



Linda S. Adams
Secretary for
Environmental
Protection

California Regional Water Quality Control Board

Central Valley Region

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Arnold
Schwarzenegger
Governor

8 August 2008

Thomas Skjelstad, General Manager
Donner Summit Public Utilities District
PO Box 610
53823 Sherritt Ln
Soda Springs, CA 95728

NOTICE OF VIOLATION, DONNER SUMMIT PUBLIC UTILITIES DISTRICT, NEVADA COUNTY

The Regional Water Board regulates the Donner Summit Public Utility District (PUD) under Waste Discharge Requirements Order No. R5-2002-0088 (NPDES No. CA0081621), which includes effluent limitations and other requirements regarding the treated wastewater discharged to the South Yuba River. On 30 June 2008, Regional Water Board staff responded to a complaint regarding algae growth by inspecting the Donner Summit PUD Wastewater Treatment Plant (WWTP) and the South Yuba River upstream and downstream of the discharge point. A copy of the inspection report is enclosed. The report makes the following findings:

1. Waste Discharge Requirements Order No. R5-2002-0088 Receiving Water Limitation G.5 states:

“Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit. The discharge shall not cause the following in the receiving water:”

“5. Fungi, slimes, or other objectionable objects.”

The treated effluent adds nitrate, organic nitrogen, phosphorous, and orthophosphate to the South Yuba River. These nutrients are known to promote algae growth. There was algae growth below the effluent discharge point that appeared to be caused by the discharge, in violation of Receiving Water Limitation No. G.5.

2. Waste Discharge Requirements Order No. R5-2002-0088 Standard Provision General Provisions No. A.6 states:

“The Discharger shall at all times properly operate and maintain all facilities, and systems of treatment and control including sludge use and disposal facilities (and related appurtenances) that are installed or used to achieve compliance with this Order.

Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by the Discharger only when necessary to achieve compliance with this Order.”

Algae growth in the secondary clarifiers is an indication that the facility may be having operational problems.

3. The WWTP is effectively nitrifying ammonia to nitrate as evidenced by the laboratory analyses, which did not detect ammonia or nitrite in the effluent sample. However, the WWTP appears to have difficulty denitrifying nitrate to nitrogen, as shown in the laboratory analysis, which detected nitrate in the effluent sample at a concentration above the monthly average limitation. Donner Summit violated the nitrate monthly average effluent limitation for June 2008.

On 2 July 2008, [ECO:LOGIC Engineering, Inc.](#), consultant for Donner Summit PUD, surveyed biostimulation in the South Yuba River at and about the effluent discharge point. ECO:LOGIC submitted their findings to the Regional Water Board in a report dated 11 July 2008. ECO:LOGIC found a correlation between the locations of algae and the effluent discharge point among other conclusions:

“Based on the field observations, it is a reasonable conclusion that the DSPUD effluent discharge was at least a major contributing factor to a reportedly rare, highly unusual, transient growth of filamentous green algae in the South Yuba River in June 2008 in the reach from the DSPUD effluent discharge point, downstream through the Towle Mountain Estates area, but not as far downstream as Kingvale. The filamentous biofilm tracks fairly well to the effluent discharge point,” (page 5).

By **8 September 2008**, please provide a technical report to address the following issues:

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 that 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.

Regional Water Board staff will evaluate whether additional enforcement for the problems described above is appropriate upon review of the technical report.

If you have questions regarding the inspection, please contact Spencer Joplin at (916) 464-4660.

PATRICIA LEARY
Senior Engineer
NPDES Compliance and Enforcement Unit

Enclosure: Inspection Report

cc: Robert Emerick, ECO:LOGIC Engineering, Inc., Rocklin
Robert Coats, Hydroikos Ltd, Berkley
Tom Hendrey, Whitley, Burchett, and Associates, Walnut Creek
Bill Oudegeest, Serene Lakes Homeowners' Association, Modesto
Jason Rainey, South Yuba River Citizen League, Nevada City
Peter Van Zant, Sierra Watch, Nevada City
John Eaton, Truckee
Kathryn Gray, Palo Alto
Frank and Sue Grigsby, Soda Springs
Susan Snider, Nevada City
Linda Waddle, Auburn

cc by email: Vance Anderson
Anthony Bachman
Nikki and Gerry Barner
Mike Basich
Robert Baxter
Steve and Roberta Brown
Tim Dawes
Orville and Letty Erringer
Brett Garrett
Timothy Geiser
Robert Humphreys
H Jones
Hal Kessler
Kevin
Warren Kocmond
Scott and Debbie Lucas
Todd McDole
Shannon McDole
Larry and Carla Nordstrom
Laura Pregent
Lee Price
Dennis and Cherie Shimek
Ambrose Tuscano

