EAST BAY
MUNICIPAL UTILITY DISTRICT

April 1, 2008

VIA FACSIMILE: 916-464-4780
And Electronic Mail

Ms. Mary Serra
Senior WRC Engineer
Central Valley Region California Regional Water Quality Control Board
11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

Re: Comment for Tentative Waste Discharge Requirements, Camanche Dam I'ower House, Clements, San Joaquin County

Dear Ms. Serra:

The East Bay Municipal Utility District (District) is pleased to provide comments to tlie tentative order for waste discharge requirements to discharge treated industrial wastewater to an evaporation/percolation (EP) pond at our Camanche Dam I'ower House. Attached are minor editorial changes to the electronic document in redline/strike-out formal. Substantive comments include proposed changes to the discharge flow rate (B. Discharge Specifications), total copper concentration in the effluent (C. Effluent Limitations), Provisions, and the Monitoring and Reporting Program. The rationale for these changes is provided below.

## Discharge Specifications

The District used 15,000 gallons per day (gpd) as a conservative estimate in the water balance and based on historical downward trends as a result of mechanical improvements to the turbines. However, future maintenance projects of the units and/or high water release years during the spring months may require single events of higher discharge flows to 20,000 gpd on a monthly average. A revised water balance (attached) indicates that the El' pond, with its final design dimensions, will have sufficient capacity including a 2-feel freeboard. Therefore, tlie District requests a discharge flow limit of 20,000 gpd on a monthly average.

The final pond design will have a capacity of approximately 750,000 gallons with two feel of freeboard. It will be approximately 179 feet by 167 feet (trapezoid shaped) at the top of dikes with a 2:1 (Horizontal: Vertical) slope. With a pond depth of 7 feet, the bottom will be 151 feet by 139 feel. Due to ground slope, tlie pond's north end would have a deeper excavation (– 10 feet below grade), while tlie south end would have a shallower excavation and taller dike height (– 1 foot down and – 6 feet up). In February 2007, depth to groundwater below tlie pond was 14 feet, therefore the distance between the bottom of tlie excavated pond to shallow groundwater would be approximately 9 to 13 feet. Additionally, the increased pond bottom surface area will increase evaporation and percolation rates so that no water will be standing in the El' pond. See the attaclied revised water balance calculations.

Effluent Limitations

The total copper effluent limit of 20 micrograms per liter (µg/L) is too restrictive based on historical data froni 2004 to 2006. There were three sample events with effluent concentrations up to 18 µg/L. Although this limit may he appropriate. for a hardness based effluent limit to surface water (equivalent to low parts per billion of dissolved copper), a higher limit would be more reasonable for compliance purposes, while still protective of soil and groundwater. In addition, the District has removed every conceivable source of copper from contact with the reservoir water and is currently discharging less than 0.25 pounds per year. Further reductions are technically infeasible and a higher effluent limit should be established for measuring compliance, particularly since this facility produces hydropower that provides a maximum benefit to the people of the State of California.

As indicated in the tentative WDRs, the California Public Health Goal for total copper is 170 ug/L. Using a conservative dilution and attenuation factor of one (i.e. little to no dilution or sorption by the soils before groundwater is impacted), a soil concentration of 520 milligrams per kilograms would be the limit of concern before the public health goal would be exceeded (calculated from using site specific soil/water partition coefficients and cation exchange capacities). By contrast; the mean background concentration of copper in on-site soils is only 14.7 mg/kg. Based on these considerations, the District requests a monthly average effluent limit of total copper of 50 µg/L and an annual average effluent limit of 20 µg/L. These limits are based on conservative assumptions that are protective of soil and groundwater.

Provisions

The District will commit to submitting the required *Wastewater System Improvement Workplan* by June 17,2008, but has no control over Eaccutive Officer authorization to divert the discharge to the EP pond. Please confirm that the language in F. Provisions. I.b. allows continued powerhouse operation under the terms of the existing NPDES permit until authorization is given to divert the discharge to the EP Pond.

Monitoring and Reporting **Program**

For the effluent monitoring, the District proposes that TPH – diesel and TPI-I – oil and grease be replaced by total oil and grease. This constituent is monitored under the existing NPDES permit and is more representative of the single source waste stream at the powerhouse. It also corresponds to the effluent limit for total oil and grease of 5 mg/L, for which the effluent has consistently been less than the detection limit (3 mg/L), as shown in Finding 24. It is proposed that fixed dissolved solids be replaced by electrical conductivity because it is monitored under the existing NPDES permit. There is no source of brine input to the effluent and the electrical conductivities have consistently been similar to the river conductivities upstream and downstream of the point of discharge.

For the EP and standby pond soil sampling, it is proposed that TPH – diesel and TPH – oil and grease be deleted because they duplicate the measurement by total oil and grease. No oil and

grease is expected to be present in the soil. As shown in Finding 24, the effluent contains non-detectable levels of oil and grease.

If you have any questions, please contact me at (510) 287-0345 or Colin Moy, REA, Environmental Health and Safety Specialist, at (510) 287-0247.

Sincerely,

John H. Schroeter, P.E.
Manager of Environmental Compliance

JHS: csm

Attachments

Cc: Timothy O'Brien, CVRWQCB

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO.

WASTE DISCHARGE REQUIREMENTS
FOR
EAST BAY MUNICIPAL UTILITY DISTRICT
CAMANCHE DAM POWER HOUSE
SAN JOAQUIN COUNTY

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

1. East Bay Municipal Utility District (hereafter Discharger) submitted a Report of Waste Discharge (RWD) dated 21 September 2007 for treatment and land application of wastewater generated at the Camanche Dam Power House (facility). Additional information was provided on 17 December 2007 and 18 March 2008.

2. Order No. R5-2003-0153 (NPDES No. CA0082040), adopted by the Regional Water Board on 17 October 2003, prescribes requirements for the surface water discharge at the Discharger's facility. The Order is a National Pollutant Discharge Elimination System (NPDES) Permit. The NPDES permit is neither adequate nor consistent with the current plans and policies of the Regional Water Board, nor with the Discharger's current operational plans.

3. The facility is at 23900 E. Buena Vista Road, Clements, San Joaquin County. The Power House and associated land operates on~~comprise~~ approximately ~~—~~6.5-acres (Assessor's Parcel No. 023-010-~~0~~01) in Section 32 T2N, R7E, MDB&M. The facility location is shown on Attachment A, which is attached hereto and is made part of this Order by reference.

4. The Discharger owns and operates Camanche Dam, Camanche Power House, as well as an associated industrial wastewater collection, treatment, and disposal system. The facility is located on the Mokelumne River near the town of Clements.

**BACKGROUND**

5. The Power House is located on the north side of the Mokelumne River in a rural area surrounded by undeveloped watershed and agricultural land. The Mokelumne River Fish Hatchery is located on the south side of the river.

6. Camanche Dam provides for the storage of water for ~~irrigation~~water supply; stream-flow regulation; and~~provides~~ flood control; and Camanche Dam releases~~provides~~ water to meet the needs of downstream water rights

holders, water for fisheries, and riparian habitat.

7. Three hydro-powered turbine generators are operated at the Power House and are capable of producing up to 10 million kilowatts of electricity per year. Wastewater is generated in the Power House as part of power generation.

8. The Discharger has operated the Power House wastewater discharge under NPDES Permit No. CA0082040 (Waste Discharge Requirements Order No. R5-2003-0153). The current permit contains effluent limitations for copper and other analytes.

9. Under the NPDES permit, the Discharger treated the wastewater to remove petroleum products (used for lubrication in the turbines) and discharged the treated effluent to the Mokelumne River downstream of Camanche Dam.

