Final effluent limitations have been assigned to the Sacramento River, based on historical plant performance, that are more stringent than those that would be associated with maximum available dilution. These final effluent limitations are in effect on 1 March 2006 or upon discharge directly into the Sacramento River, whichever is sooner.

46. **Chloride** concentrations in the effluent ranged from 100-220 mg/l based on results from samples collected in 2002 and 2003. Samples taken by the Discharger show that chloride concentration in the Sacramento River ranged from 7-20 mg/l with an average of 13 mg/l, based on samples taken in 2002. The recommended secondary MCL for chloride is 250 mg/l, the upper secondary MCL is 500 mg/l, and the short term secondary MCL is 600 mg/l. USEPA's National Ambient Water Quality Criteria for chloride for the Protection of Freshwater Aquatic Life is 230 mg/l, as a 4-day average, and 860 mg/l as a 1-hour average. The Agricultural Water Quality goal for chloride is 106 mg/l (Ayers, R. S. and D. W. Westcot, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations - Irrigation and Drainage Paper No. 29, Rev. 1, Rome, 1985). Above this level in irrigation water, sensitive crops will be adversely affected. This Order and the Basin Plan prohibit the discharge of chemical constituents in concentrations that adversely affect beneficial uses and the Agricultural Water Quality Goal is a numerical criterion, which may be used to apply the Basin Plan's narrative objective for chemical constituents to protect agricultural uses of water. Based on the maximum observed effluent concentration, the Regional Board finds that

the discharge has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for chloride in the unnamed tributary stream. As a result, this Order establishes a final effluent limitation for chloride. The Discharger is unable to immediately comply with the final effluent limitations for chloride. A compliance time schedule and interim limits will be considered in a separate Cease and Desist Order.

Assimilative capacity is available in the Sacramento River for the discharge of chloride. Although the Discharger has reported in a Mixing Study that 20:1 dilution is available when discharging to the Sacramento River, the *Anti-degradation Policy* prevents assignment of all of the available assimilative capacity. Final effluent limitations have been assigned to the Sacramento River, based on historical plant performance, that are more stringent than those that would be associated with maximum available dilution. These final effluent limitations are in effect on 1 March 2006 or upon discharge directly into the Sacramento River, whichever is sooner.

47. **Chlorodibromomethane** concentrations in the effluent ranged from <0.18 µg/L to 3.4 µg/L. Samples taken by the Discharger indicate that chlorodibromomethane has not been detected in the Sacramento River. The CTR human health criterion (for waters that are sources of drinking water and from which aquatic organisms may be consumed) is 0.41 µg/L, based on a 1-in-1,000,000 cancer risk. Maximum effluent concentrations exceed the CTR criterion. Therefore, the discharge to the unnamed tributary stream has the potential to cause or contribute to excursions above the CTR criterion. Final effluent limitations for discharge to the unnamed tributary stream are included in this Order. Additionally, since these limits put the Trilogy WWTP in immediate non-compliance, a compliance schedule is included in the permit in accordance with SIP Section 2.1, to come into compliance by 1 March 2006 or upon a direct discharge into the Sacramento River, whichever occurs first. Therefore, **Provision H3** of this permit allows time to complete construction of the Northwest WWTF and/or the effluent diffuser into the Sacramento River for direct discharge (where assimilative capacity exists) as the measure of compliance with these limitations.

Based on SIP Section 2.2.2, interim effluent limitations are required when compliance schedules are granted to allow the Discharger an opportunity to provide additional information or construct facilities to meet the specified CTR criteria. Interim effluent limitations, based on historical plant performance, are included in this Order.

Assimilative capacity is available in the Sacramento River for discharger of chlorodibromomethane. Although the Discharger has reported in a Mixing Study that 20:1 dilution is available when discharging to the Sacramento River, the *Anti-degradation Policy* prevents assignment of all of the available assimilative capacity.

Final effluent limitations have been assigned to the Sacramento River, based on historical plant performance, that are more stringent than those that would be associated with maximum available dilution. These final effluent limitations are in effect on 1 March 2006 or upon discharge directly into the Sacramento River, whichever is sooner.

48. **Chloroform** concentrations in the effluent ranged from 0.5 µg/L to 10 µg/L. Samples taken by the Discharger indicate that chloroform has not been detected in the Sacramento River. The USEPA National Recommended Ambient Water Quality Criterion for human health protection (for waters that are sources of drinking water and from which aquatic organisms may be consumed) is 5.7 µg/L, based on a 1-in-1,000,000 cancer risk. The Office of Environmental Health Hazard Assessment (OEHHA) has published and maintains the Toxicity Criteria Database, which contains cancer potency factors for chemicals, including chloroform, that have been used as a basis for regulatory actions by the boards, departments and offices within the California Environmental Protection Agency (Cal/EPA). The cancer potency factor for oral exposure to chloroform in this database is 0.031 milligrams per kilogram body weight per day (mg/kg-day). By applying standard toxicologic assumptions used by OEHHA, USEPA and other environmental agencies in evaluating health risks via drinking water exposure (i.e., 70 kg body weight and 2 liters per day water consumption), this cancer potency factor is equivalent to a concentration in drinking water of 1.1 ug/L (ppb) at the 1-in-a-million cancer risk level. The 1-in-a-million risk level is consistent with that used by the Department of Health Services (DHS) to set *de minimis* risks from involuntary exposure to carcinogens in drinking water in the development of drinking water MCLs and Action Levels and by OEHHA to set negligible cancer risks in the development of Public Health Goals for drinking water. The one-in-a-million cancer risk level is also mandated by USEPA in applying human health protective criteria contained in the National Toxics Rule and the California Toxics Rule for priority toxic pollutants in California surface waters. Maximum effluent concentrations exceed both the USEPA and OEHHA criteria. Therefore, the discharge to the unnamed tributary stream has the potential to cause or contribute to excursions above the OEHHA criterion. Final effluent limitations for discharge to the unnamed tributary stream are included in this Order. Additionally, since these limits put the Trilogy WWTP in immediate non-compliance, a compliance schedule is provided. The previous permit did not include this limitation. Since this effluent limitation is a new regulatory requirement within this permit, and because the application of the water quality objective for the protection of MUN at the discharge point into the unnamed stream is a new interpretation of the Basin Plan, a compliance schedule is included in the permit, to come into compliance by 1 March 2006 or upon a direct discharge into the Sacramento River, whichever occurs first. Therefore, **Provision H3** of this permit allows time to complete construction of the Northwest WWTF and/or the effluent diffuser into the Sacramento for direct discharge (where assimilative capacity exists) as the measure of compliance with these limitations.

Interim effluent limitations, based on historical plant performance, are included in this Order.

Assimilative capacity is available in the Sacramento River for chloroform. Although the Discharger has reported in a Mixing Study that 20:1 dilution is available when discharging to the Sacramento River, the *Anti-degradation Policy* prevents assignment of all of the available assimilative capacity. Final effluent limitations have been assigned to the Sacramento River, based on historical plant performance, that are more stringent than those that would be associated with maximum available dilution. These final effluent limitations are in effect on 1 March 2006 or upon discharge directly into the Sacramento River, whichever is sooner.

49. **Copper** concentrations in the effluent ranged from 2.3 µg/L to 12 µg/L. Samples taken by the Discharger of copper concentrations in the Sacramento River ranged between 3.4 µg/L and 14 µg/L. The Basin Plan has established a maximum concentration objective for copper for waters in the Delta at 10 µg/L (independent of hardness). The CTR criteria for copper for the protection of freshwater aquatic life are dependent on hardness for both the acute and chronic scenarios. Therefore, because of lack of dilution waters, the CTR aquatic life criteria is based on hardness of the effluent when discharging to the unnamed tributary stream. When discharging to the Sacramento River, the CTR aquatic life criteria will be based on the hardness of the Sacramento River. Based on a worst-case (i.e., lowest) effluent hardness of 79 mg/L (as $CaCO_3$), the CTR copper continuous concentration (maximum four-day average concentration, chronic) for the protection of freshwater aquatic life as total recoverable is 7.6 µg/L and the recommended maximum concentration (maximum one-hour average concentration, acute) as total recoverable is 11 µg/L. The maximum effluent concentrations exceed both these criteria and the basin plan objective. Based on a worst-case Sacramento River hardness of 43 mg/L (as $CaCO_3$), the CTR copper continuous concentration (maximum four-day average concentration, chronic) for the protection of freshwater aquatic life as total recoverable is 4.5 µg/L and the recommended maximum concentration (maximum one-hour average concentration, acute) as total recoverable is 6.3 µg/L. The ambient Sacramento River background concentrations exceed both these criteria and the basin plan objective. Therefore, the effluent has a reasonable potential to cause or contribute to aquatic toxicity based on total recoverable copper when discharging to the ephemeral stream and the Sacramento River. Effluent limitations for both the unnamed tributary stream and the Sacramento River, based on hardness, are included in this Order as shown in attachment I, with an upper limit of 10 µg/l in conformance with the basin plan objective. Full compliance with these limitations is not required by this Order until 1 July 2009. Additionally, since these limits put the Trilogy WWTP in immediate non-compliance, a compliance schedule is included in the permit in accordance with SIP Section 2.1. Therefore, **Provision H3** of this order

allows time to complete construction of the Northwest WWTF and undertake any other process improvements required to ensure compliance with these effluent limitations.

Based on SIP Section 2.2.2, interim effluent limitations are required when compliance schedules are granted to allow the Discharger an opportunity to provide additional information or construct facilities to meet the specified CTR criteria. Interim effluent limitations, based on historical plant performance, are included in this Order.

50. **Cyanide** concentrations in the effluent ranged from <0.6 µg/L to 6 µg/L. Samples taken by the Discharger of cyanide concentrations in the Sacramento River ranged between <0.6 µg/L and 3 µg/L. The CTR cyanide continuous concentration (maximum four-day average concentration, chronic) criterion for the protection of freshwater aquatic life is 5.2 µg/L and the maximum concentration (one-hour average concentration, acute) criterion is 22 µg/L. The Basin Plan contains an objective of 10 µg/L for the Sacramento-San Joaquin River Delta. Maximum effluent concentrations exceed the CTR chronic criteria. Therefore, the discharge to the unnamed tributary stream has the potential to cause or contribute to excursions above the CTR criterion. Final effluent limitations for discharge to the unnamed tributary stream are included in this Order. Additionally, since these limits put the Trilogy WWTP in immediate non-compliance, a compliance schedule is included in the permit in accordance with SIP Section 2.1, to come into compliance by 1 March 2006 or upon a direct discharge into the Sacramento River, whichever occurs first. Therefore, **Provision H3** of this order allows time to complete construction of the Northwest WWTF and/or the effluent diffuser into the Sacramento River for direct discharge (where assimilative capacity exists) as the measure of compliance with these limitations.

Based on SIP Section 2.2.2, interim effluent limitations are required when compliance schedules are granted to allow the Discharger an opportunity to provide additional information or construct facilities to meet the specified CTR criteria. Interim effluent limitations, based on historical plant performance, are included in this Order.

Assimilative capacity is available in the Sacramento River for discharge of cyanide. Although the Discharger has reported in a Mixing Study that 20:1 dilution is available when discharging to the Sacramento River, the *Anti-degradation Policy* prevents assignment of all of the available assimilative capacity. Final effluent limitations have been assigned to the Sacramento River, based on historical plant performance, that are more stringent than those that would be associated with maximum available dilution. These final effluent limitations are in effect on 1 March 2006 or upon discharge directly into the Sacramento River, whichever is sooner.

51. **Dichlorobromomethane** concentrations in the effluent ranged from <0.2 µg/L to 7.9 µg/L. Samples taken by the Discharger indicate that dichlorobromomethane has not been detected in the Sacramento River. The CTR human health criterion (for waters that are sources of drinking water and from which aquatic organisms may be consumed) is 0.56 µg/L, based on a 1-in-1,000,000 cancer risk. Maximum effluent concentrations exceed the CTR criterion. Therefore, the discharge to the unnamed tributary stream has the potential to cause or contribute to excursions above the CTR criterion. Final effluent limitations for discharge to the unnamed tributary stream are included in this Order. Additionally, since these limits put the Trilogy WWTP in immediate non-compliance, a compliance schedule is included in the permit in accordance with SIP Section 2.1, to come into compliance by 1 March 2006 or upon a direct discharge into the Sacramento River, whichever occurs first. Therefore, **Provision H3** of this order allows time to complete construction of the Northwest WWTF and/or the effluent diffuser into the Sacramento River for direct discharge (where assimilative capacity exists) as the measure of compliance with these limitations.

    Based on SIP Section 2.2.2, interim effluent limitations are required when compliance schedules are granted to allow the Discharger an opportunity to provide additional information or construct facilities to meet the specified CTR criteria. Interim effluent limitations, based on historical plant performance, are included in this Order.

    Assimilative capacity is available in the Sacramento River for discharge of dichlorobromomethane. Although the Discharger has reported in a Mixing Study that 20:1 dilution is available when discharging to the Sacramento River, the *Anti-degradation Policy* prevents assignment of all of the available assimilative capacity. Final effluent limitations have been assigned to the Sacramento River, based on historical plant performance, that are more stringent than those that would be associated with maximum available dilution. These final effluent limitations are in effect on 1 March 2006 or upon discharge directly into the Sacramento River, whichever is sooner.

52. **1,2-Diphenylhydrazine** concentrations in the effluent ranged from <0.13 µg/L to 0.44 µg/L. Samples taken by the Discharger indicate that 1,2-diphenylhydrazine has not been detected in the Sacramento River. The CTR human health criterion (for waters that are sources of drinking water and from which aquatic organisms may be consumed) is 0.04 µg/L. Maximum effluent concentrations exceed the CTR criterion. Therefore, the discharge to the unnamed tributary stream has the potential to cause or contribute to excursions above the CTR criterion. Final effluent limitations for discharge to the unnamed tributary stream are included in this Order. Additionally, since these limits put the Trilogy WWTP in immediate non-compliance, a compliance schedule is included in the permit in accordance with SIP Section 2.1, to come into compliance by 1 March 2006 or upon a direct discharge into the Sacramento River,

whichever occurs first. Therefore, **Provision H3** of this permit allows time to complete construction of the Northwest WWTF and/or the effluent diffuser into the Sacramento River for direct discharge (where assimilative capacity exists) as the measure of compliance with these limitations.

Based on SIP Section 2.2.2, interim effluent limitations are required when compliance schedules are granted to allow the Discharger an opportunity to provide additional information or construct facilities to meet the specified CTR criteria. Interim effluent limitations, based on historical plant performance, are included in this Order.

Assimilative capacity is available in the Sacramento River for 1,2-diphenylhydrazine. Although the Discharger has reported in a Mixing Study that 20:1 dilution is available when discharging to the Sacramento River, the *Anti-degradation Policy* prevents assignment of all of the available assimilative capacity. Final effluent limitations have been assigned to the Sacramento River, based on historical plant performance, that are more stringent than those that would be associated with maximum available dilution. These final effluent limitations are in effect on 1 March 2006 or upon discharge directly into the Sacramento River, whichever is sooner.

53. **Electrical Conductivity** (EC) of the effluent was found to range between 1100 µmhos/cm and 1400 µmhos/cm in samples collected in 2002. The recommended Secondary MCL is 900 µmhos/cm, the upper Secondary MCL is 1600 µmhos/cm and the short-term Secondary MCL is 2200 µmhos/cm. The Agricultural Water Quality Goal is 700 µmhos/cm (Ayers, R. S. and D. W. Westcot, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations - Irrigation and Drainage Paper No. 29, Rev. 1, Rome, 1985), and this value represents a guideline for interpreting water quality for irrigation. Above this level in irrigation water, sensitive crops will be adversely affected. This Order and the Basin Plan prohibit the discharge of chemical constituents in concentrations that impair beneficial uses and the Agricultural Water Quality Goal is a numerical criterion, which is applies this Basin Plan's narrative objective to protect agricultural uses of water. Based on the maximum observed effluent concentration, the Regional Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for electrical conductivity in the unnamed tributary stream. As a result, this Order establishes a final effluent limitation for electrical conductivity. The Discharger is unable to immediately comply with the final effluent limitations for electrical conductivity when discharging to the unnamed tributary stream. A compliance time schedule and interim limits will be considered in a separate Cease and Desist Order.

Assimilative capacity is available in the Sacramento River for electrical conductivity. Background concentrations of EC in the Sacramento River average at 544 µmhos/cm,

based on quarterly data collected from monitoring station BG20 between 1993 and 1999. More recent data (18 September 2003) submitted by the City of Rio Vista as part of the dilution mixing zone study in the Sacramento River show a highest 30-day running average EC of 325 µmhos/cm and a highest 14-day running average EC of 350 µmhos/cm from hourly data collected between 2000 and 2002 from a Department of Water Resources monitoring station. The more recent data appears to be of better quality. Therefore, the 544 µmhos/cm average is considered a more adequate worst case scenario for the Sacramento River. Although the Discharger has reported in a Mixing Study that 20:1 dilution is available when discharging to the Sacramento River, the *Anti-degradation Policy* prevents assignment of all of the available assimilative capacity. Final effluent limitations have been assigned to the Sacramento River, based on historical plant performance, that are more stringent than those that would be associated with maximum available dilution. These final effluent limitations are in effect on 1 March 2006 or upon discharge directly into the Sacramento River, whichever is sooner.

54. **Iron** was detected in the effluent with a total recoverable concentration ranging between <18 µg/l and 320 µg/l. The Discharger has reported concentrations of Iron in the Sacramento River between 1000 µg/L and 9400 µg/L. The Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit is 300 µg/L. The Basin Plan includes a water quality objective that "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels- Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the unnamed tributary. Based on information included in analytical laboratory reports submitted by the Discharger, iron in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 300 µg/L in both the unnamed tributary stream and the Sacramento River. The Basin Plan also includes a water quality objective that water "…*shall be free of discoloration that causes nuisance or adversely affects beneficial uses*." The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Sacramento River, by which the discharge is tributary. Iron concentrations in excess of the Secondary MCL-Consumer Acceptance Limit cause aesthetically undesirable discoloration. Therefore, this Order establishes final effluent limitations for iron. The Discharger is unable to immediately comply with the final effluent limitations for iron. A compliance time schedule and interim limits will be considered in a separate Cease and Desist Order.

55. **Manganese** was detected in the effluent with a total recoverable concentration ranging between 14 µg/l and 76 µg/l. The Discharger has reported concentrations of manganese in the Sacramento River between 23 µg/L and 140 µg/L. The CTR does not list manganese as a priority pollutant. The Basin Plan includes a water quality objective that "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels- Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the unnamed tributary. Based on information included in analytical laboratory reports submitted by the Discharger, manganese in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 50 µg/L in both the unnamed tributary stream and the Sacramento River. The Basin Plan also includes water quality objectives that water be free of discoloration and taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Sacramento River, of which the discharge is tributary. Manganese concentrations in excess of the Secondary MCL-Consumer Acceptance Limit produce aesthetically undesirable discoloration and taste. Therefore, effluent limitations for manganese are included in this Order for both the discharge to the unnamed tributary stream and the Sacramento River and are based on compliance with the Basin Plan water quality objectives for chemical constituents, color, and tastes and odors and the DHS Secondary MCL. The Discharger is unable to immediately comply with the final effluent limitations for manganese. A compliance time schedule and interim limits will be considered in a separate Cease and Desist Order.

56. **Foaming Agents (MBAS)** were detected in the effluent at concentrations between 50 µg/l and 2300 µg/l. Samples taken by the Discharger indicate that MBAS has not been detected in the Sacramento River. The CTR does not list MBAS as priority pollutants. The Basin Plan includes a water quality objective that "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels- Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the unnamed tributary. Based on information included in analytical laboratory reports submitted by the Discharger, MBAS in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 500 µg/L in the unnamed tributary stream. The Basin Plan also includes water

quality objectives that water not contain floating material or taste- or odor-producing substances in concentrations that causes nuisance or adversely affect beneficial uses. The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Sacramento River, of which the discharge is tributary. MBAS concentrations in excess of the Secondary MCL Consumer Acceptance Limit produce aesthetically undesirable froth, taste, and odor. Therefore, an effluent limitation for MBAS is included in this Order for discharge to the unnamed tributary stream and is based on compliance with the Basin Plan water quality objectives for chemical constituents, floating material, and tastes and odors and the DHS Secondary MCL. The Discharger is unable to immediately comply with the final effluent limitations for MBAS. A compliance time schedule and interim limits will be considered in a separate Cease and Desist Order.

Assimilative capacity is available in the Sacramento River for MBAS. Although the Discharger has reported in a Mixing Study that 20:1 dilution is available when discharging to the Sacramento River, the *Anti-degradation Policy* prevents assignment of all of the available assimilative capacity. Final effluent limitations have been assigned to the Sacramento River, based on historical plant performance, that are more stringent than those that would be associated with maximum available dilution. These final effluent limitations are in effect on 1 March 2006 or upon discharge directly into the Sacramento River, whichever is sooner.

57. **Mercury** was detected in the effluent on all 4 samples taken in 2002 using a "clean technique" USEPA Method 1631 with concentrations ranging from 0.0020 - 0.0072 µg/l. The current USEPA's ambient water quality criterion for protection of aquatic life (expressed as dissolved concentrations) for continuous concentration of mercury is 0.77 µg/l (4-day average, chronic criteria), and the CTR (expressed as total recoverable) concentration for the human health protection for consumption of water and aquatic organisms is 0.050 µg/l. The maximum concentrations of mercury in the effluent are less than the CTR criteria, thus the discharge does not have reasonable potential to cause or contribute to an exceedance of water quality standards for mercury.

Mercury is listed under the California 303(d) list as a pollutant causing impairment in the Sacramento-San Joaquin Delta. This listing is based partly on elevated levels of mercury in fish tissue. Because the Sacramento-San Joaquin Delta has been listed as an impaired water body for mercury based on fish tissue impairment, the discharge must not cause or contribute to increased mercury levels in fish tissue.

The Regional Board plans to adopt Total Maximum Daily Loads (TMDLs) for mercury in the Sacramento-San Joaquin Delta by December 2005. When the TMDL is complete, the Regional Board will adopt appropriate water quality based concentration and mass loading effluent limits for the discharge. For situations like this, the SIP

recommends that mass loading of the bioaccumulative pollutant should be limited in the interim to representative, current levels pending development of applicable water quality standards. Until the TMDL is completed and water quality based effluent limits are prescribed, this Order contains an interim, performance based, mass loading limit.

58. **Nitrite** measures as Nitrogen was detected in the effluent at concentrations between <0.03 µg/l and 3.6 µg/l. Samples taken by the Discharger indicate that nitrite has not been detected in the Sacramento River. The CTR does not list nitrite as a priority pollutant. The Basin Plan includes a water quality objective that "*…water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels- Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the unnamed tributary. Based on information included in analytical laboratory reports submitted by the Discharger, nitrite in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Primary Maximum Contaminant Level (MCL) of 1.0 mg/L, measured as nitrogen, in the unnamed tributary stream. An effluent Limitation for nitrite when discharging to the unnamed tributary stream is included in this Order and is based on the DHS Primary MCL. The Discharger is unable to immediately comply with the final effluent limitations for nitrite. A time schedule and interim limits will be considered in a separate Cease and Desist Order.

Assimilative capacity is available in the Sacramento River for nitrite. Although the Discharger has reported in a Mixing Study that 20:1 dilution is available when discharging to the Sacramento River, the *Anti-degradation Policy* prevents assignment of all of the available assimilative capacity. Final effluent limitations have been assigned to the Sacramento River, based on historical plant performance, that are more stringent than those that would be associated with the available dilution. These final effluent limitations are in effect on 1 March 2006 or upon discharge directly into the Sacramento River, whichever is sooner.

59. **Total Dissolved Solids** were detected in the effluent at concentrations ranging from 600 to 1100 mg/L. Total dissolved solids are typically correlated with electrical conductivity. Therefore, because an effluent limit has been placed on electrical conductivity, an effluent limit on total dissolved solids would be redundant. An effluent limit on total dissolved solids therefore has not been placed on this discharge.

60. **Chlorine** is used at the WWTP as a disinfectant and is known to be extremely toxic to aquatic organisms, and based on the effectiveness of methods for chlorination, it may, at times have reasonable potential to be discharged at significant concentrations. The

Discharger monitors chlorine residual as a means of permit compliance. The USEPA developed ambient water quality criteria for chlorine to protect freshwater aquatic organisms. USEPA's ambient water quality criteria for protection of aquatic life are 11 µg/l as a 4-day average (chronic) concentration, and 19 µg/l as a 1-hour average (acute) concentration for total chlorine residual. Therefore, this Order contains effluent discharge limitations for total chlorine residual of 0.011 mg/l as a 4-day maximum, and 0.019 mg/l as a 1- hour average based on the USEPA's ambient criteria to protect aquatic life.

61. **Total Coliform** limitations are imposed to protect the beneficial uses of the receiving water, including body contact water recreation, and municipal, domestic and unrestricted agricultural beneficial use. There are no regulations that prescribe necessary levels of disinfection; however, according to the Department of Health Services (DHS), appropriate limitations are based on average river/effluent dilution ratios over a period of time, with the recommendation to impose tertiary standards (pathogen free) when available dilution is less than 20:1.

    The discharge to the Unnamed Tributary may not always have 20:1 dilution. The previous Order required the 7-day median concentration of total coliform to be no more than 2.2 per 100 mL. The total number of total coliform bacteria was not to exceed an MPN of 23 per 100 mL in more than one sample in any 30-day period with no single sample exceeding an MPN of 240 per 100 mL. Based on the lack of available dilution in the Unnamed Tributary, protection of the beneficial uses of the receiving water will be maintained by continuation of the total coliform limitation from the previous permit.

    Evaluation of flow data obtained from the Department of Water Resources, Delta Modeling section database and the results of a mixing zone analysis submitted by the Discharger for the Sacramento River concluded there is a minimal dilution of 20:1 and, therefore, there is no need for tertiary treatment. This Order contains a monthly median effluent limitation of 23 MPN/100 ml, with a daily maximum effluent limitation of 500 MPN/100 ml.

62. **Pesticides:** The Sacramento–San Joaquin Delta has been listed as an impaired waterbody pursuant to Section 303(d) of the Clean Water Act because of: (1) diazinon and chlorpyrifos (organophosphate pesticides), (2) Group A-organochlorine pesticides {aldrin, chlordane, dieldrin, endosulfan (alpha, beta, sulfate), endrin, endrin aldehyde, 4,4'DDT, heptachlor, heptachlor epoxide, hexachlorocyclohexane (alpha, beta, delta and lindane), and toxaphene}, and (3) unknown toxicity.

    The Basin Plan objectives for Sacramento-San Joaquin Delta regarding pesticides include:

a. no individual pesticides shall be present in concentrations that adversely affect beneficial uses,

b. discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affects beneficial uses,

c. total chlorinated hydrocarbon pesticide concentrations shall not be present in the water column at detectable concentrations, and

d. pesticide concentrations shall not exceed those allowable by applicable antidegradation policies.

The Basin Plan's requirement that persistent chlorinated hydrocarbon pesticides shall not be present in the water column in detectable concentrations is the most stringent criteria for the regulation of the Group A-organochlorine pesticides. Data reported by the Discharger does not indicate that 303(d) listed pesticides are present in the Discharge. Because these constituents are listed under the California 303(d) list as pollutants causing impairment in the Sacramento-San Joaquin Delta, the Discharger is not to cause or contribute to an in-stream excursion above the Basin Plan organochlorine pesticides objective.

Stormwater

63. Federal Regulations for storm water discharges were promulgated by the U.S Environmental Protection Agency on 19 November 1990. The regulations of 40 CFR Parts 122,123, and 124 require specific categories of industrial activities, including Publicly Owned Treatment Works (POTW), which discharge storm water associated with industrial activity to obtain an NPDES permit to implement Best Available Technology Economically Achievable and Best Conventional Pollutant Control Technology to control pollutants in industrial storm water discharges.

64. The City of Rio Vista, upon completion of the Northwest Wastewater Treatment Facility or by 1 March 2006, whichever is sooner, shall be covered under the General Storm Water Permit, Water Quality Order No. 97-03-DWQ, NPDES General Permit No. CAS000001 for *Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities.*

Public Notice

65. A Fact Sheet containing information regarding the facility and the regulatory basis for these requirements is included as a part of this Order. The Regional Board considered

all the above and the supplemental information in the attached Information Sheet, in establishing the following conditions.

66. The Regional Board consulted with the State Department of Health Services and has considered their recommendations regarding the public health aspects of water recycling.

67. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et seq.) requiring an environmental impact report or a negative declaration, in accordance with Section 13389 of the California Water Code.

68. The City of Rio Vista has certified a final Environmental Impact Report in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et seq.), and the State CEQA Guidelines for the Northwest wastewater treatment facility and construction of the outfall and diffuser for direct discharge to the Sacramento River. The Regional Board has considered the Environmental Impact Report and concurs there are no significant impacts on water quality.

69. The Regional Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

70. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.

71. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect upon the date of hearing, provided the Regional Administrator or USEPA has no objections.

IT IS HEREBY ORDERED that Order No. R5-2002-0099 is rescinded and the City of Rio Vista and ECO Resources, Inc., its agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Discharge Prohibitions:

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

2. The by-pass or overflow of untreated or partially treated wastes to surface waters is prohibited, except as allowed by Standard Provision A.13. (See attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements [NPDES]").

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

4. Discharge to the Sacramento River via unnamed tributary stream from 1 May to 31 October and after 1 May 2006 is prohibited.

