

Regional Water Quality Control Board
Central Valley Region
Board Meeting – 21/22 June 2007

Response to Written Comments for City of Redding
Stillwater Wastewater Treatment Facility
Tentative Waste Discharge Requirements

The following are responses to written comments received from interested parties in response to the Tentative Waste Discharge Requirements (NPDES No. CA0082589) for the City of Redding – Stillwater Wastewater Treatment Facility issued on 4 May 2007. Written comments from interested parties on the proposed Order were required to be received by the Regional Water Quality Control Board (Regional Water Board) by 5 June 2007 in order to receive full consideration. Comments were received by the due date from the following parties:

1. California Sportfishing Protection Alliance (CSPA)
2. City of Redding

Written comments from the above interested parties are summarized below, followed by the response of the Regional Water Board staff.

CALIFORNIA SPORTFISHING PROTECTION ALLIANCE (CSPA) COMMENTS

CSPA - COMMENT #1: The proposed Permit contains numeric Effluent Limitations for alpha-BHC, beta-BHC and gamma-BHC contrary to the Basin Plan water quality objective of “non-detectable” in violation of Federal Regulations 40 CFR122.44 and California Water Code (CWC) Section 13377.

RESPONSE

The Basin Plan water quality objective for persistent chlorinated hydrocarbon pesticides states, “pesticides shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by the Environmental Protection Agency or the Executive Officer.” The proposed Order contains a receiving water limitation for persistent chlorinated hydrocarbon pesticides of “non-detect.” Upstream and downstream receiving water monitoring for persistent chlorinated hydrocarbon pesticides have been included in the proposed Order to measure compliance with the receiving water quality objective. Effluent limitations on alpha-BHC, beta-BHC, and gamma-BHC were established utilizing either the numeric CTR criteria for protection of human health, or the laboratory minimum level (ML) required by the SIP, whichever was most conservative. There were no detectable concentrations of alpha-BHC, beta-BHC, or gamma-BHC in the receiving water and assimilative capacity was given based on the laboratory detection limits for each constituent. Due to the high dilution the Sacramento River provides, and the effluent mixing, the effluent limitations for alpha-BHC, beta-BHC, and gamma-BHC ensure that the applicable water quality objectives and criteria are not exceeded, and that all

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beneficial uses of the receiving water are protected. The proposed Order does not allow pesticides to be detected in the downstream receiving water.

CSPA - COMMENT #2: The proposed Permit utilized mixing zones to develop limitations for copper, zinc, cyanide, chlorodibromomethane and dichlorobromomethane without having conducted a mixing zone analysis as required by the Basin Plan and the SIP and the proposed limitations may therefore exceed water quality standards in violation of Federal Regulations 40 CFR 122.44 and CWC Section 13377.

RESPONSE

The mixing zone and dilution credits used in the proposed Order are consistent with the Basin Plan and the SIP. The Basin Plan and the SIP allow the Regional Board to authorize a mixing zone and dilution credit. Where there is incomplete mixing, the Regional Board may authorize a mixing zone where the discharger has completed appropriate studies and “demonstrated to the satisfaction of the Regional Board that a dilution credit is appropriate”. In this case, the discharger has completed some studies, including a dye study, and provided information that demonstrates to the satisfaction of the Regional Board that dilution credits are appropriate. The Discharger supplied effluent flow data and receiving water flow data in order to calculate dilution ratios for applicable water quality objectives such as acute and chronic aquatic life criteria and human health criteria. The ratio of the receiving water (Sacramento River) flow to effluent is approximately 148:1 at extreme critical low river flow and high treatment facility flow, and 1077:1 at long-term average receiving water and treatment facility flows. A conservative estimated mixing of the effluent in the receiving water was valued at 25 percent. The percent mixing was partially based on the length of the diffuser (80 feet) relative to the width of the river (450 feet) at low flows (2400 cfs). At approximately 2400 cfs, the outfall line (including the diffuser) extends 260 feet from the left bank of the river, thus placing the diffuser in relatively the center of the river where rapid mixing is expected to occur. The Discharger performed a tracer-dye analysis in September 2006 to assess the functionality of the facility’s sole effluent diffuser port (the remainder ports are clogged). The tracer dye was observed to completely mix with the receiving water within approximately 200 feet downstream of the diffuser. This was expected, as it is in an area of turbulent flow.

