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Potrero Power Plant
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Ms. Alexa La Plante
Environmental Scientist
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
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VIA E-MAIL (acl@rb2.swrcb.ca.gov) AND U.S. MAIL

**Subject: Infeasibility Study Addendum
Potrero Power Plant
Mirant Potrero, LLC**



Dear Ms. La Plante:

This addendum to Mirant Potrero, LLC's (Mirant's) 13 July 2004 Infeasibility Study (IS) addresses concerns as to the adequacy of existing data for calculating water-quality-based effluent limitations (WQBELs) for copper and selenium in the renewal of National Pollutant Discharge Elimination System (NPDES) Permit No. CA0005657 (Permit) for Potrero Power Plant (Plant). Although Mirant agrees that there are sufficient data to establish reasonable potential for copper and selenium, the lack of information regarding the temporal variability in the concentrations of these constituents makes WQBEL calculations uncertain. Thus, in accordance with Section 2.2.2 of the State Water Resources Control Board's (2000) *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP), Mirant requests that the San Francisco Bay (Bay) Regional Water Quality Control Board (Water Board) establish interim performance-based limits (IPBLs) and compliance schedules for these constituents in the new Permit. While Mirant's ability to comply with IPBLs will also be uncertain because of the lack of temporal data, the Water Board has no choice but to establish such limits based on the available information.

Methods

Mirant completed this addendum to its IS in accordance with the SIP and the Water Board's (1995) *San Francisco Bay Basin Water-Quality Control Plan*. In cases such as Mirant's where wastewater dischargers cannot immediately comply with WQBELs, these two documents stipulate that the following information be supplied to the Water Board to support a finding of infeasibility:

- results from a diligent effort to quantify constituent concentrations and potential sources
- documentation of source-control efforts currently underway or completed
- a proposed schedule for any additional source-control measures
- a demonstration that the proposed schedule is as expedient as possible

The infeasibility of meeting copper WQBELs was discussed previously in the IS. This addendum focuses on the infeasibility of meeting selenium WQBELs and the fact that existing Intake I-001 and Outfall E-001 data are not sufficient to characterize the natural temporal variability of both copper and selenium concentrations.

Monitoring Efforts

Under the current and previous Permits, there have been no requirements to measure selenium



concentrations in Intake I-001 or Outfall E-001. However, Mirant has been measuring selenium concentrations at these two locations approximately monthly since March 2002 to meet SIP requirements in accordance with its Water Board-approved (2001) *SIP Sampling and Analysis Plan for Potrero Power Plant* (MWH Americas, Inc. 2001). Selenium data collected before 28 April 2004 are generally considered invalid because potential interferences from the saline matrix were not accounted for during analysis.

In an effort to generate a dataset of metals' concentrations unbiased by saline-matrix interference, Mirant (2004) collected and analyzed 11 sets of paired Intake I-001 and Outfall E-001 samples for total metals, including selenium, from 28 April to 2 June 2004. The samples were analyzed using U.S. Environmental Protection Agency (EPA) Method 6020 (inductively coupled plasma with mass spectrometry) on a specialized "reaction-gas, matrix-elimination" instrument specifically designed to handle "high matrix" samples (e.g., seawater) and provide highly accurate results. Table 1 summarizes the valid total selenium concentrations for Intake I-001 and Outfall E-001.

Source-Control Efforts

Mirant believes that most, if not all, of the selenium present in Outfall E-001 is derived directly from selenium already present in the Bay water obtained from Intake I-001. Not only do paired Intake I-001 and Outfall E-001 selenium concentrations show a strong correlation ($r = 0.86$; Table 1), but average intake concentrations are also notably greater than average outfall concentrations. Furthermore, stormwater flows to Outfall E-001 do not intercept potential selenium sources on their way to the Bay, and boiler blowdown discharges are not only not suspected to contain selenium, but are also minimal volumetrically. This leaves the potential weathering of alloys in the once-through cooling-water system ("system") as the only potential source of this element.

In order to evaluate this potential source, Mirant reviewed system metallurgy. Interestingly, the former owners of the Plant, Pacific Gas & Electric Company (PG&E), conducted a general metallurgical analysis of the system in response to concerns from the Water Board in 1988 that "cooling water effluent contains amounts of heavy metals at significantly higher concentrations than the intake cooling water" (PG&E, 1988). PG&E inventoried and assessed the system equipment and concluded that metals "are not used in any part of the process except as alloys in various pieces of equipment" and "could possibly be introduced into the water as a result of corrosion, [but] the increase in concentration of metals is not consistent with corrosion rates."

Mirant reviewed and updated the data from the PG&E (1988) assessment using methods similar to those conducted in the renewal of the NPDES Permit for Pittsburg Power Plant (Mirant Delta, LLC, 2002).¹ Basically, the metallurgy of the system was inventoried, cooling-water residence times were evaluated, and approximate contact-equipment surface areas were calculated. Although selenium was found not to be a common metal used in system equipment, Mirant recommends that additional selenium data be collected from both Intake I-001 and Outfall E-001 to confirm that the system is not a source of this metal to the Bay. Source-control measures would be premature at this time.

Schedule

Mirant will continue to measure total selenium concentrations in Intake I-001 and Outfall E-001 monthly to provide additional data for the eventual calculation of more accurate WQBELs. Should any sources of selenium from the Plant be identified through this monitoring, Mirant will implement appropriate source-

¹Mirant Delta, LLC worked with the Water Board to use the Pittsburg Power Plant metallurgical results to tailor the Self-Monitoring Program such that it included regulated metals that could potentially enter the Bay and excluded those that did not. The approach ensured that water quality would be protected while minimizing sampling and analytical effort.



control measures.