10. The Mokelumne River is listed as impaired for copper under the Clean Water Act (CWA), Section 303(d). As a result:

    a. The Discharger will be required to meet a stringent hardness-based Maximum Daily Effluent Limit (MDEL) and an Average Monthly Effluent Limit (AMEL) for copper beginning 1 October 2008. Because hardness values in the Mokelumne River are low, calculated values for MDEL and AMEL are also low.

    b. The Discharger has attempted to isolate and reduce the copper sources within the Power House's process wastewater stream but has ~~not been successful in reducing~~determimed that it is technically infeasible to reduce copper concentrations to levels that will consistently comply with the MDEL and AMEL.

    c. The Discharger has reported copper concentrations 50-feet upstream of the Power House effluent point of discharge that exceed the MDEL and AMEL values.

    d. The Discharger evaluated several alternatives for complying with the copper effluent limitations in a 27 June 2005 *Compliance Alternatives Study Report*. They included source control, additional wastewater treatment, application of intake water credits, pollutant trading, modification of effluent limitations, permit bubbling (facility wide discharge limit rather than separate limits at individual points of discharge), reuse, and land application. Land application and effluent limitation modification were selected as the only feasible alternatives. Land application was selected based on cost effectiveness and the ability to dispose of copper onto the land while protecting beneficial uses.

## FACILITY CHANGES

11. Hydraulic source control activities at the facility have resulted in significant reduction in the wastewater flow rate from approximately 90,000 gallons per day (gpd) to approximately 15,000 gpd. The flow reduction has allowed

land application of the wastewater as a feasible alternative.

12. Copper source control activities have resulted in wastewater quality improvement, but not to the concentrations that would be required to allow continued discharge into the Mokelumne River. Copper sources include erosion and electrochemical corrosion of piping and cooling equipment.

13. The Discharger is proposing to redirect discharge from the existing oil separation pond to a new Evaporation/Percolation (EP Pond) that will be located approximately 170 feet north of the river. The EP Pond will provide approximately 750,000 gallons of storage with two feet of freeboard. The proposed pond location is shown on Attachment B, which is attached hereto and is made part of this Order by reference.

## WASTEWATER SYSTEM

14. Water for the turbines is delivered via a 120-inch diameter epoxy-lined penstock. Water used to turn the turbines is ~~discharged~~ returned to the Mokelumne River ~~without treatment~~.

15. Wastewater is generated from several sources in the Power House. A schematic of the wastewater system is presented on Attachment C, which is attached hereto and is made part of this Order by reference. They include the following processes:

    a. Generator thrust bearing cooling.

    b. Generator air cooling.

    c. Generator lower guide bearing cooling.

    d. Turbine guide bearing cooling.

    e. Turbine shaft seal.

    f. Turbine head cover drain pump.

    g. Heat exchanger operation.

16. The wastewater generated as described in Finding 15 a through d travels through cooling jackets and does not come in contact with lubricating oil or bearings, and is discharged to the Mokelumne River untreated.

17. The wastewater generated as described in Finding 15 e through g is degraded as a result of use and is collected and treated as described below:

    a. Wastewater is collected in a sump equipped with a belt skimmer that removes oil. Oil that is skimmed from the sump is reused at the Power House. Skimmed oil is stored in a 250-gallon aboveground tank in the Power House.

    b. Wastewater is pumped from the sump to a concrete lined 20,000-gallon oil separation pond that is located outside the Power House. A rope skimmer and surface baffles remove any remaining oil from the wastewater. Skimmed waste oil is collected in a 300-gallon

aboveground storage tank. The recovered oil is removed from the site as waste oil every 90 days.

c. Treated wastewater from the 20,000-gallon oil separation pond historically discharged to the Mokelumne River. (This Order will change the discharge location to the EP Pond).

d. A standby-unlined pond with a capacity of 85,000 gallons is located adjacent to the oil separation pond and is used when the oil separation pond undergoes scheduled maintenance. Typically, the oil separation pond is cleaned quarterly to remove debris that falls into the pond. This procedure ~~may~~ does not result in oil being discharged to the environment because water has been fully treated by ~~one of~~ the two skimmers before the oil separation pond is temporarily removed from service. As shown in Finding 24, the treatment system is highly effective in removing oil and grease from the wastewater below 5 mg/L.

18. A number of improvements have been implemented since 1998 to reduce the wastewater flow rate. The improvements are listed below:

    a. Replacement of the following

        i. Turbine Seals

        ii. Static seal retaining ring

    b. Evaluation and inspection of seal assemblies

    c. Corrections for dynamic seal maintenance and operation

    d. Evaluation of replacement of seals with packing boxes and glands

    e. Improved accuracy of flow measurements

19. The wastewater flow rate has been reduced from over 90,000 gpd to an average of less than 15,000 gpd through source control and equipment improvements at the Power House. Since January 2004 the flow rate has averaged 12,000 gpd. The Discharger used 15,000 gpd in the water balance, estimating a total annual flow of approximately 5.47 million gallons.

20. A number of improvements have been implemented since 1998 to reduce the copper and/or oil concentration in wastewater. The improvements are listed below:

    a. Replacement of the following:

        i. Bronze and copper equipment

        ii. Sump rotometers (bronze casting)

        iii. Kenney and basket strainers

        iv. Heat exchangers on air compressors

    b. Verification that sump pump impellers and castings are not made of

copper

c. Evaluation and implementation of alternative methods for replacing or coating turbine dynamic and static seals, including coating with paint or epoxy, hot metal spray coatings, seal metal replacement, and seal assembly replacement.

d. Improved housekeeping - modification of work practices to prevent copper from entering waste stream.

e. Preventive Maintenance

   i. Quarterly maintenance of oil separation pond

   ii. Routine cleaning of Power House sump

   iii. Routine inspection of sump and pond skimmer system

21. As a result of the source control activities, the Power House's effluent total copper concentration was significantly reduced with the following range of concentrations:

| Dates | Units | Concentrations | Median Value |
|---|---|---|---|
| Jan 1994 to Dec 2003 | ug/L | 121 to 1.8 | 8.5 |
| Jan 2004 to Dec 2006 | ug/L | 18 to ND (0.73) | 6.6 |

22. Wastewater copper concentrations were reduced from years 1998 to 2006; with the reduced wastewater flow rate, effluent loading rates were reduced from 2.1 pounds/year to 0.24 pounds/year.

23. The Discharger has collected samples upstream and downstream of the Power House. Samples collected upstream are labeled "R1," samples collected downstream are labeled "R2." Samples collected upstream characterize Camanche Lake water; samples downstream characterize Mokelumne River water with the Power House wastewater discharge returned to the river. Annual averages are presented below but the 2007 data does not include data collected in December 2007. The data indicates the Power House does not substantially change the water quality through the process of power generation.

| Year | Total Copper (ug/L[CSM1]) | | Hardness (mg/L) | | pH (std. Unit) | | Elec. Cond. (umhos/cm) | |
|---|---|---|---|---|---|---|---|---|
| | R1 | R2 | R1 | R2 | R1 | R2 | R1 | R2 |
| 2004 | ~~3.00~~2.17 | 2.~~97~~16 ~~3.67~~1.3 | 19.1 | 18.6 | 6.8 | 6.9 | NA | NA |
| 2005 | 1.11 | 1[CSM2] | 16.2 | 16.5 | 6.7 | 6.8 | NA | NA |
| 2006 | 1.3~~13~~ | 1.2~~4~~1 | 15.0 | 15.5 | 7.0 | 6.9 | 41.0 | 53.2 |
| 2007 | 3.~~37~~58 | 0.97 | 14.8 | 15.1 | 6.8 | 6.8 | 41.3 | 43.0 |