B. Effluent Limitations for Discharge to the Unnamed Ephemeral Stream (Discharge Location 001):

1. Effluent shall not exceed the following limits:

Constituent	Units	Monthly Average	7-day Median	4-day Average	1-Hour Average	Daily Maximum
BOD[1, 2]	mg/L	10				20
	lbs/day[3]	16.7				33.4
TSS[2]	mg/L	10				20
	lbs/day[3]	16.7				33.4
Turbidity	NTU	2[4]				5[4]
Total Coliform	MPN/100 mL		2.2			23[5]
Settleable Solids	ml/L	0.1				0.2
Chlorine Residual	mg/L			0.011	0.019	
	lbs/day[3]			0.018	0.032	
Oil and Grease	mg/L	10				15
	lbs/day[3]	16.7				25.0
Aluminum[10]	µg/L	71				142
	lbs/day[3]	0.12				0.24
Ammonia	mg/L - N	Attach G			Attach H	
	lbs/day[3]	Calculate[6]			Calculate[6]	

Constituent	Units	Monthly Average	7-day Median	4-day Average	1-Hour Average	Daily Maximum
Bis (2-ethylhexyl) phthalate[7]	µg/L lbs/day[3]	1.8 0.0030				3.6 0.0060
Copper[8]	µg/L lbs/day[3]	Attach I calculate[7]				Attach I calculate[7]
Chloride	mg/L lbs/day[3]	106 177				
Chloroform[7]	µg/L lbs/day[3]	1.1 0.0018				2.2 0.0037
Chlorodibromomethane[7]	µg/L lbs/day[3]	0.40 0.00067				0.80 0.0013
Cyanide[7]	µg/L lbs/day[3]	4.2 0.007				8.4 0.014
Dichlorobromomethane[7]	µg/L lbs/day[3]	0.56 0.00093				1.1 0.0018
1,2-Diphenylhydrazine[7]	µg/L lbs/day[3]	0.04 0.000067				0.08 0.00013
Electrical Conductivity	µmhos/cm	700				
Iron	µg/L lbs/day[3]	300 0.50				
Manganese	µg/L lbs/day[3]	50 0.083				
Foaming Agents (MBAS)	µg/L lbs/day[3]	500 0.83				
Nitrite	mg/L lbs/day[3]	1.0 1.7				
303(d) Pesticides	µg/L lbs/day[3]					ND[9] 0.0

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1 5-day, 20°C biochemical oxygen demand (BOD).

2 To be ascertained by a 24-hour composite.

3 Based on an average dry weather flow of 0.2 mgd. For reporting purposes, compliance with these limitations shall be determined as follows. For monthly average limitations: (measured concentration [mg/L]) x 8.345 [conversion factor] x (monthly average flow rate). For daily maximum limitations: (measured concentration [mg/L]) x 8.345 [conversion factor] x (daily flow rate).

4 Turbidity of the filtered wastewater does not exceed any of the following: a) an average of 2 NTU within a 24-hour period, 2) 5 NTU more than 5 percent of the time within a 24-hour period; and c) 10 NTU at any time.

5 The total number of coliform bacteria shall not exceed an MPN of 23 per 100 ml in more than one sample in any 30-day period. No single sample shall exceed an MPN of 240 per 100 ml.

6 Using the value, in mg/l, determined from attachment G, H, and I (convert µg/l to mg/l) calculate the lbs per day using the formula: x mg/l x 8.345 x design flow in mgd = lbs/day

7 Full compliance with this limit is not required by this Order until 1 March 2006.

8 Full compliance with this limit is not required by this Order until 1 July 2009.

9 Each Organochlorine pesticide shall be ND (non-detectable). The Discharger shall use EPA standard analytical techniques that have the lowest practical quantitation level for the organochlorine pesticides with a maximum acceptable reporting level as indicated on appendix 4 of the SIP. Organochlorine pesticides include aldrin, chlordane, 4,4'DDT, dieldrin, endosulfan (alpha, beta, sulfate), endrin, endrin aldehyde, heptachlor, heptachlor epoxide, hexacyclohexane (alpha, beta, delta, and lindane), and toxaphene.

10 Compliance can be demonstrated using either total, or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by USEPA's Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate as approved by the Executive Officer

2. The following interim effluent limitations are effective:

Constituent	Units	Daily Maximum
Bis (2-ethylhexyl) phthalate[1]	µg/L	13
	lbs/day[3]	0.056
Chlorodibromomethane[1]	µg/L	11
	lbs/day[3]	0.018
Chloroform[1]	µg/L	31
	lbs/day[3]	0.052
Copper[2]	µg/L	37
	lbs/day[3]	0.062
Cyanide[1]	µg/L	19
	lbs/day[3]	0.032
Dichlorobromomethane[1]	µg/L	25
	lbs/day[3]	0.042
1,2-diphenylhydrazine[1]	µg/L	1.4
	lbs/day[3]	0.0023

1. Effective until initiation of the discharge to the Sacramento River or 28 February 2006, whichever occurs sooner.
2. Effective until 30 June 2009.
3. Based on an average dry weather flow of 0.2 mgd. For reporting purposes, compliance with these limitations shall be determined as follows. (measured concentration [mg/L]) x 8.345 [conversion factor] x (daily flow rate).

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

4. The discharge shall not have a pH less than 6.5 nor greater than 8.5.

5. The monthly average dry weather flow to the unnamed tributary stream shall not exceed 0.2 mgd and the peak wet weather discharge flow shall not exceed 0.44 mgd.

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

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

C. Effluent Limitations for Discharge to the Sacramento River (Discharge Location 002):

1. Effluent shall not exceed the following limits:

Constituent	Units	Monthly Average	7-day Median	4-day Average	1-Hour Maximum	Daily Maximum
BOD[1, 2]	mg/L	10				20
	lbs/day[3]	83				167
TSS[2]	mg/L	10				20
	lbs/day[3]	83				167
Total Coliform	MPN/100 mL		23			500
Settleable Solids	mL/L	0.1				0.2
Chlorine Residual	mg/L			0.011	0.019	
	lbs/day[3]			0.092	0.16	

Constituent	Units	Monthly Average	7-day Median	4-day Average	1-Hour Maximum	Daily Maximum
Oil and Grease	mg/L	10				15
	lbs/day[3]	83				167
Aluminum[7]	µg/L	71				142
	lbs/day[3]	0.59				1.2
Bis (2-ethylhexyl) phthalate	µg/L	6.5				13
	lbs/day[3]	0.054				0.11
Copper[4]	µg/L	Attach I				Attach I
	lbs/day[3]	Calculate[6]				Calculate[6]
Chloride	mg/L	340				
	lbs/day[3]	2835				
Chloroform	µg/L	15				31
	lbs/day[3]	0.13				0.26
Chlorodibromomethane	µg/L	5.3				11
	lbs/day[3]	0.044				0.092
Cyanide	µg/L	9.5				19
	lbs/day[3]	0.079				0.16
Dichlorobromomethane	µg/L	12				24
	lbs/day[3]	0.10				0.020
1,2-Diphenylhydrazine	µg/L	0.70				1.4
	lbs/day[3]	0.0058				0.012
Electrical Conductivity	µmhos/cm	2166				
Iron	µg/L	300				
	lbs/day[3]	2.5				
Manganese	µg/L	50				
	lbs/day[3]	0.42				
Foaming Agents (MBAS)	µg/L	3559				
	lbs/day[3]	30				

Constituent	Units	Monthly Average	7-day Median	4-day Average	1-Hour Maximum	Daily Maximum
Nitrite	mg/L	5.6				
	lbs/day[3]	47				
303(d) Pesticides[5]	µg/L					ND
	lbs/day[3]					0.0

1. 5-day, 20°C biochemical oxygen demand (BOD).
2. To be ascertained by a 24-hour composite.
3. Based on an average dry weather flow of 1 mgd. Actual mass limit to be per design flow under Discharge Prohibition A6. For reporting purposes, compliance with these limitations shall be determined as follows. For monthly average limitations: (measured concentration [mg/L]) x 8.345 [conversion factor] x (monthly average flow rate). For daily maximum limitations: (measured concentration [mg/L]) x 8.345 [conversion factor] x (daily flow rate).
4. Full compliance with this limit is not required by this Order until 1 July 2009.
5. Each Organochlorine pesticide shall be ND (non-detectable). The Discharger shall use EPA standard analytical techniques that have the lowest practical quantitation level for the organochlorine pesticides with a maximum acceptable reporting level as indicated on appendix 4 of the SIP. Organochlorine pesticides include aldrin, chlordane, 4,4'DDT, dieldrin, endosulfan (alpha, beta, sulfate), endrin, endrin aldehyde, heptachlor, heptachlor epoxide, hexacyclohexane (alpha, beta, delta, and lindane), and toxaphene.
6. Using the value, in mg/l, determined from attachment I (convert µg/l to mg/l) calculate the lbs per day using the formula: x mg/l x 8.345 x design flow in mgd = lbs/day.
7. Compliance can be demonstrated using either total, or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by US EPA's Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate as approved by the Executive Officer

2. The following interim effluent limitations are effective until **30 June 2009**.

Constituent	Units	Daily Maximum
Copper	µg/L	37
	lbs/day[1]	0.31

1. Based on an average dry weather flow of 1 mgd. For reporting purposes, compliance with these limitations shall be determined as follows. (measured concentration [mg/L]) x 8.345 [conversion factor] x (daily flow rate).

3. The total annual mass discharge of mercury to the Sacramento River shall not exceed 0.022 lbs per year. This interim performance-based limitation shall be in effect until a final TMDL is established for mercury. The procedures for calculating mass loadings are as follows:

   a. The total pollutant mass load for each individual month shall be determined using an average of all concentration data collected that month and the corresponding average monthly flow. All monitoring data collected under the monitoring and reporting program, pretreatment program and any special studies shall be used for these calculations.

b. In calculating compliance, the Discharger shall count all non-detect measures at one half of the detection level. If compliance with the effluent limitation is not attained due to the non-detect contribution, the Discharger shall improve and implement available analytical capabilities and compliance shall be evaluated with consideration of the detection limits.

c. The Discharger shall submit a cumulative total of mass loadings for the most recent twelve months in accordance with the MRP No.R5-2004-0092.

If mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted, this Order shall be reopened and the mass effluent limitation shall be modified (higher or lower) or an effluent concentration limitation imposed. If the Regional Board determines that a mercury offset program is feasible for Dischargers subject to a NPDES permit, then this Order may be reopened to reevaluate the interim mercury mass loading limitation(s) and the need for a mercury offset program for the Discharger.

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

5. The discharge shall not have a pH less than 6.5 nor greater than 8.5.

6. The monthly average dry weather discharge flow to the Sacramento River shall not exceed 1 mgd and the peak wet weather discharge flow shall not exceed 3 mgd.

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

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

D. Effluent Limitations for Reclamation (Golf Course Irrigation Reservoir)

1. Effluent discharged to the Trilogy Golf Course Reservoir shall not exceed the following limits:

Constituents	Units	30-Day Average	Monthly Median	Daily Maximum
BOD_5 [1,2]	mg/L	10		20
Total Suspended Solids	mg/L	10		20
Settleable Solids	ml/L	0.1		0.2
Total Coliform	MPN/100ml	----	2.2	23[3]
Turbidity	NTU	2	-----	5[4]

1. 5-Day, 200C biochemical oxygen demand (BOD).
2. To be ascertained by a 24-hour composite.
3. The total number of coliform bacteria shall not exceed an MPN of 23 per 100 ml in more than one sample in any 30-day period. No single sample shall exceed an MPN of 240 per 100 ml.
4. Turbidity of the filtered wastewater does not exceed any of the following: a) an average of 2 NTU within a 24-hour period, 2) 5 NTU more than 5 percent of the time within a 24-hour period; and c) 10 NTU at any time.

2. Application of recycled water to the golf course is prohibited upon initiation of the direct discharge to the Sacramento River or after 28 February 2006, whichever occurs sooner.

3. Application of recycled water in a manner other than that described in the Findings is prohibited.

4. The use of reclaimed wastewater for purposes other than irrigation is prohibited.

5. The monthly average dry weather May through October discharge flow to the golf course irrigation reservoir shall not exceed 0.20 mgd.

6. The Discharger may not spray irrigate effluent during periods of precipitation and for at least 24 hours after cessation of precipitation, or when winds exceed 30 mph.

7. There shall be no irrigation or impoundment of reclaimed water within 500 feet of any domestic water well or within 100 feet of any irrigation well unless it is demonstrated to the satisfaction of the Executive Officer that less distance is justified.

8. Storm water runoff from the golf course shall not be discharged to any surface water drainage course within 48-hour of the last application of reclaimed water.

9. Public contact with wastewater at the WWTF and the golf course reservoir shall be precluded or controlled through such means as fences and signs, or acceptable alternatives.

10. Objectionable odors originating at the facility shall not be perceivable beyond the limits of the property owned by the Discharger.

11. As a means of discerning compliance with Discharge Specification D.9, the dissolved oxygen content in the upper one foot of any wastewater storage pond shall not be less than 1.0 mg/L.

12. Golf course reservoir shall be managed to prevent breeding of mosquitoes. In particular,

    a. An erosion control program shall be implemented to ensure that small coves and irregularities are not created around the perimeter of the water surface.

    b. Weeds shall be minimized through control of water depth, harvesting, or herbicides.

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

13. Freeboard in any pond containing wastewater or reclaimed wastewater shall never be less than two feet as measured from the water surface to the lowest point of overflow.

14. Reclaimed water for irrigation shall be managed to minimize erosion, runoff, and movement of aerosol from the disposal area.

15. Direct or windblown spray shall be confined to the designated reclamation area and prevented from contacting drinking water facilities.

16. Application of reclaimed wastewater to the reclamation area shall be at reasonable rates considering the crop, climate, soil, and irrigation management system. The nutrient loading of the reclamation area, including the nutritive value of organic and chemical fertilizers and of the reclaimed water, shall not exceed the crop or vegetation demand.

E. Sludge Disposal:

1. Collected screenings, sludges, and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer, and consistent with *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid*

Waste, as set forth in Title 27, California Code of Regulations, Division 2, Subdivision 1, Section 20005, et seq.

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

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

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

5. The Discharger shall submit an annual sludge disposal plan describing the annual volume of sludge generated by the plant and specifying the disposal practices. The plan shall be submitted on or before **March 1** of each year.

F. Receiving Water Limitations:

Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit. The discharge shall not cause the following in the receiving water:

1. Concentrations of dissolved oxygen to fall below 7.0 mg/l in the unnamed tributary stream and the Sacramento River. The monthly median of the mean daily dissolved oxygen concentration shall not fall below 85 percent of saturation in the main water mass, and the 95th percentile concentration shall not fall below 75 percent of saturation.

2. Oils, greases, waxes, or other materials to form a visible film or coating on the water surface or on the stream bottom.

3. Oils, greases, waxes, floating material (liquids, solids, foams, and scums) or suspended material to create a nuisance or adversely affect beneficial uses.

4. Esthetically undesirable discoloration.

5. Fungi, slimes, or other objectionable growths.

6. The 30-day average for turbidity to increase as follows:

   a. More than 1 Nephelometric Turbidity Units (NTUs) where natural turbidity is between 0 and 5 NTUs.

   b. More than 20 percent where natural turbidity is between 5 and 50 NTUs.

   c. More than 10 NTUs where natural turbidity is between 50 and 100 NTUs.

   d. More than 10 percent where natural turbidity is greater than 100 NTUs.

7. The ambient pH to fall below 6.5, exceed 8.5, or the 30-day average change by more than 0.5 units.

8. The 30-day average ambient temperature in the unnamed tributary stream to increase more than 4°F, and the maximum temperature shall not exceed the natural receiving water temperature by more than 20°F.

9. The surface water temperature in the Sacramento River to increase more than 4°F at any time or place.

10. Increase water temperature in the Sacramento River by more than 1°F over more than 25 percent of the river cross-section.

11. Deposition of material that causes nuisance or adversely affects beneficial uses.

12. Radionuclides to be present in concentrations that exceed maximum contaminant levels specified in the California Code of Regulations, Title 22; that harm human, plant, animal or aquatic life; or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

13. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.

14. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental physiological responses in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.

15. Violation of any applicable water quality standard for receiving waters adopted by the Regional Board, the State Water Resources Control Board, or USEPA pursuant to the CWA and regulations adopted thereunder.

16. Taste or odor-producing substances to impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.

17. The fecal coliform concentration in any 30-day period to exceed a geometric mean of 200 MPN/100 ml or cause more than 10 percent of total samples to exceed 400 MPN/100 ml.

G. Groundwater Limitations:

1. Release of waste constituents from any storage, treatment, or disposal component associated with the WWTP shall not, in combination with other sources cause the following in groundwater:

    a. Adversely impact beneficial uses or exceed water quality objectives.

    b. Contain chemicals, heavy metals, or trace elements in concentrations that adversely affect beneficial uses or exceed maximum contaminant levels specified in 22 CCR, Division 4, Chapter 15.

    c. Exceed concentrations of radionuclides specified in 22 CCR, Division 4, Chapter 15.

    d. Contain concentrations of chemical constituents in amounts that adversely affect agricultural use.

    e. Equal or exceed a most probable number of total coliform organisms of 2.2/100 ml over any seven-day period.

    f. Exhibit a pH of less than 6.5 or greater than 8.4 pH units.

    g. Impart taste, odor, toxicity, or color that creates nuisance or impairs any beneficial use.

H. Provisions:

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

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

3. **Corrective Action Plan/Implementation schedule**: The Discharger's effluent contains bis(2-ethylhexyl) phthalate, copper, cyanide, 1,2-diphenylhydrazine, chloroform, chlorodibromomethane, and dichlorobromomethane at concentrations that exceed water quality objectives contained in the CTR. Sampling indicates the existing effluent while discharging to the unnamed stream is not capable of consistently meeting the effluent limitations for these constituents. The Discharger has proposed the construction of a new wastewater treatment facility (Northwest WWTF) with direct discharge to the Sacramento River through an outfall and diffuser as a means of compliance, since for all these constituents (except copper) assimilative capacity exists in the Sacramento River and dilution is granted. The Discharger shall achieve full compliance with final limitations in accordance with the following time schedule:

Task	Date Due
Commence Construction of Northwest WWTF	**1 October 2004**
Complete Construction of outfall to Sacramento River	**28 February 2006**
Full compliance with bis(2-ethylhexyl) phthalate, cyanide, chlororoform, chlorodibromomethane, dichlorobromomethane, and 1,2-diphenylhydrazine effluent limitations	**1 March 2006**
Submit corrective action and implementation schedule for copper, if necessary	**1 January 2007**
Progress Reports[1]	**1 January annually**
Full compliance with copper final limitations	**1 July 2009**

[1] The Progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, evaluate the effectiveness of the implemented measures and assess whether additional measures are necessary to meet the time schedule.

4. **Summary Pollutant Data and Receiving Water Characterization Report**: The Northwest WWTF shall be monitored to ensure that the discharge does not contain constituents that have a reasonable potential to cause or contribute to an exceedance of NTR or CTR criteria or of numeric or narrative water quality objectives in the Basin Plan. The constituents are specifically listed in a letter for submission of a technical report requirement issued by the Executive Officer on 10 September 2001. A copy of that letter, including its attachments is incorporated into this Order as

Attachments F through **F4**, and include NTR, CTR and additional constituents, which could exceed Basin Plan numeric or narrative water quality objectives. The Discharger shall comply with the following time schedule in conducting a study of these constituents potential effect in surface waters:

Task	Compliance Date
Initiate Study	**6 months after plant start-up**
Submit Study Report	**24 months after plant start-up**
Submit Study Report for Dioxins	**24 months after plant start-up**

This Provision is intended to be consistent with the requirements of the 10 September 2001 technical report request. The Discharger shall submit to the Regional Board on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board by letter when it returns to compliance with the time schedule.

If after review of the study results it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective this Order will be reopened and effluent limitations added for the subject constituents.

5. The Discharger shall conduct the chronic toxicity testing specified in the Monitoring and Reporting Program. If the testing indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the water quality objective for toxicity, the Discharger shall initiate a Toxicity Identification Evaluation (TIE) to identify the causes of toxicity. Upon completion of the TIE, the Discharger shall submit a workplan to conduct a Toxicity Reduction Evaluation (TRE) and, after Regional Board evaluation, conduct the TRE. This Order will be reopened and a chronic toxicity limitation included and/or a limitation for the specific toxicant identified in the TRE included. Additionally, if a chronic toxicity water quality objective is adopted by the State Water Resources Control Board, this Order may be reopened and a limitation based on that objective included.

6. The Discharger shall comply with all the items of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated 1 March 1991, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provision(s)."

7. The Discharger shall comply with Monitoring and Reporting Program No.R5-2004-0092, which is part of this Order, and any revisions thereto as ordered by the Executive Officer. When requested by EPA, the Discharger shall complete and submit Discharge Monitoring Reports. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program for Discharger Self Monitoring Reports.

8. This Order expires on **1 July 2009** and the Discharger must file a Report of Waste Discharge in accordance with Title 23, CCR, not later than 180 days in advance of such date in application for renewal of waste discharge requirements if it wishes to continue the discharge.

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

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

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

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

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

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

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

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

h. Any trucked or hauled pollutants, except at points pre-designated by the Discharger.

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

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

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

11. Prior to making any change in the discharge point, place of use, or purpose of use of the wastewater, the Discharger shall obtain approval of, or clearance from the State Water Resources Control Board (Division of Water Rights).

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

    To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Regional Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision D.6.d.(2) and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 9 July 2004.

_____

THOMAS R. PINKOS, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2004-0092

NPDES NO. CA 0083771

FOR
CITY OF RIO VISTA
AND
ECO RESOURCES, INC
TRILOGY WASTEWATER TREATMENT PLANT
NORTHWEST WASTEWATER TREATMENT FACILITY
SOLANO COUNTY

Monitoring and Reporting Program is issued pursuant to Water Code 13267. This program to monitor groundwater and the surface water are necessary to assure compliance with the waste discharge requirements of this Order. The Discharger shall not implement any changes to this Program unless and until the Regional Board or Executive Officer issues a revised Monitoring and Reporting Program. Specific sample station locations shall be established under direction of the Board's staff, and a description of the stations shall be attached to this Order.

The proposed Order includes monitoring requirements for influent, effluent, effluent irrigation reservoir, the golf course recycling area, and receiving water.

INFLUENT MONITORING

Samples shall be collected at approximately the same time as effluent samples and should be representative of the influent. Influent monitoring shall include at least the following:

Constituents	Units	Type of Sample	Sampling Frequency
Flow	mgd	Meter	Continuous
20°C BOD_5	mg/l, lbs/day	24 hr. Composite	Weekly
Suspended Solids	mg/l, lbs/day	24 hr. Composite	Weekly
pH	pH Units	Grab	Weekly
Temperature	°F	Grab	Weekly
Electrical Conductivity @25°C	µmhos/cm	Grab	Monthly

EFFLUENT MONITORING
(For Discharge to Golf Course Irrigation Reservoir)

Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the irrigation reservoir. Effluent samples should be representative of the total volume and quality of the discharge. Date and time of collection of samples shall be recorded and reported. Effluent monitoring shall include at least the following:

Constituents	Units	Type of Sample	Sampling Frequency
Flow	mgd	Meter	Continuous
Turbidity	NTU	Meter	Continuous
Total Coliform	MPN/100 ml	Grab	Daily
20°C BOD_5	mg/l, lbs/day	Grab	Weekly
Suspended Solids	mg/l, lbs/day	Grab	Weekly
Chlorine Residual	mg/l, lbs/day	Grab	Monthly
pH	number	Grab	Monthly
Settleable Solids	ml/l	Grab	Monthly
Total Nitrogen	mg/l	Grab	Monthly
Electrical Conductivity @25°C	µmhos/cm	Grab	Monthly

EFFLUENT MONITORING
(For Discharge to Unnamed Tributary Stream, Discharge Location 001)

Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the outfall. Effluent samples should be representative of the total volume and quality of the discharge. Date and time of collection of samples shall be recorded and reported. Effluent monitoring shall include at least the following:

Constituents	Units	Type of Sample	Sampling Frequency
Flow	mgd	Meter	Continuous
Turbidity	NTU	Meter	Continuous
pH	pH units	Meter	Continuous
Chlorine Residual	mg/l, lbs/day	Meter	Continuous
Total Coliform	MPN/l00 ml	Grab	Daily
20°C BOD_5	mg/l, lbs/day	24 hr. Composite	Weekly

Constituents	Units	Type of Sample	Sampling Frequency
Suspended Solids	mg/l, lbs/day	24 hr. Composite	Weekly
Dissolved Oxygen	mg/l	Grab	Weekly
Settleable Solids	ml/l	Grab	Weekly
Temperature	°C/°F	Grab	Weekly
Electrical Conductivity @25°C	µmhos/cm	Grab	Weekly
Ammonia[1,2]	mg/l, lbs/day	Grab	Weekly
Oils and Grease	mg/l, lbs/day	Grab	Quarterly
Total Dissolved Solids	mg/l	Grab	Quarterly
Aluminum[3]	µg/l, lbs/day	Grab	Quarterly
Bis (2-ethylhexyl)phthalate	µg/l, lbs/day	Grab	Quarterly
Chloride	µg/l, lbs/day	Grab	Quarterly
Chlorodibromomethane	µg/l, lbs/day	Grab	Quarterly
Chloroform	µg/l, lbs/day	Grab	Quarterly
Copper	µg/l, lbs/day	Grab	Quarterly
Cyanide	µg/l, lbs/day	Grab	Quarterly
Dichlorobromomethane	µg/l, lbs/day	Grab	Quarterly
1,2-diphenylhydrazine	µg/l, lbs/day	Grab	Quarterly
Iron	µg/l, lbs/day	Grab	Quarterly
Manganese	µg/l, lbs/day	Grab	Quarterly
Foaming Agents (MBAS)	µg/l, lbs/day	Grab	Quarterly
Mercury[4]	µg/l, lbs/day	Grab	Quarterly
Nitrite	mg/l, lbs/day	Grab	Quarterly
Nitrate	mg/l, lbs/day	Grab	Quarterly
Acute Bioassay	% survival	Grab	Quarterly

1 Concurrent with biotoxicity monitoring.

2 Report as both total and Un-ionized ammonia with corresponding pH and temperature measurements. If an ammonia value exceeds the chronic criteria, the Discharger shall conduct additional sampling on a daily basis for 4 consecutive days and will continue until no longer ammonia concentrations exceed the chronic criteria.

3 Compliance can be demonstrated using either total, or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by US EPA's Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate as approved by the Executive Officer.

4 Requires use of "clean technique" (EPA Method 1631) for sampling, handling and analysis, or later amendment.

EFFLUENT MONITORING
(For Discharge to Sacramento River, Discharge Location 002)

Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the outfall. Effluent samples should be representative of the total volume and quality of the discharge. Date and time of collection of samples shall be recorded and reported. Effluent monitoring shall include at least the following:

Constituents	Units	Type of Sample	Sampling Frequency
Flow	mgd	Meter	Continuous
pH	pH units	Meter	Continuous
Chlorine residual	mg/L, lbs/day	grab	Daily during use
20°C BOD_5	mg/l, lbs/day	24 hr. Composite	Weekly
Suspended Solids	mg/l, lbs/day	24 hr. Composite	Weekly
Total Coliform	MPN/l00 ml	Grab	Weekly
Dissolved Oxygen	mg/l	Grab	Weekly
Settleable Solids	ml/l	Grab	Weekly
Temperature	°C/°F	Grab	Weekly
Electrical Conductivity @25°C	µmhos/cm	Grab	Monthly
Nitrite	mg/l, lbs/day	Grab	Quarterly
Oils and Grease	mg/l, lbs/day	Grab	Quarterly
Total Dissolved Solids	mg/l	Grab	Quarterly
Aluminum[1]	µg/l, lbs/day	Grab	Quarterly
Ammonia[3]	mg/l	Grab	Quarterly
Bis (2-ethylhexyl)phthalate	µg/l, lbs/day	Grab	Quarterly
Chloride	mg/l, lbs/day	Grab	Quarterly
Chlorodibromomethane	µg/l, lbs/day	Grab	Quarterly
Chloroform	µg/l, lbs/day	Grab	Quarterly
Copper	µg/l, lbs/day	Grab	Quarterly
Cyanide	µg/l, lbs/day	Grab	Quarterly
Dichlorobromomethane	µg/l, lbs/day	Grab	Quarterly
1,2-diphenylhydrazine	µg/l, lbs/day	Grab	Quarterly
Iron	µg/l, lbs/day	Grab	Quarterly
Manganese	µg/l, lbs/day	Grab	Quarterly

Constituents	Units	Type of Sample	Sampling Frequency
Foaming Agents (MBAS)	µg/l, lbs/day	Grab	Quarterly
Mercury[2]	µg/l, lbs/day	Grab	Quarterly
Acute Bioassay	% survival	grab	Quarterly

1 Compliance can be demonstrated using either total, or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by US EPA's Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate as approved by the Executive Officer.

2 Requires use of "clean technique" (EPA Method 1631) for sampling, handling and analysis, or later amendment.

3 Report as both total and Un-ionized ammonia with corresponding pH and temperature measurements.

THREE SPECIES CHRONIC TOXICITY MONITORING

Chronic toxicity monitoring shall be conducted to determine whether the effluent is contributing toxicity to either the unnamed tributary stream or the Sacramento River. The testing shall be conducted as specified in USEPA Methods EPA/821-R-02-013, fourth edition. Chronic toxicity samples shall be collected at the discharge of the Trilogy WWTP or the discharge of the Northwest WWTF prior to it entering the unnamed tributary stream or the Sacramento River, respectively. Twenty-four hour composite samples shall be representative of the volume and quality of the discharge. Time of collection samples shall be recorded. The effluent tests must be conducted with concurrent reference toxicant tests. Monthly laboratory reference toxicant tests may be substituted upon approval. Both the reference toxicant and effluent test must meet all test acceptability criteria as specified in the chronic manual. If the test acceptability criteria are not achieved, then the Discharger must re-sample and re-test within 14 days. Chronic toxicity monitoring shall include the following:

Species: Pimephales promelas (larval stage), Ceriodaphnia dubia, and Selenastrum capricornutum

Frequency: Annual

Dilution Series:

	Dilutions (%)					Controls	
	100	75	50	25	12.5	Receiving Water	Lab Water
% WWTP Effluent	100	75	50	25	12.5	0	0
% Dilution Water*	0	25	50	75	87.5	100	0
% Lab Water	0	0	0	0	0	0	100

* Dilution water shall be receiving water from either the unnamed tributary stream or the Sacramento River, taken upstream from the discharge point, at monitoring station R-1 or R-3 (as applicable). The dilution series may be altered upon approval of Board staff.

