

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2002-0210

NPDES NO. CA 0078662

WASTE DISCHARGE REQUIREMENTS  
FOR  
EL DORADO IRRIGATION DISTRICT  
DEER CREEK WASTEWATER TREATMENT PLANT  
EL DORADO COUNTY

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

***BACKGROUND***

1. El Dorado Irrigation District (hereafter Discharger) submitted a Report of Waste Discharge, dated 22 March 2002, and applied for a permit renewal to discharge waste under the National Pollutant Discharge Elimination System (NPDES) from the Deer Creek Wastewater Treatment Plant (DCWWTP). Supplemental information to complete filing of the application was submitted on 15 July 2002.
2. The Discharger owns and operates a wastewater collection, treatment, reclamation and disposal system, and provides sewerage service to the Cameron Park and Mother Lode Service Area. The treatment plant is in Section 16, T9N, R9E, MDB&M, as shown on Attachment A, a part of this Order. Treated municipal wastewater is discharged to Deer Creek, a water of the United States and a tributary to the Cosumnes River at the point, latitude N38°37'42" and longitude W120°59'11". Treated wastewater discharged for reclamation is regulated under separate waste discharge requirements and must meet the requirements of California Code of Regulations, Title 22.
3. The treatment system main components consists of an influent siphon, headworks, primary clarifier, three aeration basins, an emergency storage basin, three secondary clarifiers, eleven tertiary filters, two chlorine contact chambers, one primary sludge thickener, one waste activated sludge thickener, four aerobic digesters, two belt filter presses, two sludge lime addition stations, and a plant drain sump. Sludge is dewatered by the belt filter presses and disposed off-site on farmland or at the local landfill. The Report of Waste Discharge describes the discharge as follows:

Monthly Average Flow:	2.86	million gallons per day (mgd)
Daily Peak Wet Weather Flow:	8.04	mgd
Design Flow (dry weather):	2.5	mgd
Mean Effluent Temperature:	75.5°F Summer;	59.6 °F Winter

<u>Constituent</u>	<u>mg/l</u>	<u>lb/Day<sup>2</sup></u>
CBOD <sup>1</sup>	2.53	60.35
Total Suspended Solids	2.63	62.73

<sup>1</sup> 5-day, 20°C biochemical oxygen demand

<sup>2</sup> Based on an average daily flow of 2.86 mgd

4. The DCWWTP has been significantly upgraded over the past five years. With the exception of the tertiary treatment system, improvements to the primary, secondary, and ancillary treatment processes have been constructed to accommodate an ADWF of 3.6 mgd. The environmental impact report for the expansion of the DCWWTP for 2.5 to 3.6 mgd states that the capacity of the existing tertiary filtration system is rated at 1.5 mgd. Additional filtration capacity is provided by using the tertiary filtration system that was designed and constructed for use as part of the reclamation treatment system, which can be utilized for discharge to Deer Creek when not being used to produce reclaimed water.

The Discharger has not accurately defined the capacity of the reclamation treatment system. There are occasions during peak wet weather flows when the filter capacity is exceeded. As an interim measure, until additional filter capacity is added, the Discharger modified the flow splitter to the tertiary filters so that flows that could not be handled by the filters are diverted from the secondary treatment system to a 1 million gallon seasonally used storage tank. When flows subside in the plant, the stored secondary treated wastewater is returned to the headworks, via the plant drain, for retreatment. After use as flow equalization in the winter, the storage tank is drain and cleaned before use as part of the reclamation distribution system.

The Discharger is in the initial stages of the process to add additional tertiary treatment capacity to accommodate an ADWF of 3.6 MGD. In addition, due to the variability of the receiving water dilution capacity, there are times when 20-to-1-dilution capacity is not available during peak wet weather events. Without this amount of dilution the effluent coliform limit of 2.2 MPN/100 ml (7-day median) will be required. Design parameters for the expanded tertiary system will have to take into consideration the peak wet weather events, when 20-to-1 dilution is not available, and the 2.2 MPN/100 ml (7-day median) is in effect.

A time schedule is included in the permit to allow the Discharger adequate time to construct the necessary facilities to fully expand to 3.6 MGD, and achieve compliance with the coliform limit. Upon completion of the upgrades to the tertiary treatment system, to be capable of treating both an average dry weather flow of 3.6 MGD, and peak wet weather flows, the capacity of the facility will be rated at 3.6 MGD. At that time mass limits will be calculated using 3.6 MGD. Upon completion of the improvements, the expansion of the facility shall be certified, by a Registered Civil Engineer with experience in the design and operation of wastewater treatment plants, that the facility expansion has been completed and the facility was designed and constructed to achieve the limits established in the permit.

5. The U.S. Environmental Protection Agency (EPA) and the Regional Board have classified this discharge as a major discharge.
6. 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 water quality objectives for all waters of the Basin. These requirements implement the Basin Plan.

### ***BENEFICIAL USES OF THE RECEIVING STREAM***

7. 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 beneficial uses of any specifically identified water body generally apply to its tributary streams.” The Basin Plan does not specifically identify beneficial uses for Deer Creek, but the Basin Plan does identify present and potential uses for the Cosumnes River, to which is tributary.

The Basin Plan identifies the following beneficial uses for the Cosumnes River: municipal and domestic supply; agricultural irrigation, agricultural stock watering, body contact water recreation, canoeing and rafting, non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, cold spawning habitat, and wildlife habitat. In addition, State Board Resolution No 88-63, incorporated into the Basin Plan pursuant to Regional Board Resolution 89-056, requires the Regional Board to assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in Table II-1.

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

In reviewing whether the existing and/or potential uses of the Cosumnes River apply to the Deer Creek, the Regional Board has considered the following facts:

- a. *Domestic Supply and Agricultural Supply*

The State Water Resources Control Board (SWRCB) Resolution No. 88-63 “Sources of Drinking Water” provides that “All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards...”

The SWRCB has issued water rights to existing water users along Deer Creek and the Cosumnes River downstream of the discharge for domestic and irrigation uses. Since Deer Creek is an ephemeral stream the creek likely provides groundwater recharge during periods of low flow. 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 Deer Creek.

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

The Regional Board finds that the discharge flows through residential areas, there is ready public access to Deer Creek, exclusion of the public are unrealistic and contact recreational activities currently exist along Deer Creek and downstream waters and these uses are likely to increase as the population in the area grows. Prior to discharge into the Cosumnes River, Deer Creek flows through areas of general public access, meadows, residential areas and parks, to the Cosumnes River. The Cosumnes River also offers recreational opportunities.

c. *Groundwater Recharge*

In areas where groundwater elevations are below the stream bottom, water from the stream will percolate to groundwater. Since Deer Creek is at times 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 Deer Creek, there is hydraulic continuity between Deer Creek and the Cosumnes River. During periods of hydraulic continuity, Deer Creek adds to the water quantity and may impact the quality of water flowing down stream in the Cosumnes River.

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

Deer Creek flows to the Cosumnes River. The California Department of Fish and Game (DFG) has verified that the fish species present in Deer Creek and downstream waters are consistent with both cold and warm water fisheries, that there is a potential for anadromous fish migration necessitating a cold water designation and that trout, a cold water species, have been found both upstream and downstream of the wastewater treatment plant. The Basin Plan (Table II-1) designates the Cosumnes River as being both a cold and warm freshwater habitat. Therefore, pursuant to the Basin Plan (Table II-1, Footnote (2)), the cold designation applies to Deer Creek. The cold-water habitat designation necessitates that the in-stream dissolved oxygen concentration be maintained at, or above, 7.0 mg/l.

Upon review of the flow conditions, habitat values, and beneficial uses of Deer Creek, and the facts described above, the Regional Board finds that the beneficial uses identified in the Basin Plan for the Cosumnes River are applicable to Deer Creek.

The Regional Board also finds that based on the available information and on the Discharger's application, that Deer Creek, absent the discharge, is an ephemeral stream. The ephemeral nature of Deer Creek 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 Deer Creek help support the aquatic life. Both conditions may exist within a short time span, where Deer Creek would be dry without the discharge and periods when sufficient background flows provide hydraulic continuity with the Cosumnes River. Dry conditions occur primarily in the summer months, but dry conditions may also occur throughout the year, particularly in low rainfall years. The lack of dilution results in more stringent effluent limitations to protect contact recreational uses, drinking water standards, agricultural water quality goals and aquatic life. Significant dilution may occur during and immediately following high rainfall events.

8. The beneficial uses of the underlying ground water are municipal and domestic, industrial service, industrial process and agricultural supply.

#### ***BASIN PLAN AMENDMENT PROCESS***

9. Discharge from the DCWWTP can at times dominate the flow in Deer Creek. This condition caused violation of the Basin Plan water quality objectives for inland surface waters for pH, dissolved oxygen, temperature, and turbidity. The Discharger has made significant upgrades to the facility, however during low flow conditions in the creek, receiving water limitations for these pollutants are not being consistently achieved. The Regional Board issued Cease and Desist Order (CDO) No. 95-255 on 7 December 1995 requiring the Discharger implement corrective actions to comply with these and other permit limitations. Subsequent to the CDO being issued, significant improvements to the facilities were made which brought the facility into compliance with the dissolved oxygen limit, however, pH, turbidity, and temperature remained problematic. When the current WDRs were issued in 1997, a CDO with compliance time schedules was also adopted to allow further time to comply with the Basin Plan objectives for pH, turbidity, and temperature.

The Discharger chose to pursue a Site-Specific Basin Plan Amendment (SSBPA) in lieu of making physical improvements to the treatment plant for compliance with Basin Plan objectives for pH, turbidity, and temperature. Due to the lengthy SSBPA process, the time schedule was modified to reflect the additional time needed to complete the Basin Plan Amendments (BPAs). CDO No. 5-000-033, Amendment 1, requires the Discharger to complete the BPAs by 30 December 2003. On 19 July 2002, the Regional Board adopted the BPAs for pH and turbidity. The State of California Office of Administrative Law (OAL) and U.S. EPA must also approve the BPAs before becoming effective.

The Regional Board has not yet considered the BPA for temperature. Since the existing Basin Plan Objectives for pH, turbidity, and temperature remain in effect, this Order contains limitations based those objectives.

#### ***EFFLUENT LIMITATIONS AND REASONABLE POTENTIAL***

10. U.S. EPA adopted the *National Toxics Rule* (NTR) on 5 February 1993 and the *California Toxics Rule* (CTR) on 18 May 2000. These Rules contain water quality standards applicable to this discharge. The State Water Resources Control Board 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 guidance on implementation of the NTR and the CTR.
11. 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. This Order contains provisions that:
  - a. require the Discharger to conduct a study to provide information as to whether the levels of NTR and CTR constituents, EPA Priority Pollutants, or other pollutants in the discharge 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, require the Discharger to submit information to calculate effluent limitations for those constituents; and
  - c. allow 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 to prepare a technical report assessing water quality. This Order is intended to be consistent with the requirements of the technical report in requiring sampling for NTR, CTR, and additional constituents to determine the full water quality impacts of the discharge. The technical report requirements are intended to be more detailed, listing specific constituents, detection levels, and acceptable time frames and shall take precedence in resolving any conflicts.