The proposed Order requires the discharger to repair the diffuser and conduct further mixing zone and dilution studies. It would be inappropriate to ignore the obvious and significant dilution and mixing that occurs in the Sacramento River.

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After completion of the additional studies, the Regional Board may revise the mixing zone and dilution credit.

The commenter states, “*there are drinking water intakes, and proposed intakes, downstream of the wastewater discharge which could be impacted prior to the pollutants from the discharge are completely mixed.*” Regional Board staff is not aware of any nearby municipal drinking water intakes downstream of the outfall; the closest documented intake is the West Sacramento intake.

CSPA - COMMENT #3: The proposed Permit does not contain mass based Effluent Limitations contrary to Federal Regulations and technical advice from EPA.

RESPONSE

The proposed Permit does contain mass based effluent limitations, as appropriate. Federal regulations at 40 CFR 122.45(f)(1) and (2), states the following regarding effluent limitations for publicly owned treatment works:

*“(1) All pollutants limited in permits shall have limitations, standards or prohibitions expressed in terms of mass **except**:*
(i) For pH, temperature, radiation, or other pollutants which cannot appropriately be expressed by mass;
(ii) When applicable standards and limitations are expressed in terms of other units of measurement; or
(iii) If in establishing permit limitations on a case-by-case basis under § 125.3, limitations expressed in terms of mass are infeasible because the mass of the pollutant discharged cannot be related to a measure of operation (for example, discharges of TSS from certain mining operations), and permit conditions ensure that dilution will not be used as a substitute for treatment.
(2) 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.” (emphasis added)

The proposed Order includes effluent limitations expressed in terms of both mass and concentration for some constituents. Pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some effluent limitations are not expressed in terms of mass when the applicable standards are expressed in terms of concentration (e.g. CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

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CSPA - COMMENT #4: The proposed Permit contains an Effluent Limitation for acute toxicity that allows mortality that exceeds the Basin Plan water quality objective and does not comply with Federal regulations, at 40 CFR 122.44 (d)(1)(i).

RESPONSE

The acute toxicity effluent limitations contained in the proposed Order do comply with Federal regulations. The limitations do meet the Basin Plan water quality objective, and are consistent with numerous NPDES permits issued by the Central Valley Regional Water Board and throughout the state, and are appropriate. The proposed Order, as a whole, contains several mechanisms designed to ensure that the discharge does not cause toxicity in the receiving water. The proposed Order contains a Receiving Water Limitation that prohibits the discharge from causing toxicity in the receiving water. Additionally, effluent limits are included for all toxic pollutants with reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. Where appropriate, these limits are developed based on aquatic life toxicity criteria.

In addition to chemical-specific effluent limitations, the proposed Order requires whole effluent toxicity (WET) testing that identifies both acute and chronic effluent toxicity. WET testing is necessary because chemical-specific effluent limitations do not address synergistic effects that may occur when the effluent mixes with receiving waters, synergistic effects of mixtures of chemicals, or toxicity from toxic pollutants for which there are no aquatic life toxicity criteria. To address toxicity detected in WET testing, the proposed Order includes a provision that requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate, effluent toxicity. If the discharge exhibits a pattern of toxicity, the Discharger is required to initiate a Toxicity Reduction Evaluation and take actions to mitigate the impact of the discharge and prevent reoccurrence of toxicity.

The acute toxicity effluent limitations establish additional thresholds to control toxicity in the effluent: survival in one test no less than 70% and a median of no less than 90% survival in three consecutive tests. Some in-test mortality can occur by chance. To account for this, the test acceptability criteria for the acute test allow ten percent mortality (requires 90% survival) in the control. Thus, the acute toxicity effluent limitation allows for some test variability, but imposes ceilings for exceptional events (i.e. 30% mortality or more), and for repeat events (i.e., median of three events exceeding mortality of 10%).

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CSPA - COMMENT #5: The proposed Permit does not contain Effluent Limitations for chronic toxicity and therefore does not comply with Federal regulations, at 40 CFR 122.44 (d)(1)(i) and the SIP.

RESPONSE

The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limits. This has resulted in the petitioning of a NPDES permit in the Los Angeles Region¹ that contained numeric chronic toxicity effluent limitations. As a result of this petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012:

“In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits.”