RECEIVING WATER MONITORING

All receiving water samples shall be grab samples. Receiving water monitoring stations shall be at the following locations, or at a location proposed by the Discharger and approved by the Board's Executive Officer. Access to all monitoring stations shall be safely and reasonably achieved. Receiving water monitoring is only required when discharging to the Stream or to the Sacramento River:

Station	Description
R-l	Approximately 100 feet upstream of the discharge to the Unnamed Stream (Upstream of Discharge Point 001).
R-2	Approximately 100 feet downstream of the discharge to the Unnamed Stream (Downstream of Discharge Point 001).
R-3	Approximately 500 feet upstream and 200 feet off shore from the point of discharge to the Sacramento River (i.e., at the approximate centerline of the diffuser and upstream of Discharge Point 002).
R-4	Approximately 500 feet downstream and 200 feet off shore from the point of discharge to the Sacramento River (i.e., at the approximate centerline of the diffuser and downstream of Discharge Point 002).

Constituents	Units	Sampling Station[1]	Sampling Frequency
Flow	mgd	R-1, R-2, R-3, R-4	Weekly[2]
Dissolved Oxygen	mg/l	R-1, R-2, R-3, R-4	Weekly[3]/Quarterly[4]
pH	Number	R-1, R-2, R-3, R-4	Weekly[3]/Quarterly[4]
Electrical Conductivity @25°C	µmhos/cm	R-1, R-2, R-3, R-4	Weekly[3]/Quarterly[4]
Temperature	°F	R-1, R-2, R-3, R-4	Weekly[3]/Quarterly[4]
Turbidity	NTU	R-1, R-2, R-3, R-4	Weekly[3]/Quarterly[4]

1. Sampling Station R-1 and R-2 to be monitored when discharging to the unnamed tributary stream. Sampling Station R-3 and R-4 to be monitored when discharging to the Sacramento River.
2. Flow sampling occurs only when discharging to the unnamed tributary stream. Flow shall be measured weekly during periods when Stream flows are less than 5 cfs. Flows shall be measured or estimated when Stream flows are greater than 5 cfs.
3. This monitoring frequency required when discharging to the unnamed tributary stream.
4. When discharging to the Sacramento River.

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions, throughout the reach bounded by Stations R-l and R-2 or the reach bounded by Stations R-3 and R-4. Attention shall be given to the presence or absence of:

a. Floating or suspended matter
b. Discoloration
c. Bottom deposits
d. Aquatic life
e. Visible films, sheens or coatings
f. Fungi, slimes, or objectionable growths
g. Potential nuisance conditions

Notes on receiving water conditions shall be summarized in the monitoring report. Sampling records shall be retained for a minimum of five years.

BIOSOLIDS MONITORING

A composite sample of biosolids shall be collected annually in accordance with EPA's POTW biosolids Sampling and Analysis Guidance Document, August 1989, and tested for the following metals:

Arsenic	Chromium	Lead	Molybdenum	Selenium
Cadmium	Copper	Mercury	Nickel	Zinc

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

Annually by 15 February thereafter, the Discharger shall submit:

a. Annual biosolids production in dry tons and percent solids.
b. A schematic diagram showing biosolids handling facilities and a solids flow diagram.
c. Depth of application and drying time for biosolids drying beds.
d. A description of disposal methods, including the following information related to the disposal methods used at the facility. If more than one method is used, include the percentage of annual biosolids production disposed by each method.

Within **90 days of the effective date of this Order**, the Discharger shall submit characterization of biosolids quality, including biosolids percent solids and quantitative results of chemical analysis for the priority pollutants listed in 40 CFR 122 Appendix D, Tables II and III (excluding total phenols). All biosolids samples shall be a composite of a minimum of twelve (12) discrete samples taken at equal time intervals over 24 hours. Suggested methods for analysis of biosolids are provided in EPA publications titled "Test Methods for Evaluating Solid Waste:

Physical/Chemical Methods" and "Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater". Recommended analytical holding times for biosolids samples should reflect those specified in 40 CFR 136.6.3(e). Other guidance is available in EPA's POTW Biosolids Sampling and Analysis Guidance Document, August 1989.

REPORTING

Monitoring results shall be submitted to the Regional Board by the **1st day** of the second month following sample collection. Quarterly and annual monitoring results shall be submitted by the **1st day of the second month following each calendar quarter and year**, respectively.
In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly whether the discharge complies with waste discharge requirements. The highest daily maximum for the month, and monthly averages should be determined and recorded.

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

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

a. The names, certificate grades, and general responsibilities of all persons employed at the WWTP (Standard Provision A.5).

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

c. A statement certifying when the flow meter and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration (Standard Provision C.6).

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

The Discharger may also be requested to submit an annual report to the Regional Board with both tabular and graphical summaries of the monitoring data obtained during the previous year.

Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

All reports submitted in response to this Order shall comply with the signatory requirements of Standard Provision D.6.

The Discharger shall implement the above monitoring program on the first day of the month following effective date of this Order.

Ordered by: _____
THOMAS R. PINKOS, Executive Officer

9 July 2004
(Date)

INSERT ATTACHMENTS, A, B, C, D

SUMMARY EFFLUENT DATA AND CRITERIA, PRIORITY POLLUTANTS

Constituent, Unit CTR # Date	**Antimony, µg/L #1**	**Arsenic, µg/L #2**	**Be, µg/L #3**	**Cadmium, µg/L #4**	**Cr (III), µg/L # 5a (Cr Total)**	**Cr (VI), µg/L # 5b**	**Copper, µg/L #6**	**Lead, µg/L #7**	**Mercury, µg/L #8**	**Nickel, µg/L #9**	**Selenium, µg/L #10**	**Silver, µg/L #11**	**Thallium, µg/L #12**	**Zinc, µg/L #13**	**Cyanide, µg/L #14**	**Asb., MFL #15**
2/5/02	DNQ 0.3	8.7	<0.06	<0.04	DNQ 0.4	<0.2	3	0.28	0.002	1	<0.3	<0.02	<0.03	29	<0.6	<0.2
6/5/02	DNQ 0.2	9.2	<0.06	DNQ 0.03	<0.2	<0.15	2.3	DNQ 0.23	0.0027	1.2	DNQ 0.7	<0.02	DNQ 0.05	9	<0.8	<0.2
9/10/02	DNQ 0.2	6.9	<0.06	DNQ 0.06	<0.2	0.4	12	0.29	0.0054	1.7	3	DNQ 0.05	<0.03	13	6	<0.2
12/18/02	< 0.2	8.9	<0.06	DNQ 0.03	1.0	2.7	6.7	0.27	0.0072	4.6	1	DNQ 0.04	<0.03	12	6	<0.51
MEC, µg/L	DNQ 0.3	9.2	<0.06	DNQ 0.06	1.0	2.7	12	0.29	0.0072	4.6	3	DNQ 0.05	DNQ 0.05	29	6	<0.51
Background, µg/L	DNQ 0.23	3.65	<0.06	<0.03	14	<0.15	14	3.1	0.0377	22	DNQ 0.3	0.057	<0.03	24	3	<0.2
Avg or Max Background Conc.	Avg	Max	Avg	Max	Max	Max	Max	Max	Max	Max	Max	Max	Avg	Max	Max	Avg
Numeric Basin Plan Objective, µg/L (Site Specific, MCL)	MCL 6	Site Sp/ MCL 10/50	MCL 4	MCL 5	MCL 50 (Total)	MCL 50 (Total)	Site Sp 10	MCL-action level 15	303d <0.0005	MCL 100	MCL 50	Site Sp 10	MCL 2	Site Sp 100	Site Sp 10	MCL 7 MFL
CMC Freshwater, µg/L Total @ 43 mg/l Hardness (as $CaCO_3$)	None est.	340 i,m,w	None est.	1.7	870 (Cr III)	16	6.3	28	None est.	230	20	0.95	None est.	59	22	None Est.
CCC Freshwater, µg/L Total @ 43 mg/l Hardness (as $CaCO_3$)	None est.	150 i,m,w	None est.	1.3	104 (Cr III)	11	4.5	1.1	None est.	26	5 q	None est.	None est.	59	5.2	None Est.
Human Health, µg/L Water + Org.	14 a,s	None Est.	n	n	n	n	1300	n	0.050 a	610 a	n	None Est.	1.7 a,s	None Est.	700 a	7 MFL k,s
Human Health, µg/L Organisms Only	4300 a,t	None Est.	n	n	n	n	None Est.	n	0.051 a	4600 a	n	None Est.	6.3 a,t	None Est.	220,000 a,j	None Est.
Reasonable Potential	No	No	No	No	No	No	**Yes**	No	**Yes**	No	No	No	No	No	**Yes**	No

Notes: Footnotes, abbreviations, and other notations from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations.

RECEIVING WATER (AMBIENT BACKGROUND) DATA, PRIORITY POLLUTANTS

Constituent, Unit CTR # Date	Antimony, µg/L #1	Arsenic, µg/L #2	Be, µg/L #3	Cadmium, µg/L #4	Cr (III), µg/L # 5a (Cr Total)	Cr (VI), µg/L # 5b	Copper, µg/L #6	Lead, µg/L #7	Mercury, µg/L #8	Nickel, µg/L #9	Selenium, µg/L #10	Silver, µg/L #11	Thallium, µg/L #12	Zinc, µg/L #13	Cyanide, µg/L #14	Asb, MFL #15
1/97 *		3.65					9.9	2.35	0.0377	21.8		0.057		18.2		
1/30/02	DNQ 0.3	1.3	<0.06	<0.04	3.1	<0.2	4.4	0.52	0.0049	5.5	DNQ 0.3	<0.02	<0.03	5	<0.6	<0.2
6/5/02	<0.2	2.2	<0.06	<0.03	2.1	<0.15	3.6	0.4	0.0031	3.9	<0.5	<0.02	<0.03	4	3	<0.2
9/10/02	DNQ 0.2	2	<0.06	<0.03	1.7	<0.15	3.4	0.4	0.0036	4.6	<0.5	<0.02	<0.03	4	<0.9	<0.2
12/18/02 **	<0.2	3.1	DNQ 0.1	DNQ 0.09	14	<0.16	14	3.1	0.026	22	<0.5	DNQ 0.03	DNQ 0.03	24	DNQ 0.9	<0.51
Observed Maximum*** SIP Section 1.4.3.1	DNQ 0.3	3.65	<0.06	<0.03	14	<0.15	14	3.1	0.0377	22	DNQ 0.3	<0.02	<0.03	24	3	<0.2
Arithmetic Mean*** SIP Section 1.4.3.2	DNQ 0.23	2.5	<0.06	<0.03	5.2	<0.15	7.1	1.4	0.0104	12	0.4	<0.02	<0.03	11	1.5	<0.2

* From downstream monitoring station BG20

** The December 2002 sample results were deemed non-representative due to entrainment of bottom sediments (see Rio Vista Main, March 2003 Update Report). Maximum and average concentrations were based on three quarters of data. (In addition to this data, also considered data from the downstream monitoring station BG20 in the Sacramento River)

*** Calculated per methodology specified in SIP.

EFFLUENT DATA, PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	2, 3, 7, 8-TCDD (Dioxin), µg/L # 16	Acrolein, µg/L # 17	Acrylonitrile, µg/L # 18	Benzene, µg/L # 19	Bromoform, µg/L # 20	Carbon Tetrachloride, µg/L # 21	Chlorobenzene (Monochloro-benzene), µg/L # 22	Chlorodibromo-methane, µg/L # 23	Chloroethane, µg/L # 24	2-Chloro-ethylvinyl Ether # 25
1/31/01								3.4		
2/5/02	< 8.47E-07	< 3.3	< 1.6	< 0.27	< 0.1	< 0.42	< 0.19	< 0.18	< 0.34	< 0.31
6/5/02	< 8.47E-07	< 1	< 1	< 0.3	0.5	< 0.42	< 0.3	DNQ 0.3	< 0.34	< 0.32
9/10/02	< 6.37E-07	< 1	< 1	< 0.3	DNQ 0.5	< 0.42	< 0.3	< 0.3	< 0.34	< 0.32
12/18/02	< 6.37E-07	< 1	< 1	< 0.3	< 0.2	< 0.42	< 0.3	< 0.3	< 0.34	< 0.32
MEC, µg/L	<6.37E-07	< 1	< 1	< 0.27	0.5	< 0.42	< 0.19	3.4	< 0.34	< 0.31
Background, µg/L	<8.47E-07	<1	<1	<0.27	<0.1	<0.42	<0.19	<0.18	<0.34	<0.31
Avg or Max Background Conc.	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg
BP Obj, µg/L	MCL 3.0E-08	Aquatic Toxicity 21		MCL 1	MCL THM/Proposed 100/80	MCL 0.5	MCL 70	MCL THM/Proposed 100/80		Aquatic Toxicity 122
CMC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
CCC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
Human Health, µg/L Water +Org Only	1.3E-08 c	320 s	0.059 a,c,s	1.2 a,c	4.3 a,c	0.25 a,c,s	680 a,s	0.401 a,c	None Est.	None Est.
Human Health, µg/L Org Only	1.4E-08 c	780 t	0.66 a,c,t	71 a,c	360 a,c	4.4 a,c,t	21,000 a,j,t	34 a,c	None Est.	None Est.
Reasonable Potential	Inconclusive	No	No	No	No	No	No	Yes	No	No

Notes: Footnotes, abbreviations, and other notations from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations.

RECEIVING WATER (AMBIENT BACKGROUND) DATA, PRIORITY POLLUTANTS

Constituent, Unit CTR # Date	2, 3, 7, 8-TCDD (Dioxin), µg/L # 16	Acrolein, µg/L # 17	Acrylonitrile, µg/L # 18	Benzene, µg/L # 19	Bromoform, µg/L # 20	Carbon Tetrachloride, µg/L # 21	Chlorobenzene, µg/L # 22	Chlorodibromo-methane, µg/L # 23	Chloroethane, µg/L # 24	2-Chloro-ethylvinyl Ether, µg/L # 25
1/30/02	< 8.47E-07	< 3.3	< 1.6	< 0.27	< 0.1	< 0.42	< 0.19	< 0.18	< 0.34	< 0.31
6/5/02	< 8.47E-07	< 1	< 1	< 0.3	< 0.2	< 0.42	< 0.3	< 0.3	< 0.34	< 0.32
9/10/02	< 2.30E-06	< 1	< 1	< 0.3	< 0.2	< 0.42	< 0.3	< 0.3	< 0.34	< 0.32
12/18/02 *	< 8.47E-07	< 1	< 1	< 0.3	< 0.2	< 0.42	< 0.3	< 0.3	< 0.34	< 0.32
Observed Maximum ** SIP Section 1.4.3.1	<8.47E-07	<1	<1	<0.27	<0.1	<0.42	<0.19	<0.18	<0.34	<0.31
Arithmetic Mean** SIP Section 1.4.3.2	<8.47E-07	<1	<1	<0.27	<0.1	<0.42	<0.19	<0.18	<0.34	<0.31

* The December 2002 sample results were deemed non-representative due to entrainment of bottom sediments (see Rio Vista Main, March 2003 Update Report). Maximum and average concentrations were based on three quarters of data.

** Calculated per methodology specified in SIP.

EFFLUENT PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	Chloroform, µg/L # 26	Dichlorobromo-methane, µg/L # 27	1,1-Dichloroethane, µg/L # 28	1,2-Dichloro-ethane, µg/L # 29	1,1-Dichloro-ethylene, µg/L # 30	1,2-Dichloro-propane, µg/L #31	1,3-Dichloro-propylene, µg/L # 32	Ethylbenzene, µg/L # 33	Methyl Bromide (Bromomethane), µg/L # 34	Methyl Chloride (Chloromethane), µg/L # 35
1/31/01	10	7.9								
2/5/02	3.4	0.9	<0.28	<0.18	<0.37	<0.22	<0.25	<0.3	<0.46	0.5
6/5/02	2.2	<0.2	<0.34	<0.2	<0.49	<0.2	<0.3	<0.4	<0.42	<0.46
9/10/02	0.9	<0.2	<0.34	<0.2	<0.49	<0.2	<0.3	<0.4	<0.42	0.6
12/18/02	0.5	<0.2	<0.34	<0.2	<0.49	<0.2	<0.3	<0.4	<0.42	<0.46
MEC, ug/L	10	7.9	<0.28	<0.18	<0.37	<0.2	<0.25	<0.3	<0.42	0.6
Background, ug/L	<0.24	<0.2	<0.28	<0.18	<0.37	<0.2	<0.25	<0.3	<0.42	<0.36
Avg or Max Background Conc	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg
BP Obj, µg/L	OEHHA 1.1	MCL 5	MCL 5	MCL 0.5	MCL 6	MCL 5	MCL 0.5	MCL 700		SNARL 3
CMC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
CCC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
Human Health, µg/L Water +Org Only	(CTR reserved)USEPA 5.7	0.56 a,c		0.38 a,c,s	0.057 a,c,s	0.52 a	10 a,s	3,100 a,s	48 a	n
Human Health, µg/L Org Only	(CTR reserved)USEPA 470	46 a,c		99 a,c,t	3.2 a,c,t	39 a	1,700 a,t	29,000 a,t	4,000 a	n
Reasonable Potential	**Yes**	**Yes**	No	No	No	No	No	No	No	No

Notes: Footnotes, abbreviations, and other notations from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations.

RECEIVING WATER (AMBIENT BACKGROUND) DATA, PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	Chloroform, µg/L # 26	Dichlorobromo-methane, µg/L # 27	1,1-Dichloroethane, µg/L # 28	1,2-Dichloro-ethane, µg/L # 29	1,1-Dichloro-ethylene, µg/L # 30	1,2-Dichloro-propane, µg/L #31	1,3-Dichloro-propylene, µg/L # 32	Ethylbenzene, µg/L # 33	Methyl Bromide (Bromomethane), µg/L # 34	Methyl Chloride (Chloromethane), µg/L # 35
1/30/02	<0.24	<0.46	<0.28	<0.18	<0.37	<0.22	<0.25	<0.3	<0.46	<0.36
6/5/02	<0.31	<0.2	<0.34	<0.2	<0.49	<0.2	<0.25	<0.4	<0.42	<0.46
9/10/02	<0.31	<0.2	<0.34	<0.2	<0.49	<0.2	<0.3	<0.4	<0.42	<0.46
12/18/02 *	<0.31	<0.2	<0.34	<0.2	<0.49	<0.2	<0.3	<0.4	<0.42	<0.46
Observed Maximum** SIP Section 1.4.3.1	<0.24	<0.2	<0.28	<0.18	<0.37	<0.2	<0.25	<0.3	<0.42	<0.36
Arithmetic Mean** SIP Section 1.4.3.2	<0.24	<0.2	<0.28	<0.18	<0.37	<0.2	<0.25	<0.3	<0.42	<0.36

* The December 2002 sample results were deemed non-representative due to entrainment of bottom sediments (see Rio Vista Main, March 2003 Update Report). Maximum and average concentrations were based on three quarters of data.

** Calculated per methodology specified in SIP.

EFFLUENT DATA, PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	Methylene Chloride, µg/L # 36	1,1,2,2-Tetra-chloroethane, µg/L # 37	Tetrachloro-ethylene, µg/L # 38	Toluene, µg/L # 39	1,2-Trans-Dichloro ethylene, µg/L # 40	1,1,1 - Trichloro-ethane, µg/L # 41	1,1,2-Trichloro-ethane, µg/L # 42	Trichloro-ethylene, µg/L # 43	Vinyl Chloride, µg/L # 44	2-Chloro-phenol, µg/L # 45
1/30/02	<0.38	<0.34	<0.32	<0.25	<0.3	<0.35	<0.27	<0.29	<0.34	<0.03
6/5/02	<0.4	<0.3	<0.44	<0.32	<0.43	<0.49	<0.3	<0.3	<0.47	<0.03
9/10/02	<0.4	<0.3	<0.44	<0.32	<0.43	<0.49	<0.3	<0.3	<0.47	<0.03
12/18/02	<0.4	<0.3	<0.44	<0.32	<0.43	<0.49	<0.3	<0.3	<0.47	DNQ 0.059
MEC, ug/L	<0.38	<0.3	<0.32	<0.25	<0.3	<0.35	<0.27	<0.29	<0.34	DNQ 0.059
Background, ug/L	<0.38	<0.3	<0.32	<0.25	<0.3	<0.35	<0.27	<0.29	<0.34	<0.03
Avg or Max Background Conc	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg
BP Obj, µg/L	MCL 5	MCL 1.0	MCL 5	MCL 150	MCL 10	MCL 200	MCL 5	MCL 5	MCL 0.5	
CMC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
CCC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
Human Health, µg/L Water +Org Only	4.7 a,c	0.17 a,c,s	0.8 c,s	6,800 a	700 a	n	0.60 a,c,s	2.7 c,s	2 c,s	120 a
Human Health, µg/L Org Only	1,600 a,c	11 a,c,t	8.85 c,t	200,000 a	140,000 a	n	42 a,c,t	81 c,t	525 c,t	400 a
Reasonable Potential	No	No	No	No	No	No	No	No	No	No

Notes: Footnotes, abbreviations, and other notations from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations.

RECEIVING WATER (AMBIENT BACKGROUND) DATA, PRIORITY POLLUTANTS

Constituent, Unit CTR # Date	Methylene Chloride, µg/L # 36	1,1,2,2-Tetra-chloroethane, µg/L # 37	Tetrachloro-ethylene, µg/L # 38	Toluene, µg/L # 39	1,2-Trans-Dichloro ethylene, µg/L # 40	1,1,1 - Trichloro-ethane, µg/L # 41	1,1,2-Trichloro-ethane, µg/L # 42	Trichloro-ethylene, µg/L # 43	Vinyl Chloride, µg/L # 44	2-Chloro-phenol, µg/L # 45
1/30/02	<0.38	<0.34	<0.32	<0.25	<0.3	<0.35	<0.27	<0.29	<0.34	<0.03
6/5/02	<0.4	<0.3	<0.44	<0.32	<0.43	<0.49	<0.3	<0.3	<0.47	<0.03
9/10/02	<0.4	<0.3	<0.44	<0.32	<0.43	<0.49	<0.3	<0.3	<0.47	<0.03
12/18/02 *	<0.4	<0.3	<0.44	<0.32	<0.43	<0.49	<0.3	<0.3	<0.47	<0.03
Observed Maximum** SIP Section 1.4.3.1	<0.38	<0.3	<0.32	<0.25	<0.3	<0.35	<0.27	<0.29	<0.34	<0.03
Arithmetic Mean** SIPSection 1.4.3.2	<0.38	<0.3	<0.32	<0.25	<0.3	<0.35	<0.27	<0.29	<0.34	<0.03

* The December 2002 sample results were deemed non-representative due to entrainment of bottom sediments (see Rio Vista Main, March 2003 Update Report). Maximum and average concentrations were based on three quarters of data.

** Calculated per methodology specified in SIP.

EFFLUENT PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	2, 4 Dichlorophenol, µg/L # 46	2,4-Dimethyl – phenol, µg/L # 47	2-Methyl 4,6-Di-nitrophenol, µg/L # 48	2,4-Dinitrophenol, µg/L # 49	2-Nitrophenol, µg/L # 50	4-Nitro– phenol, µg/L # 51	4-chloro-3-methyl phenol, µg/L # 52	Pentachloro-phenol, µg/L # 53	Phenol, µg/L # 54
2/5/02	<0.03	<0.04	<0.06	<0.16	<0.02	<0.02	<0.03	<0.02	<0.3
6/5/02	<0.03	<0.04	<0.06	<0.16	<0.02	<0.02	<0.03	<0.02	<0.3
9/10/02	0.11	<0.04	<0.06	<0.16	<0.02	3.1	<0.03	<0.02	<0.3
12/18/02	0.31	<0.04	<0.06	<0.16	DNQ 0.089	<0.02	<0.03	<0.02	0.51
MEC, µg/L	0.31	<0.04	<0.06	<0.16	DNQ 0.089	3.1	<0.03	<0.02	0.51
Background, µg/L	<0.03	<0.04	<0.06	<0.16	<0.02	<0.02	<0.03	<0.02	<0.3
Avg or Max Background Conc.	Avg	Avg	Avg	Avg	Max	Avg	Max	Max	Avg
BP Obj, µg/L					Aquatic Toxicity 150	SNARL 60	Aquatic Toxicity 30	MCL 1.0	
CMC Freshwater, µg/L At pH=6.5	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	30 f,w	None Est.
CCC Freshwater, µg/L At pH=6.5	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	39 f,w	None Est.
Human Health, µg/L Water +Org Only	93 a,s	540 a	13.4 s	70 a,s	None Est.	None Est.	None Est.	0.28 a,c	21,000 a
Human Health, µg/L Org Only	790 a,t	2,300 a	765 t	14,000 a,t	None Est.	None Est.	None Est.	8.2 a,c,j	4,600,000 a,j,t
Reasonable Potential	No	No	No	No	No	No	No	No	No

Notes: Footnotes, abbreviations, and other notations from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations.

RECEIVING WATER (AMBIENT BACKGROUND) DATA, PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	2, 4 Dichlorophenol, µg/L # 46	2,4-Dimethyl – phenol, µg/L # 47	2-Methyl 4,6-Di-nitrophenol, µg/L # 48	2,4-Dinitrophenol, µg/L # 49	2-Nitrophenol, µg/L # 50	4-Nitro– phenol, µg/L # 51	4-chloro-3-methyl phenol, µg/L # 52	Pentachloro-phenol, µg/L # 53	Phenol, µg/L # 54
1/30/02	<0.03	<0.04	<0.06	<0.16	<0.02	<0.02	<0.03	<0.02	<0.3
6/5/02	<0.03	<0.04	<0.06	<0.16	<0.02	<0.02	<0.03	<0.02	<0.3
9/10/02	<0.03	<0.04	<0.06	<0.16	<0.02	<0.02	<0.03	<0.02	<0.3
12/18/02 *	<0.03	<0.04	<0.06	<0.16	DNQ 0.02	<0.02	<0.03	DNQ 0.04	<0.3
Observed Maximum ** SIP Section 1.4.3.1	<0.03	<0.04	<0.06	<0.16	<0.02	<0.02	<0.03	<0.02	<0.3
Arithmetic Mean ** SIP Section 1.4.3.2	<0.03	<0.04	<0.06	<0.16	<0.02	<0.02	<0.03	<0.02	<0.3

* The December 2002 sample results were deemed non-representative due to entrainment of bottom sediments (see Rio Vista Main, March 2003 Update Report). Maximum and average concentrations were based on three quarters of data.

** Calculated per methodology specified in SIP.

ATTACHMENT E Cont.

EFFLUENT PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	2, 4, 6 Trichloro-phenol, µg/L # 55	Acenaphthene, µg/L # 56	Acenaphthylene, µg/L # 57	Anthracene, µg/L # 58	Benzidine, µg/L # 59	Benzo(a) anthracene, µg/L # 60	Benzo(a) Pyrene, µg/L # 61	Benzo(b) fluoranthene, µg/L # 62	Benzo(ghi) perylene, µg/L # 63
2/5/02	<0.02	<0.03	<0.03	<0.02	<1.0	<0.02	<0.05	<0.03	<0.06
6/5/02	DNQ 0.02	<0.03	<0.03	<0.02	<1.0	<0.02	<0.05	<0.03	<0.06
9/10/02	0.15	<0.03	<0.03	<0.02	<1.0	<0.02	<0.05	<0.03	<0.06
12/18/02	0.12	DNQ 0.083	<0.03	<0.02	<1.0	<0.02	<0.05	DNQ 0.057	<0.06
MEC, µg/L	0.15	DNQ 0.083	<0.03	<0.02	<1.0	<0.02	0.05	<0.03	<0.06
Background, µg/L	<0.02	<0.03	<0.03	<0.02	<1.0	<0.02	<0.05	<0.03	<0.06
Avg or Max Background Conc.	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg
BP Obj, µg/L							MCL 0.2		
CMC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
CCC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
Human Health, µg/L Water +Org Only	2.1 a,c	1,200 a	None established	9,600 a	0.00012 a,c,s	0.0044 a,c	0.0044 a,c	0.0044 a,c	None established
Human Health, µg/L Org Only	6.5 a,c	2,700 a	None established	110,000 a	0.00054 a,c,t	0.049 a,c	0.049 a,c	0.049 a,c	None established
Reasonable Potential	No	No	No	No	No	No	No	No	No

Notes: Footnotes, abbreviations, and other notations from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations.

RECEIVING WATER (AMBIENT BACKGROUND) DATA, PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	2, 4, 6 Trichloro-phenol, µg/L # 55	Acenaphthene, µg/L # 56	Acenaphthylene, µg/L # 57	Anthracene, µg/L # 58	Benzidine, µg/L # 59	Benzo(a) anthracene, µg/L # 60	Benzo(a) Pyrene, µg/L # 61	Benzo(b) fluoranthene, µg/L # 62	Benzo(ghi) perylene, µg/L # 63
1/30/02	<0.02	<0.03	<0.03	<0.02	<1.0	<0.02	<0.05	<0.03	<0.06
6/5/02	<0.02	<0.03	<0.03	<0.02	<1.0	<0.02	<0.05	<0.03	<0.06
9/10/02	<0.02	<0.03	<0.03	<0.02	<1.0	<0.02	<0.05	<0.03	<0.06
12/18/02 *	<0.02	<0.03	<0.03	<0.02	<1.0	<0.02	<0.05	<0.03	<0.06
Observed Maximum ** SIP Section 1.4.3.1	<0.02	<0.03	<0.03	<0.02	<1.0	<0.02	<0.05	<0.03	<0.06
Arithmetic Mean ** SIP Section 1.4.3.2	<0.02	<0.03	<0.03	<0.02	<1.0	<0.02	<0.05	<0.03	<0.06

* The December 2002 sample results were deemed non-representative due to entrainment of bottom sediments (see Rio Vista Main, March 2003 Update Report). Maximum and average concentrations were based on three quarters of data.

** Calculated per methodology specified in SIP.

ATTACHMENT E Cont.