24. A summary of wastewater quality ~~downstream of~~effluent from the oil separation pond is presented in the table below. The data is shown as averages for the years 2004 and 2005 [CSM3]and monthly averages for year 2006.

| Date | | pH (std) | O&G (mg/L) | Total Cu (ug/L) | Dissolved Cu (ug/L) | EC (umhos/cm) | DO (mg/L) |
|---|---|---|---|---|---|---|---|
| Average | 2004 | 7.3 | ND (1.0) | ~~8.57~~7.91 | ~~5.32~~4.94 | 49.26 | 9.11 |
| Average | 2005 | 7.4 | ND (1.0) | 7.~~56~~9 | 5.35 | 46.31 | 9.19 |
| Jan | 2006 | 7.1 | ND (2.3) | 4.15 | 2.9 | 41 | 8.3 |
| Feb | 2006 | 7.5 | ND (2.2) | 5.15 | 3.2 | 42.2 | 10.2 |
| Mar | 2006 | 7.8 | ND (2.6) | 4.75 | 3.7 | 43.2 | 10.9 |
| Apr | 2006 | 7.4 | ND (2.6) | 4.45 | 3.5 | 44.9 | 10 |
| May | 2006 | 7.5 | ND (2.5) | 11.25 | 4.1 | 50.4 | 8.4 |
| June | 2006 | 8.3 | ND (2.5) | 7.1 | 3.9 | 49.8 | 9.6 |
| July | 2006 | 7.2 | ND (2.6) | 5.9 | 4.3 | 38.9 | 8.5 |
| Aug | 2006 | 7.9 | ND (2.5) | 6.8 | 4.8 | 36.5 | 8.8 |
| Sept | 2006 | 7.2 | ND (2.4) | 11.5 | 7.8 | 35.9 | 8.2 |
| Nov | 2006 | 6.8 | ND (2.5) | 16.5 | 11.4 | 36.6 | 9.9 |
| Dec | 2006 | 7.6 | ND (2.6) | 5.1 | 3.8 | 39.7 | 11.5 |

O&G denotes Oil and Grease. Total Cu denotes Total Copper. Dissolved Cu denotes Dissolved Copper. EC denotes Electrical Conductivity. DO denotes Dissolved Oxygen.

25. The Power House and associated buildings are supplied with non-potable water. The Power House is equipped with an 80-gallon septic tank that pumps to a sump. Septage from the sump is periodically removed and disposed of off-site by a septic hauler. Effluent from the sump flows to a rock leach pit. The septic system is not permitted by the San Joaquin County Environmental Health Department and therefore this Order requires the system to be ~~permitted~~in compliance with county requirements.

## WATER BALANCE

26. To evaluate the infiltration potential of soils in the location of the EP Pond, three double-ring infiltrometer tests were performed on 16 and 17 November 2005 using the procedure described in ASTM D 3385.

    a. The tests were performed in excavated holes. The bottoms of the holes were at the same elevation where the pond bottom will be located. The tests lasted between 5 and 6.5 hours to allow the infiltration rate to stabilize.

    b. Stabilized infiltration rates were reported to be the following: Test I-1 (0.51 in/hr), I-2 (0.55 in/hr), and I-3 (0.16 in/hr).

27. The RWD contains a water balance for the wastewater system. The water

balance was based on a daily wastewater discharge of ~~15~~20,000 gpd, 100-year annual return rainfall amounts, and a 0.~~12~~40 acre EP Pond. Based on the calculations, the EP Pond is forecast to ~~go~~ be dry ~~in August during~~after a 100-year return annual precipitation event. The following safety factors were included in the water balance:

a. A flowrate of ~~15~~20,000 gpd was used in the calculations, which is higher than the average measured flowrate of 12,000 gpd.

b. The percolation rate used in calculations is 50-percent of the measured average percolation rate (0.41 in/hr).

c. The area used to calculate the percolation only includes the pond bottom and does not include the sloped sidewalls. ~~In addition, the final design for the EP Pond is 2.4 times larger in bottom area than the initial design.~~

d. A pan evaporation adjustment factor of 70-percent was used when calculating evaporation rates.

28. Stormwater that falls on the facility infiltrates or runs off, eventually discharging into the Mokelum~~e~~ne River. Only precipitation that falls directly on the EP Pond was included in the water balance.

## WASTEWATER DISPOSAL

29. After treatment, wastewater will be disposed of by evaporation and percolation from the EP Pond. Because the wastewater is of high quality, no additional treatment is required. Although wastewater copper concentrations are sometimes slightly higher than groundwater concentrations, groundwater quality will be protected through attenuation processes as the wastewater infiltrates. The Discharger must continue to maintain and optimize the oil removal measures to prevent discharge of petroleum to the EP Pond.

## GROUNDWATER CONDITIONS

30. A soil and groundwater investigation was performed at the facility. Three groundwater monitoring wells were installed and one additional boring was drilled from 12 February 2007 through 16 February 2007. The work investigated soil and groundwater conditions at the location of the planned EP Pond. The well construction is summarized below:

| Well Name | Units | Screen Interval (bgs) | Total Depth (bgs) | Top of Casing Elev. (msl) |
|---|---|---|---|---|
| MW-1 | Feet | 11-26 | 26.5 | 122.69 |
| MW-2 | Feet | 13-28 | 30 | 121.72 |
| MW-3 | Feet | 10-25 | 25.5 | 112.27 |

31. Soil samples were collected from Borings B-1 and MW-1 and were analyzed for selected analytes.

a. Oil and Grease (O&G) was analyzed in three samples from Boring B-1.

Concentrations were detected at 13 ft. below ground surface (bgs) (85 mg/L) and 21 ft. bgs (85 mg/L); a sample collected from 13.5 ft. bgs did not contain detectable O&G.

b. O&G was analyzed in two samples from Boring MW-1. A sample collected from 11 ft. bgs did not contain detectable O&G. A sample collected from 16 ft. bgs contained 280 mg/L.

c. Copper was analyzed in three samples from Boring B-1. Concentrations were detected at 11.5 ft. bgs (17.3 mg/L), 13.5 ft. bgs (21.7 mg/L), and 21 ft. bgs (5.08 mg/L).

d. Copper was analyzed in two samples from Boring MW-1. Concentrations were detected at 11 ft. bgs (45.5 mg/L) and at 16 ft. bgs (32.9 mg/L).

32. Groundwater elevations were determined during three sampling events performed in March, April, and May 2007. Groundwater exists approximately 15 to 20 feet below the ground surface. In the three sampling events, groundwater flowed to the south toward the Mokelumne River, which is consistent with the surface topography. Well MW-1 is located upgradient of the EP Pond, Well MW-2 is located cross-gradient of the EP Pond, and Well MW-3 is located downgradient of the EP Pond.

33. Groundwater quality was determined by sampling the groundwater monitoring wells in March, April, and May 2007. A summary of the average groundwater quality is presented below:

| Well Name | pH std. unit | TDS (mg/L) | $NO_3$ (mg/L) | TN (mg/L) | $SO_4$ (mg/L) | Cl (mg/L) | Br (mg/L) | Cu (ug/L) | K (mg/L) | Na (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 7.0 | 347 | 12.8 | 12.8 | 19.3 | 15.3 | 0.052 | ND (4.4) | 4.7 | 16.1 |
| MW-2 | 7.2 | 490 | 0.51 | 0.60 | 25.7 | 40.7 | 0.19 | 4.4 | 11.1 | 88 |
| MW-3 | 7.3 | 200 | 1.3 | 1.3 | 2.5 | 6.3 | 0.46 | ND (4.4) | 5.7 | 101 |
| WQL | 6.5-8.4 [1] | 450 [1] | 45 [2] | NA | 250 [3] | 106 [1] | 0.0063 [4] | 170 [5] | NA | 20 [6] |

TDS denotes Total Dissolved Solids. $NO_3$ denotes Nitrate. TN denotes Total Nitrogen. $SO_4$ denotes Sulfate. Cl denotes Chloride. Br denotes Bromine. Cu denotes Copper. K denotes Potassium. Na denotes Sodium.