12. 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 objectives. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs the Regional Board finds that the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above a water quality objective for ammonia, chloroform, coliform, copper, dichlorobromomethane, dibromochloromethane, and nitrates. Effluent limitations for these constituents are included in this Order.
13. Section 13263.6(a), California Water Code, requires that “the Regional Board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response

commission pursuant to Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 U.S.C. Sec. 11023) (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”.

The Regional Board has adopted a narrative objective for toxicity in the Basin Plan. The narrative toxicity objective and the Basin Plan *Policy for Application of Water Quality Objectives* provides that the objective may be translated using numerical limits published by other agencies and organizations. As detailed elsewhere in this Permit, available effluent quality data indicate that effluent concentrations of ammonia, chloroform, coliform, copper, dichlorobromomethane, dibromochloromethane, nitrate, and nitrite does have a reasonable potential to cause or contribute to an excursion above numeric or narrative water quality objectives. The EPCRKA Section 313 toxic chemical release data report indicates that ammonia, coliform, copper, and nitrate discharge into the Discharger’s collection system. Effluent limitations for ammonia, chloroform, coliform, copper, dichlorobromomethane, dibromochloromethane, nitrate, and nitrite are included in this permit pursuant to CWC Section 13263.6(a).

14. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.
15. **Chlorine-** The Basin Plan prohibits the discharge of toxic materials in toxic concentrations. The Discharger uses chlorine for disinfection of the effluent waste stream. Chlorine can cause toxicity to aquatic organisms. U.S. EPA Ambient Water Quality Criteria for the Protection of Fresh Water Aquatic Life recommends a maximum 1-hour average of 0.019 (0.02) mg/l and 4-day average of 0.011 (0.01) mg/l for chlorine. The use of chlorine as a disinfectant presents a reasonable potential that it could be discharged in toxic concentrations. Effluent Limitations for chlorine have been included in this Order to protect the receiving stream aquatic life beneficial uses. The effluent limitations have been established at the ambient water quality criteria for chlorine since Deer Creek is a low-flow stream and at times provides no dilution.
16. **Ammonia and Nitrates** - Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrogen gas, which is then released to the atmosphere. Wastewater treatment plants commonly use nitrification to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. The Basin Plan prohibits the discharge of toxic materials in toxic concentrations. Nitrate and nitrite are known to cause adverse health effects in humans. The Basin Plan prohibits the discharge of chemical constituents in concentrations that adversely affect beneficial uses. Domestic water supply is a beneficial use of Deer Creek. U.S. EPA has developed Drinking Water Standards for protection of human health for nitrite and nitrate and Ambient Water

Quality Criteria for ammonia. The discharge from the DCWWTP has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for ammonia, nitrite, and nitrate. Effluent limitations for ammonia, nitrite, and nitrate are included in this Order to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the beneficial uses of the receiving stream and to prevent aquatic toxicity.

Under current operational conditions, due to the variable inflow conditions of wastewater into the treatment plant, nitrification on a consistent basis has been achievable. In addition to nitrification, to achieve ammonia limits, de-nitrification is necessary to meet nitrate and nitrite limits. Upgrades to the facility will be necessary to achieve these limits.

17. **Coliform** - The beneficial uses of Deer Creek and the Cosumnes River include contact recreation uses and irrigation. To protect these beneficial uses, the Regional Board finds that the wastewater must be disinfected and adequately treated to prevent disease. The principal infectious agents (pathogens) that may be present in raw sewage may be classified into three broad groups: bacteria, parasites, and viruses. Tertiary treatment, consisting of chemical coagulation, sedimentation, and filtration, has been found to remove approximately 99.5% of viruses. Filtration is an effective means of reducing viruses and parasites from the waste stream. The wastewater must be treated to tertiary standards (filtered) to protect contact recreational and food crop irrigation uses. The method of treatment is not prescribed by Order No. R5-2002-0210; however, wastewater must be treated to a level equivalent to that specified in Title 22 and in other recommendations by the DHS.

The DHS is consulted by the Regional Board and makes recommendations for protection of the public's health when contacting wastewater effluent. Generally, DHS recommends that it is necessary to treat wastewater to a tertiary level or provide a 20-to-1 dilution for secondary treated wastewater, in order to protect the public health for contact recreational activities or the irrigation of food crops. The Discharger has been unable to quantify significant dilution within Deer Creek. The Discharger has, however, requested this Order contain secondary treatment effluent limitations to provide relief under a significant storm event when a 20-to-1 dilution is available. The Discharger will be required to establish an in-stream flow measuring system to accurately determine periods when 20-to-1 dilution exists. During these high flow periods, assimilative capacity has not been quantified for individual pollutants and end-of-pipe limits have been established. The BOD and TSS limits for secondary treatment are 30 mg/l as a monthly average and the total coliform limit is 23 MPN as a 7-day median. When there is less than 20-to-1 dilution full tertiary treatment is required. The tertiary limits for both BOD and TSS are 10 mg/l, and the effluent limit for total coliform organisms is 2.2 MPN/100 ml as a 7-day median. The effluent limits are based on the critical low flow, or zero dilution, and have also resulted in "end-of-pipe" limits.

The DHS has developed reclamation criteria, California Code of Regulations, Title 22, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, schoolyards, and other areas of similar public access, wastewater be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 ml as a 7-day median. Title 22 is not directly applicable to surface waters; however, the Regional Board finds that it is

appropriate to apply the DHS reclamation criteria because Deer Creek and the Cosumnes River are used for irrigation of agricultural land and for contact recreation purposes. The stringent disinfection criteria of Title 22 are appropriate since the undiluted effluent may be used for the irrigation of food crops. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens. The method of treatment is not prescribed by this Order; however, wastewater must be treated to a level equivalent to that recommended by DHS.

In addition to coliform testing, a turbidity effluent limitation has been included as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. The tertiary treatment process, or equivalent, is also capable of reliably meeting a reduced turbidity limitation of 2 NTU as a daily average, 5 NTU at least 95 percent of the time within a day, and 10 NTU at all times. Failure of the filtration system, such that virus removal is impaired, would normally result in increased particles in the effluent and higher effluent turbidity. Turbidity monitoring has a major advantage over coliform monitoring for evaluating filter performance, allowing immediate detection of filter failure and rapid corrective action. Coliform testing, by comparison, is not conducted continuously and requires several hours to days to identify high coliform concentrations.

18. This Order requires a tertiary level of treatment or 20-to-1 dilution in order to meet the requirements of the beneficial uses of Deer Creek. Sampling at the facility has shown that it can meet the 7-day 2.2 MPN/100 ml coliform standard and the 2 NTU monthly averages for turbidity the majority of the time. There is not a correlation between receiving water dilution capacity and violation of the 7-day 2.2 MPN/100 ml coliform standard. The DCWWTP tertiary treatment system must be upgraded to achieve compliance with tertiary limits up to peak wet weather flow to insure compliance with the coliform limit. With the exception of the tertiary treatment portion of the facility, the DCWWTP has been upgraded to handle peak wet weather flows. Additional tertiary filtration capacity is necessary to insure full compliance with the coliform standard.

The Discharger is currently in the process of design to upgrade the tertiary system. A time schedule is included in this Order to achieve compliance with the 7-day 2.2 MPN/100 ml coliform standard. The Discharger has not defined the actual capacity of the existing tertiary filtration system. Based on the discharger self monitoring reports and other available information, the tertiary filtration system has consistently achieved compliance with the 7-day median 2.2 MPN/100 ml coliform standard when flows to the plant are less than or equal to 5.0 MGD. Until the upgrades are completed, an interim limit for coliform is included in this Order, as follows: when the average daily flow exceeds 5.0 MGD the daily coliform standard will be 23 MPN/100 ml; and, when the daily average flow subsides to less than 5.0 MGD, the 7-day 2.2 MPN/100 ml coliform standard applies. When calculating the 7-day median, days that exceed 5.0 MGD are excluded from the calculation.

19. This Order contains Effluent Limitations and a tertiary level of treatment, or equivalent, necessary to protect the beneficial uses of the receiving water. In accordance with California Water Code, Section 13241, the Regional Board has considered the following:

As stated in the above Findings, the past, present and probable future beneficial uses of the receiving stream include municipal and domestic supply, agricultural irrigation, agricultural stock watering, body contact water recreation, canoeing and rafting, non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, cold spawning habitat, and wildlife habitat.

The environmental characteristics of the hydrographic unit including the quality of water available will be improved by the requirement to provide tertiary treatment for this wastewater discharge. Tertiary treatment will allow for the reuse of the undiluted wastewater for food crop irrigation and contact recreation activities which would otherwise be unsafe according to recommendations from the DHS.

Fishable and swimmable water quality conditions can be reasonably achieved through the coordinated control of all factors which affect water quality in the area.

The economic impact of requiring an increased level of treatment has been considered. The current monthly domestic sewer user fee is \$42.94, approximately double the California average monthly domestic sewer user fee of \$20.46. The Discharger has already expanded the capacity of the treatment facility to 3.6 MGD, except for the tertiary treatment system. In 2001 the District estimated the cost to expand the tertiary treatment capacity to be \$4.9 million. The loss of beneficial uses within downstream waters, without the tertiary treatment requirement, include prohibiting the irrigation of food crops and prohibiting public access for contact recreational purposes, would have a detrimental economic impact. In addition to pathogen removal to protect irrigation and recreation, tertiary treatment may also aid in meeting discharge limitations for other pollutants, such as heavy metals, reducing the need for advanced treatment.

The requirement to provide tertiary treatment for this discharge will not adversely impact the need for housing in the area. The potential to develop housing in the area will be facilitated by improved water quality, which protects the contact recreation and irrigation uses of the receiving water. DHS recommends that, in order to protect the public health, undiluted wastewater effluent must be treated to a tertiary level, for contact recreational and food crop irrigation uses. Without tertiary treatment, the downstream waters could not be safely utilized for contact recreation or the irrigation of food crops.

It is the Regional Board's policy, (Basin Plan, page IV-15.00, Policy 2) to encourage the reuse of wastewater. The Regional Board requires Dischargers to evaluate how reuse or land disposal of wastewater can be optimized. The need to develop and use recycled water is facilitated by providing a tertiary level of wastewater treatment, which will allow for a greater variety of uses in accordance with California Code of Regulations, Title 22.

20. In accordance with a previous permit, Order No, 97-211, the Discharger performed a study entitled "Phase II Effluent and Receiving Water Quality Assessment for the El Dorado Irrigation District's Deer Creek Wastewater Treatment Plant, dated 12 February 1999. The purpose of this report was to accurately identify contaminant levels in the treated effluent

discharged from the DCWWTP into Deer Creek, and to assess the potential for effluent discharges to cause a receiving water exceedance of the water quality standards, including chronic toxicity. The study provided a significant amount of data to determine compliance with the CTR and other applicable water quality objectives. From the study the following constituents were determined to have a reasonable potential to exceed water quality objectives.