EFFLUENT PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	Benzo(k) fluoranthene, µg/L # 64	Bis (2-Chloro-ethoxy) Methane, µg/L # 65	Bis (2-Chloroethyl) Ether, µg/L # 66	Bis (2-Chloroiso-propyl) Ether, µg/L # 67	Bis (2-Ethylhexyl) Phthalate, µg/L # 68	4-Bromo-phenyl Phenyl Ether, µg/L # 69	Butyl benzyl Phthalate, µg/L # 70	2-Chloro-naphthalene, µg/L # 71	4-Chloro phenyl Phenyl Ether, µg/L # 72
2/5/02	<0.07	<0.07	<0.12	<0.03	<2.0	<0.04	<0.04	<0.02	<0.04
6/5/02	<0.07	<0.07	<0.12	<0.03	<2.0	<0.04	<0.04	<0.02	<0.04
9/10/02	<0.07	DNQ 0.65	<0.12	<0.03	<2.0	<0.04	<0.04	<0.02	<0.04
12/18/02	<0.07	<0.07	<0.12	<0.03	4.2	<0.04	<0.04	<0.02	<0.04
MEC, µg/L	<0.07	DNQ 0.65	<0.12	<0.03	4.2	<0.04	<0.04	<0.02	<0.04
Background, µg/L	<0.07	<0.07	<0.12	<0.03	<2.0	<0.04	<0.04	<0.02	<0.04
Avg or Max Background Conc.	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg
BP Obj, µg/L				Aquatic Toxicity 122	MCL 4	Aquatic Toxicity 122	Aquatic Toxicity 3/	Aquatic Toxicity 1600	Aquatic Toxicity 122
CMC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
CCC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
Human Health, µg/L Water +Org Only	0.0044 a,c	None established	0.031 a,c,s	1,400 a	1.8 a,c,s	None established	3,000 a	1,700 a	None Est.
Human Health, µg/L Org Only	0.049 a,c	None established	1.4 a,c,t	170,000 a,t	5.9 a,c,t	None established	5,200 a	4,300 a	None Est.
Reasonable Potential	No	No	No	No	Yes	No	No	No	No

Notes: Footnotes, abbreviations, and other notations from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations.

RECEIVING WATER (AMBIENT BACKGROUND) DATA, PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	Benzo(k) fluoranthene, µg/L # 64	Bis (2-Chloro-ethoxy) Methane, µg/L # 65	Bis (2-Chloroethyl) Ether, µg/L # 66	Bis (2-Chloroiso-propyl) Ether, µg/L # 67	Bis (2-Ethylhexyl) Phthalate, µg/L # 68	4-Bromo-phenyl Phenyl Ether, µg/L # 69	Butyl benzyl Phthalate, µg/L # 70	2-Chloro-naphthalene, µg/L # 71	4-Chloro phenyl Phenyl Ether, µg/L # 72
1/30/02	<0.07	<0.07	<0.12	<0.03	<2.0	<0.04	<0.04	<0.02	<0.04
6/5/02	<0.07	<0.07	<0.12	<0.03	<2.0	<0.04	<0.04	<0.02	<0.04
9/10/02	<0.07	<0.07	<0.12	<0.03	<2.0	<0.04	<0.04	<0.02	<0.04
12/18/02	<0.07	<0.07	<0.12	<0.03	<2.0	<0.04	<0.04	<0.02	<0.04
Observed Maximum ** SIP Section 1.4.3.1	<0.07	<0.07	<0.12	<0.03	<2.0	<0.04	<0.04	<0.02	<0.04
Arithmetic Mean ** SIP Section 1.4.3.2	<0.07	<0.07	<0.12	<0.03	<2.0	<0.04	<0.04	<0.02	<0.04

* The December 2002 sample results were deemed non-representative due to entrainment of bottom sediments (see Rio Vista Main, March 2003 Update Report). Maximum and average concentrations were based on three quarters of data.

** Calculated per methodology specified in SIP.

EFFLUENT PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	Chrysene, µg/L # 73	Dibenzo (ah) anthracene, µg/L # 74	1,2 Dichloro-benzene, µg/L # 75	1, 3 Dichloro-benzene, µg/L # 76	1, 4 Dichloro-benzene, µg/L # 77	3,3-Dichloro-benzidine, µg/L # 78	Diethyl Phthalate, µg/L # 79	Dimethyl Phthalate, µg/L # 80	Di-n-Butyl Phthalate, µg/L # 81
2/5/02	<0.02	<0.04	<0.02	<0.02	<0.02	<0.2	<0.25	<0.03	1.3
6/5/02	<0.02	<0.04	<0.02	<0.02	<0.02	<0.2	<0.25	<0.03	<0.4
9/10/02	<0.02	<0.04	0.19	DNQ 0.063	<0.02	<0.2	0.32	<0.03	<0.4
12/18/02	<0.02	<0.04	DNQ 0.027	<0.02	<0.02	<0.2	1.5	DNQ 0.054	1.4
MEC, µg/L	<0.02	<0.04	0.19	DNQ 0.063	<0.02	<0.2	1.5	DNQ 0.054	1.4
Background, µg/L	<0.02	<0.04	<0.02	<0.02	<0.02	<0.2	<0.25	<0.03	1.7
Avg or Max Background Conc.	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg
BP Obj, µg/L			MCL 600		MCL 5		Aquatic Toxicity 3	Aquatic Toxicity 3	Aquatic Toxicity 3
CMC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
CCC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
Human Health, µg/L Water +Org Only	0.0044 a,c	0.0044 a,c	2,700 a	400	400	0.04 a,c,s	23,000 a,s	313,000 s	2,700 a,s
Human Health, µg/L Org Only	0.049 a,c	0.049 a,c	17,000 a	2,600	2,600	0.077 a,c,t	120,000 a,t	2,900,000 t	12,000 a,t
Reasonable Potential	No	No	No	No	No	No	No	No	No

Notes: Footnotes, abbreviations, and other notations from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations.

RECEIVING WATER (AMBIENT BACKGROUND) DATA, PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	Chrysene, µg/L # 73	Dibenzo (ah) anthracene, µg/L # 74	1,2 Dichloro-benzene, µg/L # 75	1, 3 Dichloro-benzene, µg/L # 76	1, 4 Dichloro-benzene, µg/L # 77	3,3-Dichloro-benzidine, µg/L # 78	Diethyl Phthalate, µg/L # 79	Dimethyl Phthalate, µg/L # 80	Di-n-Butyl Phthalate, µg/L # 81
1/30/02	<0.02	<0.04	<0.02	<0.02	<0.02	<0.2	<0.25	<0.03	1.7
6/5/02	<0.02	<0.04	<0.02	<0.02	<0.02	<0.2	<0.25	<0.03	<0.4
9/10/02	<0.02	<0.04	<0.02	<0.02	<0.02	<0.2	<0.25	<0.03	<0.4
12/18/02 *	<0.02	<0.04	<0.02	<0.02	<0.02	<0.2	<0.25	0.4	<0.4
Observed Maximum ** SIP Section 1.4.3.1	<0.02	<0.04	<0.02	<0.02	<0.02	<0.2	<0.25	<0.03	1.7
Arithmetic Mean ** SIP Section 1.4.3.2	<0.02	<0.04	<0.02	<0.02	<0.02	<0.2	<0.25	<0.03	0.83

* The December 2002 sample results were deemed non-representative due to entrainment of bottom sediments (see Rio Vista Main, March 2003 Update Report). Maximum and average concentrations were based on three quarters of data.

** Calculated per methodology specified in SIP.

EFFLUENT PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	2,4-Dinitro – toluene, µg/L # 82	2,6-Dinito-toluene, µg/L # 83	Di-n-Octyl Phthalate, µg/L # 84	1,2-Diphenyl – hydrazine, µg/L # 85	Fluoranthene, µg/L # 86	Fluorene, µg/L # 87	Hexachloro-benzene, µg/L # 88	Hexachloro – butadiene, µg/L # 89	Hexachloro – cyclopentadiene, µg/L # 90
2/5/02	<0.04	<0.06	<0.1	<0.13	<0.03	<0.02	<0.04	<0.01	<0.01
6/5/02	<0.04	<0.06	<0.1	<0.13	<0.03	<0.02	<0.04	<0.01	<0.01
9/10/02	<0.04	<0.06	<0.1	0.34	<0.03	<0.02	<0.04	<0.01	<0.01
12/18/02	<0.04	<0.06	<0.1	0.44	<0.03	<0.02	<0.04	<0.01	<0.01
MEC, µg/L	<0.04	<0.06	<0.1	0.44	<0.03	<0.02	<0.04	<0.01	<0.01
Background, µg/L	<0.04	<0.06	0.1	<0.13	<0.03	<0.02	<0.04	<0.01	<0.01
Avg or Max Background Conc.	Avg	Avg	Max	Avg	Avg	Avg	Avg	Avg	Avg
BP Obj, µg/L		USEPA IRIS 0.05	Aquatic Toxicity 3						MCL 50
CMC Freshwater, µg/L	None Est.	None Est.	None Est.		None Est.	None Est.	None Est.	None Est.	None Est.
CCC Freshwater, µg/L	None Est.	None Est.	None Est.		None Est.	None Est.	None Est.	None Est.	None Est.
Human Health, µg/L Water +Org Only	0.11 c,s	None Est.	None Est.	0.040 a,c,s	300 a	1,300 a	0.00075 a,c	0.44 a,c,s	240 a,s
Human Health, µg/L Org Only	9.1 c,t	None Est.	None Est.	0.54 a,c,t	370 a	14,000 a	0.00077 a,c	50 a,c,t	17,000 a,j,t
Reasonable Potential	No	No	No	Yes	No	No	No	No	No

Notes: Footnotes, abbreviations, and other notations from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations.

RECEIVING WATER (AMBIENT BACKGROUND) DATA, PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	2,4-Dinitro – toluene, µg/L # 82	2,6-Dinito-toluene, µg/L # 83	Di-n-Octyl Phthalate, µg/L # 84	1,2-Diphenyl – hydrazine, µg/L # 85	Fluoranthene, µg/L # 86	Fluorene, µg/L # 87	Hexachloro-benzene, µg/L # 88	Hexachloro – butadiene, µg/L # 89	Hexachloro – cyclopentadiene, µg/L # 90
1/30/02	<0.04	<0.06	0.1	<0.13	<0.03	<0.02	<0.04	<0.01	<0.01
6/5/02	<0.04	<0.06	<0.1	<0.13	<0.03	<0.02	<0.04	<0.01	<0.01
9/10/02	<0.04	<0.06	<0.1	<0.13	<0.03	<0.02	<0.04	<0.01	<0.01
12/18/02 *	<0.04	<0.06	0.1	<0.13	<0.03	<0.02	<0.04	<0.01	<0.01
Observed Maximum ** SIP Section 1.4.3.1	<0.04	<0.06	0.1	<0.13	<0.03	<0.02	<0.04	<0.01	<0.01
Arithmetic Mean ** SIP Section 1.4.3.2	<0.04	<0.06	<0.1	<0.13	<0.03	<0.02	<0.04	<0.01	<0.01

* The December 2002 sample results were deemed non-representative due to entrainment of bottom sediments (see Rio Vista Main, March 2003 Update Report). Maximum and average concentrations were based on three quarters of data.

** Calculated per methodology specified in SIP.

EFFLUENT PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	Hexachloro – ethane, µg/L # 91	Indeno (1,2,3-cd) pyrene, µg/L # 92	Isophorone, µg/L # 93	Naphthalene, µg/L # 94	Nitrobenzene, µg/L # 95	N-Nitrosodimethyl-amine, µg/L # 96	N-Nitrosodi-n-Propylamine, µg/L # 97	N-Nitrosodiphenyl amine, µg/L # 98
2/5/02	<0.01	<0.04	<0.07	<0.02	<0.04	<1.0	<0.03	<0.05
6/5/02	<0.01	<0.04	<0.07	<0.02	<0.04	<1.0	<0.03	<0.05
9/10/02	<0.01	<0.04	<0.07	<0.02	<0.04	<1.0	<0.03	<0.05
12/18/02	<0.01	<0.04	<0.07	DNQ 0.036	<0.04	<1.0	<0.03	<0.05
MEC, µg/L	<0.01	<0.04	<0.07	DNQ 0.036	<0.04	<1.0	<0.03	<0.05
Background, µg/L	<0.01	<0.04	<0.07	<0.02	<0.04	<1.0	<0.03	<0.05
Avg or Max Background Conc.	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg
BP Obj, µg/L				USEPA IRIS 14				
CMC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
CCC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
Human Health, µg/L Water +Org Only	1.9 a,c,s	0.0044 a,c	8.4 c,s	None Est.	17 a,s	0.00069 a,c,s	0.005 a	5.0 a,c,s
Human Health, µg/L Org Only	8.9 a,c,t	0.049 a,c	600 c,t	None Est.	1,900 a,j,t	8.1 a,c,t	1.4 a	16 a,c,t
Reasonable Potential	No	No	No	No	No	No	No	No

Notes: Footnotes, abbreviations, and other notations from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations.

RECEIVING WATER (AMBIENT BACKGROUND) DATA, PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	Hexachloro – ethane, µg/L # 91	Indeno (1,2,3-cd) pyrene, µg/L # 92	Isophorone, µg/L # 93	Naphthalene, µg/L # 94	Nitrobenzene, µg/L # 95	N-Nitrosodimethyl-amine, µg/L # 96	N-Nitrosodi-n-Propylamine, µg/L # 97	N-Nitrosodiphenyl amine, µg/L # 98
1/30/02	<0.01	<0.04	<0.07	<0.02	<0.04	<1.0	<0.03	<0.05
6/5/02	<0.01	<0.04	<0.07	<0.02	<0.04	<1.0	<0.03	<0.05
9/10/02	<0.01	<0.04	<0.07	<0.02	<0.04	<1.0	<0.03	<0.05
12/18/02 *	<0.01	<0.04	<0.07	<0.02	<0.04	<1.0	<0.03	DNQ 0.057
Observed Maximum ** SIP Section 1.4.3.1	<0.01	<0.04	<0.07	<0.02	<0.04	<1.0	<0.03	<0.05
Arithmetic Mean ** SIP Section 1.4.3.2	<0.01	<0.04	<0.07	<0.02	<0.04	<1.0	<0.03	<0.05

* The December 2002 sample results were deemed non-representative due to entrainment of bottom sediments (see Rio Vista Main, March 2003 Update Report). Maximum and average concentrations were based on three quarters of data.

** Calculated per methodology specified in SIP.

EFFLUENT PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	Phenanthrene, µg/L # 99	Pyrene, µg/L # 100	1,2,4-Trichloro-benzene, µg/L # 101	Aldrin, µg/L # 102	α-BHC, µg/L # 103	β-BHC, µg/L # 104	γ-BHC (Lindane), µg/L # 105	δ-BHC, µg/L # 106	Chlordane, µg/L # 107	4,4' DDT, µg/L # 108
2/5/02	<0.02	<0.03	<0.01	<0.003	<0.002	<0.001	<0.001	<0.001	<0.005	<0.001
6/5/02	<0.02	<0.03	<0.01	<0.003	<0.003	<0.004	<0.003	<0.002	<0.005	<0.003
9/10/02	<0.02	<0.03	<0.01	<0.003	<0.003	<0.004	<0.003	<0.002	<0.005	<0.003
12/18/02	<0.02	<0.03	<0.01	<0.003	<0.003	<0.004	<0.003	<0.002	<0.005	<0.003
MEC,µg/L	<0.02	<0.03	<0.01	<0.003	<0.002	<0.001	<0.001	<0.001	<0.005	<0.001
Background, µg/L	<0.02	<0.03	<0.01	<0.003	<0.002	<0.001	<0.001	<0.001	<0.005	<0.001
Avg or Max Background Conc.	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg
BP Obj, µg/L			PHG/MCL 5/5	303d/OCPest <0.005	303d/OCPest <0.01	303d/OCPest <0.014	303d/OCPest <0.019	303d/OCPest <0.005	303d/OCPest <0.1	303d/OCPest <0.01
CMC Freshwater, µg/L	None Est.	None Est.	None Est.	3 g			0.95 w		2.4 g	1.1 g
CCC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	0.0043 g	0.001 g
Human Health, µg/L Water +Org Only	None established	960 a	None established	0.00013 a,c	0.0039 a,c	0.014 a,c	0.019 c	None established	0.00057 a,c	0.00059 a,c
Human Health, µg/L Org Only	None established	11,000 a	None established	0.00014 a,c	0.013 a,c	0.046 a,c	0.063 c	None established	0.00059 a,c	0.00059 a,c
Reasonable Potential	No	No	No	No	No	No	No	No	No	No

Notes: Footnotes, abbreviations, and other notations from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations.

RECEIVING WATER (AMBIENT BACKGROUND) DATA, PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	Phenanthrene, µg/L # 99	Pyrene, µg/L # 100	1,2,4-Trichloro-benzene, µg/L # 101	Aldrin, µg/L # 102	α-BHC, µg/L # 103	β-BHC, µg/L # 104	γ-BHC (Lindane), µg/L # 105	δ-BHC, µg/L # 106	Chlordane, µg/L # 107	4,4' DDT, µg/L # 108
1/30/02	<0.02	<0.03	<0.01	<0.003	<0.002	<0.001	<0.001	<0.001	<0.005	<0.001
6/5/02	<0.02	<0.03	<0.01	<0.003	<0.003	<0.004	<0.003	<0.002	<0.005	<0.003
9/10/02	<0.02	<0.03	<0.01	<0.003	<0.003	<0.004	<0.003	<0.002	<0.005	<0.003
12/18/02 *	0.11	<0.03	<0.01	<0.003	<0.003	<0.004	<0.003	<0.002	<0.005	<0.003
Observed Maximum ** SIP Section 1.4.3.1	<0.02	<0.03	<0.01	<0.003	<0.002	<0.001	<0.001	<0.001	<0.005	<0.001
Arithmetic Mean ** SIP Section 1.4.3.2	<0.02	<0.03	<0.01	<0.003	<0.002	<0.001	<0.001	<0.001	<0.005	<0.001

* The December 2002 sample results were deemed non-representative due to entrainment of bottom sediments (see Rio Vista Main, March 2003 Update Report). Maximum and average concentrations were based on three quarters of data.

** Calculated per methodology specified in SIP.

EFFLUENT PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	4, 4'-DDE, µg/L # 109	4,4'-DDD, µg/L # 110	Dieldrin, µg/L # 111	alpha-Endo-sulfan, µg/L # 112	beta-Endo-sulfan, µg/L # 113	Endosulfan Sulfate, µg/L # 114	Endrin, µg/L # 115	Endrin Aldehyde, µg/L # 116	Heptachlor, µg/L # 117	Heptachlor Epoxide, µg/L # 118
2/5/02	<0.001	<0.001	<0.002	<0.003	<0.001	<0.001	<0.002	<0.002	<0.003	<0.002
6/5/02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.003	<0.003
9/10/02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.003	<0.003
12/18/02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.003	<0.003
MEC, µg/L	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.003	<0.002
Background, µg/L	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.003	<0.002
Avg or Max Background Conc.	Avg	Avg	Avg	Max	Max	Avg	Max	Avg	Avg	Avg
BP Obj, µg/L	OCPest <0.05	OCPest <0.05	303d/OCPest <0.01	303d/OCPest <0.02	303d/OCPest <0.01	303d/OCPest <0.05	303d/OCPest <0.01	303d/OCPest <0.01	303d/OCPest <0.01	303d/OCPest <0.01
CMC Freshwater, µg/L	None Est.	None Est.	0.24 w	0.22 g	0.22 g	None Est.	0.086 w	None Est.	0.52 g	0.52 g
CCC Freshwater, µg/L	None Est.	None Est.	0.056 w	0.056 g	0.056 g	None Est.	0.036 w	None Est.	0.0038 g	0.0038 g
Human Health, µg/L Water +Org Only	0.00059 a,c	0.00083 a,c	0.00014 a,c	110 a	110 a	110 a	0.76 a	0.76 a	0.00021 a,c	0.00010 a,c
Human Health, µg/L Org Only	0.00059 a,c	0.00084 a,c	0.00014 a,c	240 a	240 a	240 a	0.81 a,j	0.81 a,j	0.00021 a,c	0.00011 a,c
Reasonable Potential	No	No	No	No	No	No	No	No	No	No

Notes: Footnotes, abbreviations, and other notations from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations.

RECEIVING WATER (AMBIENT BACKGROUND) DATA, PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	4, 4'-DDE, µg/L # 109	4,4'-DDD, µg/L # 110	Dieldrin, µg/L # 111	alpha-Endo-sulfan, µg/L # 112	beta-Endo-sulfan, µg/L # 113	Endosulfan Sulfate, µg/L # 114	Endrin, µg/L # 115	Endrin Aldehyde, µg/L # 116	Heptachlor, µg/L # 117	Heptachlor Epoxide, µg/L # 118
1/30/02	<0.001	<0.001	<0.002	<0.003	<0.001	<0.001	<0.002	<0.002	<0.003	<0.002
6/5/02	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.003	<0.002
9/10/02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.003	<0.003
12/18/02 *	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.003	<0.003
Observed Maximum** SIP Section 1.4.3.1	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.003	<0.002
Arithmetic Mean** SIP Section 1.4.3.2	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.003	<0.002

* The December 2002 sample results were deemed non-representative due to entrainment of bottom sediments (see Rio Vista Main, March 2003 Update Report). Maximum and average concentrations were based on three quarters of data.

** Calculated per methodology specified in SIP.

EFFLUENT PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	PCBs, µg/L # 119	PCBs, µg/L # 120	PCBs *, µg/L # 121 -125	Toxaphene, µg/L # 126
2/5/02	<0.08	<0.03	<0.08	<0.2
6/5/02	<0.05	<0.03	<0.07	<0.4
9/10/02	<0.05	<0.03	<0.07	<0.4
12/18/02	<0.05	<0.03	<0.07	<0.4
MEC, µg/L	<0.05	<0.03	<0.07	<0.2
Background, µg/L	<0.05	<0.03	<0.07	<0.2
Avg or Max Background Conc.	Avg	Avg	Avg	Avg
Basin Plan Objective, µg/L				303d/OCPest <0.5
CMC Freshwater, µg/L				0.73
CCC Freshwater, µg/L	0.014u	0.014u	0.014u	0.0002
Human Health, µg/L Water +Org Only	0.00017c,v	0.00017c,v	0.00017c,v	0.00073a,c
Human Health, µg/L Org Only	0.00017c,v	0.00017c,v	0.00017c,v	0.00075a,c
Reasonable Potential	No	No	No	No

Notes: Footnotes, abbreviations, and other notations from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations.
* Largest limit selected for each date.

RECEIVING WATER (AMBIENT BACKGROUND) DATA, PRIORITY POLLUTANTS (CONTINUED)

Constituent, Unit CTR # Date	PCBs, µg/L # 119	PCBs, µg/L # 120	PCBs *, µg/L # 121 –125	Toxaphene, µg/L # 126
1/30/02	<0.08	<0.03	<0.08	<0.2
6/5/02	<0.05	<0.03	<0.07	<0.4
9/10/02	<0.05	<0.03	<0.07	<0.4
12/18/02 **	<0.05	<0.03	<0.07	<0.4
Observed Maximum *** SIP Section 1.4.3.1	<0.05	<0.03	<0.07	<0.2
Arithmetic Mean *** SIP Section 1.4.3.2	<0.05	<0.03	<0.07	<0.2

* Largest limit selected for each date.

** The December 2002 sample results were deemed non-representative due to entrainment of bottom sediments (see Rio Vista Main, March 2003 Update Report). Maximum and average concentrations were based on three quarters of data.

*** Calculated per methodology specified in SIP.

ATTACHMENT E Cont.

EFFLUENT OTHER POLLUTANTS OF CONCERN

Constituent, Unit Date	Aluminum, µg/L	Ammonia as N, mg/L	Barium, µg/L	Boron, µg/L	Chloride, mg/L	Electrical Conductivity µmhos/cm	Fluoride, µg/L	Iron, µg/L	Mn, µg/L	Nitrate as N, mg/L	Nitrite as N, mg/L	Sulfate, mg/L	TDS, mg/L
1/11/02													786
1/23/02										1.2			
2/5/02	630	1.1	4.4		130	1200	500	<18	17	8	<0.03	62	750
3/26/02	180	12											
6/5/02	1000	7.1	14		100	1100	500	<18	14	4.6	0.76	58	600
9/10/02	1800	22	13		140	1400	800	80	18	8.3	3.6	45	760
12/18/02	2400	27	13		130	1200	500	320	76	1.6	0.99	63	1100
1/22/03	2.49 *												
4/4/03	2.49 *									3.2			742
7/26/03	4.1 *												
8/26/03	4.1 *												
10/16/03				1.3	220					6		54	
MEC, µg/L	2400	27	14	1.3	220	1400	800	320	76	8.3	3.6	63	1100
Background, µg/L	5000	0.3	84	100	20	544***	400	9400	140	2.2	DNQ 0.029	15	265
Avg or Max Background Conc.	Max	Max	Max	Max	Max	Avg	Max	Max	Max	Max	Max	Max	Avg
Numeric Basin Plan Objective, µg/L (site specific, MCL)	MCL 200		Site Sp 100	Ag WQ Gold Book 750	Ag WQ goal 106	Ag WQ goal 700	Ag WQ Rome Paper 1,000	Site Sp 300	Site Sp 50	MCL 10	MCL 1.0	2ry MCL 250/500	Ag WQ Rome Paper 450
Narrative Basin Plan Objective, µg/L	USEPA 87 CCC 750 CMC	USEPA 0.63 CCC 2.14 CMC **											
Reasonable Potential	**Yes**	**Yes**	No	No	**Yes**	**Yes**	No	**Yes**	**Yes**	No	**Yes**	No	**Yes**

Notes: Footnotes, abbreviations, and other notations from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations.

* Questionable data.

** Based on pH of 8.5 and temperature of 23ºC.

*** Average EC from Monitoring Station BG20 from quarterly samples taken between 1993 and 1999 (worst case scenario in the Sacramento River)

RECEIVING WATER (AMBIENT BACKGROUND) DATA, OTHER POLLUTANTS OF CONCERN

Constituent, Unit Date	Aluminum, µg/L	Ammonia as N, mg/L	Barium, µg/L	Boron, µg/L	Cobalt, µg/L	Chloride, mg/L	Fluoride, µg/L	Iron, µg/L	Mn, µg/L	Nitrate as N, mg/L	Nitrite as N, mg/L	Sulfate, mg/L	TDS, mg/L
1/30/02	700	0.3	46	100	0.8	14	300	1600	33	0.7	<0.03	15	190
6/5/02	700	0.3	32			7	400	1000	25	1.9	<0.03	9.2	100
9/10/02	800	0.2	33	<100		10	200	1100	23	2.2	<0.03	7.9	130
12/18/02 *	5000	0.2	84	90	4.0	20	200	9400	140	0.7	DNQ 0.29	12	640
Observed Maximum SIP Section 1.4.3.1	5000	0.3	84	100	4.0	20	400	9400	140	2.2	<0.03	15	640
Arithmetic Mean SIP Section 1.4.3.2	1800	0.27	49	100	2.4	13	300	3275	55	1.6	<0.03	10.7	265

* The December 2002 sample results were deemed non-representative due to entrainment of bottom sediments (see Rio Vista Main, March 2003 Update Report). Maximum and average concentrations were based on three quarters of data.

** Calculated per methodology specified in SIP.

ATTACHMENT E Cont.

EFFLUENT OTHER POLLUTANTS OF CONCERN

Constituent, Unit Date	1,1,2-Trichloro-1,2,2-Trifluor-ethane, µg/L	1,2-Dibromo 3-chloro-propane (DBCP), µg/L	2,4,5-TP (Silvex), µg/L	2,4-D, µg/L	Alachlor, µg/L	Atrazine, µg/L	Bentazon, µg/L	Carbo-furan, µg/L	Chlor-pyrifos, µg/L	Cis-1,2-dichloro-ethene, µg/L	Dalapon, µg/L	Di((2-ethylhexyl) adipate, µg/L	Diazinon, µg/L
1/11/02													
1/23/02													
2/5/02	<0.48	<0.007	<0.42	<5.3	<0.3	<0.02	<0.84	DNQ2.59	<0.1	<0.24	<1.6	<0.51	<0.02
3/26/02													
6/5/02	<0.3	<0.007	<0.42	<5.3	<0.3	<0.02	<0.84	<1.3	<0.1	<0.44	<1.6	<0.51	<0.02
9/10/02	<0.3	<0.007	<0.42	<5.3	<0.3	<0.06	<0.84	<1.3	<0.1	<0.44	DNQ1.86	<0.51	<0.1
12/18/02	<0.3	<0.007	<0.42	<5.3	<0.3	<0.06	<0.84	<1.3	<0.1	<0.44	DNQ1.86	<0.51	<0.1
1/22/03													
4/4/03													
7/26/03													
8/26/03													
10/16/03													
MEC, µg/L	<0.3	<0.007	<0.42	<5.3	<0.3	<0.02	<0.84	DNQ2.59	<0.1	<0.24	DNQ1.86	<0.51	<0.02
Background, µg/L	<0.3	<0.07	<0.42	<5.3	<0.3	<0.02	<0.84	<1.3	<0.1	<0.24	<0.16	<0.51	<0.02
Avg or Max Background Conc.	AVG	AVG	MAX	AVG	AVG	AVG	AVG	MAX	MAX	AVG	MAX	AVG	MAX
Numeric Basin Plan Objective, µg/L (site specific, MCL)	MCL 1200	MCL0.2	Aquatic Toxicity 10	MCL 70	MCL 2	MCL1.0	MCL 18	MCL 18	CDFG CCC criterion 0.014	MCL 6	Aquatic Toxicity 110	MCL 400	CDFG CCC criterion 0.05
Narrative Basin Plan Objective, µg/L													
Reasonable Potential	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Notes: Footnotes, abbreviations, and other notations from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations.

* Questionable data.

