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26 August 2010

Mr. Ken Landau, Assistant Executive Officer
Ms. Diana Messina, Supervising WRCE
Mr. Cliff Raley, Senior WRCE
Mr. David Kirn, WRCE
Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive, Suite 200
Rancho Cordova, CA 95670-6144

VIA: Electronic Submission
Hardcopy if Requested

RE: Tentative Waste Discharge Requirements (NPDES No. CA0079022) for City of Live Oak Wastewater Treatment Plant, Sutter County

Dear Messrs. Landau, Raley, Kirn and Ms. Messina:

The California Sportfishing Protection Alliance (CSPA) has reviewed the proposed Waste Discharge Requirements (NPDES No. CA0079022) for City of Live Oak Wastewater Treatment Plant (Permit) and submits the following comments.

CSPA requests status as a designated party for this proceeding. CSPA is a 501(c)(3) public benefit conservation and research organization established in 1983 for the purpose of conserving, restoring, and enhancing the state's water quality and fishery resources and their aquatic ecosystems and associated riparian habitats. CSPA has actively promoted the protection of water quality and fisheries throughout California before state and federal agencies, the State Legislature and Congress and regularly participates in administrative and judicial proceedings on behalf of its members to protect, enhance, and restore California's degraded water quality and fisheries. CSPA members reside, boat, fish and recreate in and along waterways throughout the Central Valley, including Sutter County.

- 1. The proposed Permit fails to contain mass-based effluent limits for ammonia, aluminum, arsenic, copper, cadmium, dibromochloromethane, dichlorobromomethane, alpha BHC, 4,4-DDE, alpha Endosulfan, endrin aldehyde and nitrate as required by Federal Regulations 40 CFR 122.45(b) and 40 CFR 122.45 (f).**

Federal Regulation, 40 CFR 122.45 (b) requires that in the case of POTWs, permit Effluent Limitations, standards, or prohibitions shall be based on design flow.

Concentration is not a basis for design flow. Mass limitations are concentration multiplied by the design flow and therefore meet the regulatory requirement. Mass limits are critically important to assure that the facility is properly designed and capable of removing individual pollutants and to assure that the treatment facilities are not overloaded with the individual pollutant. The Regional Board's approach to priority pollutants is that treatment plants are designed to remove BOD, TSS and pathogens and that the removal of other priority pollutants is incidental; hence their removal of mass limitations from permits. This approach may have been generally successful prior to adoption of the National and California Toxics Rules, which established stringent numerical limitations for priority pollutants. It is easy to recognize the failure of relying on conventional treatment plant design for addressing priority pollutants by the number of Time Schedule Orders and Cease and Desist Orders for noncompliant treatment systems regulated by the Central Valley Regional Board. This is also evidenced by the number of NTR and CTR noncompliant wastewater treatment plants in California's Central Valley. The design flow for priority pollutants is different for each individual pollutant and is different again from the conventional design flow for BOD and TSS. The treatment plant design flow for BOD and TSS removal is not the design flow rate for individual priority pollutants and toxic constituents such as ammonia and aluminum. A prime example of the requirements for individual pollutant removal is ammonia removal or nitrification; the design of activated sludge systems has been modified from simply being designed for BOD removal to achieve nitrification in many cases by providing extended aeration. This proposed Permit even fails to contain mass limitations for ammonia and nitrate. Failure to include mass limits and design flows for priority pollutants maintains the incidental nature of past compliance and will not reliably achieve compliance with water quality standards for priority pollutants. For ammonia, aluminum, arsenic, copper, cadmium, dibromochloromethane, dichlorobromomethane, alpha BHC, 4,4-DDE, alpha Endosulfan, endrin aldehyde and nitrate the proposed Permit does not specify the design flow and does therefore not comply with the requirements of 40 CFR 122.45(b).

Section 5.7.1 of U.S. EPA's *Technical Support Document for Water Quality Based Toxics Control* (TSD, EPA/505/2-90-001) states with regard to mass-based Effluent Limits:

“Mass-based effluent limits are required by NPDES regulations at 40 CFR 122.45(f). The regulation requires that all pollutants limited in NPDES permits have limits, standards, or prohibitions expressed in terms of mass with three exceptions, including one for pollutants that cannot be expressed appropriately by mass. Examples of such pollutants are pH, temperature, radiation, and whole effluent toxicity. Mass limitations in terms of pounds per day or kilograms per day can be calculated for all chemical-specific toxics such as chlorine or chromium. Mass-based limits should be calculated using

concentration limits at critical flows. For example, a permit limit of 10 mg/l of cadmium discharged at an average rate of 1 million gallons per day also would contain a limit of 38 kilograms/day of cadmium.

Mass based limits are particularly important for control of bioconcentratable pollutants. Concentration based limits will not adequately control discharges of these pollutants if the effluent concentrations are below detection levels. For these pollutants, controlling mass loadings to the receiving water is critical for preventing adverse environmental impacts.

However, mass-based effluent limits alone may not assure attainment of water quality standards in waters with low dilution. In these waters, the quantity of effluent discharged has a strong effect on the instream dilution and therefore upon the RWC. At the extreme case of a stream that is 100 percent effluent, it is the effluent concentration rather than the mass discharge that dictates the instream concentration. Therefore, EPA recommends that permit limits on both mass and concentration be specified for effluents discharging into waters with less than 100 fold dilution to ensure attainment of water quality standards.”

Federal Regulations, 40 CFR 122.45 (f), states the following with regard to mass limitations:

- “(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 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.”

In addition to the above citations, on June 26th 2006 U.S. EPA, Mr. Douglas Eberhardt, Chief of the CWA Standards and Permits Office, sent a letter to Dave Carlson at the Central Valley

Regional Water Quality Control Board strongly recommending that NPDES permit effluent limitations be expressed in terms of mass as well as concentration.

The City of Live Oak is in the process of constructing a new wastewater treatment plant. The proposed Cease and Desist Order that accompanies this proposed Permit states that the Discharger has requested additional time to achieve compliance if the new system fails to meet requirements. It should be noted that the Regional Board does a great disservice to the Dischargers it regulates when they allow new or expanded treatment system to be built that are in immediate noncompliance with discharge limitations; this can be remedied by requiring the submittal of individual pollutant design parameters be submitted by the design engineers. The proposed Permit must be amended to include mass limitations for ammonia, aluminum, arsenic, copper, cadmium, dibromochloromethane, dichlorobromomethane, alpha BHC, 4,4-DDE, alpha Endosulfan, endrin aldehyde and nitrate. The design flow for each of the listed pollutants should be individually specified in the proposed Permit to confirm compliance with 40 CFR 122.45(b). Failure to include mass limitations for these pollutants will result in another inadequately designed treatment plant that will be noncompliant for the listed pollutants; this is confirmed by the statements in the proposed CDO regarding possible non compliance upon completion of the new WWTP. The Regional Board should consult with the State Board's Division of Financial Assistance to determine if funding for a potentially noncompliant project is being provided.

- 2. Effluent Limitations for aluminum, electrical conductivity (EC), iron, manganese and total trihalomethanes are improperly regulated as an annual average contrary to Federal Regulations 40 CFR 122.45 (d)(2) and common sense. Iron is not properly regulated to protect the beneficial uses of the receiving stream as required by federal regulation 40 CFR 122.44. The proposed Permit fails to contain an Antidegradation Policy assessment for iron which exceeds the water quality standard to both the effluent and the receiving stream. The proposed Permit fails to contain an Antidegradation Policy assessment for aluminum, which exceeds water quality standards in both the effluent and the receiving stream.**

Federal Regulation 40 CFR 122.45 (d)(2) requires that permit for POTWs establish Effluent Limitations as average weekly and average monthly unless impracticable. The proposed Permit establishes Effluent Limitations for aluminum, electrical conductivity (EC), iron, manganese and total trihalomethanes as an annual average contrary to the cited Federal Regulation. Establishing the Effluent Limitations for aluminum, electrical conductivity (EC), iron, manganese and total trihalomethanes in accordance with the Federal Regulation is not impracticable; to the contrary the Central Valley Regional Board has a long history of having done so. The dictionary defines impracticable as: not capable of being carried out in practice: not capable of being used or not capable of being managed or dealt with; intractable. The Regional Board does not use the common meaning of the word "impracticable" in determining that monthly and weekly

limitations are impracticable. Not only are shorter-term limitations practicable; they are necessary to protect the beneficial uses of the receiving stream.

IRON

Iron is regulated for tastes and odors and because it causes discoloration (laundry) when used for domestic purposes; all of which would occur instantaneously. Iron can also cause discoloration of the receiving stream. The proposed Permit (page 12, No. 4) contains a Receiving Water Limitation for discoloration that causes nuisance or adversely affects beneficial uses. Such discoloration would occur instantaneously. Page F-35 of the proposed Permit states that: “*CTR monitoring was performed monthly from March through August 2005. All six samples for iron exceeded the criterion and the MEC detected for iron was 1210 µg/L, which is greater than the lowest applicable iron criterion of 300 µg/l. Due to the lack of recent receiving water samples, data from samples taken in March 2002 and July 2002 were used for the RPA. The receiving water iron concentration measured in the July 2002 sample was 2000 µg/L, which is also greater than the lowest applicable iron criterion of 300 µg/l.*” The proposed Permit does not discuss compliance with the Receiving Water Limitation for color and the potential for the discharge with concentrations of iron up to 1200 ug/l to exceed the limitation. The regulation of iron as an annual average is not protective of the beneficial uses of the receiving stream where discoloration can occur instantaneously.

