



## California Sportfishing Protection Alliance

*"An Advocate for Fisheries, Habitat and Water Quality"*

3536 Rainier Avenue, Stockton, CA 95204

Tel: 209-464-5067, Fax: 209-464-1028, E: deltakeep@aol.com

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Mr. Kenneth Landau, Assistant Executive Officer

klandau@waterboards.ca.gov

Mr. James Marshall, Sr. WRCE

jdmarshall@waterboards.ca.gov

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: Renewal of Waste Discharge Requirements (NPDES No. CA0078018) and Time Schedule Order for City of Rio Vista Beach Wastewater Treatment Facility, Solano County

Dear Messrs. Landau and Marshall;

The California Sportfishing Protection Alliance (CSPA) has reviewed the Central Valley Regional Water Quality Control Board's (Regional Board) tentative NPDES permit (Proposed or Tentative Permit) for the City of Rio Vista Beach Wastewater Treatment Facility (Discharger) 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 surface and ground waters and associated fisheries. CSPA members reside, boat, fish and recreate in and along waterways throughout the Central Valley, including Solano County.

- 1. The proposed Permit Allows for a Taking of Endangered Species Contrary to the California Endangered Species Act (Fish and Game Code Sections 2050 to 2097) and the Federal Endangered Species Act (16 U.S.C.A. Sections 1531 to 1544).**

Proposed Permit Finding P falsely states that the proposed Permit does not authorize any act that results in the taking of a threatened or endangered species. The Sacramento River Delta waterways are listed on the 303(d) list as impaired because of unknown

toxicity and are home to species protected by state and federal endangered species acts. There is no remaining assimilative capacity for toxicity or toxic pollutants. The proposed Permit however allows mixing zones for toxic substances. Mixing zones by definition are areas where water quality standards will be exceeded, in this case toxic standards and/or objectives are allowed to be exceeded within an undefined mixing zone. The toxic conditions within the mixing zone will allow for the taking of endangered species. The mixing zone has not been defined in the proposed Permit as to its actual length (the point in the receiving water where the criteria will be met) as is required in the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP, an adopted State of California Policy), Section 1.4.2.2 B. The proposed Permit Fact Sheet, page F-16, estimated that the mixing zone was 250 feet long but could not account for the tidal effects within the Sacramento River. Clearly aquatic species can remain resident for a long period of time within a 250-foot long span of the Sacramento River. Specifically, the proposed Permit allows for toxic concentrations of:

- aluminum with a maximum daily effluent limitation of 750 mg/l (*hopefully the mg/l is a typographical error and should be ug/l*) which exceeds U.S. EPA ambient Freshwater Aquatic Life Criteria chronic of 87 ug/l and assumes that there is assimilative capacity for acute toxicity where the acute criterion is 750 ug/l.
- Ammonia with a daily maximum effluent limitation of 91 mg/l and an average monthly average of 35 mg/l. As is shown in the proposed Permit Fact Sheet, page F-19, the US EPA Freshwater Ambient Criteria for the protection of Freshwater Aquatic Life is 4.64 mg/l as a one-hour average and 1.73 mg/l as a 30-day average. The discharge of ammonia at 91 mg/l will clearly cause toxicity to freshwater aquatic life within the allowed mixing zone. The Sacramento Bee published an article on June 1<sup>st</sup> 2008 *Ammonia from Sacramento Waste Could Hurt Delta Ecosystem* citing two recent articles by Richard Dugdale, an oceanographer at San Francisco State University, which show that ammonia disrupts the food chain in the Sacramento-San Joaquin Delta. Dugdale said that ammonia in the river interrupts the natural food production line that would otherwise yield abundant blooms of tiny aquatic animals to feed salmon, smelt and bass.
- Copper with a daily maximum effluent limitation of 116 ug/l and an average monthly average of 58 ug/l. As is shown in the proposed Permit Fact Sheet, page F-22, the CTR water quality standard which was based on US EPA Freshwater Ambient Criteria for the protection of Freshwater Aquatic Life is 11.1 ug/l, as a one hour average, and 7.4 ug/l as a 4-day average. The discharge of copper at 116 ug/l will clearly cause toxicity within the allowed mixing zone.
- Acute Toxicity is limited to 30% mortality in any one sample. Again, allows for toxicity within the mixing zone.

- Chronic Toxicity is not limited in the proposed Permit although required by the SIP. The SIP, Section 4, Toxicity Control Provisions, Water Quality-Based Toxicity Control, states that: “A chronic toxicity effluent limitation is required in permits for all dischargers that will cause, have a reasonable potential to cause, or contribute to chronic toxicity in receiving waters.” The SIP is a state *Policy* and 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.
- Copper and lead act on aquatic organisms in the same fashion. Therefore, additive toxicity for these constituents must be considered. The Basin Plan, at (IV-17.00), states the following:

*“Where multiple toxic pollutants exist together in water, the potential for toxicological interactions exists. On a case by case basis, the Regional Water Board will evaluate available receiving water and effluent data to determine whether there is reasonable potential for interactive toxicity. Pollutants which are carcinogens or which manifest their toxic effects on the same organ systems or through similar mechanisms will generally be considered to have potentially additive toxicity. The following formula will be used to assist the Regional Water Board in making determinations:*

$$\sum_{i=1}^n \frac{[\text{Concentration of Toxic Substance}]}{[\text{Toxicologic Limit for Substance in Water}]} < 1.0$$

*The concentration of each toxic substance is divided by its toxicologic limit. The resulting ratios are added for substances having similar toxicologic effects and, separately, for carcinogens. If such a sum of ratios is less than one, an additive toxicity problem is assumed not to exist. If the summation is equal to or greater than one, the combination of chemicals is assumed to present an unacceptable level of toxicological risk. For example, monitoring shows that ground water beneath a site has been degraded by three volatile organic chemicals, A, B, and C, in concentrations of 0.3, 0.4, and 0.04 mg/l, respectively. Toxicologic limits for these chemicals are 0.7, 3, and 0.06 mg/l, respectively. Individually, no chemical exceeds its toxicologic limit. However, an additive toxicity calculation shows:*

$$\frac{0.3}{0.7} + \frac{0.4}{3} + \frac{0.04}{0.06} = 1.2$$

*The sum of the ratios is greater than unity (>1.0); therefore the additive toxicity criterion has been violated. The concentrations of chemicals A, B, and C together present a potentially unacceptable level of toxicity.”*

Additive toxicity has not been considered in the proposed Permit but has the potential to result in the take of endangered species within the mixing zone and potentially beyond.

The Tentative Permit is likely to result in the illegal “take” of listed species and will likely result in the destruction or adverse modification of critical habitat in violation of Section 9 of the federal Endangered Species Act (ESA).