** Based on pH of 8.5 and temperature of 23ºC.

RECEIVING WATER (AMBIENT BACKGROUND) DATA, OTHER POLLUTANTS OF CONCERN

Constituent, Unit Date	1,1,2-Trichloro-1,2,2-Trifluor-ethane, µg/L	1,2-Dibromo 3-chloro-propane (DBCP), µg/L	2,4,5-TP (Silvex), µg/L	2,4-D, µg/L	Alachlor, µg/L	Atrazine, µg/L	Bentazon, µg/L	Carbo-furan, µg/L	Chlor-pyrifos, µg/L	Cis-1,2-dichloro-ethene, µg/L	Dalapon, µg/L	Di((2-ethylhexyl) dipate, µg/L	Diazinon, µg/L
1/30/02	<0.48	<0.07	<0.42	<5.3	<0.3	<0.02	<0.84	<1.3	<0.1	<0.24	<1.6	<0.51	<0.02
6/5/02	<0.3	<0.07	<0.42	<5.3	<0.3	<0.02	<0.84	<1.3	<0.1	<0.44	<1.6	<0.51	<0.02
9/10/02	<0.3	<0.07	<0.42	<5.3	<0.3	<0.06	<0.84	<1.3	<0.1	<0.44	<1.6	<0.51	<0.1
12/18/02 *	<0.3	<0.07	<0.42	<5.3	<0.3	<0.02	<0.84	<1.3	<0.1	<0.44	<1.6	<0.51	<0.1
Observed Maximum SIP Section 1.4.3.1	<0.3	<0.07	<0.42	<5.3	<0.3	<0.02	<0.84	<1.3	<0.1	<0.24	<1.6	<0.51	<0.02
Arithmetic Mean SIP Section 1.4.3.2	<0.3	<0.07	<0.42	<5.3	<0.3	<0.02	<0.84	<1.3	<0.1	<0.24	<1.6	<0.51	<0.02

* The December 2002 sample results were deemed non-representative due to entrainment of bottom sediments (see Rio Vista Main, March 2003 Update Report). Maximum and average concentrations were based on three quarters of data.

** Calculated per methodology specified in SIP.

ATTACHMENT E Cont.

EFFLUENT OTHER POLLUTANTS OF CONCERN

Constituent, Unit Date	Dinoseb, µg/L	Diquat, µg/L	Endothal, µg/L	Ethylene Dibromide, µg/L	Foaming Agents, µg/L	Glyphosate, µg/L	Methoxychlor, µg/L	Methyl-tert-butyl ether (MTBE), µg/L	Molinate (Ordram), µg/L	Oxamyl, µg/L	Picloram, µg/L
1/11/02											
1/23/02											
2/5/02	<0.49	DNQ1.9	<19	<0.004	60	<6	<0.002	<0.19	<0.04	<2.6	<0.27
3/26/02											
6/5/02	<0.49	<0.8	<19	<0.004	50	DNQ8.7	<0.003	<0.3	<0.04	<2.6	<0.27
9/10/02	<0.49	<0.8	<19	<0.004	1500	<4.6	<0.003	<0.3	<0.04	DNQ4.20	<0.27
12/18/02	<0.49	<0.8	---	<0.004	2,300	DNQ18	<0.003	<0.3	<0.04	DNQ2.98	<0.27
1/22/03											
4/4/03											
7/26/03											
8/26/03											
10/16/03											
MEC, µg/L	<0.49	DNQ1.9	<19	<0.004	2.300	DNQ18	<0.002	<0.19	<0.03	DNQ4.2	<0.27
Background, µg/L	<0.49	<0.8	<19	<0.004	<20	<4.6	<0.002	0.52	0.9	DNQ2.61	<0.27
Avg or Max Background Conc.	AVG	MAX	AVG	AVG	AVG	AVG	AVG	AVG	MAX	AVG	AVG
Numeric Basin Plan Objective, µg/L (site specific, MCL)	MCL 7	MCL 20	MCL 100	MCL 0.05	MCL 500	MCL 700	MCL 30	MCL 5	MCL 20	MCL 50	MCL 500
Narrative Basin Plan Objective, µg/L											
Reasonable Potential	NO	NO	NO	NO	**YES**	NO	NO	NO	NO	NO	NO

Notes: Footnotes, abbreviations, and other actions from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations.

* Questionable data.

** Based on pH of 8.5 and temperature of 23ºC.

RECEIVING WATER (AMBIENT BACKGROUND) DATA, OTHER POLLUTANTS OF CONCERN

Constituent, Unit Date	Dinoseb, µg/L	Diquat, µg/L	Endothal, µg/L	Ethylene Dibromide, µg/L	Foaming Agents, µg/L	Glyphosate, µg/L	Methoxychlor, µg/L	Methyl-tert-butyl ether (MTBE), µg/L	Molinate (Ordram), µg/L	Oxamyl, µg/L	Picloram, µg/L
1/30/02	<0.49	<0.8	<19	<0.004	<20	<6	<0.002	<0.19	<0.04	<2.6	<0.27
6/5/02	<0.49	<0.8	<19	<0.004	<20	<6	<0.003	0.8	0.9	DNQ2.63	<0.27
9/10/02	<0.49	<0.8	<19	<0.004	<20	<4.6	<0.003	0.8	<0.03	<2.6	<0.27
12/18/02 *	<0.49	<0.8	---	<0.004	<20	<4.6	<0.003	<0.3	<0.03	<2.6	<0.27
Observed Maximum SIP Section 1.4.3.1	<0.49	<0.8	<19	<0.004	<20	<4.6	<0.002	0.8	0.9	DNQ2.63	<0.27
Arithmetic Mean SIP Section 1.4.3.2	<0.49	<0.8	<19	<0.004	<20	<4.6	<0.002	0.52	0.33	DNQ2.61	<0.27

* The December 2002 sample results were deemed non-representative due to entrainment of bottom sediments (see Rio Vista Main, March 2003 Update Report). Maximum and average concentrations were based on three quarters of data.

** Calculated per methodology specified in SIP.

10 September 2001

REQUIREMENT TO SUBMIT MONITORING DATA

The Regional Water Quality Control Board (Board) is required to protect and enhance the beneficial uses of surface and ground waters in the Region. As part of that effort, National Pollutant Discharge Elimination System (NPDES) Permits are adopted which prescribe effluent limits for the types and concentrations of chemical and physical constituents that can be safely discharged. In order to prepare appropriate NPDES Permits, it is necessary to have adequate characterization of the discharged effluent and the receiving water.

The following is a requirement that you collect effluent and receiving water samples and have them analyzed for a variety of potential waste constituents. In most cases this monitoring will be in addition to monitoring required in your NPDES Permit. To the extent that there is overlap between this request and monitoring already being done under your Permit, the monitoring need not be duplicated. This requirement is brought on by a number of factors:

1. On 2 March 2000, the State Water Resources Control Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*, also known as the State Implementation Policy (SIP). The SIP established methods of evaluating receiving water criteria and developing effluent limitation in NPDES Permits for the priority pollutants contained in the US Environmental Protection Agency's (USEPA) *California Toxics Rule* and portions of USEPA's *National Toxics Rule*. Section 1.2 of the SIP directs the Board to issue Water Code Section 13267 letters to all NPDES dischargers requiring submittal of data sufficient to (1) determine if priority pollutants require effluent limitations (Reasonable Potential Analysis) and (2) calculate water quality-based effluent limitations. Further, Section 2.4 of the SIP requires that each discharger submit to the Regional Boards reports necessary to determine compliance with effluent limitations for priority pollutants in permits. Sections 2.4.1 through 2.4.4 of the SIP provide minimum standards for analyses and reporting. (Copies of the SIP may be obtained from the State Water Resources Control Board, or downloaded from http://www.swrcb.ca.gov/iswp/final.pdf.) To implement the SIP, effluent and receiving water data are needed for all priority pollutants. Effluent and receiving water pH and hardness are required to evaluate the toxicity of certain priority pollutants (such a heavy metals) where the toxicity of the constituents varies with pH and/or hardness. Section 3 of the SIP prescribes mandatory monitoring of dioxin congeners.

2. In addition to the specific requirements of the SIP, the Board is requiring the following monitoring needed for permit development:

    a. Organophosphorous pesticides, principally diazinon and chlorpyrifos, are commonly-used insecticides found in many domestic wastewater discharges at concentrations which can cause toxicity both in effluent and in receiving water. These pesticides are not "priority pollutants" and so are not part of the analytical methods routinely performed for NPDES discharges. **This monitoring is required of domestic**

wastewater dischargers only.

b. Drinking water constituents. Constituents for which drinking water Maximum Contaminant Levels (MCLs) have been prescribed in the California Code of Regulation are included in the *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (Basin Plan). The Basin Plan defines virtually all surface waters within the Central Valley Region as having existing or potential beneficial uses for municipal and domestic supply. The Basin Plan further requires that, at a minimum, water designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the MCLs contained in the California Code of Regulations.

c. Effluent and receiving water temperature. This is both a concern for application of certain temperature sensitive constituents, such as fluoride, and for compliance with the Basin Plan's thermal discharge requirements.

d. Effluent and receiving water hardness and pH. These are necessary because several of the CTR constituents are hardness or pH dependent.

e. Receiving water flow is needed to determine possible dilution available in the receiving water. The receiving water flows, in combination with the receiving water pollutant concentrations, will be used to determine if there is assimilative capacity in the receiving water for each pollutant, and whether dilution credits can be granted. Dilution credits can increase the concentrations of pollutants allowed in your effluent discharge if assimilative capacity is available in the receiving water.

Pursuant to Section 13267 of the California Water Code, you are required to submit monitoring data for your effluent and receiving water as described in Attachments I through IV.

Attachment I – Sampling frequency and number of samples.

Attachment II – Constituents to be monitored. This list identifies the constituents to be monitored. It is organized into groupings (Volatile Organics, Semi-Volatile Organics, Inorganics, Pesticides/Polychlorinated Biphenyls (PCBs), Other Constituents, and Discharge & Receiving Water Flows), which correspond to groupings in Attachment I. Also listed are the Controlling Water Quality Criteria and their concentrations. The criteria concentrations are compiled in the Central Valley Regional Water Board's staff report, *A Compilation of Water Quality Goals.*[1] Minimum quantitation levels for the analysis of the listed constituents will be equal to or less than the Minimum Levels (ML) listed in Appendix 4 of the SIP or the Detection Limits for Reporting Purposes (DLRs) published by the Department of Health Services which are below the controlling water quality criteria concentrations listed in Attachment II of this letter. In cases where the controlling water quality criteria concentrations are below the detection limits of all approved analytical methods, the best available procedure will be utilized that meets the lowest of the MLs and DLR. Also listed are suggested analytical procedures. You are not required to use these specific procedures as long as the procedure you select achieves the desired minimum detection level. All analyses must be performed by a California certified environmental analytical laboratory.

Attachment III – Dioxin and furan sampling. Section 3 of the SIP has specific requirements for the collection of samples for analysis of dioxin and furan congeners, which are detailed in Attachment III. Briefly, dischargers classified as major must collect and analyze two samples per year (one collected in the wet season and one collected in the dry season) for congeners in each of the next three years. For dischargers classified as minor, one wet season and one dry season sample must be collected and analyzed at some time during the next three years.

Attachment IV – Reporting Requirements. This attachment provides laboratory and reporting requirements including a recommended data reporting format.

With the exception of dioxin and furan congener sampling which is due by **1 November 2004** (see Attachment III), all samples shall be collected, analyses completed, and monitoring data shall be submitted to the Regional Board by **1 March 2003**. Any NPDES permit application submitted after **1 March 2002** shall include with the application at least one set of data for the constituents listed in Attachment II.

In the interest of generating and submitting data by the required dates, a schedule for compliance with this data request shall be prepared and submitted to the Executive Officer by **16 November 2001**. This schedule shall include the requirements of Attachment I and Attachment III. The schedule will also include the data submission requirements for applications submitted after **1 March 2002**.

Failure or refusal to submit technical or monitoring data as required by Section 13267, California Water Code, or falsifying any information provided is guilty of a misdemeanor and is subject to an administrative civil liability of up to $1,000 per day of violation, in accordance with Section 13268, California Water Code.[1]

If you have any questions, please contact your Regional Board staff representative.

GARY M. CARLTON
Executive Officer

Attachments (4)

[1] Available on the internet at http://www.swrcb.ca.gov/rwqcb5/wq_goals.

Attachment I – Sampling Frequency and Number of Samples (Major Municipal)

Samples shall be collected from the effluent and upstream receiving water and analyzed for the constituents listed in Attachment II to provide the indicated number of valid sample results by the submittal due date. Sampling frequency shall be adjusted so that the appropriate number of samples is collected by the due date and so that the sampling is representative of the wastewater discharge.

Constituent/Sample /Type[1]	Frequency	Timeframe (years)	Total Number of Samples
Volatile Organics/grab	Monthly	1	12
Semi-Volatile Organics/grab or composite	Quarterly	1	4
Inorganics/grab or composite	Monthly	1	12
Pesticides & PCBs/grab or composite	Quarterly	1	4
Other Constituents[2]/grab or composite	Monthly	1	12
Discharge & Receiving Water Flow[3]	Weekly (plus when year 2 & 3 dioxin samples are taken)	1 (2)	52 (4)
Dioxins/grab or composite	Semi-annual	3	6

[1] The effluent sampling station and the upstream receiving water station specified in the NPDES Permit Monitoring and Reporting Program should be used.

[2] See list in Attachment II.

[3] Discharge and Receiving Water Flow. Discharge flow should be recorded and reported for each day of sample collection. All NPDES dischargers should have a means of measuring the volume of discharge as part of their monitoring already required by the NPDES Permit Monitoring and Reporting Program. Receiving Water Flow, however, is not generally required by NPDES Permit Monitoring Programs. For facilities that already conduct receiving water flow monitoring, the receiving water flow should be recorded and reported for each day in which sampling occurs. For facilities that do not routinely conduct receiving water flow monitoring, provide the best estimate of flow reasonably obtainable. It may be possible to obtain flow data from an existing nearby gauging station.

Insert Attachment II

Attachment III -Dioxin and Furan Sampling

Section 3 of the State Implementation Plan requires that each NPDES discharger conduct sampling and analysis of dioxin and dibenzofuran congeners. The required number and frequency of sampling are as follows:

- Major NPDES Dischargers – once during dry weather and once during wet weather for each of three years, for a total of six samples.
- **Minor NPDES Dischargers** – once during dry weather and once during wet weather for one year during the three-year period, for a total of two samples.

Each sample shall be analyzed for the seventeen congeners listed in the table below. High Resolution GCMS Method 8290, or another method capable of individually quantifying the congeners to an equivalent detection level, shall be used for the analyses.

Sampling shall start during winter 2001/2002 and all analyses shall be completed and submitted by 1 November 2004. Sample results shall be submitted along with routine monitoring reports as soon as the laboratory results are available.

For each sample the discharger shall report:
- The measured or estimated concentration of each of the seventeen congeners
- The quantifiable limit of the test (as determined by procedures in Section 2.4.3, No. 5 of the SIP)
- The Method Detection Level (MDL) for the test
- The TCDD equivalent concentration for each analysis calculated by multiplying the concentration of each congener by the Toxicity Equivalency Factor (TEF) in the following table, and summing the resultant products to determine the equivalent toxicity of the sample expressed as 2,3,7,8-TCDD.

Congener	TEF
2,3,7,8TetraCDD	1
1,2,3,7,8-PentaCDD	1.0
1,2,3,4,7,8-HexaCDD	0.1
1,2,3,6,7,8-HexaCDD	0.1
1,2,3,7,8,9-HexaCDD	0.1
1,2,3,4,6,7,8-HeptaCDD	0.01
OctaCDD	0.0001
2,3,7,8-TetraCDF	0.1
1,2,3,7,8-PentaCDF	0.05
2,3,4,7,8-PentaCDF	0.5
1,2,3,4,7,8-HexaCDF	0.1
1,2,3,6,7,8-HexaCDF	0.1
1,2,3,7,8,9-HexaCDF	0.1
2,3,4,6,7,8-HexaCDF	0.1
1,2,3,4,6,7,8-HeptaCDF	0.01
1,2,3,4,7,8,9-HeptaCDF	0.01
OctaCDF	0.0001

Attachment IV – Reporting Requirements

1. **Laboratory Requirements**. The laboratory analyzing the monitoring samples shall be certified by the Department of Health Services in accordance with the provisions of Water Code Section 13176 and must include quality assurance/quality control data with their reports.

2. **Criterion Quantitation Limit (CQL)**. The criterion quantitation limits will be equal to or lower than the minimum levels (MLs) in Appendix 4 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (Copies of the SIP may be obtained from the State Water Resources Control Board, or downloaded from http://www.swrcb.ca.gov/iswp/final.pdf) or the detection limits for purposes of reporting (DLRs) published by the Department of Health Services (http://www.dhs.ca.gov/ps/ddwem/chemicals/DLR/dlrindex.htm) which is below the controlling water quality criterion concentrations summarized in attachment II of this letter.

3. **Method Detection Limit (MDL)**. The method detection limit for the laboratory shall be determined by the procedure found in 40 Code of Federal Regulations (CFR) Part 136, Appendix B (revised as of May 14, 1999).

4. **Reporting Limit (RL).** The reporting limit for the laboratory. This is the lowest quantifiable concentration that the laboratory can determine. Ideally, the RL should be equal to or lower than the CQL to meet the purposes of this monitoring.

5. **Reporting Protocols**. The results of analytical determinations for the presence of chemical constituents in a sample shall use the following reporting protocols:

   a. Sample results greater than or equal to the reported RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
   b. Sample results less than the report RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.
   c. For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory, if such information is available, may include numerical estimates of the data quantity for the reported result. Numerical estimates of data quality may be percent accuracy (± a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.
   d. Sample results that are less than the laboratory's MDL shall be reported as "Not Detected" or ND.

6. **Data Format**. The monitoring report shall contain the following information for each pollutant:

   a. The name of the constituent.
   b. Sampling location.
   c. The date the sample was collected.
   d. The time the sample was collected.
   e. The date the sample was analyzed. For organic analyses, the extraction date will also be indicated to assure that hold times are not exceeded for prepared samples.
   f. The analytical method utilized.
   g. The measured or estimated concentration.
   h. The required Criterion Quantitation Limit (CQL).

i. The laboratory's current Method Detection Limit (MDL), as determined by the procedure found in 40 CFR Part 136, Appendix B (revised as of May 14, 1999).
j. The laboratory's lowest reporting limit (RL).
k. Any additional comments.

6. **Example of Data Format**.

Discharger:_____ Name of Laboratory:_____
Contact Name:_____ Laboratory Contact:_____
Phone Number:_____ Phone Number:_____

Name of Constituent and CTR #	Sampling Location *	Date Sample Collected	Time Sample Collected	Date Sample Analyzed	USEPA Method Used	Analytical Results (ug/L)	CQL (ug/L)	MDL (ug/L)	RL (ug/L)
(See Attach II)									

*The effluent sampling station and the upstream receiving water station specified in the NPDES Permit Monitoring and Reporting Program should be used. Other sampling locations must be approved by Regional Board staff. Include longitude and latitude coordinates for the receiving water sampling stations.

AMBIENT WATER QUALITY CRITERIA FOR AMMONIA

Total Ammonia
Temperature and pH-Dependent Values of the CCC (Chronic Criterion)
For Fish Early Stages Present

Continuous Concentration Criteria for Fish Early Life Stages Present, 30-day Avg (mg N/l)										
pH	**Temperature, °C**									
	0	**14**	**16**	**18**	**20**	**22**	**24**	**26**	**28**	**30**
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.8	2.46
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	2.00	2.64	2.32
6.9	6.12	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.0	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.80	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.1	2.10	2.10	1.91	1.68	1.47	1.29	1.14	**1.00**	0.879	0.773
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475
8.5	1.09	1.09	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401
8.6	0.920	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287
8.8	0.661	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9.0	0.486	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179

***** Criteria Continuous Concentration

NOTE: Chronic Criterion includes a restriction that the highest 4-day average within the 30-day averaging period cannot be greater than twice the Chronic Criterion.

ATTACHMENT H

AMBIENT WATER QUALITY CRITERIA RECOMMENDED TO PROTECT FRESHWATER AQUATIC LIFE

TOTAL AMMONIA NITROGEN
pH-Dependent Values of the CMC (Acute Criterion)

Maximum Concentration Criteria 1-hr Avg (mg N/l)*		
pH	**Salmonids Present**	**Salmonids Absent**
6.5	32.6	48.8
6.6	31.3	46.8
6.7	29.8	44.6
6.8	28.0	42.0
6.9	26.2	39.2
7.0	24.1	36.1
7.1	21.9	32.9
7.2	19.7	29.5
7.3	17.5	26.2
7.4	15.3	23.0
7.5	13.3	19.9
7.6	11.4	17.0
7.7	9.64	14.4
7.8	8.11	12.1
7.9	6.77	10.1
8.0	5.62	8.41
8.1	**4.64**	6.95
8.2	3.83	5.73
8.3	3.15	4.71
8.4	2.59	3.88
8.5	2.14	3.20
8.6	1.77	2.65
8.7	1.47	2.20
8.8	1.23	1.84
8.9	1.04	1.56
9.0	0.885	1.32

* Criteria Maximum Concentration (CMC) with Salmonids Present

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

ATTACHMENT I

City of Rio Vista Trilogy WWTP and Northwest WWTF
Effluent limit for Copper using CTR Water Quality Hardness-Dependent Values
of the CCC (Chronic Criterion) and CMC (Acute Criterion)
for the Protection of Freshwater Aquatic Life

Copper expressed as total recoverable, µg/l						
Hardness (mg/l as $CaCO_3$)	CCC[1] 4-Day Avg (µg/l)	CMC[2] 1-hr Avg (µg/l)	LTA[3] (chronic) (µg/l)	LTA[4] (acute) (µg/l)	AMEL[5] (µg/l)[5]	MDEL[6] (µg/l)
<20	- - - - - - - - - - - - - - - - - - Must Calculate - - - - - - - - - - - - - - - - - -					
25	2.9	3.8	1.5	1.2	1.9	3.8
30	3.3	4.5	1.8	1.4	2.2	4.5
35	3.8	5.2	2.0	1.7	2.6	5.2
40	4.3	5.9	2.2	1.9	2.9	5.9
45	4.7	6.6	2.5	2.1	3.3	6.6
50	5.2	7.3	2.7	2.3	3.6	7.3
55	5.6	8.0	2.9	2.6	4.0	8.0
60	6.0	8.7	3.2	2.8	4.3	8.6
65	6.5	9.3	3.4	3.0	4.6	9.3
70	6.9	10.0	3.6	3.2	5.0	10
75	7.3	10.7	3.8	3.4	5.3	10
80	7.7	11.3	4.1	3.6	5.6	10
85	8.1	12.0	4.3	3.9	6.0	10
90	8.5	12.7	4.5	4.1	6.3	10
95	8.9	13.3	4.7	4.3	6.6	10
100	9.3	14.0	4.9	4.5	7.0	10
110	10.1	15.3	5.3	4.9	7.6	10
120	10.9	16.6	5.7	5.3	8.3	10
130	11.7	17.9	6.2	5.8	8.9	10
140	12.4	19.2	6.6	6.2	9.6	10
150	13.2	20.5	7.0	6.6	10	10
160	13.9	21.8	7.3	7.0	10	10
170	14.7	23.1	7.7	7.4	10	10
180	15.4	24.4	8.1	7.8	10	10
190	16.1	25.6	8.5	8.2	10	10
200	16.9	26.9	8.9	8.6	10	10
>200	- - - - - - - - - - - - - - - - - - Must Calculate - - - - - - - - - - - - - - - - - -					

The effluent limit has been calculated per established procedures described in the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP), and a CV = 0.6:

[1]CCC (4-day average) = e{0.8545[ln(hardness)] – 1.702}
[2]CMC (1-hr average) = e{0.9422[ln(hardness)] – 1.700}
[3]LTA_c (Long-Term Average chronic) = 0.527 x CCC
[4]LTA_a (Long-Term Average acute) = 0.321 x CMC
[5]AMEL (Average monthly effluent limitation) = LTA (lowest) x 1.55, though not to exceed 10 µg/L
[6]MDEL (Maximum Daily effluent limitation) = LTA (lowest) x 3.11, though not to exceed 10 µg/L

INFORMATION SHEET

CITY OF RIO VISTA AND ECO RESOURCES, INC
TRILOGY WASTEWATER TREATMENT PLANT
NORTHWEST WASTEWATER TREATMENT FACILITY
RIO VISTA, SOLANO COUNTY

OVERVIEW OF FACILITIES

The City of Rio Vista owns a wastewater collection, treatment, and disposal system, and provides sewerage service to a small development 4 miles northwest of the City of Rio Vista, which is referred to as the Trilogy Community. The Trilogy Community consists of residential units for retired couples with an 18-hole golf course, and a clubhouse restaurant. The Trilogy Wastewater Treatment Plant (formerly Summerset WWTP) is located in the SE ¼ of the SW ¼ of Section 13, T4N, R3E, MDB&M, as shown on **Attachment A**, a part of this Order. The treatment plant and the service area are on property owned by the City of Rio Vista (Assessor's Parcel Nos. 048-110-350 and Blackhawk Rio Vista Venture Group, L.P., a California limited partnership (Assessor's Parcel Nos. 048-110-190, 310, 360). However, Blackhawk Rio Vista Venture Group, L.P entered into an agreement with the City of Rio Vista that effective November 7, 1996, the City of Rio Vista will be fully responsible for the operations, maintenance and repairs of the Trilogy Plant. Currently, the treatment facility is operated by ECO Resources, Inc., under contract with the City of Rio Vista. The City of Rio Vista and ECO Resources, Inc., are hereafter jointly referred to as Discharger.

The Trilogy WWTP was designed for 0.2 million gallons per day (mgd) average dry weather flow (ADWF) and 0.44 mgd daily peak wet weather flow (PWWF) and is staffed by a Grade II operator 8 hours per day. The wastewater treatment facility is equipped with flow equalization, primary clarification, trickling filtration, secondary clarification, chemical addition, tertiary filtration, chlorine disinfection and emergency storage**.** Treated wastewater is discharged to land during irrigation months and to an unnamed ephemeral stream during non-irrigation months. The unnamed stream is a tributary to the Sacramento River within the legal boundaries of the Sacramento-San Joaquin Delta, a water of the United States. The discharge to land currently consists of irrigating 160 acres of golf course and common area landscaping. Effluent is applied by spray irrigation at agronomic rates for both nitrogen and water application. Typically, irrigation is at night when the golf course is closed. Effluent is supplemented with raw water from the underground wells as needed. The plant schematics are shown on **Attachment B.** Solids removed in the process are stabilized in an aerated sludge holding tank for up to 22 days at an average design flow and are then dewatered in a Dri-Med bagging unit that places the sludge into non-woven polyethylene bags to increase the solids content. The dewatered sludge is disposed off-site to a regulated Class III landfill. The City also intends to investigate future potential reuse opportunities of its biosolids.

The plant has had problems complying with ammonia and aluminum regulatory criteria. Additionally, the organic load from the existing development has been observed to be higher than anticipated during design. The Discharger has proposed supplementing treatment capacity with either a package membrane bioreactor (i.e., an extended aeration activated sludge treatment

process that makes use of membrane filtration for system solids maintenance in lieu of secondary clarification) or with in-kind expansion of the treatment processes already in place. The supplemental treatment will accommodate half the Trilogy WWTP flow (0.1 MGD), with the remaining flow to be treated using the existing treatment process. A schematic of the location and piping associated with the supplemental treatment options (e.g., package membrane bioreactor or in-kind process) is also illustrated in **Attachment B**. Use of the supplemental treatment at the Trilogy WWTP is intended only to ensure compliance with BOD and TSS regulatory criteria, and will not increase treatment and/or disposal capacity.

Order No. R5-2002-0099 required compliance with effluent limitations related to aluminum and ammonia, groundwater monitoring at the site to establish appropriate groundwater limits associated with the golf course irrigation practice, required a Salinity Source Control Study to reduce concentrations of salt in the Trilogy effluent to levels consistent with agricultural use, and required a trihalomethane corrective action plan. The Discharger has stated that the Trilogy WWTP has not been designed and cannot comply with effluent limitations regarding ammonia and aluminum specified in Order No. R5-2002-0099 and the most appropriate means for addressing these effluent limitations in addition to concerns related to groundwater degradation, salinity control, and trihalomethane corrective action is to close the Trilogy WWTP and replace its treatment capacity with a new Northwest WWTP specifically designed to address all concerns. This Order considers the closure of the Trilogy WWTP coinciding with the start-up of the Northwest WWTF as a change in treatment process, and location rather than as a new treatment plant. The use of a new Northwest WWTF, will (1) make use of UV disinfection in lieu of chlorination/dechlorination to prevent the formation of disinfection byproducts (trihalomethanes) and reduce the salt concentration of the effluent, (2) discharge to the Sacramento River in lieu of continued discharge to the unnamed tributary stream to prevent elevated salts from adversely affecting local agriculture, and (3) eliminate continued discharge to the golf course irrigation reservoir and irrigation of the golf course to prevent groundwater impacts. Closure of the trilogy facility and elimination of discharge to land and an effluent dominated stream is considered adequate for addressing the requirements associated with the groundwater monitoring requirements, the trihalomethane correction action plan, and the salinity source control study. As a result, this Order does not require a Salinity Source Control Study, a trihalomethane corrective action plan, or continued groundwater monitoring, but does require monitoring of the Northwest WWTF effluent to verify that design intent was achieved.

The Discharger's proposed new Northwest Wastewater Treatment Facility (WWTF) will serve the existing Trilogy community while allowing continued growth in the northwestern portion of Rio Vista. The new Northwest WWTF will be located in the SW ¼ of Section 18, T4N, R3E, MDB&M, as shown on **Attachment C**, a part of this Order. The treatment plant is on property owned by the City of Rio Vista (Assessor's Parcel Nos. 177-10-02 and 177-09-01). The City of Rio Vista will be fully responsible for the operations, maintenance and repairs of the Northwest WWTF. Upon completion of the Northwest WWTF construction, estimated to be by the end of 2005 or early 2006, the Discharger will cease discharging treated effluent to the golf course

irrigation reservoir and to the unnamed tributary stream and initiate discharge directly into the Sacramento River.