[1] Agricultural Water Quality Goals. [2] USEPA Drinking Water MCL. [3] Recommended Secondary Maximum Contaminant Level (Drinking Water). [4] Taste and Odor Threshold. [5] California Public Health Goal [6] USEPA Health Advisory.

34. Review of the groundwater data indicates the following pattern, which is summarized below:

    a. Well MW-2 typically contains the highest concentrations of constituents of concern including TDS, sulfate, chloride, and potassium. Sodium is slightly higher in Well MW-3, otherwise MW-3 contains lower concentrations of constituents of concern.

    b. The highest nitrate concentration was reported in Well MW-1 (12.8 mg/L). The source of the nitrate in Well MW-1 is unknown but may be related to upgradient agricultural activities

    c. The source of bromine in the wells is unknown but may be related to agricultural use of methyl bromide. However, methyl bromide is unlikely to be used at the facility and the area upgradient of the facility is oak woodlands, likely used for livestock grazing and hay production, which is not an agricultural activity that would employ a soil fumigant like methyl bromide.

35. A soil quality preliminary investigation was performed at the standby-unlined pond in April and May 2004 to determine if petroleum has been released to the environment. Samples were collected from the unlined pond before and after filling the standby-unlined pond with treated wastewater. A background soil sample was taken ~~and~~ from native soil outside the pond. The unlined pond soil was sampled a month later after the wastewater had evaporated and percolated into the soil and the pond was dry. The data indicates ~~some~~ trace petroleum exists in soil, which are significantly below naturally occurring oil and grease reported in the subsurface soil in Borings B-1 and MW-1 (Finding 31.a. and 31.b.) and significantly below levels of environmental concern. ~~The source of the petroleum is assumed to be the wastewater.~~

| Parameter/Date | Native Soil | Standby Pond | Standby Pond |
|---|---|---|---|
| Sample Date | 4/15/04 | 4/15/04 | 5/19/04 |
| TPH - motor oil | ND (10) | ND (10) | 17 |
| TPH - diesel | ND (1.0) | 1.1 | ND (1.0) |

TPH denotes total petroleum hydrocarbons. Motor oil denotes extractable hydrocarbons from C20 to C32. Diesel denotes extractable hydrocarbons from C8 to C25.

## SITE SPECIFIC CONDITIONS

36. Surrounding land uses are primarily agricultural with limited residential use. The topography of the surrounding area is variable.

37. Shallow soils are described by the National Resources Conservation Service as Vina fine sandy loam (infiltration rate 0.6 to 6.0 inches per hour). Deeper soil characterized in the monitoring well borings consists of sand/silt/clay soil types.

38. The mean annual rainfall is approximately 17.46 inches, and the pan evaporation rate for North Camanche Reservoir, Department of Water

Resources Clements Station is 54.93 inches. The 100-year return annual precipitation is 33.28 inches.

39. The facility is within the Manteca Hydrologic Area (No. 531.20), as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.

40. The facility is normally unmanned. The water supply at the facility is non-potable but is supplied for non-potable uses such as toilet flushing and emergency showers. Workers are required to supply their own potable water when at the facility.

41. The site is outside the 100-year flood zone.

**BASIN PLAN, BENEFICIAL USES, AND REGULATORY CONSIDERATIONS**

42. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition* (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Resources Control Board. Pursuant to Section13263(a) of the California Water Code (CWC), waste discharge requirements must implement the Basin Plan.

43. Surface water drainage is to the Mokelumne River. The Basin Plan designates the beneficial uses of the Mokelumne River from Camanche Reservoir to the Sacramento-San Joaquin Delta are agricultural supply; water contact recreation; noncontact water recreation; warm freshwater habitat, cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.

44. The beneficial uses of underlying groundwater are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.

45. State Water Resources Control Board (State Board) Resolution No. 68-16 (the Antidegradation Policy) requires that the Regional Water Board, in regulating the discharge of waste, must maintain the high quality of waters of the state until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Water Board's policies (e.g., quality that exceeds water quality objectives). Resolution No. 68-16 also requires that waste discharged to high quality waters be required to meet waste discharge requirements that will result in the best practicable treatment or control of the discharge.

46. The Discharger submitted information showing that limited groundwater quality degradation would be in the public interest. The Discharger reported:

    a. The Power House produces 10 megawatts of electricity annually, which is capable of supplying 10,000 homes and represents 0.3-percent of California's total hydroelectric capacity. The hydroelectric

energy offsets 22,400 pounds per year of oxides of nitrogen and 98,000 barrels of oil annually.

b. Best Practicable Treatment and Control (BPTC) has been implemented through source controls to limit both the copper and hydrocarbon constituent concentrations, and system improvements ~~that~~ have resulted in lower wastewater flow rates.

c. The discharge is unlikely to degrade groundwater concentration and maintenance procedures (such as excavation of waste constituent contaminated soil) can be implemented to prevent groundwater contamination as a result of increasing waste constituents adsorbed to soil in the future.

47. This Order establishes effluent limitations that are protective of the beneficial uses of the underlying groundwater and requires regular sampling of soil in the EP pond to monitor waste constituent concentrations. Based on the result<u>s</u> of the scheduled tasks, this Order may be reopened to reconsider effluent limitations and other requirements to comply with Resolution 68-16.

48. California Water Code Section13267(b) provides that: "*In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports*."

The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2007-____" are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that generates the waste subject to this Order.

49. California Department of Water Resources standards for the construction and destruction of groundwater wells is described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981). These standards, and any more stringent standards adopted by the state or county pursuant to CWC Section 13801, apply to all monitoring wells.

50. Federal regulations for storm water discharges were promulgated by the U.S. Environmental Protection Agency on 16 November 1990 (40 CFR Parts 122, 123, and 124). The State Board adopted Order No. 97-03-DWQ (General Permit No. CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers.

The facility is exempted (SIC 4931) and not required to comply with the stormwater permit.

51. The action to issue waste discharge requirements for ~~an~~this existing facility discharge is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resource Code Section21000, et seq., and the CEQA guidelines, as follows:

    a. The pipeline that will be used to redirect wastewater from the separation pond to the infiltration pond is less than one mile in length and is within a public right-of-way. Construction of the pipeline is exempt from CEQA under 14 CCR Section15282(k).

    b. The Camanche Dam Powerhouse, the oil separation ponds and the waste discharges from the oil separation ponds are all existing facilities. The volume of wastewater discharged from the oil separation ponds will not increase.

    c. The construction and operation of the ponds and installation of the pumps at the existing facilities are exempt from CEQA under 14 CCR Section15301 because they are minor alterations of the existing wastewater discharge facilities involving negligible or no expansion of use.

    d. The construction and operation of the ponds and installation of the pumps are also exempt from CEQA under 14 CCR Section 15303 because these are small new equipment or structures appurtenant to the existing facility.

    e. Discharging to the infiltration ponds allows EBMUD to eliminate discharges to the Mokelumne River in order to protect natural resources and the environment. The issuance of this Order regulating discharges to the infiltration pond is therefore exempt from CEQA under 14 CCR Sections 15307-15308.

52. The discharge of wastewater is exempt from the requirements of *Consolidated Regulation for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 2005, et seq., (hereafter Title 27). The exemption, pursuant to Section 20090(b), is based on the following:

    a. The Regional Water Board is issuing waste discharge requirements,
    b. The discharge complies with the Basin Plan, and
    c. The wastewater does not need to be managed according to Title 22 CCR, Division 4.5, and Chapter 11, as a hazardous waste.