The Order has been developed with federal funds and is issued pursuant to U.S. Environmental Protection Agency (EPA) authorization. Consequently, the Regional Board and/or EPA must enter into formal consultation with both the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) pursuant to Section 7 of the ESA. The discharge of toxicity and toxic pollutants by the Discharger is a violation of Section 9 of the ESA and requires an incidental take permit pursuant to Section 10 of the ESA. The Regional Board’s issuance of an Order that authorizes and/or “causes” an illegal “take” is also a violation of Section 9 of the ESA. Consequently, both the Discharger and the Regional Board must secure incidental take permits from NMFS and USFWS.

The Tentative Permit will also likely result in an illegal “take” of listed species pursuant to Section 2080 of the California Fish and Game Code; i.e., the California Endangered Species Act (CESA). The Discharger must obtain a permit under Section 2081 or a consistency determination under Section 2080.1 of CESA. Unlike ESA, CESA requires that authorized take be “fully mitigated” and that all required measures be “capable of successful implementation.” Since there are no provisions for time schedules under CESA, the Discharger must comply with protective limits as soon as possible and certainly prior to any increase in the rate of discharge. The inadequate toxicity, temperature, ammonia, and dissolved oxygen limits in the Tentative Permit should be revised to be fully protective of listed species. The Discharger and Regional Board must initiate consultation with the California Department of Fish and Game.

**2. The proposed Permit Grants Mixing Zones Contrary to the Requirements of the Basin Plan, the State’s *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California* (SIP), the Antidegradation Policy, Federal Antidegradation Regulations, the California Constitution and the Clean Water Act.**

“A mixing zone is an area where an effluent discharge undergoes initial dilution and is extended to cover the secondary mixing in the ambient waterbody. A mixing zone is an allocated impact zone where water quality criteria can be exceeded as long as acutely toxic conditions are prevented” according to EPA’s *Technical Support Document for Water Quality-based Toxics Control* (TSD) (USEPA, 1991), (Water quality criteria must be met at the edge of a mixing zone.) Mixing zones are regions within public waters adjacent to point source discharges where pollutants are diluted and dispersed at concentrations that routinely exceed human health and aquatic life water quality

standards (the maximum levels of pollutants that can be tolerated without endangering people, aquatic life, and wildlife.) Mixing zone policies allow a discharger's point of compliance with state and federal water quality standards to be moved from the "end of the pipe" to the outer boundaries of a dilution zone. The CWA was adopted to minimize and eventually eliminate the release of pollutants into public waters because fish were dying and people were getting sick. The CWA requires water quality standards (WQS) be met in all waters to prohibit concentrations of pollutants at levels assumed to cause harm. Since WQS criteria are routinely exceeded in mixing zones it is likely that in some locations harm is occurring. The general public is rarely aware that local waters are being degraded within these mixing zones, the location of mixing zones within a waterbody, the nature and quantities of pollutants being diluted, the effects the pollutants might be having on human health or aquatic life, or the uses that may be harmed or eliminated by the discharge. Standing waist deep at a favorite fishing hole, a fisherman has no idea that he is in the middle of a mixing zone for pathogens for a sewage discharger that has not been required to adequately treat their waste. In this instance the proposed Permit alleges that there is always a minimum 20-to-1 dilution available in the receiving stream for pathogens that is directly contradicted by mixing zone statement that they could not account for the tidal effects within the Sacramento River; an area where the water flows back and forth. The proposed Permit, Fact Sheet page F-28, cites a letter from the California Department of Public Health (DPH) that a 20-to-1 dilution ratio is necessary to protect the contact recreational beneficial uses of the receiving stream unless tertiary treatment is provided. The Compliance Summary Section of the Fact Sheet states that the facility has routinely in violation of their "secondary" coliform organisms effluent limitations, apparently without resolution. The mixing zone allows degradation of the beneficial use of the receiving stream for contact recreation, a river well documented for water skiing and water recreational activities.

In 1972, backed by overwhelming public support, Congress overrode President Nixon's veto and passed the Clean Water Act. Under the CWA, states are required to classify surface waters by *uses* – the beneficial purposes provided by the waterbody. For example, a waterbody may be designated as a drinking water source, or for supporting the growth and propagation of aquatic life, or for allowing contact recreation, or as a water source for industrial activities, or all of the above. States must then adopt *criteria* – numeric and narrative limits on pollution, sufficient to protect the uses assigned to the waterbody. *Uses + Criteria = Water Quality Standards (WQS)*. WQS are regulations adopted by each state to protect the waters under their jurisdiction. If a waterbody is classified for more than one use, the applicable WQS are the criteria that would protect the most sensitive use.

All wastewater dischargers to surface waters must apply for and receive a permit to discharge pollutants under the National Pollutant Discharge Elimination System (NPDES.) Every NPDES permit is required to list every pollutant the discharger anticipates will be released, and establish effluent limits for these pollutants to ensure the discharger will achieve WQS. NPDES permits also delineate relevant control measures, waste management procedures, and monitoring and reporting schedules.

It is during the process of assigning effluent limits in NPDES permits that variances such as mixing zones alter the permit limits for pollutants by multiplying the scientifically derived water quality criteria by dilution factors. The question of whether mixing zones are legal has never been argued in federal court.

Mixing zones are never mentioned or sanctioned in the CWA. To the contrary, the CWA appears to speak against such a notion:

“whenever...the discharges of pollutants from a point source...would interfere with the attainment or maintenance of that water quality...which shall assure protection of public health, public water supplies, agricultural and industrial uses, and the protection and propagation of a balanced population of shellfish, fish and wildlife, and allow recreational activities in and on the water, effluent limitations...shall be established which can reasonably be expected to contribute to the attainment or maintenance of such water quality.”

A plain reading of the above paragraph calls for the application of effluent limitations whenever necessary to assure that *WQS will be met in all waters*. Despite the language of the Clean Water Act; US EPA adopted 40 CFR 131.13, General policies, that allows States to, at their discretion, include in their State standards, policies generally affecting their application and implementation, such as mixing zones, low flows and variances. According to EPA; (EPA, Policy and Guidance on Mixing Zones, 63 Fed Reg. 36,788 (July 7, 1998)) as long as mixing zones do not eliminate beneficial uses in the whole waterbody, they do not violate federal regulation or law. California has mixing zone policies included in individual Water Quality Control Plans (Basin Plans) and the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (2005) permitting pollutants to be diluted before being measured for compliance with the state’s WQS.

Federal Antidegradation regulations at 40 CFR 131.12 require that states protect waters at their present level of quality and that all beneficial uses remain protected. The corresponding State Antidegradation Policy, Resolution 68-16, requires that any degradation of water quality not unreasonably affect present and anticipated beneficial uses. Resolution 68-16 further requires that: “Any activity which produces or may produce or increase volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with the maximum benefit to the people of the State will be maintained.”