- a. **Total Trihalomethanes and Chloroform** - Municipal and domestic supply is a beneficial use of the receiving stream. The narrative toxicity objective and this beneficial use designation comprise a water quality standard applicable to pollutants in the receiving stream. The Basin Plan contains the *Policy for Application of Water Quality Objectives*, which provides that narrative objectives may be translated using numerical limits published by other agencies and organizations. The Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA) has published 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 Cal/EPA. The OEHHA cancer potency value for oral exposure to chloroform is 0.031 milligrams per kilogram body weight per day (mg/kg-day). By applying standard toxicologic assumptions used by OEHHA and USEPA in evaluating health risks via drinking water exposure of 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. This risk level is consistent with that used by the DHS to set *de minimus* risks from involuntary exposure to carcinogens in drinking water in developing MCLs and Action Levels and by OEHHA to set negligible cancer risks in developing 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 NTR and the CTR to priority toxic pollutants in California surface waters. A recent decision by the State Water Resources Control Board, Order No. WQ2002-0015, found that application of a chloroform limitation for a discharge to an ephemeral stream based on a cancer risk analysis was not appropriate since the U.S. EPA is evaluating the science used to develop the CTR and has reserved application of a water quality standard. This Order establishes an Effluent Limitation at the maximum contaminate level (MCL) for total trihalomethanes, the sum of bromoform, bromodichloromethane, chloroform and dibromochloromethane, based on protection of the municipal beneficial use of 80 µg/l. Based on information included in analytical laboratory results submitted by the Discharger, the discharge was found to have an average concentration of 48 µg/l, with a maximum concentration of 76 µg/l of chloroform. The discharge has a reasonable potential to cause or contribute to an in-stream excursion above the water quality objective for municipal uses by causing exceedance of the primary MCL for trihalomethanes. Therefore, an Effluent Limitation for total trihalomethanes is included in this Order and is based on the Basin Plan objective for municipal use. If U.S. EPA or the State Board develop a water quality objective for chloroform and/or total trihalomethanes, this Order may be reopened and a new Effluent Limitation established.
- b. **Chlorodibromomethane** - Based on information included in analytical laboratory results submitted by the Discharger, the discharge had an average concentration of 1.07 µg/l and a

maximum concentration of 1.90 µg/l, and has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for chlorodibromomethane. The CTR establishes numeric water quality standards for chlorodibromomethane. The criterion for waters from which both water and organisms are consumed is 0.41 ug/l. An Effluent Limitation for chlorodibromomethane is included in this Order.

- c. **Dichlorobromomethane** - Based on information included in analytical laboratory results submitted by the Discharger, the discharge was found to have a average concentration of 9.40 µg/l and a maximum concentration of 12.0 µg/l, and has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for dichlorobromomethane. The CTR establishes numeric water quality standards for dichlorobromomethane. The criterion for waters from which both water and organisms are consumed is 0.56 ug/l. An Effluent Limitation for dichlorobromomethane is included in this Order.
- d. **Copper**- Based on analytical results of effluent samples collected by the Discharger, the discharge has been measured up to 30.7 µg/l, with an average concentration of 19.4 µg/l, and has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for copper; therefore, effluent limitations for copper are included in the Order. At the worst-case hardness of 70 mg/l, the criterion continuous concentration and criterion maximum concentration limitations for copper are 6.6 µg/l and 9.6 µg/l, respectively. The CTR standards for metals are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for copper in freshwater are 0.960 for both the acute and the chronic criteria. The effluent limitations for copper are presented in total recoverable concentrations, and are based on the CTR.
- e. **Diethyl phthalate and Dimethyl phthalate**- Ten samples were taken monthly and analyzed for Diethyl phthalate and Dimethyl phthalate, all of the samples were non-detect except for the first sample taken. Diethyl phthalate and Dimethyl phthalate were present in the first round of samples at concentrations of 78 µg/l and 17 µg/l, respectively. Diethyl phthalate and Dimethyl phthalate are used in the manufacturing of plastics and polyvinyl chloride (PVC) pipe and tubing. The presence in the first round of sampling may have been due to the use of new sampling equipment that was not properly sanitized before it's first use. The CTR standards for Diethyl phthalate and Dimethyl phthalate are 23 mg/l and 313 mg/l, respectively. There is no reasonable potential to exceed the CTR standard.

***GENERAL***

21. Effluent limitations, and toxic and pretreatment effluent standards established pursuant to Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act (CWA) and amendments thereto are applicable to the discharge.
22. The discharge is presently governed by Waste Discharge Requirements Order No. 99-130, adopted by the Regional Board on 17 September 1999.
23. 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 preparation of an environmental impact report or negative declaration in accordance with Section 13389 of the California Water Code.
24. The El Dorado Irrigation District has certified a final environmental impact report (EIR) in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et seq.), and the State CEQA Guidelines. The Regional Board has reviewed the EIR and concurs that with adoption of these waste discharge requirements there are no significant impacts on water quality.
25. The Regional Board has considered the information in the attached Information Sheet in developing the Findings of this Order. The attached Information Sheet is part of this Order.
26. 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.
27. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.
28. 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 EPA has no objections.

**IT IS HEREBY ORDERED** that Order No. 99-130 is rescinded and El Dorado Irrigation District, 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 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.

**B. Effluent Limitations:**

1. Wastewater shall be oxidized, coagulated and filtered, or equivalent treatment provided, and the effluent shall not exceed the following limits when flow Deer Creek provides less dilution than 20:1 (stream flow:effluent):

<u>Constituents</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>7-day Median<sup>6</sup></u>	<u>Daily Maximum</u>	<u>1-hour Average</u>
Ammonia <sup>5</sup>	mg/l	Table A	---	---	Table B	---
	lbs/day <sup>3</sup>	calculated	---	---	calculated	---
BOD <sup>1</sup>	mg/l	10 <sup>2</sup>	15 <sup>2</sup>	---	30 <sup>2</sup>	---
	lbs/day <sup>3</sup>	208	313	---	626	---
Chlorine Residual	mg/l	---	0.01	---	---	0.02
	lbs/day <sup>3</sup>	---	0.21	---	---	0.42
Chlorodibromomethane <sup>7</sup>	µg/l	0.41	---	---	---	---
	lbs/day <sup>3</sup>	0.009	---	---	---	---
Copper <sup>5</sup>	µg/l	Table C	---	---	Table D	---
	lbs/day <sup>3</sup>	calculated	---	---	calculated	---
Dichlorobromomethane	µg/l	0.56	---	---	---	---
	lbs/day <sup>3</sup>	0.012	---	---	---	---
Nitrite (as N)	mg/l	1	---	---	---	---
	lbs/day <sup>3</sup>	21	---	---	---	---
Nitrate + Nitrite (as N)	mg/l	10	---	---	---	---
	lbs/day <sup>3</sup>	208	---	---	---	---
Settleable Solids	ml/l	0.1	---	---	0.2	---
Total Coliform Organisms	MPN/100 ml	---	---	2.2	23 <sup>6</sup>	---
Total Suspended Solids	mg/l	10 <sup>2</sup>	15 <sup>2</sup>	---	30 <sup>2</sup>	---
	lbs/day <sup>3</sup>	208	313	---	626	---
Total Trihalomethanes <sup>7</sup>	µg/l	80 <sup>7</sup>	---	---	---	---
	lbs/day <sup>3</sup>	1.66	---	---	---	---
Turbidity <sup>4</sup>	NTU	2 <sup>4</sup>	---	---	5 <sup>4</sup>	---

<sup>1</sup> 5-day, 20°C biochemical oxygen demand (BOD)

<sup>2</sup> To be ascertained by a 24-hour flow proportional composite sample.

<sup>3</sup> Based upon a design treatment capacity of 2.5 mgd ( $x \text{ mg/l} \times 8.345 \times 2.5 \text{ mgd} = y \text{ lbs/day}$ )

<sup>4</sup> The daily average turbidity shall not exceed 2 NTU. Turbidity shall not exceed 5 NTU more than 5 percent of the time within a 24-hour period. At no time shall the turbidity exceed 10 NTU.

Footnotes continued on next page.

- <sup>5</sup> The mass limit (lb/day) for ammonia and copper shall be equal to the concentration limit (from Attachments) multiplied by the design flow of 2.5 mgd and the unit conversion factor of 8.345 (see footnote 3 for equation).
- <sup>6</sup> 7-day median is based on the previous seven daily sample results. The total coliform organisms concentration shall not exceed 23 MPN/100 ml more than once in any 30-day period. No sample shall exceed a concentration of 240 MPN/100 ml.
- <sup>7</sup> The monthly average for total trihalomethanes shall not exceed 80µg/l. Total trihalomethanes is the sum of bromoform, bromodichloromethane, chloroform and dibromochloromethane.

2. When flow in Deer Creek provides a minimum dilution of 20:1 (stream flow:effluent) full secondary treatment shall be provided and the coagulation system and filters shall be used to the maximum extent possible and effluent shall not exceed the following limits:

<u>Constituents</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>7-day Median<sup>5</sup></u>	<u>Daily Maximum</u>	<u>1-hour Average</u>
Ammonia <sup>4</sup>	mg/l	Table A	---	---	Table B	---
	lbs/day <sup>3</sup>	calculated	---	---	calculated	---
BOD <sup>1</sup>	mg/l	30 <sup>2</sup>	45 <sup>2</sup>	---	60 <sup>2</sup>	---
	lbs/day <sup>3</sup>	625	938	---	1251	---
Chlorine Residual	mg/l	---	0.01	---	---	0.02
	lbs/day <sup>3</sup>	---	0.21	---	---	0.42
Chlorodibromomethane	µg/l	0.41	---	---	---	---
	lbs/day <sup>3</sup>	0.009	---	---	---	---
Copper <sup>4</sup>	µg/l	Table C	---	---	Table C	---
	lbs/day <sup>3</sup>	calculated	---	---	calculated	---
Dichlorobromomethane	µg/l	0.56	---	---	---	---
	lbs/day <sup>3</sup>	0.012	---	---	---	---
Nitrite (as N)	mg/l	1	---	---	---	---
	lbs/day <sup>3</sup>	21	---	---	---	---
Nitrate + Nitrite (as N)	mg/l	10	---	---	---	---
	lbs/day <sup>3</sup>	208	---	---	---	---
Settleable Solids	ml/l	0.1	---	---	0.2	---
Total Coliform Organisms	MPN/100 ml	---	---	23	230	---
Total Suspended Solids	mg/l	30 <sup>2</sup>	45 <sup>2</sup>	---	60 <sup>2</sup>	---
	lbs/day <sup>3</sup>	250	376	---	750	---
Total Trihalomethanes <sup>6</sup>	µg/l	80 <sup>6</sup>	---	---	---	---
	lbs/day <sup>3</sup>	1.66	---	---	---	---

- <sup>1</sup> 5-day, 20°C biochemical oxygen demand (BOD)
- <sup>2</sup> To be ascertained by a 24-hour flow proportional composite sample.
- <sup>3</sup> Based upon a design treatment capacity of 2.5 mgd ( $x \text{ mg/l} \times 8.345 \times 2.5 \text{ mgd} = y \text{ lbs/day}$ )
- <sup>4</sup> The mass limit (lb/day) for ammonia and copper shall be equal to the concentration limit (from Attachments) multiplied by the design flow of 2.5 mgd and the unit conversion factor of 8.345 (see footnote 3 for equation).
- <sup>5</sup> 7-day median is based on the previous seven daily sample results.
- <sup>6</sup> The monthly average for total trihalomethanes shall not exceed 80µg/l. Total trihalomethanes is the sum of bromoform, bromodichloromethane, chloroform and dibromochloromethane.