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CIWQS Regulation 349775
CIWQS Violation 777093
CIWQS Violation 778681

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

INSPECTION REPORT

8 August 2008

Discharger: Donner Summit Public Utility District
PO Box 610
Soda Springs, CA 95728

Facility: Wastewater Treatment Plant
53823 Sherritt Ln
Soda Springs, CA 95728
Nevada County

Contact: Thomas Skjelstad, General Manager, 530-426-3456.
Jim King, Chief Plant Operator (not present during inspection)

Inspection Date: 30 June 2008 09:40 hours to 13:00 hours,
announced 25 June 2008

Lead Inspector: Spencer Joplin, Water Resource Control Engineer, Regional Water Board

Other Inspectors: Patricia Leary, Senior WRC Engineer, Regional Water Board
Leticia Valadez, Staff Chemist, Regional Water Board

NPDES No.: CA0081621

Adopted Orders: Waste Discharge Requirements (WDRs) No. R5-2002-0088 (NPDES No. CA0081621)
Cease and Desist Order No. R5-2002-0089

Weather: Cool temperature, calm wind, sunny, no precipitation within past day

Background

The Donner Summit Public Utility District (PUD) operates a wastewater treatment plant (WWTP), which provides sewerage service to the communities of Norden, Soda Springs, and Serene Lakes, the Donner Ski Ranch, Boreal, Sugar Bowl and Soda Springs Ski Areas, and two rest stops along Interstate 80. Donner Summit PUD owns the collection systems with the exception of the Serene Lakes community.

Discharges from the WWTP are subject to the adopted orders listed above. The Cease and Desist Order provided Donner Summit PUD a time schedule to comply with ammonia and nitrate effluent limitations in the NPDES permit by 1 April 2007. The NPDES permit is in the process of being renewed, but has not yet been released for public comment.

Major components of the WWTP are a flow equalization tank, headworks for grit removal and screening, two parallel package secondary treatment plants including aeration tanks and clarifiers, sand filters, and a plug flow tank with gaseous chlorination and sulfur dioxide dechlorination. Effluent is used for spray irrigation on the Soda Springs Ski Area when the snow has melted and the soil is dry enough to irrigate without runoff. Effluent is discharged to the South Yuba River when land discharge is not possible. A 1.56 million gallon storage tank is used to store effluent when precipitation interrupts land discharge, and to divert effluent in

Approved:		
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emergencies.

Regional Water Board staff received a complaint of excessive algae growth in the South Yuba River downstream of the effluent discharge point. The complainant submitted electronic photographs dated 19 June 2008, which showed considerable algae growth in surface waters. The purpose of this inspection was to investigate this complaint to verify conditions in the receiving water and determine if significant algae growth was present downstream of the Donner Summit PUD WWTP effluent discharge point.

Observations

Donner Summit PUD general manager Thomas Skjelstad and WWTP operator Kirk Sullivan accompanied us during our investigation. We inspected four locations in the receiving water, and collected samples at three of the locations for analyses in the field and at a laboratory, as discussed below.

Location R-1:

This location is approximately 50 feet upstream of the effluent discharge point, and represents background conditions unaffected by the effluent discharge from the WWTP. The Discharger routinely collects samples from this location to measure compliance with receiving water limitations. At the time of our inspection, the water appeared clear (Figure 1). A minimal amount of attached algae was present, and was the least of the four river observations. Samples were collected at this location.

Effluent Discharge Location:

This location is where the effluent discharges from a diffuser consisting of a pipe buried beneath gravel near the edge of the river. Effluent flows through the gravel and down into the river. Effluent was discharging into the river at the time of our inspection (Figure 2). Some of the effluent was visible trickling between the gravel. The effluent appeared clear and was visually indistinguishable from the river (Figure 3). Some attached algae growth was present near the effluent discharge point, particularly along the side of the river where effluent mixes with the receiving water (Figure 4). No samples were collected at this location.