California Code of Regulations, Title 22 contains a secondary drinking water maximum contaminant level (MCL) for color of 15 Units. The Basin Plan contains a water quality objective for Chemical Constituents, which incorporates the Title 22 MCLs; therefore color is an applicable water quality objective for this discharge. The Regional Board did not conduct a reasonable potential analysis for color based on the high iron concentrations in both the effluent and the receiving water. The proposed Permit does not protect the drinking water beneficial use of the receiving stream for color which is threatened by the elevated iron concentrations as is required by Federal Regulations 40 CFR 122.4, 122.44(d) and the California Water Code, Section 13377.

As is stated above: “*...the MEC detected for iron was 1210 µg/L, which is greater than the lowest applicable iron criterion of 300 µg/l... The receiving water iron concentration measured in the July 2002 sample was 2000 µg/L, which is also greater than the lowest applicable iron criterion of 300 µg/l.*” The receiving stream exceeds the water quality standard for iron. Iron is a conservative constituent; it will not volatilize and the mass is additive. The proposed Permit fails to contain an Antidegradation Policy assessment for iron which exceeds the water quality standard in both the effluent and the receiving stream.

Aluminum

US EPA's ambient criteria for the protection of freshwater aquatic life for aluminum (1988, EPA 440/5-86-008) contains a water quality objective of 86 ug/l to prevent chronic toxicity. The aluminum criteria document (EPA 440/5-86-008) also cites that:

169 ug/l of aluminum caused a 24% reduction in the growth of young brook trout.

174 ug/l of aluminum killed 58% of the exposed striped bass.

Bioaccumulation factors ranged from 50 to 231 for young brook trout exposed to aluminum for 15 days.

Aluminum at 169 ug/l caused a 24% reduction in the weight of young brook trout.

The proposed Permit, Table F-2, shows that aluminum was sampled in the discharge as high as 530 ug/l. The maximum observed upstream receiving water concentration was 1300 µg/L. Clearly an annual average limitation of 200 ug/l, as is contained in the proposed permit, will not prevent chronic toxicity in the receiving stream. According to EPA's ambient criteria for aluminum chronic impacts to fish occur based on a 4-day average; an annual average allowance of 200 ug/l allows the chronic levels of aluminum to be exceeded. Toxicity is a water quality objective in the Basin Plan. The prevention of toxicity is required to protect the aquatic life beneficial use of the receiving stream. The proposed Permit does not protect the aquatic life beneficial use of the receiving stream which is threatened by the elevated aluminum concentrations as is required by Federal Regulations 40 CFR 122.4, 122.44(d) and the California Water Code, Section 13377.

As is stated above, the MEC detected for aluminum was 530 µg/, and the receiving water aluminum concentration was measured at 1,300 ug/l. The receiving stream exceeds both the acute and chronic aquatic life and the drinking water quality standards for aluminum. Aluminum is a conservative constituent; it will not volatilize and the mass is additive. The proposed Permit fails to contain an Antidegradation Policy assessment for aluminum, which exceeds water quality standards in both the effluent and the receiving stream.

Electrical conductivity (EC)

The secondary MCL for EC is 900 µmhos/cm as a recommended level, 1600 µmhos/cm as an upper level, and 2200 µmhos/cm as a short-term maximum. The agricultural water quality goal, that would apply the narrative chemical constituents objective, is 700 µmhos/cm as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). The 700 µmhos/cm agricultural water quality goal is intended to prevent reduction in crop yield, i.e. a restriction on use of water, for salt-sensitive crops, such as beans, carrots, turnips, and strawberries. These crops are either currently grown in the area or may be grown in the future. In a *Biological Significance* document, dated November 1st 2006, James M. Harrington, Staff Water Quality Biologist with the California Department of Fish and Game, citing McKee and Wolf (1971 Water Quality Criteria) wrote that: "Surveys of inland fresh

waters indicates that good mixes of fish fauna are found where conductivity values range between 150 and 500 umhos/cm. Even in the most alkaline waters, the upper tolerance limit for aquatic life is approximately 2000 umhos/cm.” *McKee and Wolf* (1971 Water Quality Criteria) lists the limiting TDS concentrations for numerous industrial uses in mg/l; boiler feed water 50-3000, brewing 500-1000, canning 850, general food processing 850 and paper manufacturing 80-500.

The proposed Permit cites the effluent concentration for EC at 953 as an average and 1188 umhos/cm as a maximum concentration. The background receiving water EC averaged 820 umhos/cm for 152 samples taken from June 2006 through June 2009. There is no assimilative capacity in the receiving stream for EC.

Toxicity is a water quality objective in the Basin Plan. The proposed Permit contains a Receiving Water Limitation for toxicity, based on the Basin Plan objective, which prohibits: “Toxic substances to be present, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” The proposed Permit also contains a Receiving Water Limitation for Chemical Constituents, based on a Basin Plan objective, which prohibits: “Chemical constituents to be present in concentrations that adversely affect beneficial uses.” Drinking water MCLs are included in the Basin Plan water quality objectives as Chemical Constituents. The proposed Permit (page 12) contains an *Interim Effluent Limitation* for EC as an annual average of 1100 umhos/cm. The Interim Effluent Limitation exceeds the drinking water MCL and the agricultural water quality goal. A discharge above the agricultural water quality goal will cause detrimental physiological responses in plant life. A discharge at the Effluent Limitation for EC will cause violation of the Receiving Water Limitations for Chemical Constituents and Toxicity. The proposed permit fails to assess or to discuss the industrial beneficial use of the receiving stream. 40 CFR 122.44 required the development of Effluent Limitations that are protective of the beneficial uses of the receiving stream. The proposed Permit does not comply with 40 CFR 122.44.

Manganese

The State Water Board’s water quality standards presented in *McKee and Wolf* states that the following concentrations of manganese will not be deleterious to the given beneficial uses:

Domestic Water Supply	50 ug/l
Industrial Water Supply	50 ug/l
Irrigation	500 ug/l
Fish and aquatic life	1000 ug/l

The domestic water supply limitation is principally based on taste and odor. Manganese imparts a metallic taste to water. *McKee and Wolf* also identify laundry issues with manganese levels above 50 ug/l. Laundry and taste issues occur instantaneously, not on an annual basis. The

Regional Board has traditionally ignored the industrial beneficial uses of receiving waters. Industries such as cooling towers and boilers, which need clean water to prevent scaling and fouling often utilize reverse osmosis to control the quality of their intake source water.

The proposed Permit contains a Receiving Water Limitation for Taste and Odors which prohibits Taste- or odor-producing substances to be present in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses. An annual average limitation will not protect against manganese concentrations in the short term that produce unacceptable exceedances of the 50 ug/l standard.

The receiving water manganese concentration was measured at 270 ug/l. The receiving stream exceeds both the domestic and industrial water quality standards for manganese. Manganese is a conservative constituent; it will not volatilize and the mass is additive. The proposed Permit fails to contain an Antidegradation Policy assessment for manganese, which exceeds water quality standards in the receiving stream.

Trihalomethanes

Trihalomethanes are a carcinogen. Cancer risk factors are generally generated over a long period of time; however this does not mean that it is impracticable to develop weekly and monthly discharge limitations. One also needs to consider the individual trihalomethanes. Specifically, chloroform, chlorodibromomethane and dibromochloromethane are limited in the California toxics rule (CTR) at a fraction of the drinking water standard for total trihalomethanes. Compliance with the CTR standards cannot possibly be achieved while discharging at an annual average of 80 ug/l.

By developing annual average limitations, short term peaks can be extremely high, while still maintaining compliance with an annual average. There is sufficient information available that iron and manganese concentrations above the water quality standard impart unacceptable tastes and odors to drinking water. There is sufficient information available that iron concentrations above the water quality standard imparts color and staining. Color, taste and odor and toxicity are water quality objectives in the Basin Plan. There is no time frame associated with the Basin Plan water quality objectives; compliance is required at all times. An annual average limitation will allow exceedances above the Basin Plan water quality objectives.

The test of impracticability is not a test of a staff recommendation from the Department of Public Health. The Regional Board has not presented any evidence that properly and legally limiting aluminum, electrical conductivity (EC), iron, manganese and total trihalomethanes is impracticable. The above discussion of individual constituents does not discuss whether it is possible to develop limitations for the limited constituents; clearly weekly and monthly limitations can be developed. The above discussion of individual constituents discusses the harm

that is done to the beneficial uses by failing to develop shorter term limitations. It is the Regional Boards obligation, under 40 CFR 122.44 to develop limitations that protect the beneficial uses of the receiving stream. It is further the Regional Boards obligation to comply with 40 CFR 122.45 (d)(2) which requires limitations be developed on a weekly and monthly basis. The Regional Board rationalizes, on page F-49, that Title 22 requires compliance with drinking water standards on an annual average basis and concludes therefore that weekly and monthly averages are impracticable. First, Title 22 is applicable to public water supplies, not surface waters, and it is not applicable to wastewater discharges. Second, taste and odor impacts and discoloration occur instantaneously. However the DHP regulates drinking water does not address whether weekly and monthly average limitations are practicable (possible). It is mathematically possible to develop weekly and monthly average limitations for aluminum, electrical conductivity (EC), iron, manganese and total trihalomethanes and is it therefore practicable.

3. The proposed permit contains an inadequate reasonable potential for aluminum, electrical conductivity (EC), iron, manganese and total trihalomethanes by failing to use statistical multipliers as required by Federal regulations, 40 CFR § 122.44(d)(1)(ii).

Aluminum, electrical conductivity (EC), iron, manganese and total trihalomethanes are not priority pollutants and are not subject to regulation under the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP)*.