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 average dry weather discharge flow shall not exceed 2.5 million gallons per day. With the exception of the tertiary treatment system, the facility has been upgraded to 3.6 MGD (average daily flow). Upon completion of the upgrades to the tertiary treatment system, to be capable of treating both an average dry weather flow of 3.6 MGD, and peak wet weather flows, the capacity of the facility will be rated at 3.6 MGD. At that time mass limits will be calculated using 3.6 MGD. Upon completion of the improvements, the expansion of the facility shall certified, by a Registered Civil Engineer with experience in the design and operation of wastewater treatment plants, that the facility expansion has been completed and the facility was designed and constructed to achieve the limits established by this Order.
6. Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay - - - - - 70%

Median for any three or more consecutive bioassays - - - - 90%

**C. 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, CCR, 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. By 1 May 2003, the Discharger shall submit a sludge disposal plan describing the annual volume of sludge generated by the plant and specifying the disposal practices.

**D. 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. 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 95<sup>th</sup> 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 turbidity to increase as follows:
  - a. (The 30-day average turbidity to increase) 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 ambient pH to change by more than 0.5 units.
8. The ambient temperature to increase more than 5°F.
9. Deposition of material that causes nuisance or adversely affects beneficial uses.
10. 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.

11. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.
12. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.
13. Violation of any applicable water quality standard for receiving waters adopted by the Regional Board or the State Water Resources Control Board pursuant to the CWA and regulations adopted thereunder.
14. Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.
15. 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.

**E. Groundwater Limitations:**

Release of waste constituents from any storage, treatment, or disposal component associated with the WWTP shall not degrade groundwater.

**F. Provisions:**

1. 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.
2. There are indications that the discharge may contain constituents that have a reasonable potential to cause or contribute to an exceedance of water quality objectives. The constituents are specifically listed in a technical report requirement issued by the Executive Officer on 10 September 2001 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:

<u>Task</u>	<u>Compliance Date</u>
Submit Study Report	<b>1 March 2003</b>
Submit Study Report for dioxins	<b>1 March 2004</b>

This Order is intended to be consistent with the requirements of the 10 September 2001 technical report. The technical report requirements shall take precedence in resolving any conflicts. 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.

3. New or revised effluent limitations for coliform, copper, dichlorobromomethane, and dibromochloromethane, have been included in this Order. To comply with these limits, it will be necessary for the Discharger to modify the existing treatment facility.

Additional tertiary filtration capacity is necessary during peak wet weather events to achieve total coliform limits when 20-to-1 dilution is not available in Deer Creek. A time schedule is included in this Order for the Discharger to expand the tertiary capacity of the facility to comply with Effluent Limitation B.1. for total coliform. The facility has demonstrated that it can reliably comply with this limit up to 5.0 MGD. The Discharger can not achieve immediate compliance with the total coliform limit during peak wet weather events, therefore an interim limit is provided until the construction of the additional facilities are completed. The interim limit is as follows:

When the average daily flow exceeds 5.0 MGD the daily coliform standard will be 23 MPN/100 ml; and, when the daily average flow subsides to less than 5.0 MGD, the 7-day 2.2 MPN/100 ml coliform standard applies. When calculating the 7-day median, days that exceed 5.0 MGD are excluded from the calculation.

To allow for these modifications a time schedule to comply with these new limits and construction of additional tertiary capacity is included. The Discharger shall comply with the following time schedule to complete the necessary improvements and fully comply with the new discharge limits.

<u>Task</u>	<u>Compliance Date</u>
Submit Workplan and Time Schedule	<b>6 February 2003</b>
Identify and Scope of Projects	<b>31 December 2003</b>
Complete Facility Modifications	<b>30 September 2006</b>
Full Compliance	<b>30 December 2006</b>

The Discharger shall submit to the 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 Board by letter when it returns to compliance with the time schedule.
4. 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 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.
  5. The Discharger shall report to the Regional Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986.
  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 Provisions."
  7. The Discharger shall comply with Monitoring and Reporting Program No. R5-2002-2010, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.
  8. When requested by USEPA, 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.
  9. This Order expires on **31 December 2007** 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.
  10. The Discharger shall enforce the Pretreatment Standards promulgated under Sections 307(b), 307(c) and 307(d) of the Clean Water Act. The Discharger shall perform the pretreatment functions required by 40 CFR Part 403 including but not limited to:
    - a. Adopting the legal authority required by 40 CFR 403.8(f)(1);
    - b. Enforcing the Pretreatment Standards of 40 CFR 403.5 and 403.6;

- c. Implementing procedures to ensure compliance as required by 40 CFR 403.8(f)(2); and
  - d. Providing funding and personnel for implementation and enforcement of the pretreatment program as required by 40 CFR 403.8(f)(3).
11. The Discharger shall implement its approved pretreatment program and the program shall be an enforceable condition of this permit. If the Discharger fails to perform the pretreatment functions, the Regional Water Quality Control Board (RWQCB), the State Water Resources Control Board (SWRCB) or the U.S. Environmental Protection Agency (U.S. EPA) may take enforcement actions against the Discharger as authorized by the Clean Water Act.
12. 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, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
  - g. Pollutants which result in the presence of toxic gases, vapors, or fumes within the treatment works in a quantity that may cause acute worker health and safety problems; and
  - h. Any trucked or hauled pollutants, except at points predesignated by the Discharger.
13. 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.
14. 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).
  15. Minimum detection levels for monitoring required by this Order shall, unless impracticable, be adequate to demonstrate compliance with permit limitations.
  16. In the event the Discharger does not comply with an effluent limitation or receiving water limitation of this Order, the Discharger shall resample for the specific constituent for which the limitation was exceeded. The Discharger shall continue sampling at an increased frequency sufficient to determine the duration and severity of the violation. The frequency for constituents sampled using 24-hour composites on a 7-day a week schedule are exempted. This information shall be compiled in a written notification, which shall state nature, time, duration, and cause of noncompliance, and shall describe the measures being taken to remedy the noncompliance and, prevent recurrence. All permit violations must be reported to the Board by telephone (916) 255-3000 within 24 hours of having knowledge of such noncompliance.
  17. 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 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 **6 December 2002**.

WASTE DISCHARGE REQUIREMENTS, ORDER NO. R5-2002-0210  
EL DORADO IRRIGATION DISTRICT  
DEER CREEK WASTEWATER TREATMENT PLANT  
EL DORADO COUNTY

-23-

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THOMAS R. PINKOS, Executive Officer

*rke:11/12/02*

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM ORDER NO. R5-2002-0210

NPDES NO. CA0078662

FOR  
EL DORADO IRRIGATION DISTRICT  
DEER CREEK WASTEWATER TREATMENT PLANT  
EL DORADO COUNTY

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 Regional Board's staff, and a description of the stations shall be attached to this Order.

***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:

<u>Constituent</u>	<u>Sampling Units</u>	<u>Type of Sample</u>	<u>Frequency</u>
20°C BOD <sub>5</sub>	mg/l, lbs/day	24 hr. Composite <sup>1</sup>	Twice Weekly
Total Suspended Solids	mg/l, lbs/day	24 hr. Composite <sup>1</sup>	Twice Weekly
Flow	mgd	Meter	Continuous

<sup>1</sup> 24-hour samples shall be flow proportional.

***EFFLUENT MONITORING***

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

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Chlorine Residual <sup>5,6</sup> (after dechlorination)	mg/l	Meter/Grab	Continuous/Weekly
<i>Sodium Bisulfite <sup>5,6</sup> mg/l</i>	<i>Meter</i>		<i>Continuous/Weekly</i>
<i>Flow (effluent and reclamation)</i>	<i>mgd</i>		<i>Meter      Continuous</i>
<i>Turbidity      NTU</i>	<i>Meter<sup>7</sup></i>		<i>Continuous</i>
pH	Number	Grab	Daily
Settleable Solids	ml/l	Grab	Daily
<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>

Parameter	Unit	Frequency	Sampling Method
Temperature	°F	Daily	Grab
20°C BOD <sub>5</sub>	mg/l, lbs/day	Five days/week	24 hr. Composite <sup>1</sup>
Suspended Solids	mg/l, lbs/day	Five days/week	24 hr. Composite <sup>1</sup>
Total Coliform Organisms	MPN/100 ml	Grab Five days/week	
Ammonia <sup>3</sup> mg/l		Weekly	Grab
Copper µg/l		Weekly	Grab
Electrical Conductivity	µmhos/cm	Grab Weekly	
Hardness (as CaCO <sub>3</sub> )	mg/l	Weekly	Grab
Nitrate (N) mg N/l		Weekly	Grab
Chloroform	µg/l	Bi-Monthly	Grab
Dichlorobromomethane	µg/l	Grab Bi-Monthly	
Dibromochloromethane	µg/l	Grab Bi-Monthly	
Total Trihalomethanes <sup>8</sup>	µg/l	Bi-Monthly	Grab
Acute Toxicity <sup>2</sup>	% Survival	Quarterly	Grab
EPA Priority Pollutants <sup>4</sup>	µg/l	Bi-Annually	As appropriate

<sup>1</sup> Composite samples shall be flow proportional.

<sup>2</sup> The bioassay shall be 96-hour acute toxicity tests conducted in accordance with EPA/600/4-90/027F, or later amendment approved by Board staff. The bioassay shall sample undiluted effluent after the dechlorination process and prior to discharge to Deer Creek. Larval stage rainbow trout (*Oncorhynchus mykiss*) shall be used as the test species. The bioassay shall be started on different days to assure representative sampling of the wastestream. Temperature and pH shall be recorded each day of the test.

<sup>3</sup> Concurrent with bioassay, pH, and temperature monitoring.

<sup>4</sup> EPA priority pollutants shall include NTR and CTR constituents and aluminum.

<sup>5</sup> Use of continuous monitoring instrumentation for chlorine and sodium bisulfite residual in the effluent is an appropriate method of process control, however, the accuracy of the chlorine analyzers are not low enough to meet minimum detection levels. Residual sodium bisulfite in the effluent indicates that chlorine is not present in the effluent, which can validate a zero residual reading on the chlorine analyzer. Reporting of these two constituents, when sodium bisulfite is present and chlorine is zero, sufficiently insures compliance with the chlorine residual limit, as long as the instruments are maintained and calibrated in accordance with the manufactures recommendations. In addition to the continuous recorder, a weekly grab sample of the effluent shall be analyzed by a certified laboratory for chlorine and sodium bisulfite. Readings from the residual analyzers shall be taken at the time of sampling, and reported with the laboratory results to validate the accuracy of the process control instrumentation.