Location R-2:

This location is approximately 500 feet downstream of the effluent discharge point, and represents the compliance point where complete mix with the receiving water is expected. R-2 appeared clear (Figure 5). Attached algae growth at R-2 was the most pronounced of all of the observed locations (Figures 6, 7). Samples were collected at this location.

Towle Mountain Road Bridge Crossing:

Towle Mountain Road crosses the South Yuba River at [N39.32923° W120.40997°](#), approximately 4000 feet downstream from the R-2 location. According to representatives at

Donner Summit PUD, this is the location where the Complainant's photos were taken. The river at this location appeared clear (Figure 8). Some attached algae growth was present. Samples were collected at this location.

Effluent:

The last location sampled was the WWTP final effluent. Grab samples were collected from the continuous monitoring piping, as indicated by WWTP staff.

Other:

We briefly observed the secondary treatment processes, and discovered some operational concerns at the facility. The surface of secondary clarifier No. 1 was vibrantly green (Figures 9, 10), unlike prior observations in October 1999 and February and August 2007 (Figures 11 to 13). The secondary clarifier No. 2 had algae growth on the weirs, trough, and other submerged structures (Figures 14, 15). The facility representatives indicated that they had not cleaned the algae off the clarifiers due to some operational problems with the filters. They expressed concerns that the excess algae, if released to the filters, could cause operational problems. They were planning to switch over to land disposal within the next few days, and indicated they would address the algae on the clarifiers after that time.

Sampling/Analyses

Patricia Leary and Spencer Joplin collected representative grab samples using a polyethylene dipper in the receiving water at R-1, R-2, and the Towle Mountain Road bridge, and the continuous monitoring piping for the final effluent samples at the WWTP. The samples for laboratory analyses were poured into new and labeled polyethylene bottles, one with sulfuric acid preservative for ammonia analysis, two without a preservative for all other analyses, then placed into an iced cooler. Spencer Joplin transported the samples in an iced cooler for laboratory analyses under chain of custody to California Laboratory Services, an accredited environmental laboratory. California Laboratory Services analyzed the samples by EPA Methods and Standard Methods, all within method hold times. The laboratory methods and results are summarized in Table 1. WWTP staff also collected grab samples from the same locations and times. Regional Water Board staff received the laboratory results from Donner Summit PUD, which are not included in this report but corroborate the results.

Leticia Valadez conducted field measurements for electrical conductivity (EC), pH, nitrate, and nitrite, using separate grab samples at each sample location, and after calibrating the pH and EC meters with a 7.00 pH and 1000 $\mu\text{S}/\text{cm}$ standard solutions prior to analysis of the first sample. Leticia also analyzed nitrite and nitrate using a colorimetric test strip kit. The results for EC and pH are summarized in Table 1. The field nitrite and nitrate results are not included, but they corroborate the more accurate laboratory nitrite and nitrate results.

Table 1. Sample Results.

Method:		Field Measurements		SM 4500-NH3 F	EPA 300.0			SM 4500-P E		SM 4500-NH3 C
Analyte:		pH	EC	NH ₄ as N	NO ₂ as N	NO ₃ as N	PO ₄ as PO ₄	Total P as P	Total Kjeldahl Nitrogen	
Sample	Time Sampled		µS/cm	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	
R-1	10:05	6.87	47.7	<0.10	<0.10	<0.50	<0.15	<0.050	<0.20	
Effluent	12:10	7.31	676	<0.10	<0.10	23	4.8	1.8	0.20	
R-2	10:45	7.20	65.9	<0.10	<0.10	0.55	<0.15	<0.050	0.24	
Towle Mountain Rd	11:40	8.00	60.1	<0.10	<0.10	<0.50	<0.15	<0.050	0.28	

Bold values indicate results above method detection limits.

The sample results support that pH and EC were within typical values. Ammonia (NH₄) and nitrite (NO₂) were not detected in any of the samples. Therefore, the WWTP is nitrifying ammonia.