Federal regulations, 40 CFR § 122.44(d)(1)(ii), state “when determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution, the **variability of the pollutant or pollutant parameter in the effluent**, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water.” Emphasis added. The reasonable potential analysis fails to consider the statistical variability of data and laboratory analyses as explicitly required by the federal regulations. The Regional Water Board conducted the reasonable potential analysis in accordance with Section 1.3 of the SIP. The SIP applies directly to the control of CTR priority pollutants, not non-priority pollutants. In the proposed Permit the RPA procedures from the SIP were used to evaluate reasonable potential for both CTR and non-CTR constituents. The procedures for computing variability are detailed in Chapter 3, pages 52-55, of USEPA’s *Technical Support Document For Water Quality-based Toxics Control*. The proposed Permit fails to discuss compliance with 40 CFR § 122.44(d)(1)(ii). A statistical analysis results in a projected maximum effluent concentration (MEC) based on laboratory variability and the resulting MEC is greater than was obtained from the actual sampling data. The result of using statistical variability is that a greater number of constituents will have a reasonable potential to

exceed water quality standards and therefore a permit will have a greater number of effluent limitations. The intentional act of ignoring the Federal regulation has a clear intent of limiting the number of regulated constituents in an NPDES permit. The failure to utilize statistical variability results in significantly fewer Effluent Limitations that are necessary to protect the beneficial uses of receiving waters. The reasonable potential analyses are flawed and must be recalculated.

4. The proposed Permit fails to contain an Effluent Limitation for aluminum in accordance with Federal Regulations 40 CFR 122.44, US EPA's interpretation of the regulation, and California Water Code, Section 13377.

The proposed Permit, Table F-2, shows that aluminum was sampled in the discharge as high as 530 ug/l. The maximum observed upstream receiving water concentration was 1300 µg/L.

Federal Regulations, 40 CFR 122.44 (d)(i), requires that; "Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will 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." The Basin Plan contains a narrative water quality objective for toxicity that states in part that "[a]ll waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life" (narrative toxicity objective). Where numeric water quality objectives have not been established, 40 CFR §122.44(d) specifies that WQBELs may be established using USEPA criteria guidance under CWA section 304(a), proposed State criteria or a State policy interpreting narrative criteria supplemented with other relevant information, or an indicator parameter. U.S. EPA developed National Recommended Ambient Water Quality Criteria for protection of freshwater aquatic life for aluminum to prevent toxicity to freshwater aquatic life. The recommended ambient criteria four-day average (chronic) and one-hour average (acute) criteria for aluminum are 87 µg/L and 750 µg/L, respectively.

US EPA's 87 ug/l chronic criterion was developed using low pH and hardness testing. California Central Valley waters, the Sacramento River, at the Valley floor, have been sampled to have hardnesses as low as 39 mg/l CaCO₃ by the USGS in February 1996 for the *National Water Quality Assessment Program*. Contributory streams, especially foothill streams, have also been sampled and shown to contain even lower hardness levels. US EPA recognized in their ambient criteria development document, (Ambient Water Quality Criteria for Aluminum, EPA 440/5-86-008) that the pH was in the range 6.5 to 6.6 and that the hardness was below 20 mg/l. Typical values for pH and hardness in the Central Valley alone warrant use of the chronic ambient criteria for aluminum. Despite the hardness and pH values used in the development of the criteria; U.S. EPA's conclusions in their Ambient Criteria for the Protection of Freshwater

Aquatic Life recommends that application of the ambient criteria as necessary to be protective of the aquatic beneficial uses of receiving waters in lieu of site-specific criteria.

The Regional Board and their proposed Permit cites US EPA's *Ambient Criteria for the Protection of Freshwater Aquatic Life for Aluminum* (criteria) as not being representative or necessary because the chronic criteria were based on a low hardness and low pH. The Regional Board cites one section of the criteria development document but ignores the final recommendation to use the recommended criteria absent a site-specific objective for aluminum. The Regional Board then defaults to the US EPA recommended acute criteria of 750 ug/l. The Regional Board's citation of the criteria development document is incomplete its review, for example the *criteria* development document (EPA 440/5-86-008) also cites that:

169 ug/l of aluminum caused a 24% reduction in the growth of young brook trout.

174 ug/l of aluminum killed 58% of the exposed striped bass.

Bioaccumulation factors ranged from 50 to 231 for young brook trout exposed to aluminum for 15 days.

Aluminum at 169 ug/l caused a 24% reduction in the weight of young brook trout.

US EPA recommends that understanding the *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* is necessary in order to understand the text, tables and calculations of a criteria document. The Regional Board's assessment of the use of low hardness and low pH clearly shows they did not heed EPA's advice in reviewing the criteria development procedures for water quality criteria or the final recommendations. The Regional Board occasionally cites individual aluminum toxicity testing at Yuba City; again individual testing is not a valid replacement for developing fully protective criteria. A prime example of a state utilizing good water quality standards development techniques for developing a site specific standard for aluminum is the state of Indiana where a final chronic criterion of 174 ug/l was established in 1997. In 2003, Canada adopted pH dependant freshwater aquatic life criteria for aluminum that ranges from 84 ug/l to 252 ug/l. Ignoring the final recommendation of the criteria misses the protective intermediate measures to protect against mortality and reductions to growth and reproduction. The Regional Board's single use of the acute criteria for aluminum is not protective of the beneficial uses of the receiving stream.

The drinking water maximum contaminant level (MCL) for aluminum, which is included as a Basin Plan Water Quality Chemical Constituents Objective, is 1,000 as a primary MCL and 200 µg/l as a secondary MCL.

Based on information included in analytical laboratory reports submitted by the Discharger, aluminum in the discharge has a reasonable potential to cause or contribute to an in-stream

excursion above a level necessary to protect aquatic life, and, therefore to violate the Basin Plan's narrative toxicity objective and the drinking water MCL

Federal Regulations, 40 CFR 122.44 (d)(i), requires that; "Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will 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." US EPA has interpreted 40 CFR 122.44(d) in *Central Tenets of the National Pollutant Discharge Elimination System (NPDES) Permitting Program* (Factsheets and Outreach Materials, 08/16/2002) that although States will likely have unique implementation policies there are certain tenets that may not be waived by State procedures. These tenets include that "where valid, reliable, and representative effluent data or instream background data are available they MUST be used in applicable reasonable potential and limits derivation calculations. Data may not be arbitrarily discarded or ignored." The California Water Code (CWC), Section 13377 states in part that: "...the state board or the regional boards shall...issue waste discharge requirements... which apply and ensure compliance with ...water quality control plans, or for the protection of beneficial uses..." Section 122.44(d) of 40 CFR requires that permits include water quality-based effluent limitations (WQBELs) to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water. A water quality standard for Failure to include an effluent limitation for aluminum in the proposed permit violates 40 CFR 122.44 and CWC 13377.

In addition to the above, US EPA recently commented on a Central Valley NPDES permit that it is necessary to include an effluent limitation for aluminum that protects against chronic toxicity and that antidegradation and antibacksliding issues would need to be addressed in failing to include a properly protective limitation:



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JUN 24 2010

Pamela Creedon
Executive Officer
Central Valley Regional Water Quality Control Board
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Re: Water Quality Criteria for Aluminum and the Placer County Sewer Maintenance District 1 WWTP (NPDES Permit No. CA0079316)

Dear Ms. Creedon:

We have reviewed Placer County Department of Facility Services' request, dated June 14, 2010, to relax the aluminum effluent limitations in the proposed NPDES permit. Relaxing the effluent limitations may degrade water quality, adversely affect beneficial uses, and conflict with federal anti-backsliding and/or anti-degradation requirements. These concerns need to be addressed to ensure the permit effectively protects water quality and complies with NPDES permitting requirements.

At its May 27, 2010 meeting, the Central Valley Regional Water Quality Control Board considered a proposed renewal of the NPDES permit for the Placer County Sewer Maintenance District 1 wastewater treatment plant. During the meeting, the discharger contested the applicability of EPA's National Recommended Water Quality Criteria for aluminum in determining reasonable potential for the discharge to exceed water quality standards and establishing effluent limitations. The discharger contested the use of the chronic aluminum criterion for protection of aquatic life since the criterion is based on a lower hardness than observed in the receiving waters. The 87 $\mu\text{g/l}$ chronic aluminum criterion is based on a toxicity test with striped bass in water at pH between 6.5 and 6.6 standard units and hardness less than 10 mg/l.

The aluminum effluent limitations in the proposed permit were calculated by applying EPA-recommended aluminum criteria as an interpretation of the narrative toxicity standard in the Basin Plan. The effluent limitations were calculated in accordance with procedures described in the State Implementation Policy. The EPA criteria for aluminum were also applied to the existing permit for this facility to establish the average monthly and maximum daily effluent limitations.

We understand that the existing maximum daily effluent limitation has been met (with one exception) and the 30-day average effluent limitation has been met approximately 16 months out of 25 from 2006 to 2009. The discharger currently manipulates hardness in the effluent by adding magnesium hydroxide to provide

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alkalinity for the nitrification process. Based on data the discharger provided, the upstream receiving water hardness in Rock Creek ranges from 20 to 98 mg/l, but the lowest observed effluent hardness is 141 mg/l. We understand that the reported lowest ambient hardness values (20 mg/l) may actually be a detection limit as that specific value was reported in six consecutive samples taken in 2007. If future modification to the treatment process discontinues or reduces the use of magnesium hydroxide, the effluent hardness may be significantly reduced.


EPA has not formally changed its recommended aluminum criteria; the appropriate aluminum criteria values for higher hardness situations remain uncertain. The existing EPA-recommended chronic aluminum criterion of 87 $\mu\text{g/l}$ is clearly protective of aquatic life and is appropriate for use in evaluating reasonable potential and establishing effluent limitations. As EPA's Charles Delos notes in his 2002 and 2010 letters, it may be reasonable to apply a higher criterion value if the ambient hardness levels are substantially and consistently higher than the values used in deriving the existing chronic criterion value. When considering whether to apply a higher criterion value, the Regional Board should carefully consider whether the high ambient and effluent hardness values asserted by the discharger are accurate and likely to continue in the future.