53. Pursuant to CWC Section13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

**PUBLIC NOTICE**

54. All the above and the supplemental information and details in the attached Information Sheet, incorporated by reference herein, were considered in establishing the following conditions of discharge.

55. The Discharger and interested agencies and persons were notified of the intent to prescribe WDRs for this discharge and provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

56. In a public meeting, all comments pertaining to the discharge were heard and considered.

**IT IS HEREBY ORDERED** pursuant to Section 13263 and 13267 of the California Water Code, East Bay Municipal Utility District, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the CWC and regulations adopted there under, shall comply with the following:

*Note: Other prohibitions, conditions, definitions, and the method of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991.*

**A. Discharge Prohibitions:**

1. After the Discharger obtains authorization as described in Discharge Specification B.2 to change the discharge from the Mokelumne River to the EP Pond, and reports the change complete to the Regional Water Board, discharge of wastes to surface waters or surface water drainage courses is prohibited.

~~3.~~2. Bypass or overflow of untreated or partially treated waste is prohibited with the exception of use of the standby-unlined pond when maintenance is performed on the oil separation pond. Bypass of wastewater resulting in less effective treatment as described in Finding No. 17d to the standby-unlined pond is prohibited after 30 April 2009.

~~5.~~3. Discharge of waste classified as 'hazardous,' defined in Section 20164 of Title 27, CCR, or 'designated,' as defined in Section 13173 of the CWC, is prohibited.

~~7.~~4. After the Discharger obtains authorization to change the discharge from the Mokelumne River to the EP Pond, the discharge of wastewater other than to the approved EP Pond or the standby-unlined pond identified in Finding No. 29 is prohibited.

~~9.~~5. The discharge of domestic wastewater to the industrial wastewater treatment system is prohibited.

~~11.~~6. The discharge of industrial wastewater to the domestic wastewater treatment system (septic system) is prohibited.

**B. Discharge Specifications:**

1. The monthly average discharge to the EP Pond shall not exceed ~~15~~20,000 gallons per day.

~~3.~~2. Before permanently changing the discharge location to the EP Pond, the Discharger shall obtain written authorization from the Executive Officer to begin use of the system described in the report required by Provision No. F.1.f.

~~5.~~3. Neither the treatment nor the discharge shall cause a nuisance or condition of pollution as defined by the CWC, Section 13050.

~~7.~~4. The discharge shall not cause the degradation of any water supply.

~~9.~~5. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations.

~~11.~~6. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the property owned by the Discharger.

~~13.~~7. As a means of discerning compliance with Discharge Specification No. 6, the dissolved oxygen content in the upper zone (one foot) of any wastewater pond shall not be less than 1.0 mg/L, assuming a minimum level of 1-feet of water in the EP pond.

~~15.~~8. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.

~~17.~~9. All ponds shall be managed to prevent the breeding of mosquitoes. In particular,

a. An erosion control program should assure that small coves and irregularities are not created around the perimeter of the waste surface.

~~c.~~b. Weeds shall be minimized through control of water depth, and/or harvesting~~, and/or herbicides~~.

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

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

~~12.~~11. No physical connection shall exist between wastewater piping and any domestic water supply, domestic/industrial supply well, irrigation water pipeline, or irrigation canal without an air gap or approved reduced pressure device.

~~14.~~12. The freeboard in the EP Pond shall never be less than two feet, as measured vertically from the water surface to the lowest point of overflow.

~~16.~~13. The wastewater treatment and disposal system shall have sufficient capacity to accommodate wastewater flow and ~~-~~seasonal precipitation. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.

~~18.~~14. On or about **15 October** each year, available EP Pond storage capacity shall at least equal the volume necessary to comply with Discharge Specifications No. 12 and No. 13.

~~20.~~15. Public contact with wastewater shall be precluded through such means as property boundary fences and~~,~~ signs~~, and/or irrigation management practices~~. Signs with proper wording of sufficient size shall be placed ~~at areas of access and~~ around the perimeter of the wastewater ponds to alert ~~the public~~visitors and workers of the use of wastewater.

~~22.~~16. The Discharger shall comply with all applicable sections of the Aboveground Petroleum Storage Tank Regulations (Section 25270, Health and Safety Code).

**C. Effluent Limitations:**

~~8.~~1. Wastewater discharged to the EP Pond shall not exceed the following monthly average effluent limits, or lower concentrations as the Discharger determines necessary to ensure compliance with the Groundwater Limitations:

| Constituent | Units | Concentration |
|---|---|---|
| Total Oil and Grease | mg/L | 5.0 |
| Total Copper, Annual Average | mg/L | 0.020 |
| Total Copper, Monthly Average | mg/L | 0.050 |

2. Wastewater in the EP Pond shall not have a pH of less than 6.5 or greater than 10.0.

**D. Solids/Sludge Disposal Requirements:**

1. Collected screenings, sludge, and other solids removed from the wastewater system shall be disposed of in a manner that is consistent with Title 27, Division 2, Subdivision 1 of the CCR and approved by the Executive Officer.

~~3.~~2. Sludge and other solids shall be removed from sumps, screens, etc. as needed to ensure optimal operation and adequate hydraulic capacity. Solids drying operations if any, shall be designed and operated to prevent leachate generation.

~~5.~~3. Storage and disposal of domestic wastewater sludge (septage) shall comply with existing Federal, State, and local laws and regulations, including permitting requirements and technical standards.

~~7.~~4. Sludge and other solids shall be removed from septic tanks as needed to ensure optimal operation and adequate hydraulic capacity. A duly authorized carrier shall haul sludge, septage, and domestic wastewater.

~~9.~~5. Any proposed change in solids use or disposal practice from a previously approved practice shall be reported to the Executive Officer at least 90 days in advance of the change.

**E. Groundwater Limitations:**

The discharge, in combination with other sources, shall not cause underlying groundwater to contain waste constituents in concentrations statistically greater than background water quality.

**F. Provisions:**

**1.** All of the following reports shall be submitted pursuant to CWC Section 13267, and prepared by a California registered professional as described in Provision F.2.

**a.** By **17 June 2008**, the Discharger shall submit a completed septic system permit application ~~from~~to the San Joaquin County Department of Public Health.

~~c.~~b. By **17 June 2008**, the Discharger shall submit and begin implementing a *Wastewater System Improvement Workplan* that describes the improvements that are required to cease the surface water discharge and begin to land apply the industrial wastewater. However, the discharge shall not be diverted to the EP Pond until authorization from the Executive Officer is received (although short term tests of improvements are acceptable under this provision). The *Workplan* shall include a project schedule that shows all improvements will be completed by **1 September 2008**.

~~c.~~c. By **17 June 2008**, the Discharger shall submit a *Soil Sampling and Analysis Plan* for monitoring the EP Pond bottom for waste constituent concentrations.

~~d.~~d. By **17 June 2008**, the Discharger shall submit and implement an *Operation and Management Plan* (*O&M Plan*) that addresses operation of the wastewater treatment and disposal facility. At a minimum, the *O&M Plan* will describe (a) the daily operation and maintenance of the treatment system, (b) the practices used to treat the wastewater within limits specified in this Order, (c) the location of the EP Pond, (d) the locations of flow meter(s) and effluent sampling points, (e) quality control sampling procedures, (f) solid waste disposal methods, (g) wastewater notification signs, (h) berm maintenance and vector control, and (i) a description of automatic alarms and notification systems . A copy of the *O&M Plan* shall be kept at the facility for reference by operating personnel and they shall be familiar with its contents.