Temporal Variation

The valid data available for calculating copper and selenium WQBELs consist of 11 paired Intake I-001 and Outfall E-001 measurements from 28 April to 2 June 2004. Mirant believes that these data—while sufficient to establish reasonable potential for these constituents—are insufficient in terms of covering natural temporal (month-to-month) variations in their concentrations.

Figure 1 shows the variability in background copper and selenium² concentrations at Yerba Buena Island as measured by the Regional Monitoring Program between 1993 and 2001. Clearly, natural copper and selenium concentrations can fluctuate considerably, and Mirant is concerned that the data used to calculate its WQBELs and IPBLs does not account for this. Furthermore, it is not known whether Mirant will be able to meet even IPBLs, especially considering that the vast majority (if not all) of the copper and selenium discharged from Outfall E-001 originates from Bay water obtained from Intake I-001. Nevertheless, the Water Board is required to establish numerical limits in the Permit and must rely on the available data, however limited. Mirant will continue to measure copper and selenium concentrations monthly in Intake I-001 and Outfall E-001 to gather additional temporal data for the eventual calculation of more accurate WQBELs.

Closing

I trust that this letter provides you with the information you need regarding Mirant's concerns about the adequacy of existing copper and selenium data for calculating WQBELs. If you have questions or need more information, please contact me at 925.427.3513 or guy.chammas@mirant.com.

Sincerely,

A handwritten signature in dark ink, appearing to read "Guy Chammas", is written over the typed name.

Guy Chammas, MS, RG, CPSSc, REA
Senior Environmental Specialist

Attachments

Table 1 Total Selenium Results
Figure 1 Variation in Copper and Selenium Concentrations at Yerba Buena Island

References

- Mirant Delta, LLC. 2002. *Analysis of NPDES Data for Proposed Water-Quality-Based Effluent Limits*. Submitted to Ms. Judy Huang of the San Francisco Bay Regional Water Quality Control Board as part of the renewal of NPDES Permit No. CA0004880 for Pittsburg Power Plant. 13 May.
- Mirant Potrero, LLC (Mirant). 2004. Letter from Mr. Guy Chammas, Senior Environmental Specialist, to Ms. Alexa La Plante, Environmental Scientist, San Francisco Bay Regional Water Quality Control Board, re: Follow Up on Recent NPDES Permit Renewal Meeting. 5 May.

²Mirant would like to point out that recent selenium concentrations measured in Intake I-001 and Outfall E-001 are roughly an order of magnitude greater than those observed at Yerba Buena Island between 1993 and 2001. It is not known if these differences are due to analytical artifacts or actual changes in selenium concentrations in the Bay.



MWH Americas, Inc. 2001. *State Implementation Policy Sampling and Analysis Plan for Potrero Power Plant*. Prepared for Mirant Potrero, LLC. 1 October.

Pacific Gas & Electric Company (PG&E). 1988. Letter from Mr. Norman B. Wheelock, Potrero Power Plant Manager, to Mr. Michael D. Drennan, San Francisco Bay Regional Water Quality Control Board, re: Letter Dated 7/25/88 on Potrero Power Plant and Letter Dated 8/8/88 on Hunters Point Power Plant. 1 September.

San Francisco Bay Regional Water Quality Control Board (Water Board). 1995. *San Francisco Bay Basin (Region 2) Water-Quality Control Plan*. Published 21 June. Approved by the State Water Resources Control Board on 20 July and the California State Office of Administrative Law on 13 November.

———. 2001. Letter from Ms. Shin-Roei Lee, NPDES Division Chief, to Mr. Steve Bauman, Mirant Potrero, LLC, re: Conditional Approval of the Sampling and Analysis Plan Submitted to Fulfill Requirements for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations and Policy. 20 December.

State Water Resources Control Board. 2000. *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*. Phase I of the Inland Surface Waters Plan and the Enclosed Bays and Estuaries Plan.

TABLE 1
TOTAL SELENIUM RESULTS
Infeasibility Study Addendum
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DATE	<i>Parameter:</i>	TOTAL SELENIUM	
	<i>Location:</i>	I-001	E-001
	<i>Method:</i>	EPA 6020	
	<i>Units:</i>	mg/L	
4/28/2004		0.00585	0.00340
4/29/2004		0.00270	0.00255
5/4/2004		<0.000825	<0.000825
5/5/2004		<0.000825	<0.000825
5/11/2004		<0.000825	<0.000825
5/13/2004		<0.000825	<0.000825
5/18/2004		<0.000825	<0.000825
5/19/2004		<0.000825	<0.000825
5/24/2004		0.00589	0.00194 J
5/25/2004		0.00178 J	0.00200 J
6/2/2004		<0.000825	<0.000825
	<i>Minimum:</i>	<0.000825	<0.000825
	<i>Mean:</i>	0.00174	0.00116
	<i>Median:</i>	0.00041	0.00041
	<i>Maximum:</i>	0.00585	0.00340
	<i>Correlation Coefficient:</i>	0.86	

Notes:

< = analyte not detected above the indicated limit

J = estimated result (less than reporting limit, but greater than detection limit)

mg/L = milligrams per liter

FIGURE 1
Variation in Cu and Se Concentrations at Yerba Buena Island