The Regional Board has discretion in interpreting the Basin Plan narrative toxicity standard and it may be possible to make a different reasonable potential conclusion or derive less stringent effluent limitations than provided in the existing permit. However, a decision to apply a higher criterion and relax or eliminate the effluent limitations imposed by the previous permit would have to be supported by thorough anti-degradation and anti-backsliding analyses. Recent data show that effluent concentrations of aluminum ranged between 12 and 162 $\mu\text{g/l}$. A decision to eliminate or raise the aluminum effluent limitations above current performance levels would trigger serious anti-degradation and anti-backsliding concerns as that action would, in effect, authorize aluminum discharges above current discharge and ambient levels. The information from Mr. Delos provided by the discharger does not constitute "new information" that provides a basis for backsliding from existing permit limitations as we understand that information was initially provided to Regional Board staff in 2002, prior to issuance of the existing permit.

Given the uncertainty about appropriate aluminum criteria levels for this situation and the need to carefully evaluate anti-degradation and anti-backsliding implications of removing or relaxing the aluminum limitations, EPA Region IX recommends the conservative approach of retaining the existing effluent limitations in the new permit.

If you wish to discuss our recommendations, please contact Elizabeth Sablad of my staff at (415) 972-3044.

Sincerely,


Alexis Strauss, Director
Water Division
24 June 2010

5. The proposed Permit contains an Interim Effluent Limitation for electrical conductivity (EC) and fails to contain a final effluent limitation for EC as required by federal regulation 40 CFR 122.44 (d)(1).

Federal Regulations, 40 CFR 122.44 (d)(i), requires that; “Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will 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.” The Water Quality Control Plan (Basin Plan) for the Central Valley Region, Water Quality Objectives, page III-3.00, contains a Chemical Constituents Objective that includes Title 22 Drinking Water Maximum Contaminant Levels (MCLs) by reference. The Title 22 MCLs for EC are 900 µmhos/cm (recommended level), 1,600 µmhos/cm (upper level) and 2,200 µmhos/cm (short term maximum).

The Basin Plan states, on Page III-3.00 Chemical Constituents, “Waters shall not contain constituents in concentrations that adversely affect beneficial uses.” The Basin Plan’s “Policy for Application of Water Quality Objectives” provides that in implementing narrative water quality objectives, the Regional Board will consider numerical criteria and guidelines developed by other agencies and organizations. This application of the Basin Plan is consistent with Federal Regulations, 40CFR 122.44(d).

For EC, *Ayers R.S. and D.W. Westcott, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1, Rome* (1985), levels above 700 µmhos/cm will reduce crop yield for sensitive plants. The University of California, Davis Campus, Agricultural Extension Service, published a paper, dated 7 January 1974, stating that there will not be problems to crops associated with salt if the EC remains below 750 µmhos/cm.

The discharge of EC or TDS may exceed water quality objectives for each designated beneficial use:

MUN: The Drinking Water maximum contaminant levels (MCLs) are water quality objectives incorporated into the Basin Plan Chemical Constituents by reference. The MCL for TDS is 500 mg/l as the recommended level, 1,000 mg/l as an upper level and 1,500 mg/l as a short term maximum. *McKee and Wolf* (1971 Water Quality Criteria) cites that waters above 4,000 mg/l TDS are generally unfit for human use.

AGR: The Basin Plan states, on Page III-3.00 Chemical Constituents, “Waters shall not contain constituents in concentrations that adversely affect beneficial uses.” The Basin Plan’s “Policy for Application of Water

Quality Objectives” provides that in implementing narrative water quality objectives, the Regional Board will consider numerical criteria and guidelines developed by other agencies and organizations. This application of the Basin Plan is consistent with Federal Regulations, 40CFR 122.44(d). For EC, Ayers R.S. and D.W. Westcott, *Water Quality for Agriculture, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29*, Rev. 1, Rome (1985), levels above 700 $\mu\text{mhos/cm}$ will reduce crop yield for sensitive plants. The State Water Resources Control Board’s *Irrigation with Reclaimed Municipal Waste* (July 1984) and *McKee and Wolf* (1971 Water Quality Criteria), state that waters with TDS above 2,100 mg/l are unsuitable for any irrigation under most conditions.

IND: *McKee and Wolf* (1971 Water Quality Criteria) lists the limiting TDS concentrations for numerous industrial uses in mg/l; boiler feed water 50-3000, brewing 500-1000, canning 850, general food processing 850 and paper manufacturing 80-500.

COLD/MIGR/SPWN: In a Biological Significance document sent to the Regional Board regarding the Musco Olive facility, dated November 1st 2006, James M. Harrington, Staff Water Quality Biologist with the California Department of Fish and Game, citing *McKee and Wolf* (1971 Water Quality Criteria) wrote that: “Surveys of inland fresh waters indicates that good mixes of fish fauna are found where conductivity values range between 150 and 500 $\mu\text{mhos/cm}$. Even in the most alkaline waters, the upper tolerance limit for aquatic life is approximately 2000 $\mu\text{mhos/cm}$.”

The beneficial uses of receiving streams may be degraded by salt concentrations in wastewater discharges and Federal Regulation, 40 CFR 122.4 (a), (d) and (g) require that no permit may be issued when the conditions of the permit do not provide for compliance with the applicable requirements of the CWA, or regulations promulgated under the CWA, when imposition of conditions cannot ensure compliance with applicable water quality requirements and for any discharge inconsistent with a plan or plan amendment approved under Section 208(b) of the CWA. California Water Code, section 13377, requires that: “Notwithstanding any other provision of this division, the state board and the regional boards shall, as required or authorized by the Federal Water Pollution Control Act, as amended, issue waste discharge and dredged or fill material permits which apply and ensure compliance with all applicable provisions of the act and acts amendatory thereof or supplementary, thereto, together with any more stringent effluent standards or limitations necessary to implement water quality control plans, or for the protection

of beneficial uses, or to prevent nuisance.” The Region 5 Permits does not protect the beneficial uses of the receiving stream and therefore does not comply with the requirements of Federal Regulations and the California Water Code.

The wastewater discharge average EC level is 953 $\mu\text{mhos/cm}$ and the maximum observed EC was 1188 $\mu\text{mhos/cm}$. Clearly the discharge exceeds the MCLs for EC presenting a reasonable potential to exceed the water quality objective. The proposed permit contains an interim effluent limitation for EC of 1100 $\mu\text{mhos/cm}$, as an annual average. The proposed EC limitation clearly exceeds the agricultural water quality goal and the MCL for EC. The proposed Order fails to establish an effluent limitation for EC that are protective of the Chemical Constituents water quality objective. The City’s wastewater discharge increases concentrations of EC to unacceptable concentrations adversely affecting the agricultural beneficial use. The wastewater discharge not only presents a reasonable potential, but also actually causes, violation of the Chemical Constituent Water Quality Objective in the Basin Plan. The available literature regarding safe levels of EC for irrigated agriculture mandate that an Effluent Limitation for EC is necessary to protect the beneficial use of the receiving stream in accordance with the Basin Plan and Federal Regulations. Failure to establish effluent limitations for EC that are protective of the Chemical Constituents water quality objective blatantly violates the law.

6. The Central Valley Regional Water Board (Region 5) NPDES Permits establish Effluent Limitations for metals based on the hardness of the effluent and/or the downstream water and rarely use the ambient upstream receiving water hardness as required by Federal Regulations, the California Toxics Rule (CTR, 40 CFR 131.38(c)(4)).

“The effluent hardness ranged from 220 mg/L to 330 mg/L (as CaCO_3), based on 35 samples from June 2006 to June 2009. The receiving water hardness varied from 30 mg/L to 520 mg/L (as CaCO_3), based on 35 samples from June 2006 to June 2009. Using a hardness of 220 mg/L (as CaCO_3) to calculate the ECA for chromium III, nickel, and zinc will result in water quality based effluent limitations that are protective under all potential effluent/receiving water mixing scenarios and under all known hardness conditions, as demonstrated in the example using nickel shown in Table F-6, below.” (Permit page F-20)

“As discussed above, the receiving water at times exceeds the CTR criteria for copper and chronic cadmium, which does not satisfy one of the assumptions for these procedures for calculating the ECA for Concave Down Metals. Therefore, for copper and chronic cadmium, a more stringent ECA must be calculated using the minimum observed upstream receiving water hardness of 30 mg/L (as CaCO_3) to ensure the discharge is protective.” (Permit page F-21)

“Equation 4 was used to calculate two ECAs, one based on the minimum observed upstream receiving water hardness and one based on the maximum observed upstream receiving water hardness¹. Using Equation 4, the lowest ECA results from using the maximum upstream receiving water hardness, the minimum effluent hardness, and assuming no receiving water capacity for lead (i.e., ambient background lead concentration is at the CTR chronic criterion). However, based on paired ambient hardness and metals data, the receiving water exceeded the CTR criteria for acute cadmium. Therefore, a different hardness must be used for acute cadmium to ensure protective WQBELs are calculated, as discussed below. Using Equation 4 to calculate the ECA for lead and acute silver will result in water quality-based effluent limitations that are protective under all potential effluent/receiving water mixing scenarios and under all known hardness conditions, as demonstrated in Tables F-7 and F-8, for chronic lead. In this example, the effluent is in compliance with the CTR criteria and any mixture of the effluent and receiving water is in compliance with the CTR criteria. Use of a lower ECA (e.g., calculated based solely on the lowest upstream receiving water hardness) is also protective, but would lead to unreasonably stringent effluent limits considering the known conditions. Therefore, Equation 4 has been used to calculate the ECA for lead and acute silver in this Order. For acute cadmium, the minimum observed upstream receiving water hardness of 30 mg/L (as CaCO₃) is required to calculate the ECA to ensure the discharge is protective.” (Permit page F-23)

Federal Regulation 40 CFR 131.38(c)(4) states that: “For purposes of calculating freshwater aquatic life criteria for metals from the equations in paragraph (b)(2) of this section, for waters with a hardness of 400 mg/l or less as calcium carbonate, the actual ambient hardness of the surface water shall be used in those equations.” (Emphasis added). The definition of ambient is “in the surrounding area”, “encompassing on all sides”. It has been the Region 5, Sacramento, NPDES Section, in referring to Basin Plan objectives for temperature, to define *ambient* as meaning upstream. It is reasonable to assume, after considering the definition of *ambient*, that EPA is referring to the hardness of the receiving stream before it is potentially impacted by an effluent discharge. It is also reasonable to make this assumption based on past interpretations and since EPA, in permit writers’ guidance and other reference documents, generally assumes receiving streams have dilution, which would ultimately “encompass” the discharge. Ambient conditions are in-stream conditions unimpacted by the discharge. Confirming this definition, the SIP Sections 1.4.3.1 *Ambient Background Concentration as an Observed Maximum* and 1.4.3.2 state in part that: “If possible, preference should be given to ambient water column concentrations measured immediately upstream or near the discharge, but not within an allowed mixing zone for the discharge. The RWQCB shall have discretion to consider if any samples are invalid for use as applicable data due to evidence that the sample has been erroneously reported or the sample is not representative of the ambient receiving water column that will mix with the discharge.”

