

## **Staff Report**

### **CITY OF WOODLAND WATER POLLUTION CONTROL FACILITY YOLO COUNTY**

#### **BACKGROUND INFORMATION**

The City of Woodland (Discharger) owns and operates a wastewater treatment plant (WWTP) that provides sewerage service to domestic, commercial, and industrial users of the City of Woodland. The WWTP has a design average dry weather flow capacity of 7.8 million gallons per day and includes activated sludge oxidation ditches, secondary clarifiers, a chlorination/dechlorination process, and approximately 315 acres of ponds for sludge treatment and/or disposal or treatment of excess wastewater during periods of peak flow. Treated municipal wastewater is discharged to the Tule Canal, a water of the United States.

The Regional Board adopted Waste Discharge Requirements Order No. R5-2003-0031 (NPDES No. CA0077950) and Cease and Desist Order (CDO) No. R5-2003-0032 on 13 March 2003 to regulate the WWTP and its discharge. The Discharger filed a timely petition with the State Water Resources Control Board (State Board), which issued Order WQO 2004-0010 modifying the Orders. The Discharger also filed a Writ of Administrative Mandamus in Yolo County Superior Court challenging the Orders as modified by State Board Order WQO 2004-0010. The venue was moved to Alameda County Superior Court. [*City of Woodland v. California Regional Water Quality Control Board, Central Valley Region, et al.*, Alameda Cty Sup. Ct No. RG04-188200.] On 16 May 2005 the Alameda County Superior Court issued “Order Granting Writ of Administrative Mandamus” (Court Order) ordering the Regional Board to revise the Orders by deleting effluent limits for beryllium, bis(2-ethylhexyl)phthalate, and organochlorine pesticides; addressing the effluent limit for aluminum; and demonstrating why average weekly and average monthly limits are impractical consistent with federal regulations and applicable federal water quality criteria.

The proposed tentative NPDES permit and Cease and Desist Order have been amended solely to address the Court’s Order. The Notice of Public Hearing stated that only those limited changes to the Orders would be considered. The following staff report details the rationale to modify the Regional Board’s Orders in accordance with the Court’s Order.

#### **SITE SPECIFIC BENEFICIAL USES OF THE RECEIVING WATER**

The proposed Order includes effluent limits established to protect freshwater aquatic life. The designated beneficial uses of the Tule Canal, within the Yolo Bypass, include warm freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat and potential cold freshwater aquatic habitat. The December 2002 *Habitat Improvement for Native Fish in the Yolo Bypass*, a Project of Natural Heritage Institute, California Department of Water Resources, California Department of Fish and Game, Yolo Basin Foundation, Northwest Hydraulic Consultants, Gus Yates, Peter Kiel, and Jones & Stokes, states that “considering the four runs of salmon present, adult migration may occur in any month.” This indicates the

presence of salmonids in the Tule Canal year-round. The California Department of Water Resources' *Bulletin 250-2002 Fish Passage Improvement 2003* indicates that coldwater fish may become concentrated in the Tule Canal when there is insufficient flow to allow their passage through the Fremont Weir.

## **EFFLUENT LIMITATIONS**

### **Beryllium, Organochlorine pesticides, Bis(2-ethylhexyl)phthalate Limitations**

In compliance with the Court Order, the effluent limitations for beryllium, organochlorine pesticides, and bis(2-ethylhexyl)phthalate have been removed from the proposed Order.

### **Site-specific Aluminum Limitations**

The proposed Order includes effluent limits for aluminum. In compliance with the Court Order, the proposed Order addresses why effluent limits for aluminum are reasonably necessary in light of the site-specific conditions at the Tule Canal.

