CALIFORNIA COASTAL COMMISSION
45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105- 2219
VOICE (415) 904- 5200
FAX (415) 904- 5400
TDD (415) 597-5885

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Filed: 10/09/09
Staff: Alison Dettmer-SF
Staff Report: 11/19/09
Hearing Date: 12/10/09
Commission Action:

STAFF REPORT: REQUEST FOR REVOCATION

APPLICATION NUMBER: **R-E-06-013**

APPLICANT: **Poseidon Resources (Channelside) LLC/Cabrillo Power II LLC ("Poseidon")**

PROJECT LOCATION: Site of Encina Power Plant, adjacent to Agua Hedionda Lagoon, in the City of Carlsbad, San Diego County.

PROJECT DESCRIPTION: Construct and operate a 50 million gallon per day seawater desalination facility.

PERSONS REQUESTING REVOCATION: Surfrider Foundation, San Diego Coastkeeper, and the Coastal Environmental Rights Foundation.

SUMMARY OF STAFF RECOMMENDATION

The Environmental Groups request that the California Coastal Commission ("Commission") revoke Poseidon's coastal development permit based on three main contentions:

1) That Poseidon intentionally withheld from the Commission accurate and complete data and analysis about the facility's expected impingement effects;
2) That Poseidon intentionally submitted inaccurate information about expected intake velocities; and
3) That Poseidon intentionally misstated its expected potable water production levels.

Staff recommends that the Commission **deny** the request for revocation on the basis that no grounds exist for revocation under Section 13105(a) or (b) of the Commission's regulations.

EXHIBITS

EXHIBIT 1: Coastal Development Permit E-06-013.
EXHIBIT 2: October 9, 2009 Request for Revocation.
EXHIBIT 3: May 2007 Technical Memorandum, Table 8, from Tenera Environmental.
EXHIBIT 4: Intake Diagram (from April 1, 2006 Encina Power Station Proposal For Information Collection – NPDES Permit #CA0001350).
EXHIBIT 5: Intake Diagram (from October 15, 2009 Poseidon Response to Revocation Request).

PROCEDURAL NOTE: The California Code of Regulations, Title 14, Division 5.5, Section 13105 states that the grounds for the revocation of a coastal development permit (or permit amendment) are as follows:

Grounds for revocation of a permit shall be:

a) Intentional inclusion of inaccurate, erroneous or incomplete information in connection with a coastal development permit application, where the Commission finds that accurate and complete information would have caused the Commission to require additional or different conditions on a permit or deny an application;

b) Failure to comply with the notice provisions of Section 13054, where the views of the person(s) not notified were not otherwise made known to the Commission and could have caused the Commission to require additional or different conditions on a permit or deny an application (14 Cal. Code of Regulation Section 13105).

STAFF NOTE: Revocation of a permit removes a previously granted permit. Even if a permit is vested (i.e., the permittee has begun construction of the project), if the Commission revokes the permit, the permittee is required to stop work and, if wishing to continue, to reapply for a new permit for the project. If the Executive Director determines that evidence clearly shows that there are grounds for revocation, Section 13107 of the Commission's regulations provides that permit be suspended. In this case, the Executive Director has determined that grounds for revocation *do not exist* and that the operation of the permit is not suspended.

Because of the impact on a permittee, the grounds for revocation are necessarily narrow. The rules of revocation do not allow the Commission to have second thoughts on a previously-issued permit based on information that comes into existence after the granting of a permit, no matter how compelling that information might be. Similarly, a violation of the Coastal Act or the terms and conditions of a permit, or an allegation that a violation has occurred, are not grounds for revocation under the California Code of Regulations. The grounds for revocation are confined to information in existence at the time of the Commission's action.

The revocation request is based on Section 13105(a) of the Commission's regulations. The three elements of Section 13105(a) that must be satisfied before a permit can be revoked are:

- That the applicant provided incomplete or false information; AND
- That false or incomplete information was supplied intentionally; AND
- That if the Commission had known of the information, it would have denied the permit or imposed different conditions.