The Regional Board has used the effluent hardness and the instream effluent hardness measured immediately downstream of the point of discharge, calling such “ambient”. Ambient is defined as “surrounding;” not “in the middle of.” Regional Board staff have begun to define any hardness used (effluent, upstream and downstream) as being “ambient”. The result of using a higher effluent or downstream hardness value is that metals are toxic at higher concentrations, discharges have less reasonable potential to exceed water quality standards and the resulting Permits have fewer Effluent Limitations.

The most typical wastewater discharge situation is where the receiving water hardness is lower than the effluent hardness. Metals are more toxic in lower hardness water. For example, if the receiving water hardness is 25 mg/l and the effluent hardness is 50 mg/l a corresponding chronic discharge limitation for copper based on the different hardness’s would be 2.9 ug/l and 5.2 ug/l, respectively. Obviously, the limitation based on the true ambient (upstream) receiving water hardness is more restrictive.

The Regional Board’s use of hardnesses other than the upstream is based on an approach developed by Dr. Robert Emerick, of Eco:Logic Engineers. Dr. Emerick developed a different approach for evaluating hardness-dependent metals that used effluent and downstream hardness values in assessing reasonable potential and developing effluent limits. He subsequently presented his approach at the Water Board’s Training Academy and the Regional Board has adopted this methodology as a defacto policy in developing and issuing wastewater discharge permits. Dr. Emerick’s approach has never been evaluated or adopted through the legally mandated rule-making procedures. Use of the policy has resulted in fewer and less stringent and less protective limits in numerous permits.

The Federal Register, Volume 65, No. 97/Thursday, May 18th 2000 (31692), adopting the California Toxics Rule in confirming that the ambient hardness is the upstream hardness, absent the wastewater discharge, states that: “A hardness equation is most accurate when the relationship between hardness and the other important inorganic constituents, notably alkalinity and pH, are nearly identical in all of the dilution waters used in the toxicity tests and in the surface waters to which the equation is to be applied. If an effluent raises hardness but not alkalinity and/or pH, using the lower hardness of the downstream hardness might provide a lower level of protection than intended by the 1985 guidelines. If it appears that an effluent causes hardness to be inconsistent with alkalinity and/or pH the intended level of protection will usually be maintained or exceeded if either (1) data are available to demonstrate that alkalinity and/or pH do not affect the toxicity of the metal, or (2) the hardness used in the hardness equation is the hardness of upstream water that does not include the effluent. The level of protection intended by the 1985 guidelines can also be provided by using the WER procedure.”

On March 24, 2000 the US Fish and Wildlife Service (Service) and the National Marine Fisheries Service (NMFS) issued a biological opinion on the effects of the final promulgation of

the CTR on listed species and critical habitats in California in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 USC 1531 et seq.; Act). The biological opinion was issued to the U.S. Environmental Protection Agency, Region 9, with regard to the “Final Rule for the Promulgation of Water Quality Standards: Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California” (CTR)”. The document represented the Services’ final biological opinion on the effects of the final promulgation of the CTR on listed species and critical habitats in California in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 USC 1531 et seq.; Act).

The biological opinion contains the following discussion, beginning on page 205, regarding the use of hardness in developing limitations for toxic metals:

“The CTR should more clearly identify what is actually to be measured in a site water to determine a site-specific hardness value. Is the measure of hardness referred to in the CTR equations a measure of the water hardness due to calcium and magnesium ions only? If hardness computations were specified to be derived from data obtained in site water calcium and magnesium determinations alone, confusion could be avoided and more accurate results obtained (APHA 1985). Site hardness values would thus not include contributions from other multivalent cations (e.g., iron, aluminum, manganese), would not rise above calcium + magnesium hardness values, or result in greater-than-intended site criteria when used in formulas. In this Biological opinion, what the Services refer to as hardness is the water hardness due to calcium + magnesium ions only.

The CTR should clearly state that to obtain a site hardness value, samples should be collected upstream of the effluent source(s). Clearly stating this requirement in the CTR would avoid the computation of greater-than-intended site criteria in cases where samples were collected downstream of effluents that raise ambient hardness, but not other important water qualities that affect metal toxicity (e.g., pH, alkalinity, dissolved organic carbon, calcium, sodium, chloride, etc.). Clearly, it is inappropriate to use downstream site water quality variables for input into criteria formulas because they may be greatly altered by the effluent under regulation. Alterations in receiving water chemistry by a discharger (e.g., abrupt elevation of hardness, changes in pH, exhaustion of alkalinity, abrupt increases in organic matter etc.) should not result, through application of hardness in criteria formulas, in increased allowable discharges of toxic metals. If the use of downstream site water quality variables were allowed, discharges that alter the existing, naturally-occurring water composition would be encouraged rather than discouraged. Discharges should not change water chemistry even if the alterations do not result in toxicity, because the aquatic communities present in a water body may prefer the unaltered environment over the discharge-affected environment. Biological criteria may be necessary to detect adverse ecological effects downstream of discharges, whether or not toxicity is expressed.

The CTR proposes criteria formulas that use site water hardness as the only input variable. In contrast, over twenty years ago Howarth and Sprague (1978) cautioned against a broad use of water hardness as “shorthand” for water qualities that affect copper toxicity. In that study, they observed a clear effect of pH in addition to hardness. Since that time, several studies of the toxicity of metals in test waters of various compositions have been performed and the results do not confer a singular role to hardness in ameliorating metals toxicity. In recognition of this fact, most current studies carefully vary test water characteristics like pH, calcium, alkalinity, dissolved organic carbon, chloride, sodium, suspended solids, and others while observing the responses of test organisms. It is likely that understanding metal toxicity in waters of various chemical makeup is not possible without the use of a geochemical model that is more elaborate than a regression formula. It may also be that simple toxicity tests (using mortality, growth, or reproductive endpoints) are not capable of discriminating the role of hardness or other water chemistry characteristics in modulating metals toxicity (Erickson et al. 1996). Gill surface interaction models have provided a useful framework for the study of acute metals toxicity in fish (Pagenkopf 1983; Playle et al. 1992; Playle et al. 1993a; Playle et al. 1993b; Janes and Playle 1995; Playle 1998), as have studies that observe physiological (e.g. ion fluxes) or biochemical (e.g. enzyme inhibition) responses (Lauren and McDonald 1986; Lauren and McDonald 1987a; Lauren and McDonald 1987b; Reid and McDonald 1988; Verbost et al. 1989; Bury et al. 1999a; Bury et al. 1999b). Even the earliest gill models accounted for the effects of pH on metal speciation and the effects of alkalinity on inorganic complexation, in addition to the competitive effects due to hardness ions (Pagenkopf 1983). Current gill models make use of sophisticated, computer-based, geochemical programs to more accurately account for modulating effects in waters of different chemical makeup (Playle 1998). These programs have aided in the interpretation of physiological or biochemical responses in fish and in investigations that combine their measurement with gill metal burdens and traditional toxicity endpoints.

The Services recognize and acknowledge that hardness of water and the hardness acclimation status of a fish will modify toxicity and toxic response. However the use of hardness alone as a universal surrogate for all water quality parameters that may modify toxicity, while perhaps convenient, will clearly leave gaps in protection when hardness does not correlate with other water quality parameters such as DOC, pH, Cl- or alkalinity and will not provide the combination of comprehensive protection and site specificity that a multivariate water quality model could provide. In our review of the best available scientific literature the Services have found no conclusive evidence that water hardness, by itself, in either laboratory or natural water, is a consistent, accurate predictor of the aquatic toxicity of all metals in all conditions.

SWRCB precedential Order No. WQ 2008-0008 (Corrected) regarding a petition for consideration of the City of Davis' NPDES Permit states and concludes that:

“Based on the current record, it would be more appropriate to use the lowest reliable upstream receiving water hardness values of 78 mg/l for Willows Slough Bypass and 85 mg/l for Conaway Ranch Toe Drain for protection from acute toxicity impacts, regardless of when the samples were taken or whether they were influenced by storm events. Because high flow conditions may deviate from the design flow conditions for selection of hardness as specified in the CTR, it may not be necessary, in some circumstances, to select the lowest hardness values from high flow or storm event conditions. Regardless of the hardness used, the resulting limits must always be protective of water quality criteria under all flow conditions.”