Federal regulations at 40 CFR section 122.44(d)(1)(vi) specify that the Regional Board must establish an effluent limit when a pollutant is present in the effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative water quality objective. The Regional Board must establish the effluent limit using one of several specified options, including using U.S. Environmental Protection Agency's (EPA) ambient water quality criteria on a case-by-case basis. The Basin Plan contains a narrative water quality objective that specifies, in part, "all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." U.S. EPA has established an Ambient Water Quality Criteria for aluminum for protection of freshwater aquatic life that is applied in the proposed Order to implement the Basin Plan narrative toxicity objective consistent with the federal regulations. U.S. EPA has published a Technical Support Document (TSD) for Water Quality-Based Toxics Control, which specifies the methodology for determining whether there is a reasonable potential to violate the ambient water quality criteria.

The Discharger's 1998-2002 Effluent Monitoring Data report indicates that aluminum was detected in each of four effluent samples collected by the Discharger. Using the methodology in the U.S. EPA's TSD, the reasonable potential multiplying factor is 4.7 based on the four samples collected in the effluent. The projected maximum effluent concentration (MEC) of aluminum is calculated at 141 µg/l.

The U.S. EPA Ambient Water Quality Criteria for aluminum for the protection of freshwater aquatic life are 87 µg/l (four-day average) and 750 µg/l (one-hour average). U.S. EPA Document 440/5-86-008, *Ambient Water Quality Criteria for Aluminum*, August 1988, contains the following national criteria for aluminum: "The procedures described in the 'Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses' indicate that, except possibly where a locally important species is very sensitive, freshwater aquatic organisms and their uses should not be affected unacceptably, when the pH is between 6.5 and 9.0, if the four-day average concentration of aluminum does not exceed 87 µg/L more than once every three years on the average and if the one-hour average concentration does

not exceed 750 µg/L more than once every three years on the average.” All available monitoring data indicate that the effluent contains aluminum at concentrations that exceed U.S. EPA’s ambient water quality criteria and has exceeded the Ambient Water Quality Criteria more than once every three years since it exceeded it every year for four years. The Ambient Criteria for aluminum is not restricted based on hardness. Despite that U.S. EPA does not require low hardness or pH in recommending the Ambient Criteria for the protection of Freshwater Aquatic Life, the *Sacramento River Coordinated Monitoring Program 2002-2003 Annual Report* documents the Sacramento River’s hardness as low as 28 mg/l (as CaCO<sub>3</sub>) and pH between 6.2 and 7.8 downstream of its confluence with the Feather River, and these waters are, when the river overflows the Fremont Weir, the primary waters in the Tule Canal.

The ambient water quality criteria for aluminum applies in the Tule Canal because the designated beneficial uses of the Tule Canal, within the Yolo Bypass, include warm freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, and potential cold freshwater aquatic habitat, which are beneficial uses for the protection of freshwater aquatic life. The projected MEC of aluminum exceeds U.S. EPA’s Ambient Water Quality Criteria. The discharge from the WWTP, therefore causes, has a reasonable potential to cause, or contributes to an exceedance of the Basin Plan narrative toxicity objective because the concentrations in the discharge exceed U.S. EPA’s Ambient Water Quality Criteria.

#### **Nonweekly/Nonmonthly Limitations**

The proposed Order includes effluent limits for biochemical oxygen demand (BOD), total suspended solids (TSS), turbidity, total coliform organisms, ammonia, chlorine residual dibromochloromethane, oil and grease, aluminum, and settleable solids that are not stated as average weekly and average monthly limits. In compliance with the Court Order, the proposed Order demonstrates why average weekly and average monthly limits are impractical consistent with federal regulations and applicable federal water quality criteria.

##### **1. BOD and TSS**

The Federal Clean Water Act, Section 301, requires that not later than 1 July 1977, publicly owned wastewater treatment works meet effluent limitations based on secondary treatment or any more stringent limitation necessary to meet water quality standards. Federal Regulations, 40 CFR, Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD and TSS. Tertiary treatment is necessary to protect the beneficial uses of the receiving stream and the requirements for BOD and TSS are based on the technical capability of the tertiary process. BOD is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The secondary and tertiary treatment standards for BOD and TSS are indicators of the effectiveness of the treatment processes. The principal design parameter for wastewater treatment plants is the daily BOD and TSS loading rates and the corresponding removal rate of the system. In applying 40 CFR Part 133 for weekly and monthly average BOD and TSS limitations, the application of tertiary treatment processes results in the ability to achieve lower levels for BOD and TSS than the secondary standards currently prescribed; the 30-day average BOD and TSS limitations have been revised to 10 mg/l, which is technically based on the capability of a tertiary system. A daily maximum limitation for BOD and