I. STAFF RECOMMENDATION

The staff recommends that the Commission determine that no grounds exist for revocation.

MOTION: I move that the Commission grant revocation of Coastal Development Permit E-06-013.

The staff recommends a **NO** vote on the motion. Failure of this motion will result in denial of the request for revocation and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

RESOLUTION TO DENY REVOCATION:

The Commission hereby **denies** the request for revocation of the Commission's decision on Coastal Development Permit E-06-013 on the grounds that:

a) There was no intentional inclusion of inaccurate, erroneous or incomplete information in connection with a coastal development permit application, where the Commission finds that the accurate and complete information would have caused the Commission to require additional or different conditions on a permit or deny an application.

b) There was no failure to comply with the notice provision of Section 13054 where the views of the person(s) not notified were not otherwise made known to the Commission and would have caused the Commission to require additional or different conditions on a permit or deny an application (14 Cal. Code of Regulations Section 13105).

II. FINDINGS AND DECLARATIONS

The Commission hereby finds and declares as follows:

A. Project Description/Background

On November 14, 2007, the Commission granted to Poseidon Coastal Development Permit E-06-013 to construct and operate a 50 million gallon per day (MGD) seawater desalination facility on the site of the Encina Power Station, adjacent to Agua Hedionda Lagoon, in the City of Carlsbad. To bring the project into conformity with the Chapter 3 policies of the Coastal Act, the Commission imposed 17 Special Conditions.

One of the key issues before the Commission was this project's potential adverse effects to marine life due to its use of 304 MGD of water from Agua Hedionda Lagoon. In 2004-2005, Poseidon performed a field study to determine the entrainment[1] and impingement[2] impacts that would be caused by continuous 304 MGD water use. Poseidon provided a summary of its study results and contended the project's entrainment losses would be equal to the organisms produced annually in about 37 acres of the lagoon's wetland and open water habitat. Poseidon also contended its impingement impacts would be about 2.1 pounds per day (or 0.96 kilograms/day), which the project's certified EIR described as a *de minimis* level of adverse impact.

The Commission required in Special Condition 8 that Poseidon document its full expected entrainment and impingement impacts (see Exhibit 1). It also required Poseidon to submit for Commission approval a Marine Life Mitigation Plan ("MLMP") to address the identified impacts. Commission staff reviewed Poseidon's documentation[3] and worked with Poseidon to develop a mitigation plan. On August 6, 2008, the Commission found that Poseidon's project would result in higher entrainment impacts than identified in the initial summary, and approved a MLMP requiring Poseidon to create or restore 55.4 acres of coastal estuarine habitat within the Southern California Bight. Based on analysis of Poseidon's entrainment study, the Commission concluded that 55.4 acres of wetland restoration will provide the Commission with 80% confidence that the mitigation will fully mitigate the impacts identified in the study. The Commission also concluded, based on Poseidon's impingement totals, and as stated in the project's certified EIR, that the project's impingement impacts would be *de minimis,* averaging less than 2.5 pounds per day (less than 1.14 kilograms per day). Since it had concluded that impingement effects would be *de minimis*, the Commission did not require additional mitigation for project-related impingement.

Poseidon then submitted for San Diego Regional Water Quality Control Board approval a Flow, Entrainment and Impingement Minimization Plan (which included Poseidon's 2004-2005 impingement sampling results), along with the Commission-approved MLMP. In April 2008, Regional Board staff requested during its review of the Flow Minimization Plan and impingement study that Poseidon clarify several elements of its impingement assessment,

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[1] Entrainment kills the small organisms – plankton, fish eggs, larvae, etc. – that are pulled through the intake pipes and causes indirect impacts to the larger marine community by altering the food web and removing part of the community's productivity.

[2] Impingement is injury or mortality of fish or other organisms caught on an intake's screening system.