“**Conclusion:** The Central Valley Water Board was justified in using upstream receiving water hardness values rather than effluent hardness values. However, for protection from acute toxicity impacts in the receiving waters, which can occur in short durations even during storm events, in this case, based on the existing record, the Central Valley Water Board should have used the lowest valid upstream receiving water hardness values of 78 mg/l for Willow Slough Bypass and 85 mg/l for Conaway Ranch Toe Drain. Effluent limitations must protect beneficial uses considering reasonable, worst-case conditions. We recognize that this approach does not necessarily agree with conclusions in other guidance stating that low flow conditions are the “worst-case” conditions. However, nothing in this Order is intended to suggest that low flows are inappropriate for determining the reasonable, worst-case conditions in other contexts.” (Emphasis added)

The Regional Board cited the State Board's Water Quality Order (WQO)(No. 2008 0008) for the City of Davis as allowing complete discretion in utilizing the downstream hardness in deriving limits for toxic metals. WQO 2008 0008 in requiring the Regional Board to modify their permit states: “Revise the Fact Sheet to include a discussion of the appropriate hardness to use to protect from acute toxicity impacts (which can occur in short-term periods including storm events) in the receiving waters. The Fact Sheet should also state that the lowest valid upstream receiving water hardness values of 78 mg/l for Willow Slough Bypass and 85 mg/l for Conaway Ranch Toe Drain should be used to determine reasonable potential for the effluent to exceed the hardness-dependent metal CTR criteria, unless additional evidence and analysis, consistent with this Order, demonstrates that different hardness values are appropriate to use and are fully protective of water quality.” The Regional Board did not use the lowest observed upstream hardness as required in WQO 2008 0008. The Regional Board has not provided additional evidence and analysis demonstrating that different hardness is fully protective of beneficial uses. To the contrary, the Regional Board does not address the March 24, 2000 the US Fish and Wildlife Service (Service) and the National Marine Fisheries Service (NMFS) CTR Biological Opinion cited above stating that the use of hardness alone is not protective of beneficial uses and

recommending the sole use of the ambient upstream hardness in developing limits for toxic metals.

The Regional Board's arguments with regard to effluent and/or downstream receiving water hardness can only be made if in-stream mixing is considered. Mixing zones may be granted in accordance with extensive requirements contained in the SIP and the Basin Plan to establish Effluent Limitations. Mixing zones cannot be considered in conducting a reasonable potential analysis to determine whether a constituent will exceed a water quality standard or objective. The Regional Board's approach in using the effluent or downstream hardness to conduct a reasonable potential analysis and consequently establish effluent limitations can only be utilized if mixing is considered; otherwise the ambient (upstream) hardness results in significantly more restrictive limitations. A mixing zone allowance has not been discussed with regard to this issue and therefore does not comply with the SIP.

The issue is that the Regional Board fails to comply with the regulatory requirement to use the ambient instream hardness for limiting hardness dependant metals under the CTR. Failure to utilize the upstream ambient hardness for determining reasonable potential and developing limitations results in fewer and less restrictive Effluent Limitations.

As is cited above, the Regional Board states that utilizing the instream ambient hardness would result in "overly protective limitations". The Regional Board does not have the authority to develop limitations that are less restrictive than required by the regulations, even if they believe the limitations are overly restrictive. The CTR requires use of the instream hardness, not the effluent. The Regional Board has not cited any authority in using a hardness that results in less restrictive limitations than are required under the CTR.

7. The proposed Permit does not contain enforceable Effluent Limitations for chronic toxicity and therefore does not comply with the Basin Plan and Federal Regulations, at 40 CFR 122.44 (d)(1)(i).

Federal regulations, at 40 CFR 122.44 (d)(1)(i), require that limitations must control all pollutants or pollutant parameters which the Director determines are or may be discharged at a level which will cause, or contribute to an excursion above any State water quality standard, including state narrative criteria for water quality. There has been no argument that domestic sewage contains toxic substances and presents a reasonable potential to cause toxicity if not properly treated and discharged. The Water Quality Control Plan for the Sacramento/ San Joaquin River Basins (Basin Plan), Water Quality Objectives (Page III-8.00) for Toxicity is a narrative criteria which states that all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. The Proposed Permit contains a narrative Effluent Limitation prohibiting the discharge of chronically toxic substances: however a *Compliance Determination* has been added

to the proposed Permit: “Compliance with the accelerated monitoring and TRE/TIE provisions of Provision VI.C.2.a shall constitute compliance with effluent limitations contained in sections IV.A.1.d and IV.B.1.d of this Order for chronic whole effluent toxicity “. The *Compliance Determination* nullifies the Effluent Limitation and makes toxic discharges unenforceable.

The Basin Plan narrative Toxicity Objective states that: “All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Board.”

According to the Basin Plan toxicity sampling is required to determine compliance with the requirement that all waters be maintained free of toxic substances. The proposed Permit, page F-47, states that: “*For compliance with the Basin Plan’s narrative toxicity objective, this Order requires the Discharger to conduct whole effluent toxicity testing for acute and chronic toxicity.*” No one can reasonably state that sampling will prevent toxicity. Sampling does not equate with or ensure that waters are free of toxic substances. The proposed Permit requires the Discharger to conduct an investigation of the possible sources of toxicity if a threshold is exceeded. This language is not a limitation and essentially eviscerates the Regional Board’s authority, and the authority granted to third parties under the Clean Water Act, to find the Discharger in violation for discharging chronically toxic constituents. An enforceable effluent limitation for chronic toxicity must be included in the Order.

8. The proposed Permit contains Effluent Limitations for aluminum, diazinon, cyanide, and settleable solids less stringent than the existing permit or the limitations have been removed contrary to the Antibacksliding requirements of the Clean Water Act and Federal Regulations, 40 CFR 122.44 (l)(1).

Under the Clean Water Act (CWA), point source dischargers are required to obtain federal discharge (NPDES) permits and to comply with water quality based effluent limits (WQBELs) in NPDES permits sufficient to make progress toward the achievement of water quality standards or goals. The antibacksliding and antidegradation rules clearly spell out the interest of Congress in achieving the CWA’s goal of continued progress toward eliminating all pollutant discharges. Congress clearly chose an overriding environmental interest in clean water through discharge reduction, imposition of technological controls, and adoption of a rule against relaxation of limitations once they are established.

Upon permit reissuance, modification, or renewal, a discharger may seek a relaxation of permit limitations. However, according to the CWA, relaxation of a WQBEL is permissible only if the

requirements of the antibacksliding rule are met. The antibacksliding regulations prohibit EPA from reissuing NPDES permits containing interim effluent limitations, standards or conditions less stringent than the final limits contained in the previous permit, with limited exceptions. These regulations also prohibit, with some exceptions, the reissuance of permits originally based on best professional judgment (BPJ) to incorporate the effluent guidelines promulgated under CWA §304(b), which would result in limits less stringent than those in the previous BPJ-based permit. Congress statutorily ratified the general prohibition against backsliding by enacting §§402(o) and 303(d)(4) under the 1987 Amendments to the CWA. The amendments preserve present pollution control levels achieved by dischargers by prohibiting the adoption of less stringent effluent limitations than those already contained in their discharge permits, except in certain narrowly defined circumstances.

When attempting to backslide from WQBELs under either the antidegradation rule or an exception to the antibacksliding rule, relaxed permit limits must not result in a violation of applicable water quality standards. The general prohibition against backsliding found in §402(o)(1) of the Act contains several exceptions. Specifically, under §402(o)(2), a permit may be renewed, reissued, or modified to contain a less stringent effluent limitation applicable to a pollutant if: (A) material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of a less stringent effluent limitation; (B)(i) information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance; or (ii) the Administrator determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under subsection (a)(1)(B) of this section; (C) a less stringent effluent limitation is necessary because of events over which the permittee has no control and for which there is no reasonably available remedy [(e.g., Acts of God)]; (D) the permittee has received a permit modification under section 1311(c), 1311(g), 1311(h), 1311(i), 1311(k), 1311(n), or 1326(a) of this title; or (E) the permittee has installed the treatment facilities required to meet the effluent limitations in the previous permit, and has properly operated and maintained the facilities, but has nevertheless been unable to achieve the previous effluent limitations, in which case the limitations in the reviewed, reissued, or modified permit may reflect the level of pollutant control actually achieved (but shall not be less stringent than required by effluent guidelines in effect at the time of permit renewal, reissuance, or modification).

Even if a discharger can meet either the requirements of the antidegradation rule under §303(d)(4) or one of the statutory exceptions listed in §402(o)(2), there are still limitations as to how far a permit may be allowed to backslide. Section 402(o)(3) acts as a floor to restrict the extent to which BPJ and water quality-based permit limitations may be relaxed under the antibacksliding rule. Under this subsection, even if EPA allows a permit to backslide from its previous permit requirements, EPA may never allow the reissued permit to contain effluent limitations which are less stringent than the current effluent limitation guidelines for that

pollutant, or which would cause the receiving waters to violate the applicable state water quality standard adopted under the authority of §303.49.

Federal regulations 40 CFR 122.44 (l)(1) have been adopted to implement the antibacksliding requirements of the CWA:

(l) Reissued permits. (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued, interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under Sec. 122.62.)

(2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.

(i) Exceptions--A permit with respect to which paragraph (l)(2) of this section applies may be renewed, reissued, or modified to contain a less stringent effluent limitation applicable to a pollutant, if:

(A) Material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of a less stringent effluent limitation;

(B)(1) Information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance; or (2) The Administrator determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b);

(C) A less stringent effluent limitation is necessary because of events over which the permittee has no control and for which there is no reasonably available remedy;

(D) The permittee has received a permit modification under section 301(c), 301(g), 301(h), 301(i), 301(k), 301(n), or 316(a); or

(E) The permittee has installed the treatment facilities required to meet the effluent limitations in the previous permit and has properly operated and maintained the facilities but has nevertheless been unable to achieve the previous effluent limitations, in which case the limitations in the reviewed, reissued, or modified permit may reflect the level of pollutant control

actually achieved (but shall not be less stringent than required by effluent guidelines in effect at the time of permit renewal, reissuance, or modification).