- Pollution is defined in the California Water Code as an alteration of water quality to a degree that unreasonably affects beneficial uses. In California, Water Quality Control Plans (Basin Plans) contain water quality standards and objectives that are necessary to protect beneficial uses. The Basin Plan for California’s Central Valley Regional Water Board states that: “According to Section 13050 of the

California Water Code, Basin Plans consist of a designation or establishment for the waters within a specified area of beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving the objectives. State law also requires that Basin Plans conform to the policies set forth in the Water Code beginning with Section 13000 and any state policy for water quality control. Since beneficial uses, together with their corresponding water quality objectives, can be defined per federal regulations as water quality standards, the Basin Plans are regulatory references for meeting the state and federal requirements for water quality control (40 CFR 131.20).”

- Nuisance is defined in the California Water Code as anything that is injurious to health, indecent, offensive or an obstruction of the free use of property that affects an entire community and occurs as a result of the treatment or disposal of waste.

The Antidegradation Policy (Resolution 68-16) allows water quality to be lowered as long as beneficial uses are protected (pollution or nuisance will not occur), best practicable treatment and control (BPTC) of the discharge is provided, and the degradation is in the best interest of the people of California. Water quality objectives were developed as the maximum concentration of a pollutant necessary to protect beneficial uses and levels above this concentration would be considered pollution. The Antidegradation Policy does not allow water quality standards and objectives to be exceeded. Mixing zone are regions within public waters adjacent to point source discharges where pollutants are diluted and dispersed at concentrations that routinely exceed water quality standards.

The Antidegradation Policy (Resolution 68-16) requires that best practicable treatment or control (BPTC) of the discharge be provided. Mixing zones have been allowed in lieu of treatment to meet water quality standards at the end-of-the-pipe prior to discharge. To comply with the Antidegradation Policy, the trade of receiving water beneficial uses for lower utility rates must be in the best interest of the people of the state and must also pass the test that the Discharger is providing BPTC. By routinely permitting excessive levels of pollutants to be legally discharged, mixing zones act as an economic disincentive to Dischargers who might otherwise have to design and implement better treatment mechanisms. Although the use of mixing zones may lead to individual, short-term cost savings for the discharger, significant long-term health and economic costs may be placed on the rest of society. An assessment of BPTC, and therefore compliance with the Antidegradation Policy, must assess whether treatment of the wastestream can be accomplished, is feasible, and not simply the additional costs of compliance with water quality standards. A BPTC case can be made for the benefits of prohibiting mixing zones and requiring technologies that provide superior waste treatment and reuse of the wastestream.

EPA’s Water Quality Standards Handbook states that: “It is not always necessary to meet all water quality criteria within the discharge pipe to protect the integrity of the waterbody as a whole.” The primary mixing area is commonly referred to as the zone of initial dilution, or ZID. Within the ZID acute aquatic life criteria are exceeded. To

satisfy the CWA prohibition against the discharge of toxic pollutants in toxic amounts, regulators assume that if the ZID is small, significant numbers of aquatic organisms will not be present in the ZID long enough to encounter acutely toxic conditions. EPA recommends that a ZID not be located in an area populated by non-motile or sessile organisms, which presumably would be unable to leave the primary mixing area in time to avoid serious contamination.

Determining the impacts and risks to an ecosystem from mixing pollutants with receiving waters at levels that exceed WQS is extremely complex. The range of effects pollutants have on different organisms and the influence those organisms have on each other further compromises the ability of regulators to assess or ensure “acceptable” short and long-term impacts from the use of mixing zones. Few if any mixing zones are examined prior to the onset of discharging for the potential effects on impacted biota (as opposed to the physical and chemical fate of pollutants in the water column). Biological modeling is especially challenging – while severely toxic discharges may produce immediately observable effects, long-term impacts to the ecosystem can be far more difficult to ascertain. The effects of a mixing zone can be insidious; impacts to species diversity and abundance may be impossible to detect until it is too late for reversal or mitigation.

The *CALIFORNIA CONSTITUTION, ARTICLE 10, WATER, SEC. 2* states that: “It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare. The right to water or to the use or flow of water in or from any natural stream or water course in this State is and shall be limited to such water as shall be reasonably required for the beneficial use to be served, and such right does not and shall not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion of water. Riparian rights in a stream or water course attach to, but to no more than so much of the flow thereof as may be required or used consistently with this section, for the purposes for which such lands are, or may be made adaptable, in view of such reasonable and beneficial uses; provided, however, that nothing herein contained shall be construed as depriving any riparian owner of the reasonable use of water of the stream to which the owner's land is riparian under reasonable methods of diversion and use, or as depriving any appropriator of water to which the appropriator is lawfully entitled. This section shall be self-executing, and the Legislature may also enact laws in the furtherance of the policy in this section contained.” The granting of a mixing zone is an unreasonable use of water when proper treatment of the wastestream can be accomplished to meet end-of-pipe limitations. Also contrary to the California Constitution, a mixing zone does not *serve the beneficial use*; to the contrary, beneficial uses are degraded within the mixing zone.

The Central Valley Regional Water Quality Control Board’s Basin Plan, page IV-16.00, requires the Regional Board use EPA’s *Technical Support Document for Water Quality Based Toxics Control (TSD)* in assessing mixing zones. The TSD, page 70, defines a first

stage of mixing, close to the point of discharge, where complete mixing is determined by the momentum and buoyancy of the discharge. The second stage is defined by the TSD where the initial momentum and buoyancy of the discharge are diminished and waste is mixed by ambient turbulence. The TSD goes on to state that in large rivers this second stage mixing may extend for miles. There are drinking water intakes, and proposed intakes, downstream of the wastewater discharge that could be impacted before the pollutants from the discharge are completely mixed. The TSD, Section 4.4, requires that if complete mix does not occur in a short distance mixing zone monitoring and modeling must be undertaken.