TSS is also included in the proposed Order to assure that the treatment works is not organically overloaded and operates in accordance with design capabilities. The application of tertiary treatment and the corresponding maximum daily, and average weekly and monthly limitations for BOD and TSS are in accordance with 40 CFR Part 125.3 technology based treatment requirements providing best practicable waste treatment technology utilizing best professional judgment to establish the case by case effluent limitations.

2. Turbidity

The daily average and daily maximum limitations for turbidity are in accordance with 40 CFR Part 125.3 technology based treatment requirements providing best practicable waste treatment technology utilizing best professional judgment to establish the case by case effluent limitations.

3. TCO

As coliform organisms are living and mobile, it is impracticable to quantify an exact number of coliform organisms and to establish weekly average limitations. Instead, coliform organisms are measured as a most probable number and regulated based on a 7-day median limitation.

4. Ammonia:

U.S. EPA's Ambient Water Quality Criteria for protection of freshwater aquatic life are based on one-hour and four-day averages. Ammonia effluent limits in the proposed Order are expressed as one-hour and four-day limitations, corresponding directly with U.S. EPA's Ambient Water Quality Criteria for the protection of freshwater aquatic life. Conversion of the effluent limits into average weekly and average monthly effluent limits is not practical because there is no adequate procedure to make such conversion based on a statistical projection procedure. Use of average weekly and average monthly limits are also not protective of the beneficial uses of the receiving stream since ammonia is highly toxic in very low concentrations. Ammonia is present in high concentrations in domestic waste. The removal and accurate measurement of ammonia is critical to protecting the aquatic life beneficial uses of the receiving stream. Use of weekly and monthly averages could result in conditions that are toxic to aquatic life.

5. Chlorine

U.S. EPA's Ambient Water Quality Criteria for protection of freshwater aquatic life are based on one-hour and four-day averages. Total chlorine effluent limits in the proposed Order are expressed as one-hour and four-day limitations, corresponding directly with U.S. EPA's Ambient Water Quality Criteria for the protection of freshwater aquatic life. Conversion of the effluent limits into average weekly and average monthly effluent limits is not practical because there is no adequate procedure to make such conversion based on a statistical projection procedure. Use of average weekly and average monthly limits are also not protective of the beneficial uses of the receiving stream since chlorine is highly toxic in very low concentrations. The Discharger monitors chlorine on a continuous basis and the one-hour and four-day limitations are

therefore directly measurable for demonstrating compliance with these limitations. Chlorine is a toxic substance intentionally added to the wastestream during the treatment process. The removal and accurate measurement of chlorine is critical to protecting the aquatic life beneficial uses of the receiving stream. Use of averages could result in conditions that are toxic to aquatic life.

6. Dibromochloromethane, Oil and Grease, Aluminum, and Settleable Solids  
Title 40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. The *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* contains a procedure to convert acute (one-hour average) and chronic (four-day average) aquatic life criteria to maximum daily and average monthly effluent limitations, but does not contain any procedures to convert one-hour average, four-day average, or daily maximum limitations to average weekly limitations. Technical guidance for converting non-weekly limitations to weekly limitations cannot be found, therefore it is impracticable to establish weekly limitations from criteria based upon other lengths of time.

#### **Mass-Based Limitations**

The proposed Order includes effluent limitations based on mass. In compliance with the Court Order, the proposed Order cites 40 CFR 122.45 (f)(1) and 40 CFR 122.45 (f)(2), which requires pollutants be limited in terms of mass.

#### **CEASE AND DESIST ORDER**

In compliance with the Court Order, the proposed Cease and Desist Order does not include compliance schedules for organochlorine pesticides and bis(2-ethylhexyl)phthalate.