

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION**

**TENTATIVE ORDER NO. R9-2006-0043
NPDES NO. CA0001350**

**WASTE DISCHARGE REQUIREMENTS
FOR CABRILLO POWER I LLC, ENCINA POWER PLANT, SAN DIEGO COUNTY**

RESPONSES TO SIGNIFICANT WATER QULITY RELATED COMMENTS RECEIVED BEFORE AUGUST 16, 2006

Com ment No.	Summary of Comment	Regional Board Staff Response	Suggested Revision	Permit Section
WRITTEN COMMENTS				
<i>Comments received from San Diego Bay Council via correspondence dated July 31, 2006</i>				
1	<p>The Thermal Plan Exception and Thermal Plan compliance monitoring Section 11, Findings, I. Thermal Plan Exception. The Tentative Order should provide corrective actions in response to the consultant (Tetra Tech) July 2005 report, which concluded that the data and analysis presented in the Supplemental Report were inadequate to determine whether or not the exceedence of thermal limits would allow for the propagation of a balanced indigenous population and will ensure protection of beneficial uses of water. The granting of thermal plan should not remove the requirement to monitor the receiving water temperature. Water temperature data is needed to determine if the power plant effluent is thermally harming the marine environment. Furthermore, the fish kills discussed below during heat treatment provides additional reason to monitor the receiving water temperature. Consequently, continuing the thermal plan exception is highly questionable in our view.</p>	<p>Provision VII.C.1.a directs the Discharger to address the comments identified in the Tetra Tech review memo. This directive is a “corrective action”. Based upon the adequacy of the Discharger’s response, further corrective actions, if necessary, would be prescribed by the Regional Water Board.</p> <p>Temperature, pH, dissolved oxygen, and percent light transmittance are measured on the surface at 14 stations twice per year. In addition infrared radiometry is used to map the thermal plume from the Encina Power Plant. Ground truth sea-surface data collected using an Orion Model 820 DO/temperature meter at surface stations typically are found to be within 0.1 °C of those obtained by the airborne radiometer.</p>	None	N/A

**SUPPLEMENTAL MAILING
SUPPORTING DOCUMENT NO. 2**

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2	<p>Heat Treatment and fish kill reported in the May 2006 Executive Officer's Report</p> <p>a. Heat Treatment Decision Diagram, Attachment G is missing. This information is needed to understand the criteria used to conduct heat treatment.</p> <p>b. The Executive Officer's Report for May 2006, Part B, Item 20, describes the fish kill incident that took place in during the April 30-May 1, 2006 heat treatment. U.S. Fish and Wildlife reported over 500 dead fish were found, from 6 to 12 inches but some as large as 18 inches or more. No reports were noted on attempts to estimate or monitor the kills of benthic organisms or fish larvae. However, one can expect many of these small aquatic life forms were killed as well. The May 8, 2006 letter from Cabrillo LLC to the Mr. Bob Morris of the RWQCB indicated that they were investigating measures to reduce the fish kills during heat treatment. The Executive Officer's report stated that the Regional Board may reconsider heat treatment when reissuing the NPDES permit for the Encina Power Station (EPS). Have the causes for the kill been investigated? Presumably high water was one cause, low dissolved oxygen another probable cause. Did Cabrillo LLC notify the Regional Board and the California Department of Fish and Game, at least 48 hours in advance of the heat treatment as required by paragraph 1 of section VII, Provisions B. Monitoring and Reporting Program Requirements?</p> <p>c. Please explain why no action has been taken on heat treatment in the Tentative Order. It should be noted that the South Bay Power Plant does not use heat treatment of the forebays, condensers and inlet conduits for removing encrustations. Instead, manual cleaning is used.'</p> <p>d. We are also very concerned that the large amount of encrusting organisms of 1000 cubic yards over a six</p>	<p>Attachment G has been added to the Fact Sheet</p> <p>Cabrillo Power submitted a June 16, 2006 report on the May 2006 heat treatment process. Based upon the information in the report, the number of fish that were killed during the process was not unusual. The difference in May 2006 from normal heat treatment operations was that the May operation was mistakenly scheduled during a rising tide, which resulted in the dead fish washing onto the beach. Cabrillo Power did notify the Regional Board as required.</p> <p>No changes to the requirements pertaining to the heat treatment process in the NPDES permit are justified at this time. Manual cleaning of the tunnel and forebay is conducted (see Fact Sheet page F-7), but effective control of biofouling would require continuous chlorination of the entire intake system if heat treatment is not used. The heat treatment occurs once every six to eight weeks for up to nine hours at a time when the plant discharge is reduced to approximately 7 to 45 percent of its full flow rate. The Regional Board considers that the Discharger is taking reasonable steps to minimize the water quality impacts resulting from its need to remove encrusting organisms growing within the facility.</p> <p>Temperature of the discharge is required to be monitored every two hours (Effluent Monitoring Requirement IV.A.1). Flow is monitored continuously.</p>	See errata item 13	Fact Sheet