<sup>6</sup> Report magnitude and duration of all non-zero residual events. Non-zero events are defined as a reading of zero for chlorine residual and sodium bisulfite is below the minimum detection limit of the continuous residual monitoring device. If the continuous monitoring device is out of service, then one grab chlorine residual sample shall be collected per day.

<sup>7</sup> The turbidity meter shall be stationed immediately after the filters, prior to chlorination and dechlorination.

<sup>8</sup> Total trihalomethanes is the sum of bromoform, bromodichloromethane, chloroform and dibromochloromethane.

If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record data for all of the constituents listed above, after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge. In no event shall the Discharger be required to monitor and record data more often than twice the frequencies listed in the schedule.

***RECEIVING WATER MONITORING***

All receiving water samples shall be grab samples. Receiving water monitoring shall include at least the following:

<u>Station</u>	<u>Description</u>
R-1	Gaging station upstream of the point of discharge at the first bridge crossing Deer Creek as part of the access road to the WWTP.

R-2 100 feet downstream of the confluence of the secondary channel and the main stem of Deer Creek.

<u>Constituents</u>	<u>Units</u>	<u>Station</u>	<u>Sampling Frequency</u>
Flow	mgd	Meter (R-1)	Continuous
Dissolved Oxygen	mg/l	R-1, R-2	Weekly
Electrical Conductivity	µmhos/cm	R-1, R-2	Weekly
Hardness (as CaCO <sub>3</sub> )	mg/l	R-1, R-2	Weekly
pH	Number	R-1, R-2	Weekly
Temperature	°F (°C)	R-1, R-2	Weekly
Turbidity	NTU	R-1, R-2	Weekly
Radionuclides	pCi/l	R-1, R-2	Annually

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Stations R-1 and R-2. Notes on receiving water conditions shall be summarized in the monitoring report. Attention shall be given to the presence or absence of:

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

***THREE SPECIES CHRONIC TOXICITY MONITORING***

Chronic toxicity monitoring shall be conducted to determine whether the effluent is contributing toxicity to Deer Creek. The testing shall be conducted as specified in EPA 600/4-91-002. Chronic toxicity samples shall be collected at the discharge of the wastewater treatment plant prior to its entering Deer Creek. Composite (24-hour) samples shall be representative of the volume and quality of the discharge. 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*, *Ceriodaphnia dubia*, and *Selenastrum capricornutum*  
 Frequency: Four times per year  
 Dilution Series:

	<u>Dilutions (%)</u>					<u>Controls</u>	
	<u>100</u>	<u>75</u>	<u>50</u>	<u>25</u>	<u>12.5</u>	<u>Creek Water</u>	<u>Lab Water</u>
% WWTP Effluent	100	75	50	25	12.5	0	0
% Dilution Water <sup>1</sup>	0	25	50	75	87.5	100	0
% Lab Water <sup>2</sup>	0	0	0	0	0	0	100

<sup>1</sup> Dilution water shall be receiving water from Deer Creek taken upstream from the discharge point. The dilution series may be altered upon approval of Board staff.

***SLUDGE MONITORING***

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

- |          |         |
|----------|---------|
| Cadmium  | Lead    |
| Chromium | Nickel  |
| Copper   | Zinc    |
|          | Mercury |

Sampling records shall be retained for a minimum of five years. A log shall be kept of sludge 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.

### ***REPORTING***

Monitoring results shall be submitted to the Regional Board by the **first day** of the second month following sample collection. Quarterly and annual monitoring results shall be submitted by the **first day of the second month following each calendar quarter, semi-annual period, 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, monthly and weekly averages, and medians, and removal efficiencies (%) for BOD and Suspended Solids, 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 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

6December 2002

(Date)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2002- 0211

REQUIRING THE  
EL DORADO IRRIGATION DISTRICT  
DEER CREEK WASTEWATER TREATMENT PLANT  
TO CEASE AND DESIST  
FROM DISCHARGING CONTRARY TO REQUIREMENTS

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

1. On 6 December 2002 the Regional Board adopted Waste Discharge Requirements (WDR) Order No. R5-2002- 0210, for the El Dorado Irrigation District, (Discharger) Deer Creek Wastewater Treatment Plant. WDR Order No. R5-2002-0210 regulates the discharge of approximately 2.5 million gallons per day (mgd) of treated domestic wastewater to Deer Creek, which is tributary to the Cosumnes River.
2. WDR Order No. R5-2002-0210 contains Effluent Limitations for total trihalomethanes, nitrite, and nitrate plus nitrite as contained in B.1 and B.2., which read in part as follows:

Constituents	Units	Monthly Average	Weekly Average	7-day Median	Daily Maximum	1-hour Average
Nitrite (as N)	mg/l	1	---	---	---	---
	lbs/day <sup>3</sup>	21	---	---	---	---
Nitrate + Nitrite (as N)	mg/l	10	---	---	---	---
	lbs/day <sup>3</sup>	208	---	---	---	---
Total Trihalomethanes <sup>7</sup>	µg/l	80 <sup>7</sup>	---	---	---	---
	lbs/day <sup>3</sup>	1.66	---	---	---	---

<sup>3</sup> Based upon a design treatment capacity of 2.5 mgd ( $x \text{ mg/l} \times 8.345 \times 1.12 \text{ mgd} = y \text{ lbs/day}$ ).<sup>3</sup>

<sup>7</sup> The monthly average for total trihalomethanes shall not exceed 80µg/l. Total trihalomethanes is the sum of bromoform, bromodichloromethane, chloroform and dibromochloromethane.

3. The use of chlorine as a disinfectant may result in the formation of total trihalomethanes that exceed the Effluent Limitation. Past sampling of the discharge shows total trihalomethanes above 80 µg/l. The discharge threatens to violate the Waste Discharge Requirement Effluent Limitation for total trihalomethanes.
4. The current facility design and operation result in incomplete denitrification of wastewater and increased effluent nitrate and nitrite concentrations. Failure to denitrify the wastewater would result in concentrations of nitrate and nitrite that exceed Effluent Limitations.
5. Based on the above findings, this discharge represents a threatened discharge of waste in violation of WDR Order No. R5-2002- 0210, Effluent Limitations for nitrite, and nitrate plus nitrite.
6. In order to consistently comply with the nitrite and nitrate plus nitrite Effluent Limitations, denitrification of the wastewater is necessary.
7. In accordance with California Water Code (CWC) Section 13385(j)(3), the Regional Board finds that, based upon operational capabilities, the Discharger can no consistently comply with nitrite and nitrate plus nitrite effluent limitations. The nitrite and nitrate plus nitrite limitations are new requirements that become applicable to the permit after the effective date of adoption of the waste discharge requirements for which new or modified control measures are necessary in order to comply with the limitation, and the new or modified control measures cannot be designed, installed, and put into operation within 30 calendar days.

Since the time schedules for completion of actions necessary to achieve full compliance exceed one year, interim requirements and dates for their achievement are included in this Order. This time schedule does not exceed five

years. Treatment actions can be taken to correct the violations that would otherwise be subject to mandatory penalties under California Water Code section 13385(h) and (i), and the Discharger can take reasonable measures to achieve compliance within five (5) years from the date the waste discharge requirements were required to be reviewed pursuant to Section 13380.

Compliance with this Order exempts the Discharger from mandatory minimum penalties for violations of effluent nitrate limitations only, in accordance with California Water Code Section 13385(j)(3).

8. On 6 December 2002, in Sacramento, California, after due notice to the Discharger and all other affected persons, the Regional Board conducted a public hearing at which evidence was received to consider a Cease and Desist Order to establish a time schedule to achieve compliance with waste discharge requirements.
9. Issuance of this Order is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000, *et seq.*), in accordance with Section 15321 (a)(2), Title 14, California Code of Regulations.
10. Any person adversely affected by this action of the Regional Board may petition the State Water Resources Control Board (State Board) to review the action. The petition must be received by the State Board Office of the Chief Counsel, P.O. Box 100, Sacramento, CA, 95812-0100, within 30 days of the date on which the action was taken. Copies of the law and regulations applicable to filing petitions will be provided on request.

**IT IS HEREBY ORDERED THAT:**

1. Cease and Desist Order No. 5-00-003 is hereby rescinded and the El Dorado Irrigation District, Deer Creek Wastewater Treatment Plant, shall cease and desist from discharging and threatening to discharge contrary to Waste Discharge Requirements Order No. R5-2002-0210, Effluent Limitations for total trihalomethanes, nitrite and nitrate plus nitrite.
2. The El Dorado Irrigation District, Deer Creek Wastewater Treatment Plant, shall comply with the following time schedule to assure compliance with the total trihalomethanes, nitrite and nitrate plus nitrite Effluent Limitations B.1. and B.2. contained in Waste Discharge Requirements Order No. R5-2002-0210:

<u>Task</u>	<u>Compliance Date</u>
Submit Workplan and Time Schedule	<b>6 February 2003</b>
Identify Scope of Projects	<b>31 December 2003</b>
Complete Facility Modifications	<b>30 September 2006</b>
Full Compliance	<b>30 December 2006</b>

3. Until full compliance with Waste Discharge Requirements Order No. R5-2002-0210, and Effluent Limitations B.1 and B.2 is achieved for nitrite and nitrate plus nitrite, the Discharger shall operate the treatment plant in a denitrification mode to the maximum extent practicable.
4. The El Dorado Irrigation District shall comply with the Receiving Water Limitations for pH, turbidity and temperature contained in Waste Discharge Requirements Order No. R5-2002-0210 **by 1 December 2003.**
5. If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may apply to the Attorney General for judicial enforcement or issue a complaint for Administrative Civil Liability.

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 6 December 2002.

CEASE AND DESIST ORDER NO. R5-2002-0211  
EL DORADO IRRIGATION DISTRICT  
DEER CREEK WASTEWATER TREATMENT PLANT  
EL DORADO COUNTY

32

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THOMAS R. PINKOS, Executive Officer

*RKE:rke*      *11/12/02*

## INFORMATION SHEET

ORDER NO. R5-2002-0210  
EL DORADO IRRIGATION DISTRICT  
DEER CREEK WASTEWATER TREATMENT PLANT  
EL DORADO COUNTY  
NPDES NO. CA0078662

### SCOPE OF PERMIT

This renewed Order regulates the discharge of up to 2.5 million gallons per day (mgd), design average dry weather flow (ADWF), of effluent from the El Dorado Irrigation District (Discharger), Deer Creek Wastewater Treatment Plant (DCWWTP). This Order includes effluent, water supply, sludge, and surface water limitations, monitoring and reporting requirements, additional study requirements, and reopener provisions for effluent constituents.

### BACKGROUND INFORMATION

The Discharger owns and operates a wastewater collection, treatment, reclamation and disposal system, and provides sewerage service to the Cameron Park and Mother Lode Service Area. The treatment plant is in Section 16, T9N, R9E, MDB&M, as shown on Attachment A, a part of this Order. Treated municipal wastewater is discharged to Deer Creek, a water of the United States and a tributary to the Cosumnes River. Treated wastewater discharged for reclamation is regulated under separate waste discharge requirements and must meet the requirements of California Code of Regulations, Title 22.