The Northwest WWTF has been designed for 1 million gallons per day (mgd) average dry weather flow (ADWF) start-up capacity, with peak hydraulic capacity at 3 mgd. Any flow in excess of 3 MGD will automatically spill into a 2 million gallon lined emergency storage basin. The Northwest WWTF has been designed to accommodate an expansion to accommodate an average dry weather flow capacity of 2 MGD, with peak hydraulic capacity at 6 mgd. The plant expansion to 2 MGD average dry weather flow is anticipated to occur sometime after 2010. This Order limits the average dry weather flow to 1 mgd per the start-up capacity. Expansion of flow beyond 1 MGD will require revisions to this Order. The Northwest WWTF will be equipped with extended aeration activated sludge biological treatment with nitrogen removal (nitrification and denitrification), ultrafiltration (i.e., membrane filtration), and UV disinfection. A two-day (2 million gallon) lined emergency storage basin is also being provided to accommodate process failure and/or flows in excess of the peak hydraulic capacity**.** The Discharger has proposed discharging treated wastewater from the Northwest WWTF directly to the Sacramento River within the legal boundaries of the Sacramento-San Joaquin Delta, a water of the United States. Once the Northwest WWTF becomes operational, irrigation of the golf course with treated effluent will cease. The plant schematics are shown on **Attachment D.** Solids removed in the process will be stabilized using passive solar drying, a process that will produce Class A biosolids. The digested sludge will be disposed off-site to a regulated Class III landfill. The City also intends to investigate future potential reuse opportunities of its biosolids.

EXISTING PERMIT

Discharges from the Trilogy plant were previously regulated by Waste Discharge Requirements (WDRs) Order No. R5-2002-0099, NPDES No. CA0083771, which was adopted by the Board on 7 June 2002. This Order was issued for treatment of domestic sewage produced by residential units and a golf course clubhouse restaurant in Trilogy community. Under this Order, the plant was allowed to discharge a monthly average dry weather flow of up to 0.2 million gallons per day to land during irrigation months and a peak wet weather flow of up to 0.44 million gallons per day into an unnamed stream tributary to the Sacramento River within the legal boundaries of the Sacramento-San Joaquin Delta during non-irrigation months.

Surface water drainage in the area is to the unnamed ephemeral stream, which is tributary to the Sacramento River within the legal boundaries of the Sacramento-San Joaquin Delta.

NEW APPLICATION FOR PERMIT RENEWAL

In January 2004, the Discharger submitted an application for renewal of the NPDES permit. Previous Order No. R5-2002-0099 was scheduled to expire on 1 June 2007. However, because the Discharger was unable to comply with the limitations described by Order No. R5-2002-0099,

the Discharger proposed the addition of additional treatment to aid in compliance (e.g., package membrane bioreactor or expansion of in-kind treatment processes) until a long-term solution consisting of constructing an entirely new WWTF was implemented. The Discharger submitted a Report of Waste Discharge (RWD), and requested for a permit renewal on 26 January 2004. Included in their RWD was chemical analysis of the priority pollutants in the Trilogy plant effluent.

This renewal permit will reflect minor revisions to update the effluent limitations for discharge to both surface water and to the land.

SUMMARY OF NEW ORDER

Based on the new Report of Waste Discharge, permitted discharge flow from the Trilogy WWTP remains the same as in the previous Order. However, this Order broadens certain effluent limitation guidelines of previous Order representing the degree of effluent treatment attainable by the technology based currently available for wastewater treatment plants. The Discharger has described the design intent of the new Northwest WWTF to ensure compliance with CTR, NTR, and other water quality criteria. This Order also requires the Discharger to provide information upon start-up that design intent was satisfied regarding whether pollutants in the discharge have a reasonable potential to cause or contribute to an in-stream excursion above a water quality objective. This Order requires the Discharger to develop and submit: 1) *chronic toxicity testing results, 2) a Corrective Action Plan/Implementation schedule,* and 3) a *Summary Pollutant Data and Receiving Water Characterization Report.* This Order may be reopened to establish water quality based effluent limitations if required supplemental data, required by provisions in this Order, indicates a pollutant has a reasonable potential to cause or contribute to an in-stream excursion above a water quality objective.

This Order also requires the Discharger to submit an annual sludge disposal plan describing the annual volume of sludge generated by the plant and specifying the disposal practices. If the solid wastes are found to be "designated," then this Order may be reopened to determine appropriate landfill specifications and groundwater monitoring provisions.

DOMESTIC WASTEWATER

Domestic wastewater from in-and-around the water treatment facility is discharged back into the treatment plant for appropriate treatment and disposal.

RECEIVING WATER BENEFICAL USES

The Sacramento River and San Joaquin River Basins cover about one fourth of the total area of the State and over 30 percent of the State's irrigable land. The Sacramento and San Joaquin Rivers furnish roughly 51 percent of the State 's water supply. Surface water from the two

drainage basins meet and form the Delta, which ultimately drains to San Francisco bay. Most of the basin is agricultural land, with an agricultural history dating to the 1870's. The Sacramento River is the largest tributary to the San Joaquin River. The basins are bound by the crests of the Sierra Nevada on the east and the Coast Range and Klamath Mountains on the west. They extend some 400 miles from the California-Oregon border southward to the headwaters of the San Joaquin River.

The Regional Board adopted a Water Quality Control Plan; Fourth Edition, for the Sacramento River and San Joaquin River Basins (Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve water quality objectives for all waters of the Basin. The requirements in this Order implement the Basin Plan.

The Basin Plan at page II-2.00 states: "Existing and potential beneficial uses which currently apply to surface waters of the basins are presented in Figure II-1 and Table II-1." The Basin Plan does not specifically identify any beneficial uses for the unnamed tributary ephemeral stream, but the Basin Plan does identify present and potential uses for the Sacramento – San Joaquin River Delta, that includes the section of the Sacramento River to which the ephemeral stream is tributary. As identified in Table II-1 of the Basin Plan, the beneficial uses of the Delta include: municipal and domestic water supply (MUN), agricultural irrigation and stock watering (AGR), industrial process water supply (PRO), industrial service supply (IND), body contact water recreation (REC-1), other non-body contact water recreation (REC-2), warm freshwater aquatic habitat (WARM), cold freshwater aquatic habitat (COLD), warm and cold fish migration habitat (MIGR), warm spawning habitat (SPWN), wildlife habitat (WILD), and navigation (NAV). The Basin Plan states, on page II-1.00, "Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning…" and with respect to disposal of wastewaters states that "…disposal of wastewaters is not included as a beneficial use. This is not to say that disposal of wastewaters is a prohibited use of waters of the state; it is merely a use which cannot be satisfied to the detriment of beneficial uses." The Basin Plan recognizes that some uses may not currently exist and may not be able to be supported in the probable future for at least certain portions of a receiving water. Thus, the Regional Board recognizes that considering removing some of the beneficial uses may be appropriate. The Regional Board, however, is not authorized to remove such uses unless it follows the public process as required by state law and the federal regulations, i.e., by amending the Basin Plan. Upon review of the flow conditions, habitat values, and beneficial uses of the ephemeral stream that is tributary to the Sacramento River, and based on hydraulic continuity, aquatic life migration, and existing and potential water rights, the Regional Board finds that the following beneficial uses identified in the Basin Plan for the Sacramento - San Joaquin River Delta are applicable to the ephemeral stream.

a. *Domestic Supply and Agricultural Supply*

The Regional Board is required to apply the beneficial use of MUN to the ephemeral stream based on State Board Resolution 88-63, which was incorporated into the Basin Plan pursuant to Regional Board Resolution 89-056. In addition, the State Water Resources Control Board (SWRCB) has issued water rights to existing water users of the Sacramento River downstream of the discharge for domestic and irrigation uses. The main beneficial use of the stream waters is for irrigation supply. The stream is an ephemeral water body, fully charged in the irrigation season and containing little or no water during non-irrigation season. The stream may also provide minimal amounts of groundwater recharge. The groundwater is a source of drinking water. In addition to the existing water uses, growth in the area, downstream of the discharge is expected to continue, which presents a potential for increased domestic and agricultural uses of the water in the stream.

b. *Water Contact and Noncontact Recreation and Esthetic Enjoyment*

The Regional Board finds that the stream discharge flows through rural areas, there is ready public access to the stream, exclusion of the public are unrealistic and although not encouraged, potential for contact recreational activities exist along the stream and downstream waters and these uses are likely to increase as the population in the area grows. Prior to discharge into the Sacramento River, the stream flows through areas of general public access, fields, and commercial areas, to the Sacramento River. The Sacramento River also offers recreational opportunities.

c. *Groundwater Recharge*

In areas where groundwater elevations are below bottom of the stream or the Sacramento River, water may percolate to groundwater. Since the stream is at times semi-dry, it is reasonable to assume that the stream water is lost by evaporation, flow downstream and percolation to groundwater providing a source of municipal and irrigation water supply.

d. *Freshwater Replenishment*

When water is present in the stream, there is hydraulic continuity between the stream and the Sacramento River. During periods of hydraulic continuity, the stream adds to the water quantity and may impact the quality of water flowing down stream in the Sacramento River.

e. *Preservation and Enhancement of Fish, Wildlife and Other Aquatic Resources.*

The Basin Plan (Table II-1) designates the Sacramento-San Joaquin Rivers as having both cold and warm freshwater beneficial uses, which include: warm freshwater habitat (WARM); cold freshwater habitat (COLD), cold and warm habitat migration of aquatic organisms (MIGR) including salmon, striped bass, sturgeon, shad, and steelhead; warm habitat spawning, reproduction, and/or early development (SPWN), and wildlife habitat (WILD). Therefore, pursuant to the Basin Plan (Table II-1, Footnote (2)), the cold water habitat designation applies to the ephemeral stream. The cold-water habitat designation necessitates that the in-stream dissolved oxygen concentration be maintained at, or above, 7.0 mg/l. This approach recognizes that, if the naturally occurring in-stream dissolved oxygen concentration is below 7.0 mg/l, the Discharger is not required to improve the naturally occurring level.

The Regional Board also finds that based on the available information and on the Discharger's application, that the stream, absent the discharge, is an ephemeral stream. The ephemeral nature of the stream means that the designated beneficial uses must be protected, but that no credit for receiving water dilution is available. Although the discharge, at times, maintains the aquatic habitat, constituents may not be discharged that may cause harm to aquatic life. At other times, natural flows within the stream help support the cold-water aquatic life. Both conditions may exist within a short time span, where the stream would be dry without the discharge and periods when sufficient background flows provide hydraulic continuity with the Sacramento River

WATER QUALITY OBJECTIVES

The Porter Cologne Water Quality Control Act defines water quality objectives as *"...the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area*". Water quality objectives designed to protect beneficial uses and prevent nuisances are found in the Basin Plan, and may be stated in either numerical or narrative form.

BASIN PLAN OBJECTIVES

Specific water quality objectives, which apply to surface waters in the Sacramento and San Joaquin River Basins, are provided in Chapter III of the Basin Plan.

Receiving Water Objectives:

a. Dissolved Oxygen (DO)

At page III-5.00 the Basin Plan states; *Within the legal boundaries of the Delta, the dissolved oxygen concentration shall not be reduced below 7.0 mg/l in the*

Sacramento River (below the I street bridge) and in all Delta waters west of the Antioch Bridge. and…*For surface water bodies outside the legal boundaries of the Delta, the monthly median of the mean daily dissolved oxygen(DO) concentration shall not fall below 85 percent of saturation in the main water mass, and the 95 percentile concentration shall not fall below 75 percent of saturation. The DO concentration shall not be reduced below the following minimum levels at any time.*

Waters designated WARM 5.0 mg/l
Waters designated COLD 7.0 mg/l
Waters designated SPWN 7.0 mg/l

The new Order allows discharge to the unnamed stream only during the winter months (1 November to 30 April). In winter months the flow in the ephemeral stream, if any, is mostly from the storm water run-offs, which generally is rich in dissolved oxygen. The tertiary effluent, therefore, should not contribute to a decrease in DO in the Unnamed Tributary Stream. Consequently, no effluent limitation has been included in this Order.

The new Order also allows for discharge directly to the Sacramento River year-round. The Sacramento River provides considerably more dilution than the Stream. The effluent from the membrane bioreactor process, therefore, should not contribute to a decrease in DO in the Sacramento River. Consequently, no effluent limitation has been included in this Order.

b. Oil and Grease

The Basin Plan states "*Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses*."

The wastewater treatment activities are not anticipated to generate any oils, greases, waxes, or other materials that can cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses. Therefore, there is no reasonable potential to exceed the criteria established by the Basin Plan.

c. pH

The Basin Plan provides that the pH (of surface waters) shall not be depressed below 6.5 nor raised above 8.5 pH Units. The Basin Plan further provides that changes in normal ambient pH levels shall not exceed 0.5 pH Units in fresh waters with

designated COLD or WARM beneficial uses. The wastewater analysis submitted by the discharger indicates the lowest and highest monthly average pH values of 6.0 and 7.9 in the effluent, respectively. These readings indicate that the current wastewater treatment activity has a reasonable potential to generate effluent with a pH concentrations that could adversely affect beneficial uses. Hence, an effluent limitation for this criterion is set at 6.5 (daily minimum) and 8.5 (daily maximum), which are protective of receiving waters for discharge to the Stream. Effluent and receiving water limitations have been established in the Order.

d. Suspended Matter

Regarding suspended material, the Basin Plan states: "*Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses."* The Basin Plan further states for biostimulatory substances: "*Water shall not contain biostimulatory substances, which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses*."

The current wastewater treatment process has a reasonable potential to generate suspended matter. Municipal wastewater contains numerous suspended matter, which tend to escape the treatment and/or removal process. Because at times, any of the secondary or tertiary treatment process units could malfunction causing solids to stay suspended. This practice could result in suspended matter being discharged directly to the Stream. Hence, an effluent limitation for this criterion is set at 10 mg/l (monthly average) and 20 mg/l (daily maximum). The rationale for establishing these limits are based on the following requirements: Regulations promulgated under 40 CFR 122.44 (a) require technology based effluent limitations to be placed in NPDES permits based on national effluent limitations guidelines and standards. Furthermore, Section 301 of CWA requires that all POTWs wastewater discharges receive at least secondary level treatment prior to discharge to protect the beneficial uses of the receiving waters. Therefore, in view of these requirements, and the need to protect the beneficial uses of the Stream, an effluent limitation of 10 mg/l (monthly average) and 20 mg/l (daily maximum) have been established. These limits are considered fair and reasonable for protecting the beneficial uses of receiving waters.

e. Settleable Matter

The Basin Plan states, "*the water shall not contain substances in concentrations that result in the deposition of material that causes nuisances or adversely affects beneficial uses*." The current wastewater treatment activity has a reasonable potential to generate settleable matter in concentrations that could adversely affect beneficial uses. There are occasions where it is necessary to drain process units for cleaning and maintenance. This practice could result in basin sediments being discharged directly

to either the Unnamed Tributary Stream or the Sacramento River. Hence, an effluent limitation for this criterion is set at 0.1 ml/l (monthly average) and 0.2 ml/l (daily maximum), which are protective of receiving waters.

f. Temperature

At page III-8.00, the Basin Plan states; "*The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. At no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature… In determining compliance with the water quality objectives for temperature, appropriate averaging periods may be applied provided that beneficial uses will be fully protected.*"

The current practice of effluent discharge is not expected to cause variation in receiving water temperature by more than 5^{o} F. This is due to the influent wastewater, which is circulated through several process units for several hours within the plant before it is discharged into the Stream. Consequently, no effluent limitation has been included in this Order.

The Discharger has provided information in the Report of Waste Discharge describing modeling results that indicate that the discharge to the Sacramento River will not cause temperature changes in violation of Basin Plan requirements, even during flow reversals. Consequently, no effluent limitation has been included in this Order for the discharge to the Sacramento River.

g. Toxicity

At page III-8.00 the Basin Plan provides that relative to toxicity: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*. *This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances*". Under the CWA Section 304(a), EPA has developed methodologies and specific criteria guidance to protect aquatic life and human health. These methodologies are intended to provide protection for all surface waters on a national basis. The methodologies have been subject to public review, as have the individual criteria guidance documents. Water quality criteria developed under Section 304(a) of the CWA are based solely on data and scientific judgments on the relationship between pollutant concentrations and environmental and human health effects. Section 304(a) criteria do not reflect consideration of economic impacts or the technological feasibility of meeting the chemical concentrations in

ambient water. Section 304(a) criteria provide guidance to States in adopting water quality standards that ultimately provide a basis for controlling discharges or releases of pollutants. USEPA's ambient water quality criteria have been used as a means of supplementing the integrated approach to toxics control, and in some cases deriving numeric limitations to protect receiving waters from toxicity as required in the Basin Plan's narrative standard prohibiting the discharge of toxic constituents in toxic amounts.

This Order contains provisions that require complete characterization of the discharge. The characterization will include analysis for toxic constituents. Provisions also require direct effluent testing for chronic toxicity.

h. Turbidity

The Basin Plan states: "*Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:*

- *Where natural turbidity is between 0 and 5 (NTUs), increases shall not exceed 1 NTU.*
- *Where natural turbidity is between 5 and 50 NTU's, increases shall not exceed 20 percent.*
- *Where natural turbidity is between 50 and 100 NTU's, increases shall not exceed 10 NTU's.*
- *Where natural turbidity is greater than 100 NTU's, increases shall not exceed 10 percent."*

There may be a reasonable potential to exceed the receiving water turbidity criteria due to discharges from tertiary filtration units, when a little to no dilution is available in the Stream. Although, most discharges occur during the period when a reasonable amount of dilution in the Unnamed Tributary Stream is expected to take place, a small amount of discharges also occur during low or no flows in the Stream. Therefore, receiving water limitations have been incorporated into this Order in conformance with Basin Plan objectives.

Permit Effluent Limitations

Clean Water Act Section 301 (b)(1) requires NPDES permits to include effluent limitations that achieve technology-based standards and any more stringent limitations necessary to meet water

quality standards. Water quality standards include Regional Board Basin Plan beneficial uses and narrative and numeric water quality objectives, State Board-adopted standards, and federal standards, including the CTR and NTR. The Basin Plan contains many numeric water quality objectives and 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.) For determining whether there is reasonable potential for an excursion above a narrative objective, the regulations prescribe three discrete methods (40 CFR 122.44 (d)(vi)). The Regional Board often relies on the second method because the USEPA's water quality criteria have been developed using methodologies that are subject to public review, as are the individual recommended criteria guidance documents. USEPA's ambient water quality criteria are used as means of supplementing the integrated approach to toxics control, and in some cases deriving numeric limitations to protect receiving waters from toxicity as required in the Basin Plan's narrative toxicity objective. In addition, when determining effluent limitations for a discharger, the dilution of the effluent in the receiving water may be considered where areas of dilution are defined. However, when a receiving water is impaired by a particular pollutant or stressor, limited or no pollutant assimilative capacity may be available in spite of the available dilution. In these instances, and depending upon the nature of the pollutant, effluent limitations may be set equal to or less than the applicable water quality criteria which are applied at the point of discharge such that the discharge will not cause or contribute to receiving stream exceedance of water quality standards established to protect the beneficial uses.

Section 1.3 of the SIP requires the Board to conduct an analysis for each priority pollutant with an applicable criterion or objective to determine if a water quality based effluent limitation is required. The Regional Board finds that with regards to the unnamed tributary stream, the ephemeral nature of the stream means that the designated beneficial uses must be protected, and no credit for receiving water dilution is available. In evaluating compliance with the CTR and SIP for the discharge to the Sacramento River (Northwest WWTF discharge), Board staff utilized ambient water quality data submitted by the Discharger from monitoring station R1 (located approximately 2 miles downstream of the future Northwest WWTF discharge point), associated with the City of Rio Vista Main Wastewater Treatment Plant that currently discharges into the Sacramento River and ambient surface water quality data from the San Francisco Regional Monitoring Program (SFRMP) conducted under the oversight of the San Francisco Bay Regional Water Quality Control Board, Region 2. The SFRMP monitoring station BG20 is located approximately 12 miles downstream of the Northwest WWTF discharge point in the Sacramento River at latitude 38^{o} 03.56' and longitude 121^{o} 48.59', at a depth of 9 meters, and 0.1 nautical miles west of channel marker "8". **Attachment E** summarizes receiving water data, maximum effluent concentrations (MECs) and includes aquatic life and human health criteria and Basin Plan objectives for each priority pollutant and other constituents.

In addition, on 10 September 2001 the Executive Officer issued a letter, in conformance with State Water Code, Section 13267, requiring the Discharger to prepare a technical report

assessing effluent and receiving water quality. A copy of that letter, including its attachments is incorporated into this Order as **Attachments F through F-4**. A provision contained in this Order is intended to be consistent with the requirements of the technical report (**Attachment F**) in requiring sampling for National Toxics Rule (NTR), California Toxics Rule (CTR) and additional constituents to determine if the discharge from the new Northwest WWTF to the Sacramento River has a reasonable potential to cause or contribute to water quality impacts once the Northwest WWTF becomes operational.

Based on the available information the following effluent limitations were included in this Order:

Technology Based

Technology-based treatment requirements under section 301 (b) of the CWA represent the minimum level of control that must be imposed in a permit issued under section 402 of the CWA. Technology based secondary treatment standards for Municipal Point-Source Dischargers are contained in 40 CFR Section 133. For secondary treatment, the 30-day average BOD_5 and total suspended solids (TSS) concentrations each shall not exceed 30 mg/l, the 7-day average BOD_5 and suspended solids concentrations each shall not exceed 40 mg/l, and the 30-day average BOD_5 and suspended solids percent removal each shall not be less than 85 percent. This permit contains more restrictive 7-day average and 30-day average effluent limitations for BOD and TSS than are required by the technology based secondary treatment standards. The reason for the more restrictive BOD_5 and TSS limitations is due to the type of treatment process being implemented with the new Northwest WWTF. The Northwest WWTF makes use of ultrafiltration membranes for mixed liquor separation within the biological treatment process. The membranes serve the role of both secondary clarification and final effluent filtration. Effluent from this process is, based on experience, capable of complying with these more restrictive limits. Under the requirements associated with "best practicable treatment and control," the limits are assigned to ensure proper operation and maintenance of the facility.

Water Quality Based

REASONABLE POTENTIAL ANALYSIS

The City of Rio Vista conducted and submitted monitoring results associated with priority and non-priority pollutants associated with four sampling events. The results of these sampling events were used in developing this Order. Effluent limitations are included in the Order to protect the beneficial uses of the receiving waters (the Unnamed Tributary Stream in the case of the Trilogy WWTP, the Sacramento River in the case of the Northwest WWTF) and to ensure that the discharge complies with the narrative Basin Plan objective that toxic substances not be discharged in toxic amounts.

As previously indicated, summary of all available Sacramento River data and Trilogy WWTP effluent data are provided in **Attachment E.** Also provided in **Appendix E** are the calculated maximum effluent concentrations (MECs), ambient background concentration, and applicable regulatory criteria (e.g., aquatic life, human health, Basin Plan objectives). Review of the available data indicates that effluent concentrations of aluminum, ammonia, bis(2-ethylhexyl) phthalate, chloride, chloroform, copper, cyanide, chlorodibromomethane, dichlorobromomethane, 1,2-diphenylhydrazine, electrical conductivity (EC), iron, manganese, MBAS (foaming agents), mercury, nitrite, and total dissolved solids (TDS) have a reasonable potential to cause or contribute to an in-stream excursion above numeric or narrative water quality objectives.

A summary of the maximum effluent concentration and applicable water quality criteria for constituents having data that indicate a reasonable potential to cause or contribute to a water quality criterion exceedence is provided in Table 1

Table 1
MAXIMUM EFFLUENT CONCENTRATIONS AND CRITERIA FOR CONSTITUENTS

Constituent	Max Conc.	Aquatic Life, Human Health, or Long-Term Criteria	Aquatic Life Chronic Criteria	Aquatic Life Acute Criteria	Human Health (water+ org.)	Other
Aluminum, µg/L	2,400	USEPA recommended Aquatic Life	87	750	---	---
Ammonia, mg/L as N (1)	27	USEPA recommended Aquatic Life	0.63	2.14	---	---
bis(2-ethylhexyl) phthalate, µg/L	4.2	CTR (Human Health)	---	---	1.8	---
Chloride, mg/L	220	Long-Term	---	---	---	106 (Agricultural Use)
Chlorodibromomethane, µg/L	3.4	Human Health			0.40	
Chloroform, µg/L	10	Human Health	---	---	---	1.1 (OEHHA)
Copper, µg/L (2)	12	CTR (Aquatic Life)	4.5	6.3	---	---
Cyanide, µg/L	6.0	CTR (Aquatic Life)	5.2	22	---	---
Dichlorobromomethane, µg/L	7.9	CTR (Human Health)	---	---	0.56	---

Constituent	Max Conc.	Aquatic Life, Human Health, or Long-Term Criteria	Aquatic Life Chronic Criteria	Aquatic Life Acute Criteria	Human Health (water+ org.)	Other
1,2-Dipheylhydrazine, µg/L	0.44	CTR (Human Health)	---	---	0.040	---
Electrical Conductivity, µmhos/cm	1,400	Long-Term	---	---	---	700 (Agricultural Use)
Iron, µg/L	320	Human Health	---	---	---	300 (Secondary MCL)
Manganese, µg/L	76	Human Health	---	---	---	50 (Secondary MCL)
MBAS (Foaming Agents), µg/L	2,300	Human Health	---	---	---	500 (Secondary MCL)
Mercury, ng/L	7.2	Human Health	---	---	<50	Bioaccumulative TMDL
Nitrite, mg/L as N	3.6	Human Health	---	---	---	1.0 (Primary MCL)
Total Dissolved Solids, mg/L	1,100	Long-Term	---	---	---	450 (Agricultural Use)

Notes:
(1) Ammonia criteria calculated based on a pH of 8.5 and temperature of 23 °C.
(2) Copper criteria calculated based on a Sacramento River hardness of 43 mg/L as $CaCO_3$.

The value and procedure used to assign effluent limitations is provided in the following sections.

DIFFUSER/MIXING

The Discharger submitted a diffuser design whereby effluent is discharged through diffuser ports over a distance of approximately 150 feet to 250 feet from shore. Cormix modeling was used to assess whether the proposed diffuser would provide greater than 20:1 dilution. The modeling effort consisted of finding a steady state solution with effluent and river flow conditions being those that occur within one hour of a flow reversal (i.e., two hours total = one hour before and one hour after flow reversal). In addition, because the Cormix model results are reported as being accurate to only plus or minus fifty percent, a safety factor was applied. Several scenarios were analyzed to determine the most critical set of parameters for the mixing zone. Critical parameters that impact the analysis include river flow, river stage, effluent temperature, flow rate and wind speed. In general terms, mixing was assessed at both low and high river velocities with a maximum temperature differential of 11 ^{0}C (corresponding with 15 ^{0}C effluent mixing into

4 ^{0}C Sacramento River water). In addition to the critical conditions outlined, a sensitivity analysis was conducted to determine the impacts of lowering the temperature differential or increasing the wind speed. The results of the mixing zone study associated with the diffuser indicate that a zone of initial mixing achieves a Sacramento River water to effluent dilution of 20:1 within 150 feet (inclusive of a safety factor) of the discharge. This dilution credit (termed "D" in the SIP) of 20 is applied whenever the effluent limitation constituent's ambient background Sacramento River concentration is less than the water quality objective or criterion (i.e., assimilative capacity exists). In accordance with Section 1.4 of the SIP, the ambient background concentration (termed "B" in the SIP) is the observed maximum concentration whenever the applicable criterion is for the protection of aquatic life and the arithmetic mean concentration for the protection of human health or other long-term water quality objective (e.g., agricultural use).

A summary of background concentrations in the Sacramento River for those constituents that the Trilogy WWTP discharge has a reasonable potential to exceed a water quality objective, and whether assimilative capacity is available or not is provided in Table 2

TABLE 2
AMBIENT BACKGROUND SACRAMENTO RIVER CONCENTRATIONS AND ASSIMILATIVE CAPACITY STATUS

Constituent	Ambient Background Conc.	Maximum or Average Conc.	Aquatic Life, Human Health, or Long-Term Criteria	Criterion Basis	Criterion Conc.	Assimilative Capacity Existence Status
Aluminum, µg/L	5,000	Maximum	Aquatic Life	Chronic	87	None
Ammonia, mg/L as N (**1**)	0.3	Maximum	Aquatic Life	Chronic	0.63	Assimilative Capacity Exists
bis(2-ethylhexyl) phthalate, µg/L	<2.0	Average	Human Health	CTR	1.8	Assimilative Capacity Exists
Chloride, mg/L	20 13	Maximum Average	Long-Term	Ag Goal	106	Assimilative Capacity Exists
Chlorodibromomethane, µg/L	<0.18	Average	Human Health	CTR	0.40	Assimilative Capacity Exists
Chloroform, µg/L	<0.24	Average	Human Health	OEHHA	1.1	Assimilative Capacity Exists
Copper, µg/L (**2**)	14	Maximum	Aquatic Life	CTR Chronic	4.5	None

Constituent	Ambient Background Conc.	Maximum or Average Conc.	Aquatic Life, Human Health, or Long-Term Criteria	Criterion Basis	Criterion Conc.	Assimilative Capacity Existence Status
Cyanide, µg/L	3.0	Maximum	Aquatic Life	CTR Chronic	5.2	Assimilative Capacity Exists
Dichlorobromomethane, µg/L	<0.2	Average	Human Health	CTR	0.56	Assimilative Capacity Exists
1,2-Diphenylhydrazine, µg/L	<0.13	Average	Human Health	CTR	0.040	Assimilative Capacity Exists
Electrical Conductivity, µmhos/cm (**3**)	544	Average	Long-Term	Ag Goal	700	Assimilative Capacity Exists
Iron, µg/L	9,400 3,275	Maximum Average	Human Health	Secondary MCL	300	None
Manganese, µg/L	140 55	Maximum Average	Human Health	Secondary MCL	50	None
MBAS (Foaming Agents), µg/L	<20	Average	Human Health	Secondary MCL	500	Assimilative Capacity Exists
Mercury, ng/L	4.9	Maximum	Human Health	TMDL	<0.0002 (ND)	None: Bioaccumulative
Nitrite, mg/L as N	DNQ 0.029	Average	Human Health	Primary MCL	1.0	Assimilative Capacity Exists
Total Dissolved Solids, mg/L	265	Average	Long-Term	Ag Goal	450	Assimilative Capacity Exists

Notes: (1) Ammonia criteria calculated based on a pH of 8.5 and temperature of 23 °C.
(2) Copper criteria calculated based on a Sacramento River hardness of 43 mg/L as $CaCO_3$.
(3) This EC average result was calculated from quarterly monitoring from monitoring Station BG20 from 1993 thru 1999.