**SUPPLEMENTAL MAILING
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	<p>month period noted in the Fact Sheet page F-13 is discharged into the receiving waters during heat treatment. Effluent during heat treat is not but should be monitored and comply with Table 6, Effluent limitations for discharge point 001. The fact that the Monitoring and Receiving Waters Program does not require effluent temperature, turbidity, and dissolved oxygen monitoring during the heat treatment cycle is in our view a serious omission.</p>			
3	<p>Thermal Plan Exception and Heat Treatment recommendations:</p> <p>a. Discontinue the Thermal Plan Exception and require conformance with the Thermal Plan.</p> <p>b. Revise the Monitoring and Reporting Program to require temperature monitoring of the receiving waters to show compliance with the Thermal Plan with or without the Exception.</p> <p>c. Discontinue the heat treatment practice and replace it by manual cleaning with the clean-up matter collected and sent to a landfill.</p>	<p>The requirements in tentative Order No. R9-2006-043 are consistent with the Thermal Plan, which states that existing discharges shall comply with limitations necessary to assure protection of the beneficial uses and areas of special biological significance.</p> <p>The temperature monitoring in MRP R9-2006-043 for receiving water are appropriate for assessing compliance with the Thermal Plan.</p> <p>The heat treatment process results in a temporary increase in discharge temperature that may reach a permitted maximum of 120°F. However, the typical maximum temperature in the discharges is 104-106°F. No changes to the requirements pertaining to the heat treatment process in the NPDES permit are justified at this time. Manual cleaning of the tunnel and forebay is conducted (see Fact Sheet page F-7), but effective control of biofouling would require continuous chlorination of the entire intake system if heat treatment is not used. The heat treatment occurs once every six to eight weeks for up to nine hours at a time when the plant discharge is reduced to approximately 7 to 45 percent of its full flow rate. The Regional Board considers that the Discharger is taking reasonable steps to minimize the water quality impacts resulting from its need to remove encrusting organisms growing within the facility.</p>	None	N/A

**SUPPLEMENTAL MAILING
SUPPORTING DOCUMENT NO. 2**

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4	Attachment C- Flow Schematic. Please explain the Rainfall 1,280,000 MGD value shown on the Schematic.	Storm water collected in Basins D and E is discharged through Discharge Point 001. The quantity is based on runoff from the area draining to Basins D and E resulting from a 10year – 24hour precipitation event.	None	N/A
5	Attachment E, Monitoring and Reporting Program. Table C-1, Monitoring Locations. Receiving water monitoring Attachment X is missing.	The information in “Attachment X” was included in the MRP as section VI. The Attachment is not necessary and the reference has been deleted.	See errata item 14	MRP Section VI
6	Attachment E, Monitoring and Reporting Program. Section VI Receiving Water Monitoring Requirements, A2, page E-14, Thermal Plume Mapping. Methods to determine compliance with the Thermal Plan is not adequate. Infrared mapping is required to map the thermal plume. This section states that a report for items monitored at receiving water monitoring stations and thermal plume characterization shall compare data from reference stations with data located in the discharge. The data are not defined. Please describe additional data required other than that in Table C-8. Water temperature should be monitored. The power output during the plume monitoring is not specified. Maximum operating power conditions should be specified. Fact Sheet page F-A- 42, Table F-17, tabulates water temperature measurements taken in spring 2005. EPS power output during these measurements is not specified. Without the power output the thermal temperature data does not have much use in relating the plume temperature as a function of power output. In sum this section need to be completely revised.	Surface temperatures are plotted in 2°F increments above ambient, and isotherms depicting the extent of the thermal discharge near the outfall are drawn. Temperature depth contours for inshore to offshore and alongshore are also shown. The areal extent of these plumes are compared to historical data. A study of the potential thermal effects of the discharge on aquatic habitat was initiated by San Diego Gas & Electric in December 1980 and the issue has been periodically revisited ever since. This issue should be resolved by the Discharger addressing Provision VII.C.1.a of the tentative Order.	None	N/A
7	Fact Sheet Section II A1. Cooling Water System and Associated Wastes (Discharge Point 001). The description of the intake structure, paragraphs two to four is not clear. Provide the flow rates at each five generating units. With five generating units it is not clear where the two additional screens (total seven) are located. We recommend a schematic of the cooling water system showing the tunnels, screens and pumps	See attached diagrams	None	N/A