[3] Poseidon's documentation included:

- Encina Power Station Entrainment and Impingement Sampling Plan, 2004.
- Carlsbad Desalination Facility: Draft Intake Effects Assessment, March 2005.
- Technical Memorandum: Assessment of Potential Impingement and Entrainment Attributed to Desalination Plant Operations and Associated Area of Production Foregone, May 2007.
- Revised Flow, Entrainment and Impingement Minimization Plan, June 2007.
- Carlsbad Desalination Facility – Encina Power Station: Summary of Fish and Target Shellfish Larvae Collected for Entrainment and Source Water Studies in the Vicinity of Agua Hedionda Lagoon from June 2005 through May 2006, n.d.

including how it had calculated its expected impingement impacts.[4] Poseidon responded by acknowledging a calculation error in its results and revised its daily impingement estimate to be 3.43 lbs/day.[5] It also proposed revising its daily impingement calculations to adjust for flow and to delete two of the 52 samples, which Poseidon believed should be considered statistical outliers and not included in the calculations.

Regional Board staff disagreed with Poseidon's approach, and used several different statistical and flow-proportioned approaches to evaluate the data – e.g., include all or just 50 of the 52 samples, consider different power plant flow volumes, consider weather-related conditions during sampling, etc. The Regional Board's review showed that, depending on the approach used, impingement was expected to range from about 3.4 to 15.8 pounds per day (1.54 to 7.16 kg/day), which represents an annual range of from about one-half ton to almost three tons of fish.[6,7] In May 2009, the Board concluded that it did not need to determine the precise level of expected impingement but instead required as a condition of its Order that Poseidon monitor actual impingement impacts once operations begin and that Poseidon show through monitoring that the created or restored wetland mitigation sites required in the MLMP provide at least 10.3 pounds per day (4.7 kg/day) of fish productivity along with mitigating for the identified entrainment impacts. The Regional Board also clarified that Poseidon had based its stated intake velocities of 0.5 feet per second (fps) on a different location than had been assumed during Commission review, which could also lead to higher impingement rates.

Upon learning of the Regional Board's findings that the range of expected impingement impacts was higher than the level the Commission determined to be *de minimis*, Commission staff requested that Poseidon submit a permit amendment application to the Commission to address these increased adverse impingement impacts, and suggested Poseidon propose additional

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[4] Regional Board staff identified an apparent discrepancy between different tables in the study that suggested Poseidon had not adjusted its sample data for flow volumes and had not interpolated for the days between sampling events, both of which led to an incorrect determination of daily expected impingement rates.

[5] Poseidon states in its October 15, 2009 letter to Commission staff responding to the revocation request that "[w]hile the data presented in the Minimization Plan was accurate and complete, there was a math error in the consultant's calculation of the Daily Impingement Estimate in which the total amount of measured impingement at EPS was divided by 365 days rather than 52 weeks…"

[6] May 13, 2009, San Diego Regional Water Quality Control Board, Order No. R9-2009-0038 Amending Order No. R9-2006-0065 (NPDES No. CA0109223) Waste Discharge Requirements for the Poseidon Resources Corporation Carlsbad Desalination Project, accessed October 21, 2009 at http://www.waterboards.ca.gov/sandiego/board_decisions/adopted_orders/2009/R9_2009_0038_rev1.pdf

[7] The different analyses conducted by Commission staff and Regional Board staff were due in part to the different approaches taken by the Commission and the Board. The Commission's review focused on the effects of Poseidon's "stand-alone" operations – that is, the effects the desalination facility would cause when operating at 304 MGD while the power plant was not using its cooling water system. The Regional Board review focused on co-located operations – when both the power plant and desalination facility were operating – and considered the effects of different flow rates for the two facilities. It also distinguished between normal operations, when both facilities were operating, and operations during heat treatments, when the power plant clears its cooling system and which caused substantial impingement effects, but requires the temporary shutdown of the desalination facility. In both cases, however, the analyses focused on determining the expected impingement impacts caused during operating flows of 304 MGD.