The treatment system main components consists of an influent siphon, headworks, primary clarifier, three aeration basins, an emergency storage basin, three secondary clarifiers, eleven tertiary filters, two chlorine contact chambers, one primary sludge thickener, one waste activated sludge thickener, four aerobic digesters, two belt filter presses, two sludge lime addition stations, and a plant drain sump. Sludge is dewatered by the belt filter presses and disposed off-site on farmland or at the local landfill.

The DCWWTP has been significantly upgraded over the past five years. With the exception of the tertiary treatment system, improvements to the primary, secondary, and ancillary treatment processes have been constructed to accommodate an ADWF of 3.6 mgd. The environmental impact report for the expansion of the DCWWTP for 2.5 to 3.6 mgd states that the capacity of the existing tertiary filtration system is rated at 1.5 mgd. Additional filtration capacity is provided by using the tertiary filtration system that was designed and constructed for use as part of the reclamation treatment system, which can be utilized for discharge to Deer Creek when not being used to produce reclaimed water.

The Discharger has not accurately defined the capacity of the reclamation treatment system. There are occasions during peak wet weather flows when the filter capacity is exceeded. As an interim measure, until additional filter capacity is added, the Discharger modified the flow splitter to the tertiary filters so that flows that could not be handled by the filters are diverted from the secondary treatment system to a 1 million gallon seasonally used storage tank. When flows subside in the plant, the stored secondary treated wastewater is returned to the headworks, via the plant drain, for retreatment.

The Discharger is in the initial stages of the process to add additional tertiary treatment capacity to accommodate an ADWF of 3.6 MGD. In addition, due to the variability of the receiving water dilution capacity, there are times when 20-to-1-dilution capacity is not available during peak wet weather events. Without this amount of dilution the effluent coliform limit of 2.2 MPN/100 ml (7-day median) will be required. Design parameters for the expanded tertiary system will have to take into consideration the peak wet weather events, when 20-to-1 dilutions is not available, and the 2.2 MPN/100 ml (7-day median) is in effect.

A time schedule is included in the permit to allow the Discharger adequate time to construct the necessary facilities to fully expand to 3.6 MGD, and achieve compliance with the coliform limit. Upon completion of the upgrades to the tertiary treatment system, to be capable of treating both an average dry weather flow of 3.6 MGD, and peak wet weather flows, the capacity of the facility will be rated at 3.6 MGD. At that time mass limits will be calculated using 3.6 MGD. Upon completion of the improvements, the expansion of the facility shall be certified, by a Registered Civil Engineer with experience in the design and operation of wastewater treatment plants, that the facility expansion has been completed and the facility was designed and constructed to achieve the limits established in the permit.

RECEIVING WATER BENEFICIAL USES

The DCWWTP discharges treated effluent to Deer Creek, which is tributary to the Cosumnes River. 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 beneficial uses of any specifically identified water body generally apply to its tributary streams." The Basin Plan does not specifically identify beneficial uses for Deer Creek, but the Basin Plan does identify present and potential uses for the Cosumnes River, to which is tributary.

The Basin Plan identifies the following beneficial uses for the Cosumnes River: municipal and domestic supply; agricultural irrigation, agricultural stock watering, body contact water recreation, canoeing and rafting, non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, cold spawning habitat, and wildlife habitat. In addition, State Board Resolution No 88-63, incorporated into the Basin Plan pursuant to Regional Board Resolution 89-056, requires the Regional Board to assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in Table II-1.

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

In reviewing whether the existing and/or potential uses of the Cosumnes River apply to the Deer Creek, the Regional Board has considered the following facts:

a. *Domestic Supply and Agricultural Supply*

The State Water Resources Control Board (SWRCB) Resolution No. 88-63 "Sources of Drinking Water" provides that "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards..."

*The SWRCB has issued water rights to existing water users along Deer Creek and the Cosumnes River downstream of the discharge for domestic and irrigation uses. Since Deer Creek is an ephemeral stream the creek likely provides groundwater recharge*

*during periods of low flow. 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 Deer Creek.*

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

The Regional Board finds that the discharge flows through residential areas, there is ready public access to Deer Creek, exclusion of the public are unrealistic and contact recreational activities currently exist along Deer Creek and downstream waters and these uses are likely to increase as the population in the area grows. Prior to discharge into the Cosumnes River, Deer Creek flows through areas of general public access, meadows, residential areas and parks, to the Cosumnes River. The Cosumnes River also offers recreational opportunities.

c. *Groundwater Recharge*

In areas where groundwater elevations are below the stream bottom, water from the stream will percolate to groundwater. Since Deer Creek is at times 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 Deer Creek, there is hydraulic continuity between Deer Creek and the Cosumnes River. During periods of hydraulic continuity, Deer Creek adds to the water quantity and may impact the quality of water flowing down stream in the Cosumnes River.*

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

Deer Creek flows to the Cosumnes River. The California Department of Fish and Game (DFG) has verified that the fish species present in Deer Creek and downstream waters are consistent with both cold and warm water fisheries, that there is a potential for anadromous fish migration necessitating a cold water designation and that trout, a cold water species, have been found both upstream and downstream of the wastewater treatment plant. The Basin Plan (Table II-1) designates the Cosumnes River as being both a cold and warm freshwater habitat. Therefore, pursuant to the Basin Plan (Table II-1, Footnote (2)), the cold designation applies to Deer Creek. The cold-water habitat designation necessitates that the in-stream dissolved oxygen concentration be maintained at, or above, 7.0 mg/l.

Upon review of the flow conditions, habitat values, and beneficial uses of Deer Creek, and the facts described above, the Regional Board finds that the beneficial uses identified in the Basin Plan for the Cosumnes River are applicable to Deer Creek.

The Regional Board also finds that based on the available information and on the Discharger's application, that Deer Creek, absent the discharge, is an ephemeral stream. The ephemeral nature of Deer Creek 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 Deer Creek help support the aquatic life. Both conditions may exist within a short time span, where Deer Creek would be dry without the discharge and periods when sufficient background flows provide hydraulic continuity with the Cosumnes River. Dry conditions occur primarily in the summer months, but dry conditions may also occur throughout the year, particularly in low rainfall years. The lack of dilution results in more stringent effluent limitations to protect contact recreational uses, drinking water standards, agricultural water quality goals and aquatic life. Significant dilution may occur during and immediately following high rainfall events.

### **WATER RIGHTS**

On 22 June 1995, the State Water Resources Control Board (SWRCB) adopted Water Rights Order No. WR95-9. The Order established that the Discharger is required to maintain specified quantities of discharge to Deer Creek. Terms and conditions of the water rights decisions to allow reclamation of a portion of the discharge from the WWTP are as follows:

*“IT IS HEREBY ORDERED THAT treated waste water change petition WW-20 filed by El Dorado Irrigation District on September 14, 1992 pursuant to Water Code sections 1210 and 1211 is approved, subject to the following terms and conditions:*

- 1. The source of treated wastewater shall be from the Deer Creek Waste Water Treatment Plant located within Section 15, T9N, R9E, MDB&M: California Coordinate System: Zone 2, North 353,200, East 2,290,750.*
- 2. Irrigation shall be added as a purpose of use of the treated wastewater. This purpose of use is in addition to the existing purposes of use for habitat and fish and wildlife preservation within Deer Creek.*
- 3. The added place of use and point of discharge shall be within the El Dorado Hills Development, north of Highway 50 near Cameron Park, as shown on a map on file with the State Water Resources Control Board. This place of use and point of discharge are in addition to the existing point of discharge to Deer Creek and in addition to the existing place of use of treated wastewater in Deer Creek downstream from the wastewater treatment plant.*
- 4. EID shall install continuous recording devices at the outlet to Deer Creek and in the pipe used for delivery to the added place of use from the wastewater treatment plant. Such measuring devices shall be satisfactory to the SWRCB and capable of measuring the flows discharged to Deer Creek and to the added place of use. Said measuring devices shall be installed and operational no later than August 1, 1995, and shall be properly maintained thereafter. The measuring devices shall be monitored on a weekly basis. A record of the measurements and their sum shall be maintained by EID and made available for inspection by interested parties upon reasonable request. A copy of the records shall be submitted*

*annually to the Chief, Division of Water Rights. Construction, operation, and maintenance costs of the measuring devices are the responsibility of EID.*

- 5.a.. Whenever the Deer Creek Waste Water Treatment Plant produces less than a daily average of 2.5 million gallons per day, EID may discharge up to 1.5 million gallons per day of treated waste water through the added point of discharge to the added place of use within the El Dorado Hills Development as described in term 3, provided that EID shall discharge a minimum of 0.5 million gallons per day of treated waste water into Deer Creek as measured at the point of discharge to Deer Creek.*
- 5.b. Whenever the Deer Creek Waste Water Treatment Plant produces more than a daily average of 2.5 million gallons per day, EID shall discharge a minimum of 1.0 million gallons per day of treated waste water to Deer Creek, and may discharge to the added point of discharge and place of use within the El Dorado Hills Development described in term 3 any treated waste water in excess of the 1.0 million gallons per day released to Deer Creek.*
- 5.c. EID shall continue such releases so long as the California Regional Water Quality Control Board, Central Valley Region, permits discharge to the creek.*
- 6. The SWRCB reserves jurisdiction in the public interest to modify the terms and conditions of this order, including imposition of requirements-to alter project facilities or operations and to modify instream flow releases. SWRCB action will be taken only after notice to interested parties and opportunity for hearing."*

Water Rights Order No. WR95-9 is a condition of operation of the DCWWTP. The Monitoring and Reporting Program, requires the Discharger to report to the influent, effluent, and reclamation flows on a daily basis in order to validate compliance with the water rights order.

#### EFFLUENT LIMITATIONS

**Chlorine-** The Basin Plan prohibits the discharge of toxic materials in toxic concentrations. The Discharger uses chlorine for disinfection of the effluent waste stream. Chlorine can cause toxicity to aquatic organisms. U.S. EPA Ambient Water Quality Criteria for the Protection of Fresh Water Aquatic Life recommends a maximum 1-hour average of 0.019 (0.02) µg/l and 4-day average of 0.011 (0.01) µg/l chlorine. The use of chlorine as a disinfectant presents a reasonable potential that it could be discharged in toxic concentrations. Effluent Limitations for chlorine have been included in this Order to protect the receiving stream aquatic life beneficial uses. The effluent limitations have been established at the ambient water quality criteria for chlorine since Deer Creek is a low-flow stream and at times provides no dilution.

INFORMATION SHEET  
WASTE DISCHARGE REQUIREMENTS, ORDER NO. R5-2002-0210  
EL DORADO IRRIGATION DISTRICT  
DEER CREEK WASTEWATER TREATMENT PLANT  
EL DORADO COUNTY

-38-

**Ammonia and Nitrates** - Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrogen gas, which is then released to the atmosphere. Wastewater treatment plants commonly use nitrification to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. The Basin Plan prohibits the discharge of toxic materials in toxic concentrations. Nitrate and nitrite are known to cause adverse health effects in humans. The Basin Plan prohibits the discharge of chemical constituents in concentrations that adversely affect beneficial uses. Domestic water supply is a beneficial use of Deer Creek. U.S. EPA has developed Drinking Water Standards for protection of human health for nitrite and nitrate and Ambient Water Quality Criteria for ammonia. The discharge from the DCWWTP has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for ammonia, nitrite, and nitrate. Effluent limitations for ammonia, nitrate, and nitrite are included in this Order to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the beneficial uses of the receiving stream and to prevent aquatic toxicity.