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SUPPORTING DOCUMENT NO. 2**

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	to avoid this confusion.			
8	Fact Sheet Section V. Planned Changes. This section notes that Poseidon Resources proposal to co-locate a seawater desalination plant at the EPS and has submitted applied for an NPDES permit. Please explain the process including public review and comment by which the Tentative Order would incorporate changes to the Order should the proposed desalination plant be approved. NRG Energy Cabrillo has stated that they plan to replace the existing EPS during or shortly after the five year term of this NPDES permit. We believe that it is highly questionable that the proposed desalination plant could be licensed and be online during this time (by 2011).	No changes to the tentative Order for Cabrillo Power are necessary to address the Poseidon discharge.	None	N/A
<i>Comments received from Stanford Law Clinics via correspondence dated August 2, 2006</i>				
9	The Regional Board should defer consideration of the EPS permit at the August 16 meeting, continue this agenda item to the next Board meeting, and use the intervening time to work with the facility owner to explore and verify its future plans at the site.	No delay is necessary.	None	N/A
10	If the news reports of NRG's future plans at the site are accurate, the Regional Board should then tailor its renewal of the NPDES permit for the existing facility to the particular circumstances presented here. For instance, the permit could be issued for a more limited period of two or three years, with the express condition that at the end of the permit period, "once through cooling" systems will no longer be allowed for this site, in connection with either the existing plant or a new facility, thereby essentially phasing out this destructive practice.	The requirements specified in the tentative Order are based upon the information submitted in the Discharger's application. If there is a material change in the discharge, Cabrillo Power is required to submitted a new application to modify the Permit.	None	N/A
			None	N/A

**SUPPLEMENTAL MAILING
SUPPORTING DOCUMENT NO. 2**

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11	<p>Table 9 on page 12 of Tentative Order No. R9-2006-0043 (TO) includes silver in the list of parameters for which effluent limitations are required in the Low Volume Wastewaters (LVW). However, the Reasonable Potential Analysis (RPA) submitted on June 22, 2006 to the California Regional Water Quality Control Board - San Diego Region (Regional Water Board) by Cabrillo Power I LLC Encina Power Station (EPS) concluded Endpoint 2 (an effluent limitation is not required) for silver. The TO Fact Sheet (page F-A-32, paragraph 2 at VII C.2.b) confirms that an effluent limitation is not required for silver. Because there is no reasonable potential for excursions beyond the Ocean Plan water quality objective for silver, EPS requests that the Regional Water Board remove silver from Table 9.</p>	<p>Concur</p>	<p>See errata item 7</p>	<p>IV.B.2 (new Table 9)</p> <p>VI.C.2.c</p>
12	<p>Table C-5 on page E-9 of the TO Monitoring and Reporting Program (MRP) lists "semiannually" as the minimum frequency of analysis, and "semiannually" as the reporting frequency, for arsenic, cadmium, lead, selenium, silver, zinc, cyanide and ammonia. However, these parameters do not have effluent limitations established in the TO for the LVW. The other parameters in the table that do not have effluent limitations list "One time during the permit period" as the minimum frequency of analysis and "As part of the renewal application in 2010" as the reporting frequency. EPS requests that the Regional Water Board modify the minimum frequency of analysis and the reporting frequency for arsenic, cadmium, lead, selenium, silver, zinc, cyanide and ammonia to make them consistent with the other parameters in the table that do not have effluent limitations.</p> <p>Page F-A-38 of the TO Fact Sheet at IX.A "Cooling Water Intake Structure Monitoring", second paragraph, states that Order No. 2000-03 requires the Discharger to</p>	<p>The frequency of monitoring for all constituents will be evaluated in 2010. At this time, semiannual monitoring for these constituents to complete reasonable potential analysis is necessary.</p> <p>Concur with comment regarding intake monitoring</p>	<p>See errata item 8</p>	