Copper and lead act on aquatic organisms in the same fashion. Therefore, additive toxicity for these constituents must be considered in any mixing zone. The Basin Plan, at (IV-17.00), states the following:

*“Where multiple toxic pollutants exist together in water, the potential for toxicological interactions exists. On a case by case basis, the Regional Water Board will evaluate available receiving water and effluent data to determine whether there is reasonable potential for interactive toxicity. Pollutants which are carcinogens or which manifest their toxic effects on the same organ systems or through similar mechanisms will generally be considered to have potentially additive toxicity. The following formula will be used to assist the Regional Water Board in making determinations:*

$$\sum_{i=1}^n \frac{[\text{Concentration of Toxic Substance}]}{[\text{Toxicologic Limit for Substance in Water}]} < 1.0$$

*The concentration of each toxic substance is divided by its toxicologic limit. The resulting ratios are added for substances having similar toxicologic effects and, separately, for carcinogens. If such a sum of ratios is less than one, an additive toxicity problem is assumed not to exist. If the summation is equal to or greater than one, the combination of chemicals is assumed to present an unacceptable level of toxicological risk. For example, monitoring shows that ground water beneath a site has been degraded by three volatile organic chemicals, A, B, and C, in concentrations of 0.3, 0.4, and 0.04 mg/l, respectively. Toxicologic limits for these chemicals are 0.7, 3, and 0.06 mg/l, respectively. Individually, no chemical exceeds its toxicologic limit. However, an additive toxicity calculation shows:*

$$\frac{0.3}{0.7} + \frac{0.4}{3} + \frac{0.04}{0.06} = 1.2$$

*The sum of the ratios is greater than unity (>1.0); therefore the additive toxicity criterion has been violated. The concentrations of chemicals A, B, and C together present a potentially unacceptable level of toxicity.”*

Additive toxicity has not been considered in the proposed Permit but has the potential to result in the take of endangered species within the mixing zone and potentially beyond.

The State's *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California* (SIP), Section 1.4.2.2, contains requirements for a mixing zone study which must be analyzed before a mixing zone is allowed for a wastewater discharge. Properly adopted state Policy requirements are not optional. The proposed Effluent Limitations in the proposed Permit are not supported by the scientific investigation that is required by the SIP and the Basin Plan.

SIP Section 1.4.2.2 requires that a mixing zone shall not:

1. Compromise the integrity of the entire waterbody.
2. Cause acutely toxic conditions to aquatic life.
3. Restrict the passage of aquatic life.
4. Adversely impact biologically sensitive habitats.
5. Produce undesirable aquatic life.
6. Result in floating debris.
7. Produce objectionable color, odor, taste or turbidity.
8. Cause objectionable bottom deposits.
9. Cause Nuisance.
10. Dominate the receiving water body or overlap a different mixing zone.
11. Be allowed at or near any drinking water intake.

The proposed Permit's mixing zone statements have not addressed a single required item of the SIP. The proposed Permit Fact sheet cites the SIP requirements but fails to fulfill a single requirement. The Sacramento River is already 303d listed as impaired for copper and unknown toxicity. A very clear unaddressed requirement (SIP Section 1.4.2.2) for mixing zones is that the point(s) in the receiving stream where the applicable criteria must be met shall be specified in the proposed Permit. Since the Sacramento River is impaired for copper and unknown toxicity the proposed Permit cannot define the location for copper compliance or Acute Toxicity. Chronic Toxicity is not even limited in the proposed Permit as is required by the SIP. The "edge of the mixing zone" has not been clearly defined. The proposed Permit Fact Sheet, page F-16, estimated that the mixing zone was 250 feet long but could not account for the tidal effects within the Sacramento River. The proposed Permit Fact Sheet, page F-16, further indicates that mixing zones for human health criteria were simply carried forth from the previous permit at a dilution credit of 1000 to 1 even after the same Section of the Fact Sheet reported that the pervious Permit's mixing zones had been based solely on an unsupported hydraulic analysis.

Few mixing zones are adequately evaluated to determine whether the modeling exercise was in fact relevant or accurate, or monitored over time to assess the impacts of the mixing zone on the aquatic environment. The sampling of receiving waters often consists of analyzing one or two points where the mixing zone boundary is supposed to be –

finding no pollution at the mixing zone boundary is often considered proof that mixing has been “successful” when in fact the sampling protocol might have missed the plume altogether. The proposed Permit fails to define the edge of the mixing zone, as is required by State Policy and fails to require any confirmation sampling for compliance with the modeling results.

- 3. California Water Code Sections 13146 and 13247 require that the Board in carrying out activities which affect water quality shall comply with state policy and assure that Wastewater Dischargers are required to provide Best Practicable Treatment and Control (BPTC) of the discharge to assure pollution will not occur and that the highest water quality consistent with the maximum benefit to the people of the State will be maintained in accordance with the Antidegradation Policy (Resolution 68-16). The proposed Permit fails to require BPTC by failing to require tertiary Treatment.**

The ultimate goal of the Federal Clean Water Act as expressed in Section 101 is the elimination of the discharge of pollutants into navigable waters by 1985. The Act throughout, places an emphasis on the control and reduction of the discharge of pollutants by point sources as interim goals. Technology based effluent limitations are required by Section 301 of the Act for all point sources. A standard of “best available technology” (BPT) is required by 1977, and a more stringent standard of “best available technology” (BAT) is required by 1983 for industrial point sources. For publicly owned treatment works (POTWs), secondary treatment is required by 1977 and “best practicable treatment” (BPT) by 1983. As a part of the Antidegradation Policy, Dischargers are required to provide best practicable treatment and control of the discharge (BPTC).

BAT and BPTC are terms applied with regulations on limiting pollutant discharges with regard to the abatement strategy. Similar terms are best available techniques, best practicable means or best practicable environmental option. The term constitutes a moving target on practices, since developing societal values and advancing treatment techniques may change what is currently regarded as achievable, best practicable and best available. A literal understanding will connect it with a “spare no expense” doctrine, which prescribes the acquisition of the best state of the art technology available, without regard for traditional cost-benefit analysis.

Federal 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. The Antidegradation Policy, State Water Resources Control Board Resolution No. 68-16, states that: “Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with the maximum benefit to the people of the State will be maintained.”

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. Waste Discharge Requirements must require that the treatments systems provide BPTC.

The CWA requires water quality standards (WQS) be met in all waters to prohibit concentrations of pollutants at levels assumed to cause harm. Since WQS criteria are routinely exceeded in mixing zones it is likely that in some locations harm is occurring. The general public is rarely aware that local waters are being degraded within these mixing zones, the location of mixing zones within a waterbody, the nature and quantities of pollutants being diluted, the effects the pollutants might be having on human health or aquatic life, or the uses that may be harmed or eliminated by the discharge. Standing waist deep at a favorite fishing hole, a fisherman has no idea that he is in the middle of a mixing zone for pathogens for a sewage discharger that has not been required to adequately treat their waste. In this instance the proposed Permit alleges that there is always a minimum 20-to-1 dilution available in the receiving stream for pathogens, which is directly contradicted by mixing zone statement that they could not account for the tidal effects within the Sacramento River; an area where the water flows back and forth. The proposed Permit, Fact Sheet page F-28, cites a letter from the California Department of Public Health (DPH) that a 20-to-1 dilution ratio is necessary to protect the contact recreational beneficial uses of the receiving stream unless tertiary treatment is provided. The Compliance Summary Section of the Fact Sheet states that the facility has routinely in violation of their “secondary” coliform organisms effluent limitations, apparently without resolution. The mixing zone allows degradation of the beneficial use of the receiving stream for contact recreation, a river well documented for water skiing and water recreational activities. The proposed Permit Fact Sheet, page F-16, estimated that the mixing zone was 250 feet long but could not account for the tidal effects within the Sacramento River. Even if the proposed Permit were correct that a 20-to-1 dilution ratio were provided; contact recreation is not prohibited within this reach of the river and the public’s health is threatened.

