

September 4, 2008

Patricia Leary
Senior Engineer
NPDES Compliance and Enforcement Unit
California Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670-6114

**RE: TECHNICAL REPORT
DONNER SUMMIT PUBLIC UTILITY DISTRICT, NEVADA COUNTY
NOTICE OF VIOLATION DATED 8 AUGUST 2008**

Dear Ms. Leary:

Please accept this technical report as a response to requirements requested in the Notice of Violation dated 8 August 2008. Given the relatively short response period (30 days) allowed for in the Notice of Violation (NOV) for the preparation of this report, it was not possible to undertake planning or modeling efforts in specific response to the NOV. Therefore, it was assumed that the need for this report was directed toward (a) summarizing the compliance plan that was in place prior to the occurrence of the biostimulation event and NOV and (b) reporting whether the occurrence of the biostimulation event was sufficient cause to necessitate a change to the current compliance plan. These details are provided, herein. The District welcomes the opportunity to further discuss any of the contents of this report if desired by Regional Board staff.

Per the technical report requirements, the following issues were to be addressed:

- 1. The inability of the WWTP to denitrify and to remove nitrate from the discharge. The WWTP cannot consistently meet its effluent limitation for nitrate, as evidenced by historical nitrate effluent concentrations. Please provide plans and a time schedule for reducing nitrate concentrations in effluent to comply with effluent limitations and to prevent further violations of receiving water limitations.*
- 2. The condition of the clarifiers, and the concerns raised about filter operations support the WWTP is encountering operational problems. Please provide a detailed explanation of the problems, and the measures being taken to improve operations at the facility.*

Item 1: Denitrification

The Donner Summit Public Utility District (DSPUD) currently discharges waste under National Pollutant Discharge Elimination System (NPDES), permit number R5-2002-0088. That Order contained an average monthly nitrate limitation set at 10 mg/L. That Order expired on June 1, 2007. The District also operates under a Cease and Desist Order that required compliance with the nitrate limitation by 1 April 2007. The District has been operating under the expired Order since June 1, 2007.

The District has undertaken efforts in an attempt to comply with this limitation. All of the infrastructure facilities are in place and the District has been diligently operating the facility with the intention of nitrate compliance. However, flows and loads to the facility are highly variable. The flow and strength of wastewater is too variable to maintain a robust biological treatment process that can consistently nitrify and denitrify to the standards contained in Order R5-2002-0088. To assure that an adequate biology is available for the holiday weekends when the greatest flow and load treatment requirements occur, nutrients must be added to the process during the off-season periods. In effect, current attempts at complying with the limitations contained in Order R5-2002-0088 require feeding the biological treatment process a synthetic wastewater so that an adequate biology is available when a significant amount of real wastewater requires treatment during holiday weekends. Very low wastewater temperatures also contribute to inhibiting the biological treatment process from performing in a robust manner. Insofar as the infrastructure is in place, and operations occur with the intent of compliance, the District is not obtaining any economic benefit by not complying with the nitrate limitation. As a result, the District submitted a **Report of Waste Discharge** in March 2007 for renewal of its National Pollution Discharge Elimination System (NPDES) Permit. That report described the District's current proposal to make use of dilution in addition to current treatment efforts to attain compliance with the nitrate regulatory criteria. Discussion follows with regards to impacts to human health and biostimulation.

Human Health Objectives. The nitrate limitation contained in Order No. R5-2002-0088 is derived from maintaining an MUN beneficial use of the South Yuba River and reflects the drinking water maximum contaminant level (MCL). The nitrate limitation has no connection to biostimulation within the South Yuba River.

The nitrate limitation described by Order R5-2002-0088 was assigned without regard to dilution that had historically existed, and continues to exist, within the South Yuba River. The Report of Waste Discharge provided information, consistent with the State Implementation Plan (SIP), that established the harmonic mean flow (the applicable flow statistic per SIP for human health based criteria) of the South Yuba River at the DSPUD discharge point for the 51 years of record. For the permitted effluent discharge months of October through July, the harmonic mean flow is estimated to be 19.3 cfs (12.5 Mgal/day). This is a conservatively low estimate of the harmonic mean flow because the harmonic mean is disproportionately biased toward the low stream flows that occur in

dry Octobers when no effluent will be discharged into the river (i.e., during dry Octobers, effluent will continue to be discharged to land).

The long-term arithmetic mean effluent discharge to the South Yuba River that has occurred during October through July for the past four years has been 0.238 Mgal/day. The peak month flow corresponding with this average flow is estimated to be 0.383 Mgal/day. Considering the possibility that peak month ski season flows may increase to 0.82 Mgal/day during the life of the permit, the October through July average effluent flow may also increase. Based on linear extrapolation of the 0.238 Mgal/day average flow associated with 0.383 Mgal/day peak month flows, the October through July long-term average effluent discharge flow under “build-out 0.82 Mgal/day” flow conditions would be 0.510 Mgal/day. This 0.510 Mgal/day value is a high estimate of the average flow rate under the life of the proposed permit because pre-ski season flows are not expected to increase much. However, if this conservative average effluent discharge flow is used with the conservative harmonic mean flow of the South Yuba River at the discharge location, then the resulting dilution factor is calculated to be 24.5 (e.g., 12.5 Mgal/day ÷ 0.510 Mgal/day = 24.5).