**SUPPLEMENTAL MAILING
SUPPORTING DOCUMENT NO. 2**

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	<p>periodically monitor temperature, total suspended solids (TSS), turbidity, and pH at the intake structure. It also states that the TO "retains the requirements of Order 2000-03 for influent monitoring at the intake structure." However, in Table C-2 of the TO MRP the temperature monitoring frequency has been changed from once every two hours in Order 2000-03 to continuous and the TSS monitoring frequency has been changed from monthly in Order 2000-03 to continuous. EPS requests that the Regional Water Board change Table C-2 monitoring frequency to "once every 2 hours" for temperature and "monthly" for TSS.</p>			
13	<p>The TO MRP (page E-9 at IV.C.1) and the TO Fact Sheet (page F-A-40 at IX.B.5 paragraph 3) are consistent in discussing the collection of flow-weighted composite samples of LVW. They both state that "[t]he proportion of each waste stream to be added to the composite sample must be based on the actual (preferred) or estimated flow rates for the day on which the samples are collected." However, on pages 11-12 of the TO at IV.C (metal cleaning wastes) and IV.D (LVW), Q_a is defined, respectively, as "actual metal cleaning flows..." and "the combined discharge flow rate...". EPS requests that the Regional Water Board make the TO consistent with the MRP and the Fact Sheet by defining Q_a as, respectively, "actual (preferred) or estimated metal cleaning flows..." and "the actual (preferred) or estimated combined discharge rate..." EPS also requests that the Regional Water Board use the same language on page 22 Endnote 17 for Q_a as "the actual (preferred) or estimated combined discharge flow rate..."</p>	Concur	See errata items 9 & 10	IV.D and Endnote 17
14	<p>Page F-12 of the TO Fact Sheet at II.A.4 states that stormwater collected in Basins D and E is discharged under this Order and that all other stormwater (Basins A, B, C and F) discharges under authority of the General Permit for Industrial Storm Water Discharges (General Permit). Page F-A-25 of the TO Fact Sheet at IV.C.4</p>	<p>Concur with all comments. No change to Fact Sheet necessary to address first comment regarding application of SWPPP.</p> <p>Identification of the individual waste streams that come under Metal Cleaning Wastes is not necessary in Table E-1</p>	See errata items 11 & 12	Table F-3 Table E-1 (C-1)

**SUPPLEMENTAL MAILING
SUPPORTING DOCUMENT NO. 2**

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	<p>states that Best Management Practices (BMPs) contained in the Discharger's Storm Water Pollution Prevention Plan (SWPPP) represent the BMPs required pursuant to Provision 3 of Order 97-03-DWQ. EPS understands that Basins D and E are not regulated under the General Permit, but EPS also understands that Basins D and E should be maintained under the General Permit in accordance with 40 CFR 122.21(g)(7). EPS requests that the Regional Water Board clarify in the TO Fact Sheet that Basins D and E are maintained in accordance with 40 CFR 122.21(g)(7) and that the BMPs in EPS's SWPPP apply to Basins D and E as well as Basins A, B, C and F, similar to the last sentence of Finding 68 of Order No. 2000-03.</p> <p>Also, to be consistent with the TO MRP Table C- 1, EPS requests that the Regional Water Board correct TO Fact Sheet Table F-3 (page F-5) to include Discharge Point 001-I, Stormwater, Maximum Flow 1.280 MGD, and page F-5 at ILA, second paragraph, should be corrected to say "...discharge point designations (001-A through 001-1)...".</p> <p>Finally, EPS requests that the Regional Water Board correct TO MRP Table C-1, details of Discharge Point 001-A, to provide the same Wastewater Discharges that are shown in TO Fact Sheet Table F-3 (page F-4) for Discharge Point 001-A.</p>			
15	<p>The Regional Water Board recognizes certain potential impacts on intake water on page F-A-38 at IX.A of the TO Fact Sheet and on TO page 20 at Endnote 10 by allowing compliance determination with the effluent limitation for turbidity based on the difference between influent and effluent values. EPS intake water is potentially subject to contamination by waste constituents and pollutants beyond the control of EPS. Order No. 2000-03 recognized and addressed this potential issue in Finding 67. Therefore, EPS requests</p>	<p>No change to the tentative Order is necessary to address this concern. The State Water Board's <i>Water Quality Enforcement Policy</i> establishes the framework for taking appropriate enforcement action, which is used by this Regional Board to establish enforcement priorities. The reason for a violation of effluent limits is one of the factors that is taken into consideration.</p>	None	N/A