Under current operational conditions, due to the variable inflow conditions of wastewater into the treatment plant, nitrification on a consistent basis has been achievable. In addition to nitrification, to achieve ammonia limits, denitrification is necessary to meet nitrate and nitrite limits. Upgrades to the facility will be necessary to achieve these limits.

**Coliform** - The beneficial uses of Deer Creek and the Cosumnes River include contact recreation uses and irrigation. To protect these beneficial uses, the Regional Board finds that the wastewater must be disinfected and adequately treated to prevent disease. The principal infectious agents (pathogens) that may be present in raw sewage may be classified into three broad groups: bacteria, parasites, and viruses. Tertiary treatment, consisting of chemical coagulation, sedimentation, and filtration, has been found to remove approximately 99.5% of viruses. Filtration is an effective means of reducing viruses and parasites from the waste stream. The wastewater must be treated to tertiary standards (filtered) to protect contact recreational and food crop irrigation uses. The method of treatment is not prescribed by Order No. R5-2002-0210; however, wastewater must be treated to a level equivalent to that specified in Title 22 and in other recommendations by the DHS.

The DHS is consulted by the Regional Board and makes recommendations for protection of the public's health when contacting wastewater effluent. Generally, DHS recommends that it is necessary treat wastewater to a tertiary level or provide a 20-to-1 dilution for secondary treated wastewater, in order to protect the public health for contact recreational activities or the irrigation of food crops. The Discharger has been unable to quantify significant dilution within Deer Creek. The Discharger has, however, requested this Order contain secondary treatment effluent limitations to provide relief under a significant storm event when a 20-to-1 dilution is available. The Discharger will be required to establish an in-stream flow measuring system to accurately determine periods when 20-to-1 dilution exists. During these high flow periods, assimilative capacity has not been quantified for individual pollutants and end-of-pipe limits have been established. The BOD and TSS limits for secondary treatment are 30 mg/l as a monthly average and the total coliform limit is 23 MPN as a 7-day median. When there is less than 20-to-1 dilution full tertiary treatment is required. The tertiary limits for both BOD and TSS are 10 mg/l, and the effluent limit for total coliform organisms is 2.2 MPN/100 ml as a 7-day median. The effluent limits are based on the critical low flow, or zero dilution, and have also resulted in "end-of-pipe" limits.

The DHS has developed reclamation criteria, California Code of Regulations, Title 22, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds,

INFORMATION SHEET  
WASTE DISCHARGE REQUIREMENTS, ORDER NO. R5-2002-0210  
EL DORADO IRRIGATION DISTRICT  
DEER CREEK WASTEWATER TREATMENT PLANT  
EL DORADO COUNTY

-39-

schoolyards, and other areas of similar public access, wastewater be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 ml as a 7-day median. Title 22 is not directly applicable to surface waters; however, the Regional Board finds that it is appropriate to apply DHS's reclamation criteria because Deer Creek and the Consumnes River are used for irrigation of agricultural land and for contact recreation purposes. The stringent disinfection criteria of Title 22 are appropriate since the undiluted effluent may be used for the irrigation of food crops. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens. The method of treatment is not prescribed by this Order; however, wastewater must be treated to a level equivalent to that recommended by DHS.

The permit contains Effluent Limitations and a tertiary level of treatment, or equivalent, necessary to protect the beneficial uses of the receiving water. In accordance with California Water Code, Section 13241, the Board has considered the following:

As stated in the above Findings, the past, present and probable future beneficial uses of the receiving stream include municipal and domestic supply, agricultural irrigation, agricultural stock watering, body contact water recreation, canoeing and rafting, non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, cold spawning habitat, and wildlife habitat.

The environmental characteristics of the hydrographic unit including the quality of water available will be improved by the requirement to provide tertiary treatment for this wastewater discharge. Tertiary treatment will allow for the reuse of the undiluted wastewater for food crop irrigation and contact recreation activities which would otherwise be unsafe according to recommendations from the DHS.

Fishable and swimmable water quality conditions can be reasonably achieved through the coordinated control of all factors which affect water quality in the area.

The economic impact of requiring an increased level of treatment has been considered. The economic impact of requiring an increased level of treatment has been considered. The current monthly domestic sewer user fee is \$42.94, approximately double the California average monthly domestic sewer user fee of \$20.46. The Discharger has already expanded the capacity of the treatment facility to 3.6 MGD, except for the tertiary treatment system. In 2001 the District estimated the cost to expand the tertiary treatment capacity to be \$4.9 million. The loss of beneficial uses within downstream waters, without the tertiary treatment requirement, include prohibiting the irrigation of food crops and prohibiting public access for contact recreational purposes, would have a detrimental economic impact. In addition to pathogen removal to protect irrigation and recreation, tertiary treatment may also aid in meeting discharge limitations for other pollutants, such as heavy metals, reducing the need for advanced treatment.

The need to develop housing in the area will be facilitated by improved water quality, which protects the contact recreation and irrigation uses of the receiving water. DHS recommends that, in order to protect the public health, undiluted wastewater effluent must be treated to a tertiary level, for contact recreational and food crop irrigation uses. Without tertiary treatment, the downstream waters could not be safely utilized for contact recreation or the irrigation of food crops.

It is the Regional Board's policy, (Basin Plan, page IV-15.00, Policy 2) to encourage the reuse of wastewater. The Regional Board requires Dischargers to evaluate how reuse or land disposal of wastewater can be optimized. The need to develop and use recycled water is facilitated by

providing a tertiary level of wastewater treatment, which will allow for a greater variety of uses in accordance with California Code of Regulations, Title 22.

**Turbidity-** In addition to coliform testing, a turbidity effluent limitation has been included as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. The tertiary treatment process, or equivalent, is also capable of reliably meeting a reduced turbidity limitation of 2 NTU as a daily average, 5 NTU at least 95 percent of the time within a day, and 10 NTU at all times. Failure of the filtration system, such that virus removal is impaired, would normally result in increased particles in the effluent and higher effluent turbidity. Turbidity monitoring has a major advantage over coliform monitoring for evaluating filter performance, allowing immediate detection of filter failure and rapid corrective action. Coliform testing, by comparison, is not conducted continuously and requires several hours to days to identify high coliform concentrations.

### Phase II Effluent and Receiving Water Quality Assessment

In accordance with a previous permit, Order No, 97-211, the Discharger performed a study entitled "Phase II Effluent and Receiving Water Quality Assessment for the El Dorado Irrigation District's Deer Creek Wastewater Treatment Plant, dated 12 February 1999. The purpose of this report was to accurately identify contaminant levels in the treated effluent discharged from the DCWWTP into Deer Creek, and to assess the potential for effluent discharges to cause a receiving water exceedance of the water quality standards, including chronic toxicity. The study provided a significant amount of data to determine compliance with the CTR and other applicable water quality objectives. From the study the following constituents were determined to have a reasonable potential to exceed water quality objectives.

- a. **Total Trihalomethanes and Chloroform** - Municipal and domestic supply is a beneficial use of the receiving stream. The narrative toxicity objective and this beneficial use designation comprise a water quality standard applicable to pollutants in the receiving stream. The Basin Plan contains the *Policy for Application of Water Quality Objectives*, which provides that narrative objectives may be translated using numerical limits published by other agencies and organizations. The Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA) has published 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 Cal/EPA. The OEHHA cancer potency value for oral exposure to chloroform is 0.031 milligrams per kilogram body weight per day (mg/kg-day). By applying standard toxicologic assumptions used by OEHHA and USEPA in evaluating health risks via drinking water exposure of 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. This risk level is consistent with that used by the DHS to set *de minimus* risks from involuntary exposure to carcinogens in drinking water in developing MCLs and Action Levels and by OEHHA to set negligible cancer risks in developing 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 NTR and the CTR to priority toxic pollutants in California surface waters. A recent decision by the State Water Resources Control Board, Order No. WQ2002-0015, found that application of a chloroform limitation for a discharge to an ephemeral stream based on a cancer risk analysis was not appropriate since the U.S. EPA is evaluating the science used to develop the CTR and has reserved application of a water quality standard. This Order establishes an Effluent Limitation at the maximum contaminate level (MCL) for total trihalomethanes, the sum of bromoform, bromodichloromethane, chloroform and dibromochloromethane, based on protection of the municipal beneficial use of 80 µg/l. Based on information included in analytical laboratory results submitted by the Discharger, the discharge was found to have an average concentration of 48 µg/l, with a maximum concentration of 76 µg/l of chloroform. The discharge has a reasonable potential to cause or contribute to an in-stream excursion above the water quality

INFORMATION SHEET  
WASTE DISCHARGE REQUIREMENTS, ORDER NO. R5-2002-0210  
EL DORADO IRRIGATION DISTRICT  
DEER CREEK WASTEWATER TREATMENT PLANT  
EL DORADO COUNTY

-41-

objective for municipal uses by causing exceedance of the primary MCL for trihalomethanes. Therefore, an Effluent Limitation for total trihalomethanes is included in this Order and is based on the Basin Plan objective for municipal use. If U.S. EPA or the State Board develop a water quality objective for chloroform and/or total trihalomethanes, this Order may be reopened and a new Effluent Limitation established.

- b. ***Chlorodibromomethane*** - Based on information included in analytical laboratory results submitted by the Discharger, the discharge had an average concentration of 1.07 µg/l and a maximum concentration of 1.90 µg/l, and has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for chlorodibromomethane. The CTR establishes numeric water quality standards for chlorodibromomethane. The criterion for waters from which both water and organisms are consumed is 0.41 ug/l. An Effluent Limitation for chlorodibromomethane is included in the permit.
- f. ***Dichlorobromomethane*** - Based on information included in analytical laboratory results submitted by the Discharger, the discharge was found to have a average concentration of 9.4 µg/l and a maximum concentration of 12.0 µg/l, and has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for dichlorobromomethane. The CTR establishes numeric water quality standards for dichlorobromomethane. The criterion for waters from which both water and organisms are consumed is 0.56 ug/l. An Effluent Limitation for dichlorobromomethane is included in the permit.
- g. ***Copper***- Based on analytical results of effluent samples collected by the Discharger, the discharge has been measured up to 30.7 µg/l, with an average concentration of 19.4 µg/l, and has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for copper; therefore, effluent limitations for copper are included in the Order. At the worst case hardness of 70 mg/l, the criterion continuous concentration and criterion maximum concentration limitations for copper are 6.6 µg/l and 9.6 µg/l, respectively. The CTR standards for metals are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for copper in freshwater are 0.960 for both the acute and the chronic criteria. The effluent limitations for copper are presented in total recoverable concentrations, and are based on the CTR.