As stated above the Antidegradation Policy requires that any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that pollution will not occur. Pollution is defined in CWC Section 13050 as: “...an alteration of the quality of the waters of the state by waste to a degree which unreasonably affects either of the following: a) the waters for beneficial uses, b) facilities which serve these beneficial uses. Pollution may also include contamination, which is defined as an impairment of the quality of the waters of the state to a degree that creates a hazard to the public health through poisoning or through the spread of disease. In short; the Regional Board is required to write waste

discharge requirements that result in BPTC to assure that pollution will not occur and all beneficial uses are fully protected.

- 4. California Water Code Sections 13146 and 13247 require that the Board in carrying out activities which affect water quality shall comply with state policy and assure that Wastewater Dischargers are required to provide Best Practicable Treatment and Control (BPTC) of the discharge to assure pollution will not occur and that the highest water quality consistent with the maximum benefit to the people of the State will be maintained in accordance with the Antidegradation Policy (Resolution 68-16). Nitrification to remove ammonia from domestic wastewater is widely used throughout the Central Valley and routinely required in the Central Valley Regional Board's NPDES Permits and constitutes BPTC.**

The ultimate goal of the Federal Clean Water Act as expressed in Section 101 is the elimination of the discharge of pollutants into navigable waters by 1985. The Act throughout, places an emphasis on the control and reduction of the discharge of pollutants by point sources as interim goals. Technology based effluent limitations are required by Section 301 of the Act for all point sources. A standard of "best available technology" (BPT) is required by 1977, and a more stringent standard of "best available technology" (BAT) is required by 1983 for industrial point sources. For publicly owned treatment works (POTWs), secondary treatment is required by 1977 and "best practicable treatment" (BPT) by 1983. As a part of the Antidegradation Policy, Dischargers are required to provide best practicable treatment and control of the discharge (BPTC).

BAT and BPTC are terms applied with regulations on limiting pollutant discharges with regard to the abatement strategy. Similar terms are best available techniques, best practicable means or best practicable environmental option. The term constitutes a moving target on practices, since developing societal values and advancing treatment techniques may change what is currently regarded as achievable, best practicable and best available. A literal understanding will connect it with a "spare no expense" doctrine, which prescribes the acquisition of the best state of the art technology available, without regard for traditional cost-benefit analysis.

Federal 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. The Antidegradation Policy, State Water Resources Control Board Resolution No. 68-16, states that: "Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with the maximum benefit to the people of the State will be maintained."

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. Waste Discharge Requirements must require that the treatments systems provide BPTC.

As stated above the Antidegradation Policy requires that any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that pollution will not occur. Pollution is defined in CWC Section 13050 as: "...an alteration of the quality of the waters of the state by waste to a degree which unreasonably affects either of the following: a) the waters for beneficial uses, b) facilities which serve these beneficial uses. Pollution may also include contamination, which is defined as an impairment of the quality of the waters of the state to a degree, which creates a hazard to the public health through poisoning or through the spread of disease. In short; the Regional Board is required to write waste discharge requirements that result in BPTC to assure that pollution will not occur and all beneficial uses are fully protected.

Ammonia is limited in the proposed Permit to daily maximum effluent limitation of 91 mg/l and an average monthly average of 35 mg/l. As is shown in the proposed Permit Fact Sheet, page F-19, the US EPA Freshwater Ambient Criteria for the protection of Freshwater Aquatic Life is 4.64 mg/l as a one-hour average and 1.73 mg/l as a 30-day average. The discharge of ammonia at 91 mg/l will clearly cause toxicity to freshwater aquatic life within the allowed mixing zone. The Sacramento Bee published an article on June 1<sup>st</sup> 2008 *Ammonia from Sacramento Waste Could Hurt Delta Ecosystem* citing two recent articles by Richard Dugdale, an oceanographer at San Francisco State University, which show that ammonia disrupts the food chain in the Sacramento-San Joaquin Delta. Dugdale said that ammonia in the river interrupts the natural food production line that would otherwise yield abundant blooms of tiny aquatic animals to feed salmon, smelt and bass. Nitrification to remove ammonia from domestic wastewater is widely used throughout the Central Valley and routinely required in the Central Valley Regional Board's NPDES Permits and constitutes BPTC.

**5. Effluent Limitations for specific conductivity (EC) and aluminum are improperly regulated as an annual average contrary to Federal Regulations 40 CFR 122.45 (d)(2) and common sense.**

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 EC and aluminum as an annual average contrary to the cited Federal Regulation. Establishing the Effluent Limitations

for EC and aluminum 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. Proof of impracticability is properly a steep slope and the Regional Board has not presented any evidence that properly and legally limiting EC, iron and manganese is impracticable.

Limiting these constituents to be regulated on an annual, average will allow for peaks well above the secondary MCLs, agricultural goals, toxic levels and directly impacting beneficial uses and the numerous documented downstream domestic water users. There does not appear to be any reasoning or logic applied to the Regional Board staff's attempts to relax water quality objectives contrary to Federal Regulations. The permit must be amended to limit EC and aluminum in accordance with the cited Federal Regulation.

**6. The proposed Permit does not comply with the requirements of California Code of Regulations (CCR) Title 27 for the disposal of sludge which may have degraded groundwater quality contrary to the Antidegradation Policy, Resolution 68-16.**

The proposed Permit states that sludge is discharged to lined and unlined drying beds. There has been and the permit does not require any analysis of whether historical and ongoing sludge handling practices unreasonably degraded groundwater. While domestic wastewater may be exempted from Title 27, under certain circumstances, sludge is not exempt. CCR Title 27, Table 2.1, requires undewatered sewage sludge to be disposed at a Class II surface impoundment and dewatered sludge to be disposed at a Class III landfill. Obviously, unlined drying beds, especially where groundwater has been degraded by these practices, do not meet the requirements of Title 27.

The Board's Antidegradation Policy, Resolution 68-16, requires the application of best practicable treatment and control (BPTC) of the discharge. The disposal and storage of sludge to unlined drying beds has degraded groundwater. The wastewater industry standard is to mechanically dewater sludge with immediate removal to a proper disposal area, typically a landfill. Dewatering sludge with removal to a landfill is BPTC. The proposed Permit does not comply with CCR Title 27 and the Antidegradation Policy for the disposal of sludge and must be amended accordingly.