~~i.~~e. By **17 June 2008**, the Discharger shall submit a *Petroleum Control Workplan* that describes improvements that will be implemented to prevent petroleum from being discharged to the environment via the standby-unlined pond. The Workplan shall include a schedule that shows improvements will be completed by 30 April 2009.

~~k.~~f. By **1 September 2008**, the Discharger shall submit a request to begin discharging wastewater to the EP Pond. The request shall include a *Wastewater System Improvement As-Built or Record Drawings Report* for the wastewater system improvements. The report shall document that the EP Pond system is completed, tested, and ready for use.

~~m.~~g. **Within 90 days** of obtaining Executive Officer approval to begin discharging wastewater to the EP Pond, the Discharger shall report the change to land discharge is complete and submit a request to the Regional Water Board to rescind WDRs Order No. R5-2003-0153 NPDES Order No. CA0082040. Until Order No. R5-2003-0153 is rescinded, it is in full effect and all monitoring is required in addition to that required by this Order.

~~o.~~h. By **30 April 2009**, the Discharger shall submit a *Petroleum Implementation Report* that describes the changes implemented to operation of the standby-unlined pond that prevents petroleum discharge to the environment.

2. In accordance with California Business and Professions Code Sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall contain a statement of qualifications of the responsible licensed professional(s) as well as the professional's signature and/or stamp of the seal.

3. The Discharger shall comply with the Monitoring and Reporting Program No. R5-2008-_____, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

4. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and by reference a part of this Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

5. If EP Pond bottom soil monitoring results show that the discharge of waste is causing the copper or petroleum concentration in soil to

increase to levels that could potentially have an adverse impact upon groundwater, then within **120 days** of the request of the Executive Officer, the Discharger shall submit a *BPTC Evaluation Workplan* that sets forth the scope and schedule for a systematic and comprehensive technical evaluation of each component of the facility's waste treatment and disposal system to determine best practicable treatment and control for the copper and/or petroleum concentration. The schedule to complete the evaluation shall be as short as practicable, and shall not exceed one year.

6. In the event of any change in control or ownership of the facility or wastewater disposal areas, the Discharger must 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 as Discharger 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, the name and address and telephone number of the persons responsible for contact with the Regional Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 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 by the Executive Officer.

7. The Discharger shall submit to the Regional Water Board on or before each compliance report due date the specified document, or if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is reported, then the Discharger shall state the reasons for noncompliance and shall provide a schedule to come into compliance.

8. The Discharger shall report to the Regional Water Board any toxic chemical release data it reports to the State Emergency Response Commission within15 days of reporting the data to the Commission pursuant to Section 313 of the "Emergency Planning and Community Right to Know Act of 1986."

9. The Discharger shall report promptly to the Board any material change or proposed change in the character, location, or volume of the discharge.

10. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or recession of this Order.

11. A copy of this Order shall be kept at the discharge facility for reference

by operating personnel. Key operating personnel shall be familiar with its contents.

12. The Regional Water Board will review this Order periodically and will revise requirements when necessary.

I, PAMELA C. CREEDON, 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 24/25 April 2008.

PAMELA C. CREEDON,
Executive Officer

TRO: 3/21/08

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2008-____

FOR

EAST BAY MUNICIPAL UTILITY DISTRICT
CAMANCHE DAM POWER HOUSE
SAN JOAQUIN COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring influent wastewater, treated effluent, wastewater ponds, and pond soil quality. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. Regional Board staff shall approve specific sample station locations prior to implementation of sampling activities.

This MRP is effective upon date of signature; however, portions of the MRP will not be relevant until the wastewater discharge location is changed to the EP Pond. In the meantime, the Discharger shall submit the monitoring data as described in the "Reporting" section of this MRP and all requirements of WDRs Order No. R5-2003-0153 until that order is rescinded.

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form. Field test instruments (such as those used to measure pH and dissolved oxygen) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are calibrated prior to each monitoring event;
3. The instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of the MRP.

## INFLUENT MONITORING

Influent flow monitoring shall be performed upstream of the oil separation pond. Influent monitoring shall include the following:

| Constituent | Units | Type of Sample | Sampling Frequency | Reporting Frequency |
|---|---|---|---|---|
| Flow[1] | gpd | Continuous Meter | Daily | Quarterly |
| Average Daily Flow[2] | gpd | Calculated | Monthly | Quarterly |

[1] Flow represents the daily flow rate.
[2] Average Daily Flow represents the daily flow rate averaged over the month.

## EFFLUENT MONITORING

Effluent samples shall be collected immediately downstream of the oil separation pond, and prior to discharge to the EP Pond. All samples shall be representative of the volume and

nature of the discharge. Effluent monitoring shall include the following:

| Constituent | Units | Type of Sample | Sampling Frequency | Reporting Frequency |
|---|---|---|---|---|
| ~~TPH - Diesel~~ | ~~mg/L~~ | ~~Grab~~ | ~~Monthly~~ | ~~Quarterly~~ |
| ~~TPH -~~Total Oil and Grease | mg/L | Grab | Monthly | Quarterly |
| ~~Fixed Dissolved Solids~~Electrical Conductivity | mg/L | Grab | Monthly | Quarterly |
| Total Copper | ug/L | Grab | Monthly | Quarterly |
| Total Dissolved Copper | ug/L | Grab | Monthly | Quarterly |

~~TPH denotes Total Petroleum Hydrocarbons.~~

## EVAPORATION/PERCOLATION (EP) AND STANDBY POND MONITORING

Each pond shall be monitored when in use and when there is a minimum of 1-feet of water as specified below:

| Constituent | Units | Type of Sample | Sampling Frequency | Reporting Frequency |
|---|---|---|---|---|
| Dissolved Oxygen [1] | mg/L | Grab | Monthly | Quarterly |
| Freeboard | 0.1 feet | Measurement | Weekly | Quarterly |
| pH [1] | Standard | Grab | Monthly | Quarterly |
| Odors | -- | Observation | Monthly | Quarterly |
| Berm condition | -- | Observation | Monthly | Quarterly |
| Petroleum Sheen | -- | Observation | Monthly | Quarterly |

[1] Samples shall be collected at a depth of one foot from each pond in use, opposite the inlet. Samples shall be collected between 0700 and 0900 hours.

## EP AND STANDBY POND SOIL SAMPLING

Soil samples shall be collected from the bottom of the EP and Standby ponds as specified below and described in the approved *Soil Sampling and Analysis Plan*. If no wastewater was discharged to the Standby pond during the quarter, the monitoring for that pond is not required.

| Constituent | Units | Type of Sample | Sampling Frequency | Reporting Frequency |
|---|---|---|---|---|
| Total Copper | mg/kg | Grab | Annual | Annual |
| Total Oil and Grease | mg/kg | Grab | Annual | Annual |
| ~~TPH - Diesel~~ | ~~mg/L~~ | ~~Grab~~ | ~~Monthly~~ | ~~Quarterly~~ |
| ~~TPH - Oil and Grease~~ | ~~mg/L~~ | ~~Grab~~ | ~~Monthly~~ | ~~Quarterly~~ |

## REPORTING

In reporting monitoring data, the District shall arrange the data in tabular form so that the date, sample type (e.g., effluent, pond, etc.), and reported analytical result for each sample is readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported to the Regional Water Board.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all soil sampling reports shall be prepared under the direct supervision of a Registered Engineer or Geologist and signed by the registered professional.

### A. Quarterly Monitoring Reports

Daily, weekly, and monthly monitoring data shall be reported in quarterly monitoring reports. Quarterly monitoring reports shall be submitted to the Board by the **1st day of the second month after the quarter** (i.e. the January-March quarterly report is due by May 1st) At a minimum, the reports shall include:

1. The report shall include the following:
    a. Results of influent; effluent; and EP and Standby Ponds;
    b. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements. Data shall be presented in tabular format;
    c. If requested by staff, copies of laboratory analytical report(s); and
    d. A calibration log verifying calibration of all hand-held monitoring instruments and devices used to comply with the prescribed monitoring program.
    e. When appropriate, the results of sampling the bottom of the EP Pond and/or standby-unlined pond soil sampling.