The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. The proposed Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

CSPA - COMMENT #6: The proposed Permit does not contain an Effluent Limitation for ammonia in violation of Federal Regulations 40 CFR 122.44 and California Water Code, Section 13377.

¹ In the Matter of the Review of Own Motion of Waste Discharge Requirements Order Nos. R4-2002-0121 [NPDES No. CA0054011] and R4-2002-0123 [NPDES NO. CA0055119] and Time Schedule Order Nos. R4-2002-0122 and R4-2002-0124 for Los Coyotes and Long Beach Wastewater Reclamation Plants Issued by the California Regional Water Quality Control Board, Los Angeles Region SWRCB/OCC FILES A-1496 AND 1496(a)

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RESPONSE

The proposed Order does not contain an effluent limit for ammonia because it is not required or appropriate. 40 CFR 122.44(d) requires effluent limits to be established for pollutants that cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality (reasonable potential). As explained below, effluent limits for ammonia were not included in the proposed Order because there is no “reasonable potential” for ammonia.

The USEPA, in National Ambient Water Quality Criteria for Freshwater Aquatic Life, promulgated water quality criteria for ammonia that are dependent on pH, temperature, and whether or not early life stages of fish are present in the water. Regional Board staff examined effluent ammonia concentrations, and upstream receiving water pH and temperature values to determine if effluent ammonia concentrations have exceeded the water quality criteria.

The maximum permitted effluent pH is 9.0. The maximum historical effluent pH is 8.2. The Basin Plan objective for pH in the receiving stream is the range of 6.5 to 8.5. The maximum observed 30-day average effluent temperature was 82.4°F (28°C), for the period of January 2004 through December 2006 and occurred on the 30-day period ending in July 2004. The maximum observed 30-day background receiving water temperature for the period of January 2004 through December 2006 (33 samples) was 55.4°F (13.0°C). Using a pH value of 9.0 and the worst-case temperature value of 55.4°F (13.0°C) on a 30-day basis, the resulting effluent limitations are 0.486 mg/L (as N) for the average monthly effluent limitation and 0.885 mg/L (as N) for the average one-hour effluent limitation. The maximum observed daily pH value for effluent during the period of January 2004 through December 2006 was reported as 8.2. Using the observed maximum pH value of 8.2 and the worst-case temperature value of 55.4°F (13.0°C) on a 30-day basis, the resulting effluent limitations are 1.79 mg/L (as N) for the average monthly effluent limitation and 3.83 mg/L (as N) for the average one-hour effluent limitation.

The maximum effluent concentration for ammonia was 0.354 mg/L, based on 32 samples collected between January 2004 and December 2006. The maximum observed ammonia effluent concentration does not exceed the chronic or acute criteria for ammonia utilizing both the worst-case effluent pH limit of 9.0 and the observed maximum effluent pH of 8.2. Based on historical ammonia effluent data, the treatment process adequately nitrifies the waste stream. There is no reasonable potential for ammonia, therefore effluent limits for ammonia were not included in the Order.

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It should be noted that this reasonable potential analysis was extremely conservative, as the worst case conditions of maximum pH value, maximum temperature value, and maximum effluent ammonia concentration did not actually occur at the same time. Additionally, significant dilution of the effluent with the receiving water occurs year-round. Although 40 CFR 122.44(d) allows dilution of the effluent with the receiving water to be considered when determining reasonable potential, no dilution credit was considered. Also, as opposed to chlorine, for example, ammonia is not a pollutant that is added as part of the treatment process, nor is it stored in bulk onsite, and therefore does not automatically require an effluent limit and continuous monitoring, as does chlorine. Therefore, in this case it is not appropriate to establish an ammonia effluent limit.

CSPA - COMMENT #7: The proposed Permit incorrectly cites a DHS letter as stating that secondary treated sewage with an instream dilution ratio of 20-to-1 is protective of the domestic and municipal beneficial uses of the receiving stream.

RESPONSE

A late revision to correct the citation in Finding “g” of the Fact Sheet (page F-19) is proposed. The reference of “drinking water source” was improperly included in the sentence.