(ii) Limitations. In no event may a permit with respect to which paragraph (1)(2) of this section applies be renewed, reissued, or modified to contain an effluent limitation which is less stringent than required by effluent guidelines in effect at the time the permit is renewed, reissued, or modified. In no event may such a permit to discharge into waters be renewed, issued, or modified to contain a less stringent effluent limitation if the implementation of such limitation would result in a violation of a water quality standard under section 303 applicable to such waters.

The proposed Permit fails to utilize EPA's chronic ambient criteria for aluminum. For aluminum we refer to the above comments and the included letter from US EPA stating that the Ambient Criteria document for aluminum is relevant with regard to the chronic criteria.

For diazinon and cyanide the Regional Board does not present any discussion of a single point addressing the Exceptions to the Antidegradation regulations. There is no change to the facility; no change in the character of the influent and there is no information that would invalidate the data to determine reasonable potential conducted during the writing of the existing permit. The limited data collected during this permit cycle is not new information and does not in any way invalidate the older data. There is no defense for removal of the Effluent Limitations for diazinon and cyanide.

The proposed Permit, page F-26, states that: "Based on the RPA dataset, over 1100 daily samples from June 2006 through September 2009, Settleable Solids measured 0.1 ml/L only twice (two consecutive days) in February 2007 and was not detected (less than reporting levels of < 0.1 ml/L) in all the other effluent samples." The two cited data points clearly show there is a reasonable potential for settleable solids to exceed the permit limitation of 0.1 ml/l. We also remind that Federal Regulations, 40 CFR § 122.44(d)(1)(ii), state "when determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution, the **variability of the pollutant or pollutant parameter** in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water." Emphasis added. The reasonable potential analysis fails to consider the statistical variability of data and laboratory analyses as explicitly required by the federal regulations. Settleable solids are not priority pollutants subject to the SIP and statistical variability must be considered. The Regional Board has not cited a single Exception to the Antidegradation regulations. There is no change to the facility; no change in the character of the influent and there is no information that would invalidate the data

to determine reasonable potential conducted during the writing of the existing permit. The limited data collected during this permit cycle is not new information and does not in any way invalidate the older data. There is no defense for removal of the Effluent Limitations for settleable solids.

The Antibacksliding discussion in the proposed Permit fails to address removal of the non-detectable Effluent Limitations for organochlorine pesticides. The Regional Board has not cited a single Exception to the Antibacksliding regulations.

9. The proposed Permit contains an inadequate antidegradation analysis that does not comply with the requirements of Section 101(a) of the Clean Water Act, Federal Regulations 40 CFR § 131.12, the State Board's Antidegradation Policy (Resolution 68-16) and California Water Code (CWC) Sections 13146 and 13247.

CWC Sections 13146 and 13247 require that the Board in carrying out activities which affect water quality shall comply with state policy for water quality control unless otherwise directed by statute, in which case they shall indicate to the State Board in writing their authority for not complying with such policy. The State Board has adopted the Antidegradation Policy (Resolution 68-16), which the Regional Board has incorporated into its Basin Plan. The Regional Board is required by the CWC to comply with the Antidegradation Policy.

Section 101(a) of the Clean Water Act (CWA), the basis for the antidegradation policy, states that the objective of the Act is to “restore and maintain the chemical, biological and physical integrity of the nation’s waters.” Section 303(d)(4) of the CWA carries this further, referring explicitly to the need for states to satisfy the antidegradation regulations at 40 CFR § 131.12 before taking action to lower water quality. These regulations (40 CFR § 131.12(a)) describe the federal antidegradation policy and dictate that states must adopt both a policy at least as stringent as the federal policy as well as implementing procedures.

California’s antidegradation policy is composed of both the federal antidegradation policy and the State Board’s Resolution 68-16 (State Water Resources Control Board, Water Quality Order 86-17, p. 20 (1986) (“Order 86-17”); Memorandum from Chief Counsel William Attwater, SWRCB to Regional Board Executive Officers, “federal Antidegradation Policy,” pp. 2, 18 (Oct. 7, 1987) (“State Antidegradation Guidance”). As a state policy, with inclusion in the Water Quality Control Plan (Basin Plan), the antidegradation policy is binding on all of the Regional Boards (Water Quality Order 86-17, pp. 17-18).

Implementation of the state’s antidegradation policy is guided by the State Antidegradation Guidance, SWRCB Administrative Procedures Update 90-004, 2 July 1990 (“APU 90-004”) and USEPA Region IX, “Guidance on Implementing the Antidegradation Provisions of 40 CFR 131.12” (3 June 1987) (“Region IX Guidance”), as well as Water Quality Order 86-17.

The Regional Board must apply the antidegradation policy whenever it takes an action that will lower water quality (State Antidegradation Guidance, pp. 3, 5, 18, and Region IX Guidance, p. 1). Application of the policy does not depend on whether the action will actually impair beneficial uses (State Antidegradation Guidance, p. 6). Actions that trigger use of the antidegradation policy include issuance, re-issuance, and modification of NPDES and Section 404 permits and waste discharge requirements, waiver of waste discharge requirements, issuance of variances, relocation of discharges, issuance of cleanup and abatement orders, increases in discharges due to industrial production and/or municipal growth and/or other sources, exceptions from otherwise applicable water quality objectives, etc. (State Antidegradation Guidance, pp. 7-10, Region IX Guidance, pp. 2-3). Both the state and federal policies apply to point and nonpoint source pollution (State Antidegradation Guidance p. 6, Region IX Guidance, p. 4).

The federal antidegradation regulations delineate three tiers of protection for waterbodies. Tier 1, described in 40 CFR § 131.12(a)(1), is the floor for protection of all waters of the United States (48 Fed. Reg. 51400, 51403 (8 Nov. 1983); Region IX Guidance, pp. 1-2; APU 90-004, pp. 11-12). It states that “[e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.” Uses are “existing” if they were actually attained in the water body on or after November 28, 1975, or if the water quality is suitable to allow the use to occur, regardless of whether the use was actually designated (40 CFR § 131.3(e)). Tier 1 protections apply even to those waters already impacted by pollution and identified as impaired. In other words, already impaired waters cannot be further impaired.

Tier 2 waters are provided additional protections against unnecessary degradation in places where the levels of water quality are better than necessary to support existing uses. Tier 2 protections strictly prohibit degradation unless the state finds that a degrading activity is: 1) necessary to accommodate important economic or social development in the area, 2) water quality is adequate to protect and maintain existing beneficial uses and 3) the highest statutory and regulatory requirements and best management practices for pollution control are achieved (40 CFR § 131.12(a) (2)). Cost savings to a discharger alone, absent a demonstration by the project proponent as to how these savings are “necessary to accommodate important economic or social development in the area,” are not adequate justification for allowing reductions in water quality (Water Quality Order 86-17, p. 22; State Antidegradation Guidance, p. 13). If the waterbody passes this test and the degradation is allowed, degradation must not impair existing uses of the waterbody (48 Fed. Reg. 51403). Virtually all waterbodies in California may be Tier 2 waters since the state, like most states, applies the antidegradation policy on a parameter-by-parameter basis, rather than on a waterbody basis (APU 90-004, p. 4). Consequently, a request to discharge a particular chemical to a river, whose level of that chemical was better than the state standards, would trigger a Tier 2 antidegradation review even if the river was already impaired by other chemicals.

Tier 3 of the federal antidegradation policy states “[w]here high quality waters constitute an outstanding national resource, such as waters of national and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water shall be maintained and protected (40 CFR § 131.12(a)(3)). These Outstanding National Resource Waters (ONRW) are designated either because of their high quality or because they are important for another reason (48 Fed. Reg. 51403; State Antidegradation Guidance, p. 15). No degradation of water quality is allowed in these waters other than short-term, temporary changes (Id.). Accordingly, no new or increased discharges are allowed in either ONRW or tributaries to ONRW that would result in lower water quality in the ONRW (EPA Handbook, p. 4-10; State Antidegradation Guidance, p. 15). Existing antidegradation policy already dictates that if a waterbody “should be” an ONRW, or “if it can be argued that the waterbody in question deserves the same treatment [as a formally designated ONRW],” then it must be treated as such, regardless of formal designation (State Antidegradation Guidance, pp. 15-16; APU 90-004, p. 4). Thus the Regional Board is required in each antidegradation analysis to consider whether the waterbody at issue should be treated as an ONRW. It should be reiterated that waters cannot be excluded from consideration as an ONRW simply because they are already “impaired” by some constituents. By definition, waters may be “outstanding” not only because of pristine quality, but also because of recreational significance, ecological significance or other reasons (40 CFR §131.12(a)(3)). Waters need not be “high quality” for every parameter to be an ONRW (APU 90-004, p. 4). For example, Lake Tahoe is on the 303(d) list due to sediments/siltation and nutrients, and Mono Lake is listed for salinity/TDC/chlorides but both are listed as ONRW.

The State Board’s APU 90-004 specifies guidance to the Regional Boards for implementing the state and federal antidegradation policies and guidance. The guidance establishes a two-tiered process for addressing these policies and sets forth two levels of analysis: a simple analysis and a complete analysis. A simple analysis may be employed where a Regional Board determines that: 1) a reduction in water quality will be spatially localized or limited with respect to the waterbody, e.g. confined to the mixing zone; 2) a reduction in water quality is temporally limited; 3) a proposed action will produce minor effects which will not result in a significant reduction of water quality; and 4) a proposed activity has been approved in a General Plan and has been adequately subjected to the environmental and economic analysis required in an EIR. A complete antidegradation analysis is required if discharges would result in: 1) a substantial increase in mass emissions of a constituent; or 2) significant mortality, growth impairment, or reproductive impairment of resident species. Regional Boards are advised to apply stricter scrutiny to non-threshold constituents, i.e., carcinogens and other constituents that are deemed to present a risk of source magnitude at all non-zero concentrations. If a Regional Board cannot find that the above determinations can be reached, a complete analysis is required.