**7. The proposed Permit establishes Effluent Limitations for metals based on the hardness of the effluent as opposed to the ambient upstream receiving water hardness as required by Federal Regulations, the California Toxics Rule (CTR, 40 CFR 131.38(c)(4)).**

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 proposed Permit states that the effluent hardness was used to calculate Effluent Limitations for metals.

The proposed Permit Fact Sheet, pages F-16 and 17, go into great detail citing the Federal Regulation requiring the receiving water hardness be used to establish Effluent Limitations. The permit writer then cites “recent studies by several consultants” which “indicate that using the lowest receiving water hardness... is not always the most protective for the receiving water.” Despite the statement by the permit writer, there is no such evidence in the proposed Permit. It could be stated with some confidence that consultants may have a vested interest, which at times may be contrary to what is best for water quality. The ambient receiving water hardness is not presented to support the permit writer’s arguments, nor are comparative Effluent Limitation values presented to defend the unsupported statements regarding which is more protective. Once again the public is subject to a bureaucrat “knowing better” and simply choosing to ignore very clear regulatory requirements. The Regional Board staff have chosen to deliberately ignore Federal Regulations placing themselves above the law. There are procedures for changing regulations if peer reviewed science indicates the need to do so, none of which have been followed. The proposed Permit failure to include Effluent Limitations based on the actual ambient hardness of the surface water is contrary to the cited Federal Regulation and must be amended to comply with the cited regulatory requirement.

**8. The proposed Permit fails to contain mass-based effluent limits for Copper, Dibromochloromethane, Dichlorobromomethane, Iron, Lead, Manganese, Nitrate and Nitrite and contains improper mass limitations for BOD, TSS and Ammonia as required by Federal Regulations 40 CFR 122.45(b).**

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.

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.”

Federal Regulations, 40 CFR 122.45 (B)(1), states the following: “In the case of POTWs, permit effluent limitations, standards, or prohibitions shall be calculated based on design flow.”

Traditional wastewater treatment plant design utilizes average dry weather flow rates for organic, individual constituent, loading rates and peak wet weather flow rates for hydraulic design of pipes, weir overflow rates, and pumps.

Increased wet weather flow rates are typically caused by inflow and infiltration (I/I) into the sewer collection system that dilutes constituent loading rates and does not add to the mass of wastewater constituents.

For POTWs priority pollutants, such as metals, have traditionally been reduced by the reduction of solids from the wastestream, incidental to treatment for organic material. Following adoption of the CTR, compliance with priority pollutants is of critical importance and systems will need to begin utilizing loading rates of individual constituents in the WWTP design process. It is highly likely that the principal design parameters for individual priority pollutant removal will be based on mass, making mass based Effluent Limitations critically important to compliance. The inclusion of mass limitations will be of increasing importance to achieving compliance with requirements for individual pollutants.

As systems begin to design to comply with priority pollutants, the design systems for POTWs will be more sensitive to similar restrictions as industrial dischargers currently face where production rates (mass loadings) are critical components of treatment system design and compliance. Currently, Industrial Pretreatment Program local limits are frequently based on mass. Failure to include mass limitations would allow industries to discharge mass loads of individual pollutants during periods of wet weather when a dilute concentration was otherwise observed, upsetting treatment processes, causing effluent limitation processes, sludge disposal issues, or problems in the collection system.

Mixing zone allowances will increase the mass loadings of a pollutant to a waterbody and decrease treatment requirements. Accurate mass loadings are critical to mixing zone determinations. The proposed Permit extensively allows mixing zones but apparently fails to recognize the importance of mass loadings.

Once toxicity numeric limitations (TUs) have been established, it is necessary to convert toxicity units that can be directly related to mass.

The Federal Regulations, at 40 CFR 122.45 (b), require that POTW effluent limitations, standards, or prohibitions be based on design flow. The mass limitations contained in the proposed permit have however been modified to be based on wet weather flow rates. Virtually every engineering textbook includes *Ten States Standards* as standard engineering design and a recognized civil engineering basis for wastewater treatment plant (WWTP) design parameters. Pursuant to these standards;

- a. Average Dry Weather Flow (ADWF) represents the daily average flow when groundwater is at or near normal and runoff is not occurring.
- b. Maximum Wet Weather Flow (MWWF) represents the total maximum flow received during any 24-hour period when the groundwater is high and runoff is occurring.

- c. Peak Hourly Wet Weather Flow (PHWWF) represents the total maximum flow received during one-hour when groundwater is high, runoff is occurring, and domestic and commercial flows are at their peak.

The PHWWF must be used to evaluate the effect of hydraulic peaks on the design of pumps, piping, clarifiers, and any other flow sensitive aspects. We could not find an example of the design for chemical constituent limitations being based on wet weather flow rates. It is entirely inappropriate to regulate the mass of BOD, TSS and Ammonia based on wet weather flow rates; where there is no corresponding design parameter. Consequently, the mass limitations contained in the permit are not based on acceptable WWTP design parameters and therefore fail to comply with the cited federal regulations.

In addition to the above citations, on June 26<sup>th</sup> 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.

**9. The proposed Permit Effluent Limitation for Ammonia directly conflicts with the Receiving Water Limitation prohibiting the discharge of biostimulatory substances.**

Ammonia is limited in the proposed Permit to daily maximum effluent limitation of 91 mg/l and an average monthly average of 35 mg/l. Ammonia as nitrogen is clearly a biostimulatory substance and the allowed discharge concentrations will cause and/or contribute to biostimulation within the receiving stream.

**10. 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.**

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).

Since issuance of the previous NPDES permit for this facility:

- a. The Sacramento River has been closed to salmon fishing due to a rapid decline in the fishery population, likely in part due to water quality impacts of substances discharged from this facility, such as toxic levels of ammonia.
- b. The proposed Permit allows for new mixing zones. The proposed 250-foot mixing zone is not as small as practicable or limited to an initial zone of dilution.
- c. Tertiary treatment and nitrification and denitrification can be considered best practicable treatment and control technology (BPTC).
- d. The Sacramento Bee published an article on June 1<sup>st</sup> 2008 *Ammonia from Sacramento Waste Could Hurt Delta Ecosystem* citing two recent articles by Richard Dugdale, an oceanographer at San Francisco State University, which show that ammonia disrupts the food chain in the Sacramento-San Joaquin Delta. Dugdale said that ammonia in the river interrupts the natural food production line that would otherwise yield abundant blooms of tiny aquatic animals to feed salmon, smelt and bass.
- e. The Discharger has routinely violated coliform limitations.
- f. Copper and lead act on aquatic organisms in the same fashion and have been measured in the effluent concentrations that require the establishment of Effluent Limitations, yet additive toxicity for these constituents has not been considered.
- g. There is a significant data set regarding priority pollutants that was not available when the permit was last renewed.