The Discharger is considering conducting a Water Effect Ratio (WER) study for copper, to determine the site-specific toxicity of copper in the effluent and Deer Creek. The default value for the WER, in calculating the copper effluent limits is 1. The reason for performing this study is to determine if the WER ratio for the site-specific conditions in Deer Creek is greater than the default value, and if that value allows for a higher effluent limit for copper. Upon completion of the study, Regional Board Staff will evaluate the results of the study, and may reopen the permit to account for a sites-specific WER for discharge from the DCWWTP.

- h. ***Diethyl phthalate and Dimethyl phthalate***- Ten samples were taken monthly and analyzed for Diethyl phthalate and Dimethyl phthalate, all of the samples were non-detect except for the first sample taken. Diethyl phthalate and Dimethyl phthalate were present in the first round of samples at concentrations of 78 µg/l and 17 µg/l, respectively. Diethyl phthalate and Dimethyl phthalate are used in the manufacturing of plastics and polyvinyl chloride (PVC) pipe and tubing. The presence in the first round of sampling may have been due to the use of new sampling equipment that was not properly sanitized before it's first use. The CTR standards for Diethyl phthalate and Dimethyl phthalate are 23 mg/l and 313 mg/l, respectively. There is no reasonable potential to exceed the CTR standard.

***Toxicity***—The Basin Plan states that “[a]ll waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances.” The Basin Plan requires that “[a]s a minimum, compliance with this objective...shall be evaluated with a 96-hour

INFORMATION SHEET  
WASTE DISCHARGE REQUIREMENTS, ORDER NO. R5-2002-0210  
EL DORADO IRRIGATION DISTRICT  
DEER CREEK WASTEWATER TREATMENT PLANT  
EL DORADO COUNTY

bioassay.” Order No. R5-2002-0210 requires both acute and chronic toxicity monitoring to evaluate compliance with this water quality objective.

The low-flow nature of Deer Creek means that the designated beneficial uses must be protected, but that no credit for receiving water dilution is available. The use of a dilution series to evaluate compliance with the narrative toxicity objective contained in the Basin Plan is, therefore, inappropriate.

The Basin Plan further states that “. . .effluent limits based upon acute biotoxicity tests of effluents will be prescribed. . .”. Effluent limitations for acute toxicity have been included in the Order.

*GENERAL EFFLUENT LIMITATION INFORMATION*

Selected 40 CFR §122.2 definitions:

*‘Average monthly discharge limitation* means the highest allowable average of “daily discharges” over a calendar month, calculated as the sum of all “daily discharges” measured during a calendar month divided by the number of “daily discharges” measured during that month.

*Average weekly discharge limitation* means the highest allowable average of “daily discharges” over a calendar week, calculated as the sum of all “daily discharges” measured during a calendar week divided by the number of “daily discharges” measured during that week.

*Continuous discharge* means a “discharge” which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities.

*Daily discharge* means the “discharge of a pollutant” measured during a calendar day or any 24-hour period that reasonable represents a calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the “daily discharge” is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the “daily discharge” is calculated as the average measurement of the pollutant over the day.

*Maximum daily discharge limitation* means the highest allowable “daily discharge”.’

The SIP contains similar definitions. These definitions were used in the development of Order No. 0210. Alternate limitation period terms were used in the permit for the sake of clarity. Alternates are shown in the following table:

Term Used in Permit	SIP/40 CFR 122.2 Term
Monthly average	Average monthly discharge limitation. 30-day averages may have been converted to monthly averages to conform with 40 CFR §122.45 (see below)
1-Day average	Maximum daily discharge limitation. Since the daily discharge for limitations expressed in concentrations is defined as the average measurement of the pollutant over the day, the term ‘1-Day Average’ was used in the Order.

40 CFR §122.45 states that:

- (1) “In the case of POTWs, permit effluent limitations. . .shall be calculated based on design flow.”

- (2) “For continuous discharges all permit effluent limitations...shall unless impracticable be stated as...[a]verage weekly and average monthly discharge limitations for POTWs.”
- (3) “All pollutants limited in permits shall have limitations...expressed in terms of mass except...[f]or pH, temperature, radiation, or other pollutants which cannot appropriately be expressed by mass...Pollutants limited in terms of mass additionally may be limited in terms of other units of measurement, and the permit shall require the permittee to comply with both limitations.”

U.S. EPA recommends a maximum daily limitation rather than an average weekly limitation for water quality based permitting.

#### RECEIVING WATER LIMITATIONS AND MONITORING

**Dissolved Oxygen**—By the tributary rule, Deer Creek has been designated as having the beneficial use of cold freshwater aquatic habitat (COLD). For water bodies designated as having COLD as a beneficial use, the Basin Plan includes a water quality objective of maintaining a minimum of 7.0 mg/l of dissolved oxygen. Since, by the tributary rule, the beneficial use of COLD does apply to Deer Creek, a receiving water limitation of 7.0 mg/l for dissolved oxygen was included in the Order.

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

**pH**—For all surface water bodies in the Sacramento River and San Joaquin River basins, the Basin Plan includes water quality objectives stating that “[t]he pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses.” By the tributary rule, Deer Creek has the beneficial uses of both COLD and WARM (warm freshwater habitat); therefore, the Order includes receiving water limitations for both pH range and pH change.

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

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

**Turbidity**—The Basin Plan includes the following objective: “Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:

- (The 30-day average turbidity to increase) More than 1 Nephelometric Turbidity Units (NTUs) where natural turbidity is between 0 and 5 NTUs.
- Where natural turbidity is between 5 and 10 NTUs, increases shall not exceed 20 percent.
- Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTU.

- Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.”

The Basin Plan states: “*In determining compliance with the above limits, appropriate averaging periods may be applied provided that the beneficial uses will be fully protected.*”. Based upon studies performed by the Discharger, in consultation with the Department of Fish and Game, a 30-day averaging period is protective of the beneficial uses for turbidity when the turbidity of the receiving water is between 0 and 5 NTUs.

***Narrative Limitations***—Receiving Water Limitations 2 (biostimulatory substances), 3 (color), 5 (floating material), 4 (oil and grease), 5 (radioactivity), 6 (settleable material), 7 (tastes and odors), and 8 (toxicity) are based on narrative Basin Plan objectives. The objectives are located in Chapter III: Water Quality Objectives, under the Water Quality Objectives for Inland Surface Waters heading.

### **BASIN PLAN AMENDMENT PROCESS**

Discharge from the DCWWTP can at times dominate the flow in Deer Creek. This condition caused violation of the Basin Plan water quality objectives for inland surface waters for pH, dissolved oxygen, temperature, and turbidity. The Discharger has made significant upgrades to the facility, however during low flow conditions in the creek, receiving water limitations for these pollutants are not being consistently achieved. The Regional Board issued Cease and Desist Order (CDO) No. 95-255 on 7 December 1995 requiring the Discharger implement corrective actions to comply with these and other permit limitations. Subsequent to the CDO being issued, significant improvements to the facilities were made which brought the facility into compliance with the dissolved oxygen limit, however, pH, turbidity, and temperature remained problematic. When the current WDRs were issued in 1997, a CDO with compliance time schedules was also adopted to allow further time to comply with the Basin Plan objectives for pH, turbidity, and temperature.

The Discharger chose to pursue a Site-Specific Basin Plan Amendment (SSBPA) in lieu of making physical improvements to the treatment plant for compliance with Basin Plan objectives for pH, turbidity, and temperature. Due to the lengthy SSBPA process, the time schedule was modified to reflect the additional time needed to complete the Basin Plan Amendments (BPAs). CDO No. 5-000-033, Amendment 1, requires the Discharger to complete the BPAs by 30 December 2003. On 19 July 2002, the Regional Board adopted the BPAs for pH and turbidity. The State of California Office of Administrative Law (OAL) and U.S. EPA must also approve the BPAs before becoming effective.

The Regional Board has not yet considered the BPA for temperature. Since the existing Basin Plan Objectives for pH, turbidity, and temperature remain in effect, this Order contains limitations based those objectives.

**Temperature- and pH-Dependent Effluent Limits for Ammonia**  
**Criterion Continuous Concentration, Maximum Average Monthly Concentration**

<b>Ammonia Concentration Limitation (mg N/l)</b>										
<b>Temperature, °C (°F)</b>										
<b>pH</b>	<b>0</b> (32)	<b>14</b> (57)	<b>16</b> (61)	<b>18</b> (64)	<b>20</b> (68)	<b>22</b> (72)	<b>24</b> (75)	<b>26</b> (79)	<b>28</b> (82)	<b>30</b> (86)
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	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	3.00	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

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

Where: CCC = criteria continuous concentration  
T = temperature in degrees Celsius (°C)

**pH-Dependent Effluent Limits for Ammonia**  
**Criterion Maximum Concentration, Maximum 1-hour Average**

pH	Ammonia Concentration Limit (mg N/l)
6.5	32.6
6.6	31.3
6.7	29.8
6.8	28.0
6.9	26.2
7.0	24.1
7.1	21.9
7.2	19.7
7.3	17.5
7.4	15.3
7.5	13.3
7.6	11.4
7.7	9.64
7.8	8.11
7.9	6.77
8.0	5.62
8.1	4.64
8.2	3.83
8.3	3.15
8.4	2.59
8.5	2.14
8.6	1.77
8.7	1.47
8.8	1.23
8.9	1.04
9.0	0.885

$$CMC_{salmonids\ present} = \left( \frac{0.275}{1 + 10^{7.204 - pH}} + \frac{39.0}{1 + 10^{pH - 7.204}} \right)$$

Where: CMC = criteria maximum concentration

**Hardness-Dependent Effluent Limits for Copper**

U.S. EPA National Ambient Water Quality Criteria  
Recommended To Protect Freshwater Aquatic Life

<b>Copper Concentration Limitations</b> <b>(Expressed as dissolved metal)</b>		
<b>Hardness (mg/l as CaCO<sub>3</sub>)</b>	<b>Continuous Conc. 4-Day Avg. (µg/l) <sup>1</sup></b>	<b>Maximum Conc. 1-hour Avg. (µg/l) <sup>2</sup></b>
<25	Must Calculate	Must Calculate
25	2.7	3.6
30	3.2	4.3
35	3.7	5.0
40	4.1	5.7
45	4.5	6.3
50	5.0	7.0
55	5.4	7.7
60	5.8	8.3
65	6.2	9.0
70	6.6	9.6
75	7.0	10
80	7.4	11
85	7.8	12
90	8.2	12
95	8.6	13
100	9.0	13
110	9.7	15
120	11	16
130	11	17
140	12	19
150	13	20
160	13	21
170	14	22
180	15	23
190	16	25
200	16	26
210	17	27
220	18	28
230	18	30
240	19	31
250	20	32
260	20	33
270	21	34
280	22	36
290	22	37
300	23	38

<sup>1</sup> Criteria Continuous Concentration (4-day Average) =  
(e<sup>{0.8545[ln(hardness)] - 1.702}</sup>) x (0.960)

<sup>2</sup> Criteria Maximum Concentration (1-hour Average) =  
(e<sup>{0.9422[ln(hardness)] - 1.700}</sup>) x (0.960)