Even a minimal antidegradation analysis would require an examination of: 1) existing applicable water quality standards; 2) ambient conditions in receiving waters compared to standards; 3)

incremental changes in constituent loading, both concentration and mass; 4) treatability; 5) best practicable treatment and control (BPTC); 6) comparison of the proposed increased loadings relative to other sources; 7) an assessment of the significance of changes in ambient water quality and 8) whether the waterbody was a ONRW. A minimal antidegradation analysis must also analyze whether: 1) such degradation is consistent with the maximum benefit to the people of the state; 2) the activity is necessary to accommodate important economic or social development in the area; 3) the highest statutory and regulatory requirements and best management practices for pollution control are achieved; and 4) resulting water quality is adequate to protect and maintain existing beneficial uses. A BPTC technology analysis must be done on an individual constituent basis; while tertiary treatment may provide BPTC for pathogens, dissolved metals may simply pass through.

Any antidegradation analysis must comport with implementation requirements in State Board Water Quality Order 86-17, State Antidegradation Guidance, APU 90-004 and Region IX Guidance. The conclusory, unsupported, undocumented statements in the Permit are no substitute for a defensible antidegradation analysis.

The antidegradation analysis in the proposed Permit is not simply deficient, it is literally nonexistent. The brief discussion of antidegradation requirements for aluminum does not address the best interest of the people of California: that the beneficial uses are protected or that best practicable treatment and control is being provided.

The proposed Permit's antidegradation analysis does not discuss: 1) existing applicable water quality standards; 2) ambient conditions in receiving waters compared to standards; 3) incremental changes in constituent loading, both concentration and mass; 4) treatability; 5) best practicable treatment and control (BPTC); 6) comparison of the proposed increased loadings relative to other sources; 7) an assessment of the significance of changes in ambient water quality and 8) whether the waterbody was a ONRW.

The Antidegradation analysis does not discuss the impacts of Effluent Limits, page 11, d., for Chronic Whole Effluent Toxicity which states that: "Effective 30 September 2012, there shall be no chronic toxicity in the effluent discharge." The impacts of allowing toxic discharges until 30 September 2012 is not discussed and the beneficial use of aquatic life is not assessed.

The Antidegradation analysis does not discuss the impacts of the Interim Effluent Limitations for Total Ammonia (as N). The proposed Permit page 12 states that: "Effective immediately and ending on 31 August 2015, the Discharger shall maintain compliance with the interim effluent limitation at Discharge Point No. 001, with compliance measured at Monitoring Location EFF-001 as described in the Monitoring and Reporting Program. The interim effluent limitation for ammonia is 23.7 mg/L as a daily average. This interim effluent limitation shall apply in lieu of

all of the final effluent limitations specified for the same parameters during the time period indicated in this provision.” The Antidegradation policy discussion does not address the likely violation of receiving water limitations for toxic substances, biostimulatory substances, dissolved oxygen from the high concentration of ammonia.

The proposed Permit states that: “The Antidegradation Policy (Resolution No. 68-16) requires that the Discharger implement best practicable treatment or control (BPTC) of its discharge. For salinity, the Central Valley Water Board is considering limiting effluent salinity of municipal wastewater treatment plants to an increment of 500 $\mu\text{mhos/cm}$ over the salinity of the municipal water supply as representing BPTC.” The finding by the Regional Board is from the Tulare Lake Basin Plan, which is not applicable to this discharge. The discharge is regulated under the Sacramento San-Joaquin River Basin Plan. There is no evidence in the record for this discharge and nothing in the proposed Permit, which supports the Regional Board’s allowance of degradation from salinity wastewater discharges. There has been no analysis of what constitutes BPTC for salinity in the Sacramento San Joaquin River Basins. The area covered under the Tulare Lake Basin Plan was well established salinity problems in surface and groundwater exceeding those found in the Sacramento watershed. There has been no investigation of the impacts to beneficial uses from allowing salinity degradation within the Sacramento River watershed. There has been no Antidegradation Policy investigation to support the Regional Board’s finding.

The current Facility consists of aerated lagoons, oxidation ponds, disinfection by chlorine, and dechlorination. Unlined aerated lagoons and oxidation ponds present a reasonable potential that pollutants could migrate to groundwater. The Regional Board has not assessed groundwater quality and whether the decades old discharge has degraded groundwater quality.

10. The proposed Permit contains Groundwater Limitations but does not require groundwater monitoring to determine compliance with the limitation.

The proposed Permit, page 3, states that: “The current Facility consists of aerated lagoons, oxidation ponds, disinfection by chlorine, and dechlorination.” Unlined aerated lagoons and oxidation ponds present a reasonable potential that pollutants could migrate to groundwater. The Regional Board has not assessed groundwater quality and whether the decades old discharge has degraded groundwater quality.

The existing NPDES permit R5-2004-0096, Finding 36, required: “36. Monitoring of the groundwater must be conducted to determine if the discharge has caused an increase in constituent concentrations, when compared to background. The monitoring must, at a minimum, require a complete assessment of groundwater impacts including the vertical and lateral extent of degradation, an assessment of all wastewater-related constituents which may have migrated to groundwater, an analysis of whether additional or different methods of treatment or control of

the discharge are necessary to provide best practicable treatment or control to comply with Resolution No. 68-16. Economic analysis is only one of many factors considered in determining best practicable treatment or control. If monitoring indicates that the discharge has incrementally increased constituent concentrations in groundwater above background, this permit may be reopened and modified. Until groundwater monitoring is sufficient, this Order contains Groundwater Limitations that allow groundwater quality to be degraded for certain constituents when compared to background groundwater quality, but not to exceed water quality objectives. If groundwater quality has been degraded by the discharge, the incremental change in pollutant concentration (when compared with background) may not be increased. If groundwater quality has been or may be degraded by the discharge, this Order may be reopened and specific numeric limitations established consistent with Resolution 68-16 and the Basin Plan.”

Finding No. 38 required that: “This Order requires the Discharger to continue groundwater monitoring and includes a regular schedule of groundwater monitoring in the attached Monitoring and Reporting Program. The groundwater monitoring reports are necessary to evaluate impacts to waters of the State to assure protection of beneficial uses and compliance with Regional Board plans and policies, including Resolution 68-16. Evidence in the record includes effluent monitoring data that indicates the presence of constituents that may degrade groundwater and surface water.”

The proposed permit does not discuss the results of any groundwater monitoring.

11. The proposed Permit finds that the wastewater and sludge treatment and disposal facilities are exempt from California Code of Regulations (CCR) Title 27 absent any analysis or fact.

The current Facility consists of aerated lagoons, oxidation ponds, disinfection by chlorine, and dechlorination. Unlined aerated lagoons and oxidation ponds present a reasonable potential that pollutants could migrate to groundwater. The Regional Board has not assessed groundwater quality and whether the decades old discharge has degraded groundwater quality. Any current means of sludge disposal is not discussed in the proposed Permit. The Regional Board cannot state that the “precondition” that groundwater has not been degraded beyond water quality standards and objectives have been met. The proposed permit does not discuss the results of any groundwater monitoring.

CCR Title 27

§20090. SWRCB - Exemptions. (C15: §2511): The following activities shall be exempt from the SWRCB-promulgated provisions of this subdivision, so long as the activity meets, and continues to meet, all preconditions listed: (a) **Sewage**—Discharges of domestic sewage or treated effluent which are regulated by WDRs issued pursuant to Chapter 9, Division 3, Title 23 of this code, or for which WDRs have been waived, and which are consistent with applicable

water quality objectives, and treatment or storage facilities associated with municipal wastewater treatment plants, provided that residual sludges or solid waste from wastewater treatment facilities shall be discharged only in accordance with the applicable SWRCB-promulgated provisions of this division. (b) **Wastewater**—Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leachfields if the following conditions are met: (1) the applicable RWQCB has issued WDRs, reclamation requirements, or waived such issuance; (2) the discharge is in compliance with the applicable water quality control plan; and (3) the wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.

Region 5's Basin Plan

WATER QUALITY OBJECTIVES FOR GROUND WATERS

The following objectives apply to all ground waters of the Sacramento and San Joaquin River Basins, as the objectives are relevant to the protection of designated beneficial uses. These objectives do not require improvement over naturally occurring background concentrations. The ground water objectives contained in this plan are not required by the federal Clean Water Act.

Bacteria

In ground waters used for domestic or municipal supply (MUN) the most probable number of coliform organisms over any seven-day period shall be less than 2.2/100 ml.

Chemical Constituents

Ground waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At a minimum, ground waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Tables 64449-A (Secondary Maximum Contaminant Levels- Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels- Ranges) of Section 64449. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain lead in excess of 0.015 mg/l. To protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

Tastes and Odors

Ground waters shall not contain taste- or odor producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

Toxicity

Ground waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial use(s). This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances.

The Regional Board cannot state that the Basin Plan water quality objectives for groundwater have not been exceeded since groundwater monitoring has apparently not been conducted or is not addressed in the proposed Permit. The exemption from CCR Title 27 is a “precondition” which has not been satisfied. The proposed permit does not discuss the results of any groundwater monitoring.

Thank you for considering these comments. If you have questions or require clarification, please don't hesitate to contact us.

Sincerely,

A handwritten signature in black ink, appearing to read "Bill Jennings". The signature is fluid and cursive, with the first name "Bill" being more prominent than the last name "Jennings".

Bill Jennings, Executive Director
California Sportfishing Protection Alliance