mitigation as part of its application.[8] Poseidon responded that an amendment application is not necessary because in its view the updated estimate of the project's impingement impacts remain *de minimis* and insignificant and therefore no further mitigation is required. [9] Although Poseidon disagreed with Commission staff's position that additional mitigation acreage be provided, it proposed in a September 3, 2009, letter to voluntarily provide 11 acres of additional wetland restoration mitigation as part of the Commission-approved MLMP and subject to the MLMP's standards and requirements.[10]

B. Revocation Request

On October 9, 2009, the Surfrider Foundation, San Diego Coastkeeper, and Coastal Environmental Rights Foundation (collectively "Environmental Groups") filed with the Commission a joint request to revoke the Commission's approval of Coastal Development Permit E-06-013 granted to Poseidon on November 14, 2007. The Environmental Groups' stated grounds for revocation are summarized below in Section II.C. of this report and are provided in full in Exhibit 2.

In its October 15, 2009, response to the revocation request, Poseidon claims that the Coastal Environmental Rights Foundation is not a proper party to the revocation request and should be removed as a party from the revocation proceeding under Section 13106 of the Commission's regulations. Since the revocation request was submitted by the Surfrider Foundation and the San Diego Coastkeeper, who each raise the same contentions as the Coastal Environmental Rights Foundation, these contentions are validly before the Commission. Poseidon further argues that

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[8] April 29, 2009, e-mail from Tom Luster, CCC staff, to Peter MacLaggan, Poseidon.

[9] May 5, 2009, letter from Peter MacLaggan, Poseidon, to Tom Luster, CCC staff.

[10] However, Poseidon says it will withdraw the offer if:

(1) In any revocation request brought pursuant to Section 13105 of the Commission's regulations (Title 14, Division 5.5 of the California Code of Regulations (the "Regulations")), the Commission determines or Commission staff recommends that Poseidon's impingement calculation error or any of the issues raised in [the Commission's] May 6, 2009 letter to the Regional Board meets the grounds for revocation of Poseidon's Permit or requires additional mitigation beyond the scope of Poseidon's offer set forth above;

(2) In any extension proceeding pursuant to the Regulations Section 13169, the Commission determines or Commission staff recommends that Poseidon's impingement calculation error, any of the impingement issues analyzed by the Regional Board, or Poseidon's provision of the additional 11-acres as set forth above qualify as "changed circumstances"; or

(3) The Commission or the Commission staff determines that providing the 11 acres of additional wetland restoration mitigation cannot be accomplished voluntarily through this letter and instead will require an amendment to either the Permit under the Regulations Section 13166 or the MLMP.

If none of the events set forth in the above conditions occur, Poseidon agrees: (a) to provide the 11 acres of additional wetland restoration mitigation (at least 5.5 acres in Phase I and any remaining acres in Phase II, as defined above); (b) that the 11 acres would become part of the MLMP and would be fully enforceable under Permit Special Condition 8 and the MLMP; and (c) to waive the right to dispute that the 11 acres are fully enforceable by the Commission.[***Note:*** The May 6, 2009 letter referenced above is a letter from Commission staff to the Regional Board.]

since the Environmental Groups waited to file the revocation request about five months after the Regional Board findings described above, the request was not filed with "due diligence" and therefore must be denied under Section 13108 of the Commission's regulations. However, the Commission finds otherwise.

The Environmental Groups, relying on Commission staff's April 2009 request that Poseidon amend its permit and on Poseidon's May 14, 2009 submittal of a permit extension request, reasonably believed that their concerns would be timely considered in either a permit amendment or a permit extension hearing. However, in September 2009, when Poseidon offered the 11 acres of additional mitigation to address impingement impacts, it made clear that it had no intention of filing an amendment application. Additionally, within the past month, it became clear that Poseidon was close to satisfying its "prior to permit issuance" requirements and that a permit extension would not be necessary. When the Environmental Groups discovered that neither a permit amendment nor a permit extension hearing was likely, it filed the subject revocation request. Given the foregoing, the Commission finds that the revocation request was timely filed.