### B. Annual Report

An Annual Report shall be prepared as the fourth quarter monitoring report. The Annual Report will include all monitoring data required in the quarterly schedule. The Annual Report shall be submitted to the Regional Board by **1 February** each year. In addition to the data normally presented, the Annual Report shall include the following:

1. If requested by staff, tabular and graphical summaries of all data collected during the year;

2. A discussion of compliance and the corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements;
3. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program;
4. Summary of septic tank pumping activity;
5. Equipment maintenance and calibration records, as described in Standard Provision No. C.4;
6. A forecast of influent flows, as described in Standard Provision No. E.4;

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

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

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

_____
(Date)

TRO: 3/21/08

## Table 4 - Infiltration Pond Water Balance with 100-Year Rain, Camanche Dam Powerhouse (Rev. 3/2008)

| Month | Days | Influent | Precip. 100-Year[d] | Precip. 100-Year | Total Flow (1) | Pond Evaporation[e] | Pond Evaporation (2) | Percolation | Percolation (3) | Net Flow to Pond (1-2-3) | Cumulative Pond Volume - Water Year #1[f] | Cumulative Pond Volume - Water Year #1[f] | Cumulative Pond Volume - WY #2 (w/ Avg Rain) | Cumulative Pond Volume - WY #2 (w/ Avg Rain) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ac-ft | in | ac-ft | ac-ft | in | ac-ft | gallons | ac-ft | ac-ft | ac-ft | ac-ft | ac-ft | ac-ft |
| **January** | 31 | 1.90 | 5.11 | 0.25 | 2.15 | 1.22 | 0.04 | 1,638,041 | 5.03 | -2.91 | | -8.75 | | -33.82 |
| **February** | 28 | 1.72 | 4.69 | 0.23 | 1.95 | 1.74 | 0.06 | 1,479,521 | 4.54 | -2.65 | | -11.40 | | -33.79 |
| **March** | 31 | 1.90 | 4.23 | 0.21 | 2.11 | 2.91 | 0.10 | 1,638,041 | 5.03 | -3.01 | | -14.41 | | -33.79 |
| **April** | 30 | 1.84 | 3.03 | 0.15 | 1.99 | 4.32 | 0.14 | 1,585,201 | 4.86 | -3.02 | | -17.43 | | -33.82 |
| **May** | 31 | 1.90 | 1.84 | 0.09 | 1.99 | 6.48 | 0.22 | 1,638,041 | 5.03 | -3.25 | | -20.68 | | -33.90 |
| **June** | 30 | 1.84 | 0.74 | 0.04 | 1.88 | 7.97 | 0.27 | 1,585,201 | 4.86 | -3.25 | | -23.94 | | -34.00 |
| **July** | 31 | 1.90 | 0.72 | 0.04 | 1.94 | 8.89 | 0.30 | 1,638,041 | 5.03 | -3.39 | | -27.32 | | -34.11 |
| **August** | 31 | 1.90 | 0.33 | 0.02 | 1.92 | 8.02 | 0.27 | 1,638,041 | 5.03 | -3.38 | | -30.70 | | -34.22 |
| **September** | 30 | 1.84 | 1.88 | 0.09 | 1.93 | 6.15 | 0.21 | 1,585,201 | 4.86 | -3.14 | | -33.83 | -33.83 | -34.30 |
| **October** | 31 | 1.90 | 2.22 | 0.11 | 2.01 | 4.11 | 0.14 | 1,638,041 | 5.03 | -3.15 | 0.00 | | -33.88 | |
| **November** | 30 | 1.84 | 4.54 | 0.22 | 2.06 | 1.97 | 0.07 | 1,585,201 | 4.86 | -2.87 | -2.87 | | -33.87 | |
| **December** | 31 | 1.90 | 3.95 | 0.19 | 2.10 | 1.15 | 0.04 | 1,638,041 | 5.03 | -2.97 | -5.84 | | -33.86 | |
| **TOTAL** | 365 | 22.40 | 33.28 | 1.63 | 24.03 | 54.93 | 1.83 | 19,286,611 | 59.19 | -36.98 | | | | |

Calculated Surface Area (ac) = 0.59 (used for precipitation calculations)

Sump Discharge Flow Rate[a] (gpm) = 13.89 **(or 20,000 gpd)**

Percolation Rate[b] = 1 gpm per **474.84** ft²

Calculated Bottom of Pond Area[c] (ac) = 0.40 (used for percolation and evaporation calculations)

**Bottom of Pond Length (ft) = 132**

Top of Pond Length (ft) = 160

Total Pond Capacity = 149,212 ft³ → 3.43 ac-ft → 1,116,183 gallons

Total Pond Capacity w/ a 2' freeboard = 2.29 ac-ft → 99,585 ft³ → **744,950 gallons**

With a dry pond by the end of September after a year with 100-yr rain, the pond would remain dry throughout the next year, assuming average rain return. (see shaded notation)

Notes

a A conservative sump flowrate of 20,000 gpd is assumed (compared to the 2004 - 2006 mean flowrate of 12,000 gpd).

b A conservative percolation rate is assumed to be 50% less than the measured percolation rate observed in November 2005.

c The assumed surface area available for percolation is only the bottom of the pond even though some percolation through the walls can be expected. The assumed surface area available for evaporation is also the bottom of the pond even though, with any water accumulation in the pond, the actual area available for evaporation would be larger.

d Precipitation data from N. Camanche Res. DWR Station #B00 1325, an area with a potentially higher total rainfall, were used for conservative purposes.

e Based on 70% of pan evaporation data from N. Camanche Res. (Ave 1965 - 2000)

f A water year is calculated from October to September.

INFORMATION SHEET

ORDER NO. R5-2008-_____

EAST BAY MUNICIPAL UTILITY DISTRICT
CAMANCHE DAM POWER HOUSE
SAN JOAQUIN COUNTY

East Bay Municipal Utility District (EBMUD) hereafter Discharger, owns and operates a hydroelectric generating Power House at 23900 E. Buena Vista Road, Clements, San Joaquin County. The Discharger submitted a Report of Waste Discharge (RWD) dated 21 September 2007 for treatment and land application of wastewater generated at the Camanche Dam Power House.

**Background**

Three hydro-powered turbine generators are operated at the Power House and are capable of producing up to 10 million kilowatts of electricity per year. Approximately 12,000 gallons per day (gpd) of wastewater is generated in the Power House. The Discharger treats the industrial wastewater to remove petroleum products (used for lubrication in the turbines) and discharges the treated effluent to the Mokelumne River downstream of Camanche Dam under a National Pollutant Discharge Elimination System (NPDES) permit.

The NPDES permit contains effluent limitations for copper and other analytes; because the Mokelumne River is listed as impaired for copper under the Clean Water Act (CWA), Section 303(d), increasingly stringent copper concentration discharge limits are imposed beginning 1 October 2008. The Discharger has reported copper concentrations upstream of the Power House that exceed the discharge limits that would be imposed on 1 October 2008 if the NPDES discharge were continued. The Discharger has attempted to reduce the concentration of copper in wastewater effluent, but has determined that it is technically infeasible to reduce copper to concentrations that will consistently comply with the new limits. ~~not been successful in reducing concentrations to levels that will consistently comply with the new limits~~. Rather than attempt to improve treatment to reduce already low concentrations, the Discharger has elected to switch the discharge from surface water to land and will construct an Evaporation/Percolation (EP) Pond.