CSPA - COMMENT #8: The proposed “advanced secondary” treatment system does not provide Best Practicable Treatment and Control (BPTC) of the discharge which is evidenced by the fact that the discharge cannot meet many of the proposed Effluent Limitations and the level of treatment provided at Redding is not protective of the municipal and domestic beneficial uses of the receiving stream.

RESPONSE

The proposed Order does require BPTC. Advanced secondary treatment including clarification, filtration, and disinfection of the wastewater is required. Municipal and domestic beneficial uses are protected by effluent limitations. No exceedances of water quality objectives or criteria due to the WWTP have ever been observed in the receiving water. The level of treatment at the WWTP is adequate and appropriate.

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CITY OF REDDING (Redding) COMMENTS

Redding - COMMENT #1: Eliminate the requirement for a salinity evaluation plan from this permit.

RESPONSE

The Region 5 Management Guidance for Salinity in Waste Discharger Requirements (Salinity Guidance) states that a salinity evaluation and minimization plan is required for municipal dischargers of 1 mgd or larger and non-municipal dischargers, regardless of flow. The Stillwater WWTF has a design flow of 4.0 mgd and as explained in the Salinity Guidance, it is appropriate to require the development of a salinity evaluation and minimization plan.

Redding - COMMENT #2: The treatment feasibility study for copper should be scheduled to occur after May 18, 2010, and only be required if the data and other studies do not result in justifying effluent limitations that can be met with the current treatment facilities.

RESPONSE

A late revision is proposed to require the treatment and feasibility study for copper only if the required studies to be conducted by the Discharger do not justify alternate effluent limitations that can be met by current treatment facilities.

Redding - COMMENT #3: The BPTC Evaluation reporting requirement in Table E-9 state “Not Applicable.”

RESPONSE

On Page 22 (e) the BPTC Evaluation Tasks states, “Not Applicable.” This is inconsistent with the reporting requirement set forth in Table E-9. A late revision to remove the BPTC Evaluation Task reporting requirement in Table E-9 has been proposed.

Redding - COMMENT #4: Page E-16, Number 5 – Annual Pretreatment Requirements. Request paragraph revision from “A summary of analytical results from representative, flow proportioned, 24-hour composite sampling....” to read as follows: “A summary of analytical results from representative, grab, flow proportioned, or 24-hour time-weighted composite sampling....”

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RESPONSE

Analytical results from the facility's influent and effluent sampling for annual pretreatment requirements shall be from flow proportioned 24-hour composite sampling as required by Standard Provisions. Grab samples are not typically considered a representative sample for the purpose of capturing industrial pollutants within the waste stream. The Discharger may request, on a case-by-case basis, the ability to collect a grab sample rather than a flow proportioned 24-hour composite sample, when such sample type would prove more representative of the influent and/or effluent waste stream.

Redding - COMMENT #5: The minimum Sacramento River flows should be consistent with current operating conditions designated by the Bureau of Reclamation and other resource agencies when calculating future or final effluent limits.

RESPONSE

On 8 March 2007 the Discharger submitted minimum and average flow data for the Sacramento River. The data received was based on twenty years of receiving water flow and was used to calculate dilution ratios for acute, chronic, and human health water quality criteria in the proposed Order. The Discharger has now requested to change the receiving water flow data set to reflect "current operating conditions" at the Keswick Reservoir. Although alternate receiving water flows and other new information may be considered for future permits, the receiving water flow data utilized in the tentative Permit is not incorrect or inappropriate and will remain unchanged.

Redding - COMMENT #6: Page F-7 – Table F-3: Add sentence "...Flows occurring in May shall be excluded from this limitation if significant rain events occur or seasonal high groundwater conditions persist."

RESPONSE

Table F-3, Historical Effluent Flow, summarizes the existing flow requirements and self-monitoring data for Order No. 5-01-216. Table F-3 does not set flow limitations and/or requirements for the new tentative Permit. Therefore, Table F-3 remains unchanged.

Redding - COMMENT #7: The treatment feasibility study for zinc should be scheduled to occur after May 18, 2010, and only be required if the data and other studies do not result in justifying effluent limitations that can be met with the current treatment facilities.

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RESPONSE

A late revision is proposed to require the treatment and feasibility study for zinc only if the required studies to be conducted by the Discharger do not justify alternate effluent limitations that can be met by current treatment facilities.

6/19/2007, 2:00pm
BJS