The next paragraphs describe the general methodology used for calculating effluent limitations. A discussion of each constituent and effluent limitation calculation follows the general overview of the final and interim effluent limitation calculations.

Calculations for Final Effluent Limitations

When calculating maximum effluent limitations when no dilution credit is applied (e.g., the unnamed tributary stream, the Sacramento River when ambient background concentrations

exceed water quality objectives), the effluent concentration allowances (ECAs) were set equal to the criteria/standards/objectives as follows:

$$ECA_{chronic} = CCC$$
$$ECA_{acute} = CMC$$
$$ECA_{HH} = HH$$

where:

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

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

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

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

CMC = criterion maximum concentration (one-hour average).

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

When calculating the maximum effluent limitation when a 20:1 dilution credit is applied (e.g., when discharging to the Sacramento River), the effluent concentration allowances were determined as follows:

$$ECA_{chronic} = CCC + D(CCC - B(max))$$
$$ECA_{acute} = CMC + D(CMC - B(max))$$
$$ECA_{HH} = HH + D(HH - B(average))$$

where:

D = dilution credit.
B = ambient background concentration.
and other terms as defined above.

For aquatic life acute and chronic toxicity ECAs, the acute and chronic ECAs were then converted to equivalent long-term averages (LTA) using ECA statistical multipliers (see Table 1, SIP). Based on a 0.6 coefficient of variation (applied when less than 10 effluent monitoring data points are available), the acute multiplier is 0.321 and the chronic multiplier is 0.527. After application of these multipliers, the lowest LTA is obtained and used for further effluent limitation calculations:

$$LTA_{acute} = (ECA_{acute})(\text{ECA multiplier-acute}) = (ECA_{acute})(0.321)$$
$$LTA_{chronic} = (ECA_{chronic})(\text{ECA mutiplier-chronic}) = (ECA_{chronic})(0.527)$$

Additional statistical multipliers (see Table 2, SIP) are then used to calculate the aquatic life maximum daily effluent limitation (MDEL) and the average monthly effluent limitation (AMEL). The MDEL and AMEL statistical multipliers are also obtained by making use of a 0.6 coefficient of variation (applied when less than 10 effluent monitoring data points are available) and a sampling frequency of once monthly is assigned to the discharge (Note: the SIP requires assumption of four monthly samples as a minimum value, even when monitoring occurs at a lower frequency such as once monthly; n=4). Under these conditions, the aquatic life MDEL multiplier is 3.11 and the AMEL multiplier is 1.55.

AMEL = (MIN LTA)(AMEL multiplier) = (MIN LTA)(1.55)
MDEL = (MIN LTA)(MDEL multiplier) = (MIN LTA)(3.11)

Human health criteria are addressed in a manner different than aquatic life criteria. Human health/long term ECAs are set equal to the AMEL and a statistical multiplier (MDEL/AMEL) is used to calculate the MDEL (see Table 2, SIP). The MDEL/AMEL statistical multiplier when the coefficient of variation is 0.6 (default assumption) and monitoring occurs less than four times per month is 2.01.

$$AMEL = (ECA_{HH})$$

$$MDEL = (ECA_{HH})(MDEL/AMEL\ multiplier) = (ECA_{HH})(2.01)$$

Calculations for Interim Effluent Limitations/Performance-based Effluent Limitations

Section 2.1 of the SIP provides that: "Based on an existing discharger's request and demonstration that it is infeasible for the discharger to achieve immediate compliance with a CTR criterion, or with an effluent limitation based on a CTR criterion, the RWQCB may establish a compliance schedule in an NPDES permit." Section 2.1 further states that compliance schedules may be included in NPDES permits provided that the following justification has been submitted: (a) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream; (b) documentation of source control measures and/or pollution minimization measures currently underway or completed; (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades); and (d) a demonstration that the proposed schedule is a short as practicable."

The Discharger qualifies for the assignment of interim effluent limitations, where warranted. On 10 September 2001, the Executive Officer issued a letter, in conformance with State Water Code, Section 13267, which required that the Discharger prepare a technical report assessing effluent and receiving water quality. A copy of that letter, including its attachments is incorporated into this Order as **Attachments F through F-4**. The Discharger has fulfilled its obligation under this request per submittal of its 28 February 2003 Technical Report. Additionally, the Discharger reports that current wastewater is municipal in origin. The contaminants, therefore, originate

from the municipal water supply and/or municipal use. The monitoring and source identification fulfills the requirements of (a). The Discharger has stated its intent in the Report of Waste Discharge to make use of an ultrafiltration based biological treatment system (i.e., membrane bioreactor) with UV disinfection to replace the current trickling filter/granular medium filtration with chlorination/dechlorination system at the Northwest WWTF. This replacement treatment system complies with "best practicable treatment and control," thus fulfilling requirements associated with (b) and (c). Because of the availability of assimilative capacity in the Sacramento River for bis (2-ethylhexyl) phthalate, chlorodibromomethane, chloroform, cyanide, dichlorobromomethane, and 1,2-diphenylhydrazine, a compliance time schedule, to **28 February 2006**, has been provided in this Order to allow for design completion, project bidding, construction, and start-up of the Northwest WWTF and outfall diffuser. Because of the lack of assimilative capacity in the Sacramento River for copper, a five-year compliance time schedule, to **30 June 2009**, has been included in this Order to allow for the additional task of process monitoring and further action/process modifications to ensure compliance with the copper effluent limitations. These time schedules are considered as short as practicable.

The SIP requires submission of monitoring data prior to the issuance of a permit. The Discharger has submitted Trilogy effluent data for fulfillment of this requirement, with explanation as to how the Northwest WWTF design and disposal method will ensure compliance with water quality objectives. Although interim effluent limitations will be applied based on the Trilogy monitoring results of which this discharge is replacing, a provision for additional monitoring of the discharge to verify design intent has been applied. Upon review of the additional monitoring data, this permit can be reopened and the effluent limitations may be removed. This change would be consistent with Federal anti-backsliding provisions of 40 CFR 122.44(1)12 and 122.62(a)(16).

Interim effluent limitations are established based on current treatment plant performance to ensure that problematic conditions do not worsen in the interim period between Order adoption and start-up of the Northwest WWTF. Interim compliance dates are included. In developing the interim limitations, sampling frequency and data variability is accounted for by establishing limits when there is ten or more data points, that are based on normally distributed data where 99.9% of the data lie within 3.3 standard deviations of the mean (Basic Statistical Methods for Engineers and Scientists, Kennedy and Nevelle). A coefficient of variation of 0.6 was used to describe effluent variability.

Performance-based effluent limitations are established for those constituents for whom anti-degradation prevents full use of available dilution credits. These performance-based effluent limitations are calculated using the same methodology as for determining interim limitations.

The multipliers contained in Table 5-2 of the Technical Support Document of Water Quality Based Toxics Control (EPA/505/2-90-001, TSD) were 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 data for a constituent, interim limitations are based on 3.11 times the maximum observed sampling point to obtain the daily maximum interim limitations (Table 5-2, TSD).

The determination of each effluent limitation is described next.

Aluminum

Aluminum occurs naturally and makes up about 8% of the earth's composition. When aluminum enters the environment, it can dissolve in lakes, streams, and rivers depending on the quality of the water. USEPA developed National Recommended Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life for total recoverable aluminum; 87 µg/l as a four-day average (chronic) and 750 µg/l as a one-hour average (acute). USEPA's 2002 National Recommended Water Quality Criteria summary document notes that these criteria were developed at low hardness values. It also states that aluminum is substantially less toxic at higher hardness, but the effects of hardness on the criteria are not well quantified at this time. Aluminum exists as aluminum silicate in suspended clay particles, which USEPA acknowledges might be less toxic than other forms of aluminum. Correspondence with US EPA indicates that the criterion is not intended to apply to aluminum silicate. Therefore, a monitoring method that excludes aluminum silicate is likely to be more appropriate. According to correspondence contained in Regional Board files, the use of acid-soluble analysis for compliance with the aluminum criteria appears to satisfy USEPA. This Order and the Basin Plan prohibit the discharge of toxic constituents in toxic amounts and USEPA's criteria for prevention of acute and chronic toxicity are numerical criteria, which may be used to apply the Basin Plan's narrative objective to protect aquatic life from toxicity. The drinking water primary and secondary MCLs for aluminum are 1000 µg/l and 200 µg/l, respectively.

Aluminum has been detected in effluent samples collected from the Trilogy WWTP within the range of 2.5 µg/L to 2,400 µg/L. Aluminum in the Sacramento River was found to be as high as 5,000 µg/l.

The maximum effluent and receiving water concentrations of aluminum exceed both the aquatic life criteria and the drinking water standards. Therefore, the discharge must meet all regulatory water quality criteria at end-of-pipe and no dilution can be granted when discharging to the Sacramento River. The previous permit included an effluent limitation for aluminum of 87 µg/l as a 4-day average and 750 µg/l as a daily maximum. These limitations have been recalculated to develop both daily maximum and a monthly average limitations.

Final Effluent Limitation Calculations – Unnamed Tributary

ECA_{acute} = 750 µg/L
$ECA_{chronic}$ = 87 µg/L

LTA acute = (750 µg/L)(0.321) = 240 µg/L
LTA chronic = (87 µg/L)(0.527) = 45.8 µg/L

Lowest LTA = 45.8 µg/L

AMEL = (45.8 µg/L)(1.55) = 71 µg/L
MDEL = (45.8 µg/L)(3.11) = 142 µg/L

Interim Effluent Limitation Calculations

The effluent data from the Trilogy WWTP indicate that the effluent would not consistently comply with the final effluent limits described above. However, because the aluminum criteria are not new, interim effluent limitations are not established in the order. Instead, compliance with the aluminum limitations is addressed in a Cease and Desist Order.

Final Effluent Limitation Calculations – Sacramento River

The interim effluent limitations addressed in the Cease and Desist Order will also apply to the Sacramento River, pending completion of effluent characterization. Upon review of the additional monitoring data, this permit can be reopened and the effluent limitations modified or removed. This change would be consistent with Federal anti-backsliding provisions of 40 CFR 122.44(1)12 and 122.62(a)(16).

Ammonia

Wastewater treatment plants commonly use nitrification and denitrification processes to remove ammonia from the waste stream. Nitrification is a biological process that converts ammonia to nitrate, and denitrification is a process that converts nitrate to nitrogen gas, which is then released to the atmosphere. Ammonia concentrations in the effluent from domestic wastewater treatment plants (without nitrification facilities), in general, range higher than USEPA recommended freshwater criteria. Because the Trilogy Plant is not designed to nitrify, the Discharger has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan narrative toxicity objective, which prohibits toxic constituents in toxic concentrations in ambient waters. The USEPA has published revised ambient water quality criteria for Ammonia (1999 Ammonia Update), superseding all previous USEPA recommended freshwater criteria for ammonia. The new criteria incorporate revisions where the acute criterion (1-hour average) for ammonia is now dependent on pH and fish species and the chronic criterion (30-day average) is dependent on pH and temperature, and at temperatures lower than 15^{o}C is also dependent on the presence or absence or early life stages of aquatic organisms. USEPA found that as pH increased, both the acute and chronic toxicity of ammonia increased and salmonids were more sensitive to acute toxicity affects than any other species. USEPA also found that

invertebrates and young fish experienced increasing chronic toxicity affects with increasing temperatures.

Ammonia has been detected in effluent samples collected from the Trilogy WWTP within the range of 1.1 mg/L to 27 mg/L. Ammonia in the Sacramento River was found to be as high as 0.3 mg/l.

Final Effluent Limitation Calculations – Unnamed Tributary

Based on effluent data, the discharger has a reasonable potential to exceed the USEPA ambient water quality criteria. USEPA has presented the acute ammonia criterion as an equation, in a table format, and in graphs. This Order contains final effluent limitations, which will vary with pH and temperature for fish early life stages present as shown on **Attachments G** (chronic) and **Attachment H** (acute).

The effluent data from the Trilogy WWTP indicate that the effluent would not consistently comply with the final effluent limits described above when discharging to the unnamed stream. Therefore, a compliance schedule and interim limitations have been included in a Cease and Desist Order, allowing time for construction of the outfall diffuser to the Sacramento River and the new Northwest Plant as the measure of compliance.

Final Effluent Limitations – Sacramento River

The Discharger reports in the Report of Waste Discharge that the Northwest WWTF has been designed to fully nitrify, resulting in effluent ammonia concentrations lower than 1 mg/L. Background data for ammonia at the Sacramento River ranged from 0.2 mg/L as N to 0.3 mg/L as N. Based on historical available receiving water data, since 1996, the worst-case scenarios in the Sacramento River have been when the pH was 8.1 and the temperature was 23 ^{o}C. Under these conditions, the USEPA's ambient water quality criteria for ammonia are 4.64 mg/L as N (Salmonids Present) as a 1-hour average (acute) and 1.22 mg/L as N (early life stages present) as a 30-day average (chronic). Therefore, if the Northwest WWTF is operated in accordance with its design, there should be no reasonable potential for the Northwest WWTF discharge to cause or contribute to ammonia toxicity in the Sacramento River. Effluent limitations related to ammonia have not been applied to this discharge. However, effluent monitoring will continue with the operation of the Northwest WWTF. If effluent ammonia concentrations are measured at greater than 1 mg/L, then this order may be reopened and a new effluent limitation for ammonia established.

Bis(2-ethylhexyl) Phthalate

Bis (2-ethylhexyl) Phthalate is a colorless oily liquid that is extensively used as a plasticizer in a wide variety of industrial, domestic, and medical products. It is in polyvinyl chloride plastic

products like toys, plastic upholstery, shower curtains, adhesives, and coatings. Bis (2-ethylhexyl) phthalate is also used in inks, pesticides, cosmetics, and vacuum pump oil. Bis (2-ethylhexyl) phthalate is insoluble in water, miscible with mineral oil and hexane, and soluble in most organic solvents.

The California Office of Environmental Health Hazard Assessment and USEPA have determined that Bis (2-ethylhexyl) phthalate may reasonably be anticipated to be a carcinogen. The CTR human health criterion (for waters that are sources of drinking water and from which aquatic organisms may be consumed) is 1.8 μg/L.

Data provided by the Discharger indicate that Bis (2-ethylhexyl) phthalate was detected at a maximum concentration of 4.2 μg/L in the Trilogy WWTP effluent. Bis(2-ethylhexyl) Phthalate has not been detected in the Sacramento River (<2.0 μg/L). The maximum effluent concentration of Bis(2-ethylhexyl) Phthalate exceeds the CTR human health criterion. Therefore, an effluent limitation is necessary. For the discharge to the unnamed tributary stream, since no dilution is granted, the discharge must meet all regulatory water quality criteria at end-of-pipe.

The effluent data from the Trilogy WWTP indicate that the effluent would not consistently comply with the final effluent limits described above. Therefore, this Order establishes interim limitations and includes a compliance schedule to allow time for construction of the outfall diffuser to the Sacramento River and the new Northwest Plant as the measure of compliance.

Final Effluent Limitation Calculations – Unnamed Tributary

AMEL = 1.8 μg/L
MDEL = (1.8 μg/L)(2.01) = 3.6 μg/L

Interim Effluent Limitation Calculations

MDEL = MEC x 3.11 = 4.2 x 3.11 = 13.1 μg/L = 13 μg/L

Final Effluent Limitations – Sacramento River

The SIP requires submission of monitoring data prior to the issuance of a permit. The Discharger has submitted Trilogy effluent data for fulfillment of this requirement, with explanation as to how the Northwest WWTF design and disposal method will remedy violations of Bis (2-ethylhexyl) phthalate criteria. Effluent limitations will be applied based on the Trilogy monitoring results of which this discharge is replacing, with a provision for additional monitoring of the discharge to verify design intent. Upon review of the additional monitoring data, this permit can be reopened and the effluent limitation for Bis (2-ethylhexyl) phthalate may be removed. This change would be consistent with Federal anti-backsliding provisions of 40 CFR 122.44(1)12 and 122.62(a)(16).

Bis (2-ethylhexyl) phthalate has not been detected in the Sacramento River. The detection limit for analysis (e.g., 2µg/L), however, exceeds the human health objective. It is not expected that significant concentrations would be present in the Sacramento River due to the insoluble nature of Bis (2-ethylhexyl) phthalate and the likely sources of contributions of Bis (2-ethylhexyl) phthalate. An effluent limitation, based on 20:1 dilution, is assigned pending completion of the additional monitoring.

$ECA_{HH} = 1.8$ µg/L + $20(1.8-0) = 37.8$ µg/L,

Therefore, the limitations become:

AMEL = 37.8 µg/L = 38 µg/L
MDEL = 37.8 x 2.01 = 76 µg/L

Both of these calculated limitations exceed the statistically projected performance based interim limitation above, therefore the limit for bis (2-ethyl-hexyl) phthalate when discharging to the Sacramento River becomes 13 µg/L as a daily maximum.

MDEL = 13.1 µg/L = 13 µg/L
AMEL = 13.1 µg/L / 2.01 = 6.5 µg/L

Copper

Copper was detected in effluent samples collected from the Trilogy WWTP within the range of 2.3 µg/L to 12 µg/L as total recoverable. The Basin Plan has established a maximum concentration objective for copper for waters in the Delta at 10 µg/L (independent of hardness). The CTR criteria for copper for the protection of freshwater aquatic life are dependent on hardness for both the acute and chronic scenarios. Therefore, because of lack of dilution waters, the CTR criteria will be based on hardness of the effluent when discharging to the unnamed stream. When discharging to the Sacramento River, the CTR criteria will be based on the hardness of the Sacramento River. Based on a worst case effluent hardness of 79 mg/L (as $CaCO_3$), the CTR copper continuous concentration (maximum four-day average concentration, chronic) for the protection of freshwater aquatic life as total recoverable is 7.6 µg/L and the recommended maximum concentration (maximum one-hour average concentration, acute) as total recoverable is 11 µg/L. Samples taken by the Discharger of copper concentrations in the Sacramento River ranged between 3.4 µg/L and 14 µg/L. Based on a worst-case Sacramento River hardness of 43 mg/L (as $CaCO_3$), the CTR copper continuous concentration (maximum four-day average concentration, chronic) for the protection of freshwater aquatic life as total recoverable is 4.5 µg/L and the recommended maximum concentration (maximum one-hour average concentration, acute) as total recoverable is 6.3 µg/L. Under the worst-case conditions it appears the Sacramento River does not provide any assimilative capacity for copper.

Final Effluent Limitation Calculations – Unnamed Tributary

Since the criteria are dependent on hardness, then the effluent limitations will also change based on hardness. Attachment I includes calculated limitations for monthly and daily maximums at different hardness values. The limitations presented in Attachment I reflect the upper limit Basin Plan objective of 10 µg/L (i.e., when the calculations based on CTR exceed 10 µg/L, then the Basin Plan objective governs and the limitation is set at 10 µg/L total recoverable).

Example Calculation:

ECA_{acute} = 11.2 µg/L (based on an effluent hardness of 79 mg/L)
$ECA_{chronic}$ =7.6 µg/L (based on an effluent hardness of 79 mg/L)

LTA acute = (11.2 µg/L)(0.321) = 3.6 µg/L
LTA chronic = (7.6 µg/L)(0.527) = 4.0 µg/L

Lowest LTA = 3.6 µg/L

AMEL = (3.6 µg/L)(1.55) = 5.6 µg/L
MDEL = (3.6 µg/L)(3.11) = 11.2 µg/L (set at 10 µg/L per Basin Plan)
MDEL = 10 µg/L.

Since it appears the discharge cannot consistently comply with the effluent limitation, a compliance time schedule is included in this Order to comply with the copper effluent limitation by 1 July 2009. Interim limitations therefore are established as follows:

Interim Effluent Limitation Calculations

MDEL= MEC x 3.11 = 12 x 3.11 = 37 µg/L

Final Effluent Limitations – Sacramento River

Copper has been measured in the Sacramento River near the discharge at a maximum concentration of 14 µg/L. The interim and final effluent limitations described above also apply to the Sacramento River because the ambient background copper concentration exceeds the CTR criteria under the worst case hardness scenario and the basin plan objective, thus, there is no assimilative capacity for copper in the Sacramento River. The Discharger has proposed use of an ultrafiltration membrane based treatment process, which has been reported as being capable of reducing the concentration of copper to concentrations below CTR criteria. The Discharger has stated in its Report of Waste Discharge that if, after monitoring, it is found that copper continues to be discharged at concentrations in excess of CTR criteria, the Northwest WWTF has been

designed for ready retrofit of contaminant equalization facilities that are expected to reduce maximum copper concentrations approximately 50 percent (average copper concentrations would remain constant). In the event that use of equalization facilities is insufficient to ensure compliance with CTR regulatory criteria, the Discharger may seek to develop a site-specific translator study and/or conduct a Water Effect Ratio, allowing for readjustment of the regulatory criteria. Full compliance with the final limitations is not required until 1 July 2009. A provision of this Order allows time to complete construction of the Northwest WWTF and undertake any other process improvements required to ensure compliance with these final effluent limitations.

The SIP requires submission of monitoring data prior to the issuance of a permit. The Discharger has submitted Trilogy effluent data for fulfillment of this requirement, with explanation as to how the Northwest WWTF design and disposal method will remedy violations of copper criteria. Interim effluent limitations will be applied based on the Trilogy monitoring results of which this discharge is replacing, with a provision for additional monitoring of the discharge to verify design intent. Upon review of the additional monitoring data, this permit can be reopened and the effluent limitation for copper may be removed. This change would be consistent with Federal anti-backsliding provisions of 40 CFR 122.44(1)12 and 122.62(a)(16).

Chloride

Chloride is a salt commonly found in natural waters. It is also present in waters that have undergone chlorination for disinfection followed by dechlorination to remove chlorine residual and prevent aquatic life toxicity. Chloride was detected in the effluent at concentrations ranging from 100 to 220 mg/L.

The recommended secondary MCL for chloride is 250 mg/l, the upper secondary MCL is 500 mg/l, and the short term secondary MCL is 600 mg/l. USEPA's National Ambient Water Quality Criteria for chloride for the Protection of Freshwater Aquatic Life is 230 mg/l, as a 4-day average, and 860 mg/l as a 1-hour average. The Agricultural Water Quality goal for chloride is 106 mg/l (Ayers, R. S. and D. W. Westcot, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations - Irrigation and Drainage Paper No. 29, Rev. 1, Rome, 1985). Above this level in irrigation water, sensitive crops will be adversely affected. This Order and the Basin Plan prohibit the discharge of chemical constituents in concentrations that adversely affect beneficial uses and the Agricultural Water Quality Goal is a numerical criterion, which may be used to apply the Basin Plan's narrative objective for chemical constituents to protect agricultural uses of water. Chloride was detected in the Sacramento River with a maximum concentration of 20 mg/l and an average concentration of 13 mg/l based on quarterly samples taken in 2002.

Final Effluent Limitations - Unnamed Tributary

No evidence has been submitted that assimilative capacity exists within the unnamed tributary. The discharge must meet all regulatory water quality criteria at end-of-pipe. The maximum effluent concentration is greater than the agricultural water quality goal; therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the agricultural water quality goal. Effluent limitations for chloride are required.

Final Effluent Limits – Unnamed Tributary

AMEL = 106 mg/L

Interim Effluent Limitation Calculations

The effluent data from the Trilogy WWTP indicate that the effluent would not consistently comply with the final effluent limits described above. However, because the chloride criteria are not new, interim effluent limitations are not established in the permit. Instead compliance with the chloride limitations is addressed in a Cease and Desist Order.

Final Effluent Limitation Calculations – Sacramento River

The SIP requires submission of monitoring data prior to the issuance of a permit. The Discharger has submitted Trilogy effluent data for fulfillment of this requirement, with explanation as to how the Northwest WWTF has been designed to remedy violations of chloride criteria. The Discharger proposes to make use of UV disinfection for pathogen control, in lieu of chlorination/dechlorination, which will adequately lower chloride concentrations, but to a level still not compliant with the agricultural water quality goal. Assimilative capacity of the Sacramento River is needed to maintain compliance with the water quality objective.

Effluent limitations will be applied using a dilution ratio of 20:1 and based on the Trilogy monitoring results of which this discharge is replacing, with a provision for additional monitoring of the discharge to verify design intent. The final effluent limitations calculated below will apply to the Sacramento River until completion of the additional monitoring. Upon review of the additional monitoring data, this permit can be reopened and the effluent limitation for chloride may be removed. This change would be consistent with Federal anti-backsliding provisions of 40 CFR 122.44(1)12 and 122.62(a)(16).

$ECA_{LT} = 106$ mg/L + $20(106-13) = 1966$ mg/L

Therefore, the effluent limitations are calculated to be:

AMEL = 1966 mg/L
MDEL = (1966 mg/L)(2.01) = 3952 mg/L

Both of these calculated limitations exceed the statistically projected performance based limitation of:

MDEL = MEC x 3.11 = 220 mg/L x 3.11 = 684 mg/L.
AMEL = 684 mg/L/2.01 = 340 mg/L

Thus, the monthly average limitation for chloride when discharging to the Sacramento River is established as 340 mg/L.

Chloroform

Chloroform is a colorless, nonflammable liquid. Chloroform is formed as a by-product when chlorine is added to wastewater to kill pathogens. The USEPA National Recommended Ambient Water Quality Criterion for human health protection (for waters that are sources of drinking water and from which aquatic organisms may be consumed) is 5.7 µg/L, based on a 1-in-1,000,000 cancer risk. The Office of Environmental Health Hazard Assessment (OEHHA) has published and maintains the Toxicity Criteria Database, which contains cancer potency factors for chemicals, including chloroform, that have been used as a basis for regulatory actions by the boards, departments and offices within the California Environmental Protection Agency (Cal/EPA). The cancer potency factor for oral exposure to chloroform in this database is 0.031 milligrams per kilogram body weight per day (mg/kg-day). By applying standard toxicologic assumptions used by OEHHA, USEPA and other environmental agencies in evaluating health risks via drinking water exposure (i.e., 70 kg body weight and 2 liters per day water consumption), this cancer potency factor is equivalent to a concentration in drinking water of 1.1 µg/L (ppb) at the 1-in-a-million cancer risk level. The 1-in-a-million risk level is consistent with that used by the Department of Health Services (DHS) to set *de minimis* risks from involuntary exposure to carcinogens in drinking water in the development of drinking water MCLs and Action Levels and by OEHHA to set negligible cancer risks in the development of Public Health Goals for drinking water. The one-in-a-million cancer risk level is also mandated by USEPA in applying human health protective criteria contained in the National Toxics Rule and the California Toxics Rule for priority toxic pollutants in California surface waters.

Data provided by the Discharger indicate that chloroform was detected at a maximum concentration of 10 µg/L in the Trilogy WWTP effluent. The maximum effluent concentration of chloroform exceeds both the USEPA and OEHHA criteria. No evidence has been submitted that assimilative capacity exists within the unnamed tributary. Therefore, the discharge must meet all regulatory water quality criteria at end-of-pipe.

Chloroform has not been detected in the Sacramento River. The detection limit for analysis was 0.24 µg/L.

Final Effluent Limitation Calculations – Unnamed Tributary

AMEL = 1.1 µg/L
MDEL = (1.1 µg/L)(2.01) = 2.2 µg/L

Since it appears the discharge cannot consistently comply with the effluent limitation, a time schedule is included in this Order to allow time for construction of the outfall diffuser to the Sacramento River and the Northwest Plant as the measure for compliance. Interim limitations therefore are established as follows:

Interim Effluent Limitation Calculations

MDEL = MEC x 3.11 = 10 µg/L x 3.11 = 31 µg/L

Final Effluent Limitations – Sacramento River

The SIP requires submission of monitoring data prior to the issuance of a permit. The Discharger has submitted Trilogy effluent data for fulfillment of this requirement, with explanation as to how the Northwest WWTF design and disposal method will remedy violations of chloroform. The Discharger proposes use of UV disinfection to prevent the formation of disinfection byproducts. Interim effluent limitations will be applied based on the Trilogy monitoring results of which this discharge is replacing, with a provision for additional monitoring of the discharge to verify design intent. Upon review of the additional monitoring data, this permit can be reopened and the effluent limitation for chloroform may be removed. This change would be consistent with Federal anti-backsliding provisions of 40 CFR 122.44(1)12 and 122.62(a)(16).

Chloroform has not been detected in the Sacramento River with a detection limit of 0.24 µg/L. Chloroform is not expected to be present at significant concentrations in the Sacramento River. Therefore, effluent limitations, based on 20:1 dilution, are assigned as follows:

ECA_{HH} = 1.1 µg/L + 20(1.1-0) =23 µg/L
AMEL = 23 µg/L
MDEL = (23 µg/L)(2.01) = 46 µg/L

The calculated effluent limitations exceed the statistically derived limitations based on historical plant performance:

MDEL = MEC x 3.11 = 10 µg/L x 3.11 = 31µg/L
AMEL = 31 µg/L / 2.01 = 15 µg/L.

The statistically derived limitations based on plant performance govern. Therefore, the limitations pending completion of the additional monitoring from the Northwest WWTF are:

MDEL = 31 µg/L
AMEL = 15 µg/L

Chlorodibromomethane

Chlorodibromomethane is a colorless, nonflammable liquid. Chlorodibromomethane is formed as a by-product when chlorine is added to wastewater to kill pathogens. The California Department of Health Services (DHS) has determined that chlorodibromomethane is reasonably anticipated to be a human carcinogen. The CTR human health criterion (for waters that are sources of drinking water and from which aquatic organisms may be consumed) is 0.40 µg/L, based on a 1-in-1,000,000 cancer risk.

Data provided by the Discharger indicate that chlorodibromomethane was detected at a maximum concentration of 3.4 µg/L in the Trilogy WWTP effluent. The maximum effluent concentration of chlorodibromomethane exceeds the human health standards. No evidence has been submitted that assimilative capacity exists within the unnamed tributary. Therefore, the discharge must meet all regulatory water quality criteria at end-of-pipe.

Chlorodibromomethane has not been detected in the Sacramento River. The detection limit for analysis was 0.18 µg/L.