Nitrate (NO₃) was detected in the effluent sample at 23 mg/l. The NPDES permit includes a monthly average effluent limitation for nitrate of 10 mg/l, calculated as the arithmetic mean of all sample results in a calendar month, regardless of sampling frequency. The Cease and Desist Order provided a schedule to comply with the nitrate limitation by 1 April 2007. The NPDES permit's monitoring and reporting program requires weekly grab samples collected for nitrate analysis and the results for June 2008 to be submitted to the Regional Water Board by 1 August 2008. The Regional Water Board received the results on 25 July 2008. The average of all nitrate results violates the effluent limitation. Nitrate was also detected in the downstream sample from R-2 but at greatly reduced concentration, and was not detected in the upstream sample from R-1.

Total Kjeldahl nitrogen measures the total of the organic and ammonia nitrogen. It was detected in the effluent sample and the two downstream samples. The concentrations detected were near the method detection limit. The NPDES permit includes no effluent limitation for total Kjeldahl nitrogen.

Phosphorus (Total P) and orthophosphate (PO₄) were detected only in the effluent sample. There is no effluent limitation for phosphorus or orthophosphate.

The results support that organic nitrogen, nitrate, orthophosphate and total phosphorous are present in the effluent, and some constituents were also present in the receiving water downstream of the effluent discharge point. None of the constituents were detected in samples collected upstream of the effluent discharge point. Filamentous attached algae

growth was also present downstream of the effluent discharge point, and it appeared to match with locations affected by the effluent discharge.

Historical Analysis

The NPDES Permit does not require Donner Summit PUD to monitor receiving water for nutrients such as nitrate. Instead, I reviewed the effluent monitoring data for the months of June and July for the years 2005 to 2008. I tabulated the data as Table 2, below. The results show that the concentrations of constituents measured during this inspection's sampling are typical of past monitoring results. The effluent often contains nitrate concentrations exceeding the average monthly effluent limitation of 10 mg/l that became effective on 1 April 2007.

Table 2. Historical Effluent Results.

Date	Ammonia	Nitrate
	mg/l	mg/l
1 June 2005	0.2	6.3
15 June 2005	0.1	20.2
22 June 2005	0.3	22.5
29 June 2005	0.3	23.6
6 July 2005	0.6	0.8
13 July 2005	0.4	19.0
20 July 2005	0.3	37.0
1 June 2006	1.7	12.3
8 June 2006	1.2	16.2
15 June 2006	5.4	12.0
22 June 2006	2.5	10.9
28 June 2006	0.6	12.0
4 July 2006	14.7	0.9
7 June 2007	1.3	14.2
14 June 2007	0.1	15.0
21 June 2007	0.3	18.0
28 June 2007	0.1	22.2
5 July 2007	<0.01	21.8
12 July 2007	2.1	19.9
17 July 2007	<0.01	not sampled
5 June 2008	0.2	23.7
12 June 2008	0.2	17.6
19 June 2008	0.2	16.4
26 June 2008	0.2	15.3
30 June 2008 (Donner Summit PUD)	0.3	21.1
30 June 2008 (Regional Water Board staff)	<0.10	23

The NPDES permit requires Donner Summit PUD to monitor the reach bounded by R-1 and R-2 and maintain a log of receiving water conditions when conducting regular monitoring

(twice weekly), including the presence or absence of “Fungi, slimes, or objectionable growths.” I reviewed the monthly report submitted for May 2008, in which Donner Summit PUD reported finding no fungi, slimes, or objectionable growths at either R-1 or R-2. The algae we noted in the receiving water supports the identification of algae as a violation of Receiving Water Limitation G.5, which requires that, *“The discharge shall not cause...fungi, slimes, or other objectionable growths.”*

Conclusions

1. Waste Discharge Requirements Order No. R5-2002-0088 Receiving Water Limitation G.5 states:

“Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit. The discharge shall not cause the following in the receiving water:”

“5. Fungi, slimes, or other objectionable objects.”

The treated effluent adds nitrate, organic nitrogen, phosphorous, and orthophosphate to the South Yuba River. These nutrients are known to promote algae growth. There was algae growth below the effluent discharge point that appeared to be caused by the discharge, in violation of Receiving Water Limitation No. G.5.

2. Waste Discharge Requirements Order No. R5-2002-0088 Standard Provision General Provisions No. A.6 states:

“The Discharger shall at all times properly operate and maintain all facilities, and systems of treatment and control including sludge use and disposal facilities (and related appurtenances) that are installed or used to achieve compliance with this Order.

Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by the Discharger only when necessary to achieve compliance with this Order.”

Algae growth in the secondary clarifiers is an indication that the facility may be having operational problems.

3. The WWTP is effectively nitrifying ammonia to nitrate as evidenced by the laboratory analyses, which did not detect ammonia or nitrite in the effluent sample. However, the WWTP appears to have difficulty denitrifying nitrate to nitrogen, as shown in the laboratory analysis, which detected nitrate in the effluent sample at a concentration above the monthly average limitation. Donner Summit violated the nitrate monthly

average effluent limitation for June 2008.

SPENCER JOPLIN, Water Resource Control
Engineer

Attachment A: Photo Log

CIWQS Inspection 1423339

Attachment A
Photo Log
Donner Summit Public Utility District
Wastewater Treatment Plant
30 June 2008



Figure 1. Monitoring point R-1 (50 feet upstream of effluent discharge point). The arrow indicates the approximate sample location. SMJ.



Figure 2. Effluent discharge point, looking upstream. The arrow indicates the gravel diffuser. SMJ.



Figure 3. Adjacent to effluent discharge point. SMJ.



Figure 4. Directly downstream of effluent discharge point, looking upstream. SMJ.



Figure 5. Monitoring point R-2 (500 feet downstream of effluent discharge point). The arrow indicates the approximate sample location. SMJ.



Figure 6. Monitoring point R-2. SMJ.

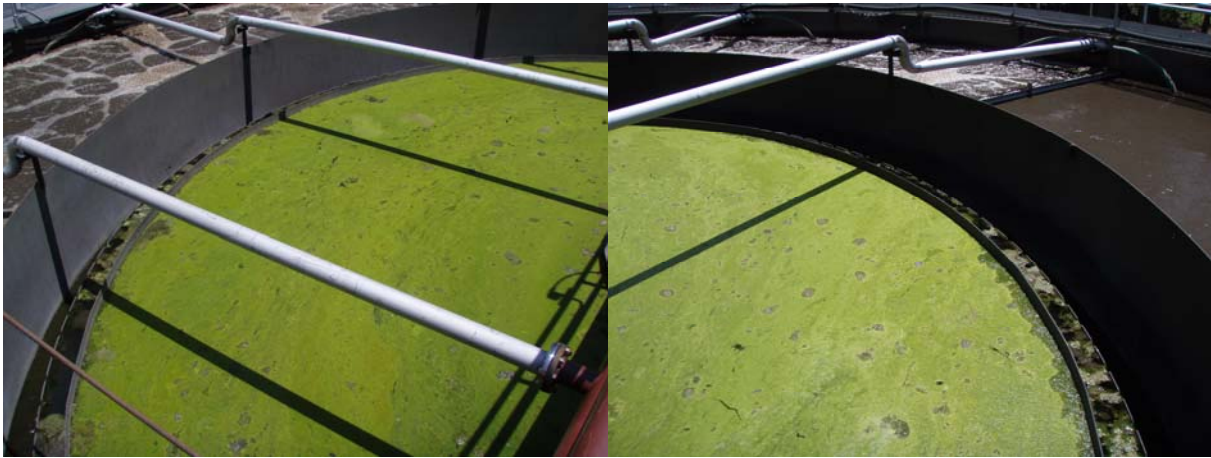


Figure 7. Monitoring point R-2. SMJ.



Figure 8. Directly upstream of Towle Mountain Rd, from the bridge. The arrow indicates the approximate sample location. SMJ.

Figures 10 to 13. Package Secondary Treatment Plant No. 1.



Figures 9, 10. 30 June 2008. The uniform color green appears different due to different photographic exposure durations. SMJ.



Figure 11. 9 August 2007. SMJ.



Figure 12. 14 February 2007 (Winter conditions). Scott Slamal, Tetra Tech, Inc.



Figure 13. 7 October 1999. Robert Fagerness, Regional Water Board staff.

Donner Summit PUD
Wastewater Treatment Plant
Nevada County



Figures 14, 15. Package treatment plant No. 2. Algae is growing on effluent troughs, scum trough, and other submerged structures. Floating algae is also growing outside of the scum ring. SMJ.