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 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.

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 review process is especially important in the context of waters protected by Tier 2. See EPA, Office of Water Quality Regulations and Standards, *Water Quality Standards Handbook*, 2nd ed. Chapter 4 (2nd ed. Aug. 1994). Whenever a person proposes an activity that may degrade a water protected by Tier 2, the antidegradation regulation requires a state to: (1) determine whether the degradation is “necessary to accommodate important economic or social development in the area in which the waters are located”; (2) consider less-degrading alternatives; (3) ensure that the best available pollution control measures are used to limit degradation; and (4) guarantee that, if water quality is lowered, existing uses will be fully protected. 40 CFR § 131.12(a)(2); EPA, Office of Water Quality Regulations and Standards, *Water Quality Standards Handbook*, 2nd ed. 4-1, 4-7 (2nd ed. Aug. 1994). These activity-specific determinations necessarily require that each activity be considered individually.

For example, the APU 90-004 states:

“Factors that should be considered when determining whether the discharge is necessary to accommodate social or economic development and is consistent with maximum public benefit include: a) past, present, and probably beneficial uses of the water, b) economic and social costs, tangible and intangible, of the proposed discharge compared to benefits. The economic impacts to be considered are those incurred in order to maintain existing water quality. The financial impact analysis should focus on the ability of the facility to pay for the necessary treatment. The ability to pay depends on the facility’s source of funds. In addition to demonstrating a financial impact on the publicly – or privately – owned facility, the analysis must show a significant adverse impact on the community. The long-term and short-term socioeconomic impacts of maintaining existing water quality must be considered. Examples of social and economic parameters that could be affected are employment, housing, community services, income, tax revenues and land value. To accurately assess the impact of the proposed project, the projected baseline socioeconomic profile of the affected community without the project should be compared to the projected profile with the project...EPA’s *Water Quality Standards Handbook* (Chapter 5) provides additional guidance in assessing financial and socioeconomic impacts”

There is nothing resembling an economic or socioeconomic analysis in the Permit. There are viable alternatives that have never been analyzed. The evaluation contains no comparative costs. As a rule-of-thumb, USEPA recommends that the cost of compliance should not be considered excessive until it consumes more than 2% of disposable household income in the region. This threshold is meant to suggest more of a floor than a ceiling when evaluating economic impact. In the Water Quality Standards Handbook, USEPA interprets the phrase “necessary to accommodate important economic or social development” with the phrase “substantial and widespread economic and social impact.”

The antidegradation analysis must discuss the relative economic burden as an aggregate impact across the entire region using macroeconomics. Considering the intrinsic value of the Delta to the entire state and the potential effects upon those who rely and use Delta waters, it must also evaluate the economic and social impacts to water supply, recreation, fisheries, etc. from the Discharger’s degradation of water quality in the Delta. Nor has the case been made that there is no alternative for necessary housing other than placing it where its wastewater must discharge directly into sensitive but seriously degraded waters. It is unfortunate that the agency charged with implementing the Clean Water Act has apparently decided it is more important to protect the polluter than the environment.

There is nothing in the Permit resembling an alternatives analysis evaluating less damaging and degrading alternatives. Unfortunately, the Permit fails to evaluate and discuss why there is no alternative other than discharging to surface waters. Other communities have successfully disposed of wastes without discharging additional pollutants to degraded rivers. A proper alternatives analysis would cost out various alternatives and compare each of the alternatives’ impacts on beneficial uses.

There is nothing resembling an analysis buttressing the unsupported claim that BPTC is being provided. An increasing number of wastewater treatment plants around the country and state are employing tertiary treatment, nitrification/denitrification, reverse-osmosis (RO), or even RO-plus. Clearly, micro or nano filtration can be considered BPTC for wastewater discharges of impairing pollutants into critically sensitive ecological areas containing listed species that are already suffering serious degradation. If this is not the case, the antidegradation analysis must explicitly detail how and why a run-of-the-mill secondary system that facilitate increased mass loadings of impairing constituents can be considered BPTC.

There is nothing in the Permit resembling an analysis that ensures that existing beneficial uses are protected. While the Permit identifies the constituents that are included on the 303(d) list as impairing receiving waters, it fails to discuss how and to what degree the identified beneficial uses will be additionally impacted by the discharge. Nor does the Permit analyze the incremental and cumulative impact of increased loading of non-impairing pollutants on beneficial uses. In fact, there is almost no information or discussion on the composition and health of the identified beneficial uses. Any reasonably adequate antidegradation analysis must discuss the affected beneficial uses (i.e., numbers and health of the aquatic ecosystem; extent, composition and viability of

agricultural production; people depending upon these waters for water supply; extent of recreational activity; etc.) and the probable effect the discharge will have on these uses.

Alternatively, Tier 1 requires that existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. By definition, any increase in the discharge of impairing pollutants to impaired waterways unreasonably degrades beneficial uses and exceeds applicable water quality standards. Prohibition of additional mass loading of impairing pollutants is a necessary stabilization precursor to any successful effort in bringing an impaired waterbody into compliance.

The State Board has clearly articulated its position on increased mass loading of impairing pollutants. In Order WQ 90-05, the Board directed the San Francisco Regional Board on the appropriate method for establishing mass-based limits that comply with state and federal antidegradation policies. That 1990 order stated “[I]n order to comply with the federal antidegradation policy, the mass loading limits should also be revised, based on mean loading, concurrently with the adoption of revised effluent limits. The [mass] limits should be calculated by multiplying the [previous year’s] annual mean effluent concentration by the [four previous year’s] annual average flow (Order WQ 90-05, p. 78). USEPA points out, in its 12 November 1999 objection letter to the San Francisco Regional Board concerning Tosco’s Avon refinery, that ‘[a]ny increase in loading of a pollutant to a water body that is impaired because of that pollutant would presumably degrade water quality in violation of the applicable antidegradation policy.’”

The antidegradation analysis in the proposed Permit is not simply deficient, it is literally nonexistent. The brief discussion of antidegradation requirements, in the Findings and Fact Sheet, consist only of skeletal, unsupported, undocumented conclusory statements totally lacking in factual analysis. NPDES permits must include any more stringent effluent limitation necessary to implement the Regional Board Basin Plan (Water Code 13377). The Tentative Permit fails to properly implement the Basin Plan’s Antidegradation Policy.