Final Effluent Limitation Calculations – Unnamed Tributary

AMEL = 0.40 µg/L
MDEL = (0.40 µg/L)(2.01) = 0.80 µg/L

Since it appears the discharge cannot consistently comply with the effluent limitation, a time schedule is included in this Order to allow time for construction of the outfall diffuser to the Sacramento River and the Northwest Plant as the measure for compliance. Interim limitations therefore are established as follows:

Interim Effluent Limitation Calculations

MDEL = MEC x 3.11 = 3.4 µg/L x 3.11 = 10.6 µg/L

Final Effluent Limitations – Sacramento River

The SIP requires submission of monitoring data prior to the issuance of a permit. The Discharger has submitted Trilogy effluent data for fulfillment of this requirement, with explanation as to how the Northwest WWTF design and disposal method will remedy violations

of chlorodibromomethane. The Discharger proposes use of UV disinfection to prevent the formation of disinfection byproducts. Interim effluent limitations will be applied based on the Trilogy monitoring results of which this discharge is replacing, with a provision for additional monitoring of the discharge to verify design intent. Upon review of the additional monitoring data, this permit can be reopened and the effluent limitation for chloroform may be removed. This change would be consistent with Federal anti-backsliding provisions of 40 CFR 122.44(1)12 and 122.62(a)(16).

Chlorodibromomethane has not been detected in the Sacramento River with a detection limit of 0.18 µg/L. Chlorodibromomethane is not expected to be present at significant concentrations in the Sacramento River. Therefore, effluent limitations, based on 20:1 dilution, are assigned as follows:

ECA_{HH} = 0.4 µg/L + 20(0.4-0) =8.4 µg/L
AMEL = 8.4 µg/L
MDEL = (8.4 µg/L)(2.01) = 17 µg/L

The calculated effluent limitations exceed the statistically derived limitations based on historical plant performance:

MDEL = MEC x 3.11 = 3.4 µg/L x 3.11 = 10.6 µg/L
AMEL = 10.6 µg/L / 2.01 = 5.3 µg/L.

The statistically derived limitations based on plant performance govern. Therefore, the limitations pending completion of the additional monitoring from the Northwest WWTF are:

MDEL = 11 µg/L
AMEL = 5.3 µg/L

Cyanide

Cyanide is usually found joined with other chemicals to form compounds. Examples of simple cyanide compounds are hydrogen cyanide, sodium cyanide and potassium cyanide. Cyanide can be produced by certain bacteria, fungi, and algae, and it is found in a number of foods and plants. Cyanide and hydrogen cyanide are used in electroplating, metallurgy, production of chemicals, photographic development, making plastics, fumigating ships, and some mining processes. Cyanide enters the environment from both natural processes and human industrial activities. The CTR cyanide continuous concentration (maximum four-day average concentration, chronic) criterion for the protection of freshwater aquatic life is 5.2 µg/L and the maximum concentration (one-hour average concentration, acute) criterion is 22 µg/L. The Basin Plan contains an objective of 10 µg/L for the Sacramento-San Joaquin River Delta.

Cyanide was detected in the effluent at concentrations ranging from less than 0.6 µg/L to 6 µg/L.

Effluent Limitations – Unnamed Tributary

Because of lack of dilution waters, no assimilative capacity exists within the unnamed tributary. The discharge must meet all regulatory water quality criteria at end-of-pipe. The maximum effluent concentration is greater than the CTR chronic criterion; therefore, effluent limitations for cyanide are required.

ECA_{acute} = 22 µg/L
$ECA_{chronic}$ = 5.2 µg/L

LTA acute = (22 µg/L)(0.321) = 7.1 µg/L
LTA chronic = (5.2 µg/L)(0.527) = 2.7 µg/L

Lowest LTA = 2.7 µg/L

AMEL = (2.7 µg/L)(1.55) = 4.2 µg/L
MDEL = (2.7 µg/L)(3.11) = 8.4 µg/L

Since it appears the discharge cannot consistently comply with the effluent limitation, a time schedule is included in this Order to allow time for construction of the Northwest Plant as the measure for compliance with direct discharge to the Sacramento River for use of available dilution and assimilative capacity. Interim limitations therefore are established as follows:

Interim Effluent Limitations

MDEL = MEC x 3.11 = 6 x 3.11 = 19 µg/L

Final Effluent Limitations – Sacramento River

The SIP requires submission of monitoring data prior to the issuance of a permit. The Discharger has submitted Trilogy effluent data for fulfillment of this requirement, with explanation as to how the Northwest WWTF design and disposal method will remedy violations of cyanide criteria. Interim effluent limitations will be applied based on the Trilogy monitoring results of which this discharge is replacing, with a provision for additional monitoring of the discharge to verify design intent. Upon review of the additional monitoring data, this permit can be reopened and the effluent limitation for cyanide may be removed. This change would be consistent with Federal anti-backsliding provisions of 40 CFR 122.44(1)12 and 122.62(a)(16). Cyanide has been detected in the Sacramento River at a maximum concentration of 3.0 µg/L. An effluent limitation, based on 20:1 dilution, is assigned pending completion of the additional monitoring. No dilution is provided for acute criteria.

ECA_{acute} = *22*µg/L = *22*µg/L
$ECA_{chronic}$ = *5.2*µg/L + *20(5.2*µg/L -*3*µg/L*)=49.2*µg/L

LTA acute = (22 µg/L)(0.321) = 7.06 µg/L
LTA chronic = (49.2 µg/L)(0.527) = 25.9 µg/L

Lowest LTA = 7.06 µg/L

AMEL = (7.06 µg/L)(1.55) = 11 µg/L
MDEL = (7.06 µg/L)(3.11) = 22 µg/L

The calculated MDEL is higher than the statistically determined concentration based on historic plant performance. Therefore, the effluent limitations become:

MDEL = 19µg/L
AMEL = (19 µg/L) / 2.01 = 9.5 µg/L.

Dichlorobromomethane

Dichlorobromomethane is a colorless, nonflammable liquid. Most dichlorobromomethane is formed as a by-product when chlorine is added to wastewater to kill pathogens. The California Department of Health Services (DHS) has determined that dichlorobromomethane is reasonably anticipated to be a human carcinogen. The CTR human health criterion (for waters that are sources of drinking water and from which aquatic organisms may be consumed) is 0.56 µg/L, based on a 1-in-1,000,000 cancer risk.

Data provided by the Discharger indicate that dichlorobromomethane was detected at a maximum concentration of 7.9 µg/L in the Trilogy WWTP effluent. The maximum effluent concentration of dichlorobromomethane exceeds the human health standard. No evidence has been submitted that assimilative capacity exists within the unnamed tributary. Therefore, the discharge must meet all regulatory water quality criteria at end-of-pipe.

Dichlorobromomethane has not been detected in the Sacramento River. The detection limit for analysis was 0.2 µg/L.

Final Effluent Limitation Calculations – Unnamed Tributary

AMEL = 0.56 µg/L
MDEL = (0.56 µg/L)(2.01) = 1.1 µg/L

Since it appears the discharge cannot consistently comply with the effluent limitation, a time schedule is included in this Order to allow time for construction of the outfall diffuser to the

Sacramento River and the Northwest Plant as the measure for compliance. Interim limitations therefore are established as follows:

Interim Effluent Limitation Calculations

MDEL = MEC x 3.11 = 7.9 µg/L x 3.11 = 25 µg/L

Final Effluent Limitations – Sacramento River

The SIP requires submission of monitoring data prior to the issuance of a permit. The Discharger has submitted Trilogy effluent data for fulfillment of this requirement, with explanation as to how the Northwest WWTF design and disposal method will remedy violations of dichlorobromomethane. The Discharger proposes use of UV disinfection to prevent the formation of disinfection byproducts. Interim effluent limitations will be applied based on the Trilogy monitoring results of which this discharge is replacing, with a provision for additional monitoring of the discharge to verify design intent. Upon review of the additional monitoring data, this permit can be reopened and the effluent limitation for dichlorobromomethane may be removed. This change would be consistent with Federal anti-backsliding provisions of 40 CFR 122.44(1)12 and 122.62(a)(16).

Dichlorombromomethane has not been detected in the Sacramento River with a detection limit of 0.2 µg/L. Dichlorobormomethane is not expected to be present at significant concentrations in the Sacramento River. Therefore, effluent limitations, based on 20:1 dilution, are assigned as follows:

ECA_{HH} = 0.56 µg/L + 20(0.56-0) =11.76 = 12 µg/L
AMEL = 12 µg/L
MDEL = (12 µg/L)(2.01) = 24 µg/L

1,2-Diphenylhydrazine

1,2-Diphenylhydrazine occurs as a white crystalline solid that dissolves only slightly in water. 1,2-Diphenylhydrazine is used as a starting material in the production of benzidine, which was previously used to manufacture benzidine-based dyes. 1,2-Diphenylhydrazine is also used in the production of anti-inflammatory drugs. 1,2-Diphenylhydrazine is no longer produced in the United States. The CTR human health criterion (for waters that are sources of drinking water and from which aquatic organisms may be consumed) is 0.04 µg/L.

Data provided by the Discharger in response to the 10 September 2001 letter indicate that 1,2-diphenylhydrazine was detected in the Trilogy WWTP effluent at a maximum concentration of 0.44 µg/L.

The maximum effluent concentration of 1,2-diphenylhydrazine exceeds the CTR human health criterion. No evidence has been submitted that assimilative capacity exists within the unnamed tributary. Therefore, the discharge must meet all regulatory water quality criteria at end-of-pipe.

Final Effluent Limitation Calculations – Unnamed Tributary

AMEL = 0.04 µg/L
MDEL = (0.04 µg/L)(2.01) = 0.08 µg/L

Since it appears the discharge cannot consistently comply with the effluent limitation, a time schedule is included in this Order to allow time for construction of the Northwest Plant as the measure for compliance with direct discharge to the Sacramento River and consider dilution and assimilative capacity available. Interim limitations therefore are established as follows:

Interim Effluent Limitation Calculations

MDEL = 0.44 x 3.11 = 1.4 µg/L

Final Effluent Limitations – Sacramento River

The SIP requires submission of monitoring data prior to the issuance of a permit. The Discharger has submitted Trilogy effluent data for fulfillment of this requirement, with explanation as to how the Northwest WWTF design and disposal method will remedy violations of 1,2-diphenylhydrazine criteria. Interim effluent limitations will be applied based on the Trilogy monitoring results of which this discharge is replacing, with a provision for additional monitoring of the discharge to verify design intent. Upon review of the additional monitoring data, this permit can be reopened and the effluent limitation for 1,2-diphenylhydrazine may be removed. This change would be consistent with Federal anti-backsliding provisions of 40 CFR 122.44(1)12 and 122.62(a)(16).

1,2-diphenylhydrazine has not been detected in the Sacramento River. The detection limit for analysis (e.g., 0.13 µg/L), however, exceeds the human health objective. It is not expected that significant concentrations would be present in the Sacramento River. An effluent limitation, based on 20:1 dilution, is assigned pending completion of the additional monitoring.

$ECA_{HH} = 0.04$ µg/L + $20(0.04-0) = 0.84$ µg/L
AMEL = 0.84 µg/L
MDEL = (0.84 µg/L)(2.01) = 1.7 µg/L

The calculated MDEL exceeds the statistically projected performance based limitation of:

MDEL = 1.4 µg/L (calculated above)

Thus, the monthly average and daily maximum limitations for 1,2-diphenylhydrazine are:

MDEL = 1.4 µg/L
AMEL = 1.4 µg/L / 2.01 = 0.70 µg/L.

Electrical Conductivity

The Agricultural Water Quality goal for electrical conductivity is 700 µmhos/cm (Ayers, R. S. and D. W. Westcot, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations - Irrigation and Drainage Paper No. 29, Rev. 1, Rome, 1985), and this value represents a guideline for interpreting water quality for irrigation. Above this level in irrigation water, sensitive crops will be adversely affected. This Order and the Basin Plan prohibit the discharge of chemical constituents in concentrations that impair beneficial uses and the Agricultural Water Quality Goal is a numerical criterion, which is applies this Basin Plan's narrative objective to protect agricultural uses of water. Data provided by the Discharger indicate that electrical conductivity was detected in the effluent ranging from 1100 to 1400 µmhos/cm. EC was detected in the Sacramento River at an average of 544 umhos/cm, based on quarterly data collected from monitoring station BG20 between 1993 and 1999 (as shown in Rio Vista NPDES Order No. 5-01-178, Attachment C). More recent data submitted by the City of Rio Vista as part of the dilution mixing zone study in the Sacramento River show a highest 30-day average EC of 370 µmhos/cm from hourly data collected between 2000 and 2002 from a Department of Water Resources monitoring station. The more recent data appear to be of better quality. Therefore, the 544 µmhos/cm average is a more adequate worst case scenario for the Sacramento River.

Final Effluent Limitation – Unnamed Tributary

Because no evidence has been submitted that assimilative capacity exists within the unnamed tributary, and because the effluent's electrical conductivity exceeds the agricultural water quality goal, there is no assimilative capacity in the receiving water. The discharge must meet all regulatory water quality criteria at end-of-pipe. The maximum effluent EC is greater than the agricultural water quality goal. Based on this information, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the agricultural water quality goal. Therefore, effluent limitations for electrical conductivity are required.

AMEL = 700 µmhos/cm

Interim Effluent Limitation

The effluent data from the Trilogy WWTP indicate that the effluent would not consistently comply with the final effluent limits described above. However, because the electrical

conductivity criteria are not new, interim effluent limitations are not established. Instead compliance with the electrical conductivity limitation is addressed in a Cease and Desist Order allowing time for construction of the Northwest WWTF as measure of compliance with a direct discharge to the Sacrament River to allow use of available assimilative capacity.

Final Effluent Limitation – Sacramento River

The Discharger reports in the Report of Waste Discharge that the Northwest WWTF has been designed to reduce the electrical conductivity from that in the Trilogy WWTP effluent by making use of UV disinfection in lieu of chlorination/dechlorination. The chlorination/dechlorination of wastewater leads to an increase in the concentration of total dissolved solids (and thus electrical conductivity). This change in disinfection practice is consistent with best practicable treatment and control of the discharge, but is not expected to reduce the electrical conducticity to levels consistent with the agricultural water quality goal of 700 µmhos/cm. Therefore, the Discharger has proposed use of assimilative capacity within the Sacramento River.

Electrical conductivity of the effluent was found to range between 1100 µmhos/cm and 1400 µmhos/cm in samples collected in 2002. However, the long term average concentration of EC in the effluent is in the range of 1200 µmhos/cm. Background electrical conductivity in the Sacramento River averages at 544 µmhos/cm.

Calculation of the effluent limitation for EC (for direct discharge into the Sacramento River) is as follows:

ECA = 700 + 20(700-544) = 3820 µmhos/cm
AMEL = 3820 µmhos/cm

The statistically derived EC based on plant performance is:

MDEL = MEC x 3.11 = 1400 µmhos/cm x 3.11 = 4354 µmhos/cm
AMEL = 4354µmhos/cm / 2.01 = 2166 µmhos/cm

The statistically derived EC governs, thus the effluent limitation is set at:

AMEL = 2166 µmhos/cm

Iron

The Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit is 300 µg/L. Data provided by the Discharger indicate that Iron was detected at a maximum concentration of 320 µg/L in the Trilogy WWTP effluent.

Final Effluent Limitation – Unnamed Tributary

The Basin Plan includes a water quality objective that "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels- Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the unnamed tributary. Based on information included in analytical laboratory reports submitted by the Discharger, iron in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 300 µg/L. The Basin Plan also includes a water quality objective that water "…*shall be free of discoloration that causes nuisance or adversely affects beneficial uses*." The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Sacramento River, by which the discharge is tributary. Iron concentrations in excess of the Secondary MCL-Consumer Acceptance Limit cause aesthetically undesirable discoloration. The maximum observed effluent iron concentration was 320 µg/L. No evidence has been submitted that assimilative capacity exists within the unnamed tributary. Therefore, there is no assimilative capacity in the receiving water and the discharge must meet all regulatory water quality criteria at end-of-pipe. The maximum effluent concentration exceeds the secondary MCL. Therefore, and effluent limitation has been assigned to this discharge.

AMEL = 300 µg/L.

Interim Effluent Limitation

The effluent data from the Trilogy WWTP indicate that the effluent would not consistently comply with this limit. However, because the iron criterion is not new, interim effluent limitations are not established. Instead compliance with the iron limitations is addressed in a Cease and Desist Order.

Final Effluent Limitation - Sacramento River Discharge

The Sacramento River does not contain assimilative capacity for iron. The Discharger has stated in the Report of Waste Discharge that the use of ultrafiltration membranes for filtration will reduce concentrations of iron to levels below the secondary MCL. This Order requires monitoring of the discharge upon initiation to verify design intent.

The final effluent limitations applied to the unnamed tributary will also be applied to the Sacramento River discharge. The Interim Effluent Limitation described in a Cease and Desist Order will also apply until completion of monitoring. Upon review of the additional monitoring data, this permit can be reopened and the effluent limitation for iron may be removed. This

change would be consistent with Federal anti-backsliding provisions of 40 CFR 122.44(1)12 and 122.62(a)(16).

Manganese

The Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit is 50 µg/L. Data provided by the Discharger indicate that manganese was detected at a maximum concentration of 76 µg/L in the Trilogy WWTP effluent.

Final Effluent Limitation – Unnamed Tributary

The CTR does not list manganese as a priority pollutant. The Basin Plan includes a water quality objective that "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels- Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the unnamed tributary. Based on information included in analytical laboratory reports submitted by the Discharger, manganese in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 50 µg/L. The Basin Plan also includes water quality objectives that water be free of discoloration and taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Sacramento River, of which the discharge is tributary. Manganese concentrations in excess of the Secondary MCL-Consumer Acceptance Limit produce aesthetically undesirable discoloration and taste. The maximum observed effluent manganese concentration was 76 µg/L. No evidence has been submitted that assimilative capacity exists within the unnamed tributary. Therefore, there is no assimilative capacity in the receiving water and the discharge must meet all regulatory water quality criteria at end-of-pipe. The maximum effluent concentration exceeds the secondary MCL. An Effluent Limitation for manganese is included in this Order and is based on compliance with the Basin Plan water quality objectives for chemical constituents, color, and tastes and odors and the DHS Secondary MCL.

AMEL = 50 µg/L.

Interim Effluent Limitation

The effluent data from the Trilogy WWTP indicate that the effluent would not consistently comply with these limits. However, because the manganese criterion is not new, interim effluent

limitations are not established. Instead compliance with the manganese limitations is addressed in a Cease and Desist Order.

Final Effluent Limitation – Sacramento River

The Sacramento River does not contain assimilative capacity for manganese. The Discharger has stated in the Report of Waste Discharge that the use of ultrafiltration membranes for filtration will reduce concentrations of manganese to levels below the secondary MCL. This Order requires monitoring of the discharge upon initiation to verify design intent.

The final effluent limitations applied to the unnamed tributary will also be applied to the Sacramento River discharge. The Interim Effluent Limitation described in a Cease and Desist Order will also apply until completion of monitoring. Upon review of the additional monitoring data, this permit can be reopened and the effluent limitation for manganese may be removed. This change would be consistent with Federal anti-backsliding provisions of 40 CFR 122.44(1)12 and 122.62(a)(16).

Methylene blue active substances (MBAS)

Data provided by the Discharger indicate that MBAS were detected at a maximum concentration of 2300 µg/L in the Trilogy WWTP effluent.

Final Effluent Limitations – Unnamed Tributary

The CTR does not list MBAS as priority pollutants. The Basin Plan includes a water quality objective that "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels- Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the unnamed tributary. Based on information included in analytical laboratory reports submitted by the Discharger, MBAS in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 500 µg/L. The Basin Plan also includes water quality objectives that water not contain floating material or taste- or odor-producing substances in concentrations that causes nuisance or adversely affect beneficial uses. The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Sacramento River, of which the discharge is tributary. MBAS concentrations in excess of the Secondary MCL Consumer Acceptance Limit produce aesthetically undesirable froth, taste, and odor. The maximum observed effluent MBAS concentration was 2300 µg/*l*. No evidence has been submitted that assimilative capacity exists within the unnamed tributary. Therefore, there is no assimilative capacity in the receiving water

and the discharge must meet all regulatory water quality criteria at end-of-pipe. An Effluent Limitation for MBAS is included in this Order and is based on compliance with the Basin Plan water quality objectives for chemical constituents, floating material, and tastes and odors and the DHS Secondary MCL.

AMEL = 500 µg/L.

Interim Effluent Limitation

The effluent data from the Trilogy WWTP indicate that the effluent would not consistently comply with these limits. However, because the MBAS criterion is not new, interim effluent limitations are not established. Instead compliance with the MBAS limitations is addressed in a Cease and Desist Order.

Final Effluent Limitation – Sacramento River

MBAS has not been detected in the Sacramento River at a detection limit of 20 µg/L. It is not expected that significant concentrations of MBAS would be present in the Sacramento River. An effluent limit, based on 20:1 dilution, is assigned pending completion of the additional monitoring.

ECA_{HH} = 500 µg/L + 20 (500 µg/L – 0 µg/L) = 10500 µg/L
AMEL = 10500 µg/L

The statistically derived MBAS concentration based on plant performance is:

MDEL = MEC x 3.11 = 2300 µg/L x 3.11 = 7153 µg/L
AMEL = 7153µg/L / 2.01 = 3559 µg/L

The statistically derived MBAS concentration governs, thus the effluent limitation is set at:

AMEL = 3559 µg/L

Mercury

Mercury was detected in the effluent on all 4 samples taken in 2002 using a "clean technique" USEPA Method 1631 with concentrations ranging from 0.0020 - 0.0072 µg/l. The current USEPA's ambient water quality criterion for protection of aquatic life (expressed as dissolved concentrations) for continuous concentration of mercury is 0.77 µg/l (4-day average, chronic criteria), and the CTR (expressed as total recoverable) concentration for the human health protection for consumption of water and aquatic organisms is 0.050 µg/l. Mercury is listed under the California 303(d) list as a pollutant causing impairment in the Sacramento-San Joaquin Delta.

This listing is based partly on elevated levels of mercury in fish tissue. Because the Sacramento-San Joaquin Delta has been listed as an impaired water body for mercury based on fish tissue impairment, the discharge must not cause or contribute to increased mercury levels in fish tissue.

The Regional Board plans to adopt Total Maximum Daily Loads (TMDLs) for mercury in the Sacramento-San Joaquin Delta by December 2005. When the TMDL is complete, the Regional Board will adopt appropriate water quality based concentration and mass loading effluent limits for the discharge. For situations like this, the SIP recommends that mass loading of the bioaccumulative pollutant should be limited in the interim to representative, current levels pending development of applicable water quality standards. Until the TMDL is completed and water quality based effluent limits are prescribed, an interim, performance based, mass loading limit will be prescribed.

Interim Effluent Limitation

Annual Mass Limit = (0.0000072 mg/L) x (8.34) (1 mgd) x (365 d/year) = 0.022 lbs/year

Interim Effluent Limitation – Sacramento River

The effluent limitation described above for the Unnamed Tributary discharge is also applicable to the Sacramento River discharge insofar as the mercury mass loading to the unnamed tributary stream ultimately reaches the Sacramento River.

Nitrite

Data provided by the Discharger indicate that nitrite measured as nitrogen was detected at a maximum concentration of 3.6 mg/L in the Trilogy WWTP effluent.

Final Effluent Limitations - Unnamed Tributary

The Basin Plan includes a water quality objective that "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels- Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the unnamed tributary. Based on information included in analytical laboratory reports submitted by the Discharger, nitrite in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Primary Maximum Contaminant Level (MCL) of 1.0 mg/L, measured as nitrogen. The maximum observed effluent nitrite concentration was 3.6 mg/L. No evidence has been submitted that assimilative capacity exists within the unnamed tributary. Therefore, there is no assimilative capacity in the receiving water and the discharge must meet all regulatory water

quality criteria at end-of-pipe. An effluent Limitation for nitrite is included in this Order and is based on the DHS Primary MCL.

MDEL = 1.0 mg/L.

Interim Effluent Limitation

The effluent data from the Trilogy WWTP indicate that the effluent would not consistently comply with these limits. However, because the nitrite criterion is not new, interim effluent limitations are not established. Instead compliance with the nitrite limitations is addressed in a Cease and Desist Order.

Final Effluent Limitation – Sacramento River

The Discharger reports in the Report of Waste Discharge that the Northwest WWTF has been designed to fully nitrify (i.e., fully converts ammonia to nitrate without elevated nitrite concentrations), resulting in effluent nitrite concentrations lower than 1 mg/L.

The SIP requires submission of monitoring data prior to the issuance of a permit. The Discharger has submitted Trilogy effluent data for fulfillment of this requirement, with explanation as to how the Northwest WWTF has been designed to remedy violations of nitrite criteria. Interim effluent limitations will be applied based on the Trilogy monitoring results of which this discharge is replacing, with a provision for additional monitoring of the discharge to verify design intent. Upon review of the additional monitoring data, this permit can be reopened and the effluent limitation for nitrite may be removed. This change would be consistent with Federal anti-backsliding provisions of 40 CFR 122.44(1)12 and 122.62(a)(16).

Nitrite has not been detected in the Sacramento River at a detection limit of 0.3 mg/L. Nitrate is not stable in the natural environment, and tends to be converted to either nitrate or nitrogen gas. Therefore, it is not expected that there would be elevated concentrations of nitrite in the Sacramento River. An effluent limitation, based on 20:1 dilution, has been assigned to this discharge.

ECA_{HH} = 1.0 mg/L + 20 (1.0 mg/L – 0 mg/L) = 21 mg/L
AMEL = 21 mg/L

The calculated AMEL is greater than the statistically derived concentration based on historical plant performance:

MDEL = MEC x 3.11 = 3.6 mg/L x 3.11 = 11.2 mg/L
AMEL = 11.2 mg/L / 2.01 = 5.6 mg/L

Therefore, the final average monthly effluent limitation to the Sacramento River is:

AMEL = 5.6 mg/L

Total Dissolved Solids (TDS)

Data provided by the Discharger indicate that total dissolved solids were detected in the effluent at concentrations ranging from 600 to 1100 mg/L.

Total dissolved solids are typically correlated with electrical conductivity. Therefore, because a limit has been placed on electrical conductivity, a limit on total dissolved solids would be redundant. An effluent limit on total dissolved solids therefore has not been placed on this discharge.

Chlorine Residual

Chlorine in the receiving water is extremely toxic and has reasonable potential to be discharged at significant concentrations. The Discharger monitors chlorine residual as a means of permit compliance. The current effluent limitation for total chlorine residual is 0.1 mg/l as a daily maximum. The USEPA developed ambient water quality criteria for chlorine to protect freshwater aquatic organisms. USEPA's ambient water quality criteria for protection of aquatic life are 11 µg/l as a 4-day average (chronic) concentration, and 19 µg/l as a 1-hour average (acute) concentration for total residual chlorine. USEPA guidelines and the Basin Plan allow for mixing zones where water quality objectives can be exceeded, but no lethality is allowed. Therefore, this Order contains effluent discharge limitations for total chlorine residual of 0.01 mg/l as a 4-day average, and 0.02 mg/l as an hourly average based on the USEPA's ambient criteria to protect aquatic life. Monitoring for this constituent is on a continuous basis.

Total Coliform

Total Coliform limitations are imposed to protect the beneficial uses of the receiving water, including body contact water recreation, and municipal, domestic and unrestricted agricultural beneficial use. There are no regulations that prescribe necessary levels of disinfection; however, according to the Department of Health Services (DHS), appropriate limitations are based on average river/effluent dilution ratios over a period of time, with the recommendation to impose tertiary standards (pathogen free) when available dilution is less than 20:1.

<u>Final Effluent Limitation – Unnamed Tributary</u>

The discharge to the Unnamed Tributary may not always have 20:1 dilution. The previous Order required the 7-day median concentration of total coliform to be no more than 2.2 per 100 mL. The total number of total coliform bacteria was not to exceed an MPN of 23 per 100 mL in more

than one sample in any 30-day period with no single sample exceeding an MPN of 240 per 100 mL. Based on the lack of available dilution in the Unnamed Tributary, protection of the beneficial uses of the receiving water will be maintained by continuation of the total coliform limitation from the previous permit.

Final Effluent Limitation – Sacramento River

Regional Board staff evaluated flow data obtained from the Department of Water Resources, Delta Modeling section database and the results of a mixing zone analysis submitted by the Discharger and concluded there is a minimal dilution of 20:1, and therefore there is no need for tertiary treatment. The Order covering the discharge from the City of Rio Vista Main WWTP contains limits of 23 MPN per 100 mL on a 7-day median basis, with a peak day concentration not to exceed 500 MPN per 100 mL. Based on available dilution, protection of beneficial uses of the receiving water will be maintained consistant with the total coliform limitations from the City of Rio Vista Main WWTP Order.

303 (d) pesticides

The Sacramento–San Joaquin Delta has been listed as an impaired waterbody pursuant to Section 303(d) of the Clean Water Act because of: (1) diazinon and chlorpyrifos (organophosphate pesticides), (2) Group A-organochlorine pesticides {aldrin, chlordane, dieldrin, endosulfan (alpha, beta, sulfate), endrin, endrin aldehyde, 4,4'DDT, heptachlor, heptachlor epoxide, hexachlorocyclohexane (alpha, beta, delta and lindane), and toxaphene}, and (3) unknown toxicity. The Basin Plan objectives regarding pesticides include:

a. no individual pesticides shall be present in concentrations that adversely affect beneficial uses,

b. discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affects beneficial uses,

c. total chlorinated hydrocarbon pesticide concentrations shall not be present in the water column at detectable concentrations, and

d. pesticide concentrations shall not exceed those allowable by applicable antidegradation policies.

The Basin Plan's requirement that persistent chlorinated hydrocarbon pesticides shall not be present in the water column in detectable concentrations is the most stringent criteria for the regulation of the Group A-organochlorine pesticides. Data reported by the Discharger does not indicate that 303(d) listed pesticides are present in the Discharge. Because these constituents are listed under the California 303(d) list as pollutants causing impairment in the Sacramento-San

Joaquin Delta, the Discharger is not to cause or contribute to an in-stream excursion above the Basin Plan organochlorine pesticides objective.

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