**Wastewater Treatment**

Wastewater is generated from several sources in the Power House generally through cooling, lubricating, heat exchange, and liquid seals. Several sources of cooling water are entirely contained within jackets and have no contact with bearings or lubricating oil. That water is directly discharged to the Mokelumne River. The wastewater that can become contaminated with petroleum hydrocarbons (lubricating oil) and copper through use in the Power House is collected in a sump, skimmed to remove oil, pumped to an oil separation pond for additional skimming, and discharged. Historically, the discharge has been to the Mokelumne River; the Discharger will switch the discharge point to the EP Pond. A standby-unlined pond with a capacity of 85,000 gallons is located adjacent to the oil separation pond and is used when the oil separation pond undergoes scheduled maintenance. Discharge to the standby-unlined

pond can result in petroleum being discharged to the environment and this Order requires improvements to be completed within one year of adoption of this Order to control the petroleum discharge.

In addition to treating the wastewater, the Discharger has completed improvements in the Power House to minimize the quantity of wastewater generated. The flow rate has been reduced from over 90,000 gpd to an average of less than 15,000 gpd. Since January 2004 the flow rate has averaged 12,000 gpd.

The Discharger has changed copper or bronze equipment to reduce the concentration of copper in wastewater. The work resulted in a reduction of median copper values from ~~8.5~~7.9 to 6.6 ug/L. Copper concentrations in water upstream of the Power House are generally approximately equal to the concentrations downstream of the Power House (after the wastewater has been discharged). In the years from 2004 through 2007, upstream concentrations ranged from 1.11 to 3.~~37~~58 ug/L, downstream concentrations ranged from ~~3.67~~2.16 to 0.97 ug/L. Removal of petroleum hydrocarbons from the wastewater has been effective, consistently removing the contaminant to below the analytical method detection limit (1.0 to 2.6 mg/L). The discharge to the standby-unlined pond ~~is~~may be of concern~~ because one of two oil skimmers is taken out of service~~ when the oil separation pond is cleaned and the wastewater is discharged to the standby-unlined pond.

**Wastewater Disposal**

Wastewater will be disposed of by evaporation and percolation from the EP Pond. Because the wastewater is of high quality, no additional treatment is required. Although wastewater copper concentrations are sometimes slightly higher than groundwater concentrations, groundwater quality will be protected through attenuation processes as the wastewater infiltrates.

Percolation capacity was determined by performing three double-ring infiltrometer tests on 16 and 17 November 2005. Infiltration rates were determined to vary from 0.16 to 0.55 in/hr. The infiltration data was used in preparation of a water balance that forecast the EP Pond would go dry in August during a 100-year return annual precipitation event. Stormwater that falls on the facility infiltrates or runs off, eventually discharging into the Mokelumene River. Only precipitation that falls directly on the EP Pond was included in the water balance.

The Power House is equipped with a septic tank that pumps to a sump. Clarified water is discharged to a leach pit. The system is not permitted by the San Joaquin County Environmental Health Department but is required to be by June 2008.

**Basin Plan, Beneficial Uses, and Regulatory Considerations**

Surface water from the WWTF is to the Mokelumne River between Camanche Reservoir and the Delta. The beneficial uses are agricultural supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat
The *Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region, Fourth Edition* (Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin. Beneficial uses often determine the water quality objectives that apply to a water body. For example, waters designated as municipal and domestic supply must meet the Maximum Contaminant Levels (MCLs) for drinking waters. The Basin Plan sets forth the applicable beneficial uses (industrial, agricultural, and domestic and municipal supply in this instance) of groundwater, procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity.

**Antidegradation**

The antidegradation directives of State Water Board Resolution No. 68-16, "Statement of Policy With Respect to Maintaining High Quality Waters in California," or "Antidegradation Policy" require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policies and procedures for complying with this directive are set forth in the Basin Plan.

Resolution 68-16 is applied on a case-by-case, constituent-by-constituent basis in determining whether a certain degree of degradation can be justified. It is incumbent upon the Discharger to provide technical information for the Regional Board to evaluate that fully characterizes:

- All waste constituents to be discharged;
- The background water quality of the uppermost layer of the uppermost aquifer;
- The background quality of other waters that may be affected;
- The underlying hydrogeologic conditions;
- Waste treatment and control measures;
- How treatment and control measures are justified as best practicable treatment and control;
- The extent the discharge will impact the quality of each aquifer; and
- The expected degree of degradation below water quality objectives.

In allowing a discharge, the Regional Water Board must comply with CWC Section 13263 in setting appropriate conditions. The Regional Water Board is required, relative to the groundwater that may be affected by the discharge, to implement the Basin Plan and consider the beneficial uses to be protected along with the water quality objectives essential for that purpose. The Regional Board need not authorize the full utilization of the waste assimilation

capacity of the groundwater (CWC 13263(b)) and must consider other waste discharges and factors that affect that capacity.

Certain wastewater constituents are not fully amenable to waste treatment and control and it is reasonable to expect some impact on groundwater quality. Some degradation for certain constituents is consistent with maximum benefit to the people of California because the technology, energy, water recycling, and waste management advantages of hydroelectric power generation facility far outweigh the environmental impact that would be required to replace lost power generation. Economic prosperity of local communities is of maximum benefit to the people of California, and therefore sufficient reason to accommodate wastewater discharge provided terms of reasonable degradation are defined and met. The proposed Order authorizes some degradation consistent with the maximum benefit to the People of the State but does not authorize pollution (i.e., violation of any water quality objective).

**Title 27**

Title 27, CCR, Section 20005 et seq. (“Title 27”), contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent is acceptable under Title 27 regulations.

Discharges of wastewater to land is exempt from the requirements of Title 27 if the applicable Regional Water Board has issued WDRs, the discharge is in compliance with the applicable water quality control plan, and the wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of the California Code of Regulations as a hazardous waste.

**Proposed Order Terms and Conditions**

**Discharge Prohibitions and Specifications**

The proposed Order’s Effluent Limitations for total oil and grease and total copper are based on groundwater quality protection. The oil and grease limit is the same as the limit in the NPDES Order. The Discharger has complied with the limit. The copper limit is 0.020 mg/L. The concentration of copper (both total and dissolved) in effluent samples have been lower than the effluent limit. The discharge specifications regarding dissolved oxygen and freeboard are consistent with Regional Board policy for the prevention of nuisance conditions and overtopping, and are applied to all such facilities.

**Monitoring Requirements**

Section 13267 of the CWC authorizes the Regional Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the state. In recent years there has been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment of civil administrative liability where appropriate.

The proposed Order includes influent/effluent monitoring requirements and wastewater pond monitoring. In order to adequately characterize the effluent, the Discharger is required to monitor for petroleum hydrocarbons, fixed dissolved solids, and copper. Monitoring of copper and petroleum concentrations in soil at the bottom of the EP Pond is required on an annual basis. To ensure that storage ponds do not create nuisance conditions, the Discharger is required to monitor dissolved oxygen weekly.

The Discharger must monitor wastewater for constituents expected to be present in the discharge, capable of reaching groundwater, and violating groundwater limitations if treatment, control, and environmental attenuation proves inadequate.

**Reopener**

The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. However, information is presently insufficient to develop final recycled water and groundwater limitations, so the proposed Order contains interim limitations. Additional information must be developed and documented by the Discharger as required by schedules set forth in the proposed Order. As this additional information is obtained, decisions will be made concerning the best means of assuring the highest water quality possible and that could involve substantial cost. It may be appropriate to reopen the Order if applicable laws and regulations change, but the mere possibility that such laws and regulations may change is not sufficient basis for reopening the Order. The CWC requires that WDRs implement all applicable requirements.