**11. The proposed Permit fails to include an Effluent Limitation for Boron and instead includes a requirement to conduct further studies contrary to US EPA’s interpretation of Federal Regulation, 40 CFR 122.44(d).**

Federal Regulations, 40 CFR 122.44(d), requires that limits must be included in permits where pollutants will cause, have reasonable potential to cause, or contribute to an exceedance of the State’s water quality standards. 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 calculations indicate reasonable potential, a specific numeric limit MUST be included in the permit. Additional “studies” or data collection efforts may not be substituted for enforceable permit limits where “reasonable potential” has been determined.”

Boron was measured in the discharge at 1,200 ug/l. The California State Action Level for drinking water is 1,000 ug/l, the agricultural water quality goal is 700 ug/l and the drinking water suggested no-adverse response level is 600 ug/l. There is a clear reasonable potential for boron in the discharge to exceed water quality criteria, yet the proposed Permit fails to contain an Effluent Limitation contrary to 40 CFR 122.44.

**12. The proposed Permit contains an Effluent Limitation for acute toxicity that allows mortality to aquatic life that exceeds the Basin Plan water quality objective and does not comply with Federal regulations, at 40 CFR 122.44 (d)(1)(i) or the Clean Water Act.**

Under the federal Clean Water Act (CWA), states are required to classify surface waters by *uses* – the beneficial purposes provided by the waterbody. For example, a waterbody may be designated as a drinking water source, or for supporting the growth and propagation of aquatic life, or for allowing contact recreation, or as a water source for industrial activities, or all of the above. States must then adopt *criteria* – numeric and narrative limits on pollution, sufficient to protect the uses assigned to the waterbody. Federal regulations, at 40 CFR 122.44 (d)(1)(i), adopted to require implementation of the CWA, 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. 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. This section of the Basin Plan further states, in part that, compliance with this objective will be determined by analysis of indicator organisms (toxicity tests).

The proposed Permit requires that the Discharger conduct acute toxicity tests and states that compliance with the toxicity objective will be determined by analysis of indicator organisms. However, the Tentative Permit contains a discharge limitation that allows 30% mortality (70% survival) of fish species in any given toxicity test. Surely, mortality is a detrimental physiological response to aquatic life.

The Regional Board has looked hard and long to find some citation as to the source of the limitation that would allow or recommend 10% and 30% mortality, such a find however would not eliminate the more restrictive applicable Basin Plan objective that simply prohibits the discharge from causing mortality in the receiving stream.

For an ephemeral or low flow stream, allowing 30% mortality in acute toxicity tests allows that same level of mortality in the receiving stream, in violation of federal regulations and contributes to exceedance of the Basin Plan's narrative water quality objective for toxicity. In receiving streams where dilution may be available the primary mixing area is commonly referred to as the zone of initial dilution, or ZID. Within the ZID acute aquatic life criteria are exceeded. To satisfy the CWA prohibition against the

discharge of toxic pollutants in toxic amounts, regulators assume that if the ZID is small, significant numbers of aquatic organisms will not be present in the ZID long enough to encounter acutely toxic conditions. The allowance of 30% mortality will result in acute toxicity within the ZID. Before the discharge can be allowed a complete mixing zone analysis is required in accordance with the Basin Plan and the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (SIP) to show that discharge limitations prevent toxicity; such an analysis has not been completed. 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 SIP and the Regional Board is required to implement and comply with the Policy.

The proposed Permit must be revised to prohibit acute toxicity, require 100% survival in toxicity tests, in accordance with Federal regulations, at 40 CFR 122.44 (d)(1)(i), the CWA, the SIP, the CWC and the Basin Plan.

**13. The proposed Permit does not contain Effluent Limitations for chronic toxicity and therefore does not comply with Federal regulations, at 40 CFR 122.44 (d)(1)(i) and the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (SIP).**

Proposed Permit, State Implementation Policy states that: “On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on April 28, 2000 with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plan. The SIP became effective on May 18, 2000 with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.”

The SIP, Section 4, Toxicity Control Provisions, Water Quality-Based Toxicity Control, states that: “A chronic toxicity effluent limitation is required in permits for all dischargers that will cause, have a reasonable potential to cause, or contribute to chronic toxicity in receiving waters.” The SIP is a state *Policy* and 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.

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 states that: "...to ensure compliance with the Basin Plan's narrative toxicity objective, the discharger is required to conduct whole effluent toxicity testing...". However, sampling does not equate with or ensure compliance. The Tentative 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 effluent limitation for chronic toxicity must be included in the Order. In addition, the Chronic Toxicity Testing Dilution Series should bracket the actual dilution at the time of discharge, not use default values that are not relevant to the discharge.

Proposed Permit is quite simply wrong; by failing to include effluent limitations prohibiting chronic toxicity the proposed Permit does not "...implement the SIP". The Regional Board has commented time and again that no chronic toxicity effluent limitations are being included in NPDES permit until the State Board adopts a numeric limitation. The Regional Board explanation does not excuse the proposed Permit's failure to comply with Federal Regulations, the SIP, the Basin Plan and the CWC. The Regional Board's Basin Plan, as cited above, already states that: "...waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses..." Accordingly, the proposed Permit must be revised to prohibit chronic toxicity (mortality and adverse sublethal impacts to aquatic life, (sublethal toxic impacts are clearly defined in EPA's toxicity guidance manuals)) in accordance with Federal regulations, at 40 CFR 122.44 (d)(1)(i) and the Basin Plan and the SIP.

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  $\mu\text{mhos/cm}$  (recommended level), 1,600  $\mu\text{mhos/cm}$  (upper level) and 2,200  $\mu\text{mhos/cm}$  (short term maximum).

The Basin Plan states, on Page III-3.00 Chemical Constituents, that “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 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  $\mu\text{mhos/cm}$ .

The wastewater discharge maximum observed EC was 1,300  $\mu\text{mhos/cm}$ . 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 1,300  $\mu\text{mhos/cm}$ , 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.

Federal Regulation, 40 CFR 122.44, which mandates an effluent limitation be established if a discharge exceeds a water quality objective. MCLs are incorporated into the Basin Plan by reference. State Board Water Quality Order 2005-005 states, in part that: “...*the State Board takes official notice [pursuant to Title 23 of California Code of Regulations, Section 648.2] of the fact that operation of a large-scale reverse osmosis treatment plant would result in production of highly saline brine for which an acceptable method of disposal would have to be developed. Consequently, any decision that would require use of reverse osmosis to treat the City’s municipal wastewater effluent on a large scale should involve thorough consideration of the expected environmental effects.*” The State Board does not have the authority to ignore Federal Regulation. Bay Area treatment plants have been utilized for RO brine disposal previously and the distance from Rio Vista is not a prohibitive factor for hauling the brine.

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 written in a cursive style with a large initial "B" and "J".

Bill Jennings, Executive Director  
California Sportfishing Protection Alliance