The human health water quality objective for nitrate is 10 mg/L (as N). The background nitrate concentration in the South Yuba River is 0.05 mg/L. The dilution ratio is 24.5 for this contaminant and the proposed discharge. There are more than 10 data for DSPUD effluent nitrate concentrations. The coefficient of variation for recent (2006) DSPUD effluent nitrate data is 0.853. Based on this coefficient of variation and the foregoing values, effluent limitations on nitrate that account for the available assimilative capacity are calculated as follows:

$$\begin{aligned}
 ECA &= C + D_{\text{other}}(C-B) = 10 \text{ mg/L} + 24.5 (10 \text{ mg/L} - 0.05 \text{ mg/L}) = 254 \text{ mg/L (as N)} \\
 AMEL &= ECA = 254 \text{ mg/L} = 250 \text{ mg/L (as N)} \\
 MDEL &= ECA (\text{MDEL/AMEL multiplier}) = 254 \text{ mg/L} (2.35) = 597 \text{ mg/L} = 600 \text{ mg/L (as N)}
 \end{aligned}$$

- where
- ECA = effluent concentration allowance (mg/L)
 - C = regulatory objective (mg/L)
 - D_{other} = dilution credit associated with human health based water quality objectives
 - B = Background concentration (mg/L)
 - AMEL = average month effluent limitation (mg/L)
 - MDEL = maximum day effluent limitation (mg/L)

There is no potential that effluent nitrate concentrations will ever exceed these effluent limitations. Therefore, it is questioned whether effluent limitations on nitrate are needed to protect public health. If effluent limitations are needed for legal reasons, then the effluent limitations need to be based on performance-based limitations under Resolution 68-16 rather than on SIP protocol.

Biostimulation. The NPDES permit allows for a discharge only during the months October through July, inclusive, and only when environmental conditions preclude land irrigation. The discharge season was established to prevent biostimulation in the South Yuba River and has been successfully

implemented for decades. This algae bloom is the only known significant biostimulatory event in the discharge's history.

The District submitted a **Field Survey of Biostimulation in the South Yuba River at and about the Donner Summit Public Utilities District Effluent Discharge Point** on 11 July 2008. That report stated that the rareness of the June 2008 growths, their limited spatial and temporal extent, their die-off under conditions normally conducive to biostimulation, and their relative absence at the effluent discharge point all suggest that this is not a typical effluent nutrient biostimulation problem; and accordingly, it was recommended that the problem not be addressed as such. It was further recommended that a revision to the monitoring plan for the facility be implemented whereby downstream locations from R2 should be visually monitored for growths and/or the presence of filamentous green algae beginning in about May and continuing until cessation of the discharge. Should growths become evident, consideration should be made to cease the discharge and initiate irrigation of the ski slope if at all possible. If cessation of the discharge is not possible, detailed visual record keeping of time and location and additional monitoring of nutrient and temperature conditions within the identified plume and outside the identified plume would aid in modifying facility design and/or diffuser design to prevent further occurrences.

At this time, considering the availability of dilution within the South Yuba River and our current understanding with Regional Board staff that dilution credits will be assigned to the discharge, storage during problematic periods rather than additional treatment appears to be the best solution given all of the operational and water quality constraints. The need for storage, and development of sizing criteria, can only be established upon a repeat of the biostimulatory event. It is uncertain, and based on the historical record statistically unlikely, that a repeat event will occur within the foreseeable future.

Item 2: Clarifiers

The facility is not experiencing operational difficulties with either the clarifiers or its filters. The effluent turbidity is, and has been, within regulated parameters. In fact, if effluent turbidity can be maintained, the presence of algae and other growths in the clarifiers would only serve to improve biological treatment of the wastewater, including reducing the concentrations of nutrients in the effluent. Insofar as the presence of algae within the clarifiers is not a regulated parameter, and does not impact the ability to comply with effluent turbidity limitations, no facility or operational improvements are planned at this time.

Conclusion and Time Schedule

Our current understanding is that the facility will be in full compliance with nitrate regulatory criteria upon adoption of the renewed Order once the impacts of dilution are properly accounted for in accordance with SIP protocols. Insofar as the District is not currently discharging to surface water (e.g., the permit precludes a discharge from occurring during the months of August and September), the nitrate effluent limitation is not currently applicable. Once the discharge is reinitiated, we will

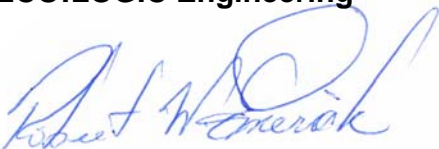
monitor the receiving water according to the recommendations presented herein to prevent a reoccurrence of biostimulation within the South Yuba River. Should the renewed Order contain different monitoring requirements, we will implement those monitoring requirements once they become known to us.

We welcome the opportunity to meet with Regional Board staff to further discuss any specific concerns.

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Sincerely,

ECO:LOGIC Engineering



Robert W. Emerick, Ph.D., P.E.
Principal

cc. Tom Skjelstad, Donner Summit Public Utility District
Ken Landau, Central Valley Regional Water Quality Control Board