**SUPPLEMENTAL MAILING
SUPPORTING DOCUMENT NO. 2**

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	<p>that the Regional Water Board add a provision in the TO at Section VIII (Compliance Determination) that will allow for discretion in both compliance determination and/or enforcement actions for violations under the Order as a result of the presence of contamination in the EPS intake water that is beyond the control of EPS. EPS believes that the language of Finding 67 completely addresses this potential issue, modified as follows:</p> <p>"Because of the configuration of the cooling water intake and discharge structures of the Encina Power Station, waste constituents and pollutants may be present in the intake water as a result of spills or other discharges beyond the control of the discharger at concentrations that could cause the cooling water discharge from the Encina Power Station to exceed the effluent limits contained in this Order or to exceed the concentrations set forth in Tables A and B of the Ocean Plan. Prior to determining compliance and initiating enforcement action for such exceedances under this Order, the Regional Board will take into consideration the source of the waste constituents or pollutants causing the exceedance(s) and any affirmative actions of the discharger to mitigate the impact of pollutants upon waters of the State and of the United States and to assist in abatement of any pollution or nuisance associated with discharges that do not comply with the requirements of this Order under such circumstances (e.g., development and implementation of contingency plans, actions to eliminate or minimize impacts, avoidance of actions that would exacerbate the problem, etc.)."</p>			
16	Section III.CAa of the 2005 Ocean Plan presents Equation 1 for calculating an effluent concentration limit for a parameter based on the water quality objective for that parameter and the dilution of the combined	Section III.C.8.d of the 2005 Ocean Plan is clear that the effluent concentration values shall be determined based upon the dilution of the combined discharge and that these concentration values shall be converted to mass emission limitations. The 2005 Ocean Plan, however, does not	None	N/A

**SUPPLEMENTAL MAILING
SUPPORTING DOCUMENT NO. 2**

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	<p>discharge by seawater. Section III.C.4 j of the 2005 Ocean Plan presents Equation 3 for calculating a mass emission rate limit for a parameter based on the effluent concentration limit for that parameter. Section III.C.8.d of the 2005 Ocean Plan, which applies specifically to power plants and heat exchange dischargers, states that Equation 1 shall consider the minimum probable initial dilution of the combined effluent, which is defined as in plant waste streams plus cooling water flow.</p> <p>EPS interprets the combined effluent flow rate specified in Section III.C.8.d of the Ocean Plan as 863.169 MGD, which is the maximum flow rate of the in plant waste streams plus cooling water (shown in Discharge Specification B.13 on page 26 of Order No. 2000-03). EPS believes that mass emission rate limits are correctly calculated using the 863.169 MGD discharge flow rate. However, on page 12 at IV.D of the TO, the Regional Water Board calculates mass emission rate limits for low volume wastewaters by using 4.08 MGD as the maximum flow rate of low volume, in-plant wastewaters. This flow rate is not consistent with that used in Order No. 2000-03 for calculating effluent limits and results in reductions of effluent limits by over two orders of magnitude. These drastically reduced limits will subject EPS to potentially very significant compliance issues. EPS requests that the Regional Water Board change the maximum flow rate back to 863.169 MGD to make the calculation procedure consistent with that used in Order No. 2000-03.</p>	<p>explicitly provide the basis for the flow rate to be used in the mass emission calculation. Because the 2005 Ocean Plan applies the mass emission limit to all inplant waste streams taken together which discharge into the cooling water, the US EPA consultant concluded and the Regional Board staff concurred that the low volume wastewater discharge flow rate is appropriate in determining the mass emission limit for low volume waste. Otherwise the mass emission limit would have been applied to the combined discharge in the Ocean Plan rather than just the low volume wastewater.</p>		
17	<p>TO page 22 at Endnote 17 adjusts mass emission rate limits for a parameter based on the ratio of actual flow to maximum flow, which is specified as 4.08 MGD for the LVW for Discharge Point 001. Per Comment 7 above, EPS interprets the maximum flow as 863.169 MGD for Discharge Point 001, and the actual flow as the actual or estimated flow of the in-plant waste streams plus cooling water at the time of sampling. This interpretation is</p>	<p>The adjustment to the mass emission limit must be based upon ratio of the actual low volume wastewater discharge flow rate at the time of sample to the maximum permitted flow rate for low volume wastewater, which is 4.08 MGD.</p>	None	N/A

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	<p>consistent with Order No. 2000-03 Discharge Specification 13 (page 26) and Endnote 6 (page 42).</p> <p>Because ratio-based mass emissions limits would allow larger discharge volumes to meet higher limits and would discriminate against smaller discharge volumes, even low mass emissions with relatively low concentrations of constituents in a low-discharge effluent stream could result in constituent mass emissions in the LVW discharge that exceed the effluent limitations, using the calculation procedure described in the TO.</p> <p>EPS requests that the Regional Water Board change the maximum flow rate back to 863.169 MGD, and that the actual flow rate be specified as the actual or estimated flow of the in plant waste streams plus cooling water at the time of sampling.</p>			