C. Contentions and Issue Analysis

1. Contention: Poseidon intentionally (a) withheld accurate and complete impingement data by excluding from the Commission's review two sampling events (January 12 and February 23, 2005) for which the recorded impingement was observed to be relatively higher than the other fifty sampling events, and (b) submitted an inaccurate, erroneous and incomplete impingement impacts analysis. Had this information been disclosed, the Commission would have placed different conditions on the CDP or denied the application.

Analysis: Staff's review shows that the information Poseidon provided in its submittals prior to the Commission's November 2007 project approval included impingement sampling results from all 52 sampling events. Poseidon also provided an expected daily impingement rate based on those sampling events and as described in the project's certified EIR. Later, Poseidon acknowledged a calculation error in its daily impingement rate, but there is no evidence that this was intentional. Therefore, pursuant to the analysis herein, the Commission finds this contention does not support revocation.

Poseidon hired the consulting firm, Tenera Environmental, to perform a one-year field study from June 2004 to June 2005 during which it would assess entrainment and impingement at the Encina Power Station's intake structure (the "Tenera Environmental Study").[11] In June 2007, Poseidon submitted to Commission staff, as part of its CDP application, a May 2007 Technical Memorandum from Tenera summarizing the results of this Study and providing an estimate of the impingement and entrainment of marine organisms that could be attributed to operating a 304 MGD desalination intake at the Encina Power Station. Poseidon also provided its June 2007 Revised Flow, Impingement and Entrainment Minimization Plan, which included a "Proposal for Information Collection" (PIC) describing how Tenera had conducted the impingement study.

[11] Tenera has conducted most of the entrainment and impingement studies in California coastal waters over the past decade and Commission staff has relied on these studies to determine impacts and mitigation needs at about a half-dozen power plant projects during that time.

The June 2007 Plan included a table showing the total number and weight of organisms collected during the 52 impingement sampling events (see Exhibit 3). It stated that "[t]he total daily weight of the impinged marine organisms when the desalination plant is operating on a stand-alone basis at 304 MGD and the power plant is not operating is estimated at 1.92 lbs/day (0.96 kg/day)." Additionally, the PIC stated that the sampling methodologies and analyses were derived from accepted studies done at other power plants along the coast.[12] The 0.96 kg/day figure is the same as reached in the project's certified EIR. These served as the primary bases for the Commission's findings that daily impingement would be less than 2.5 pounds per day.

As described previously, Regional Board staff later reviewed this same information using a different approach and asked Poseidon to clarify several elements of the impingement sampling and calculations. In reviewing the Board staff's request, Poseidon determined it had made a calculation error in its daily impingement rate and proposed a higher rate of 3.43 lbs/day (1.56 kg/day). It also proposed the Board accept different methods to determine impingement effects – e.g., deleting two of the higher sampling events as statistical outliers and applying different methods to weight samples. Board staff calculated expected impingement rates using the complete sampling data in different ways – e.g., it used weekly sampling results (instead of the overall species numbers and weights provided to the Commission), it used different statistical approaches to proportion flows between the power plant and desalination facility, etc. As a result, the Regional Board reached a different conclusion than the Commission about Poseidon's likely impingement effects, although both the Board and the Commission had available the same impingement sampling results.

Although Poseidon's correction of its calculation error resulted in higher impingement rates than initially presented to the Commission, we find no evidence that Poseidon intentionally presented inaccurate information to the Commission, and therefore find this contention does not support revocation.

2. Contention: Poseidon presented to the Regional Board in May 2009 "new, different and more complete information regarding Project intake velocities than those intentionally provided to the Commission in November 2007" and that this reveals Poseidon's intentional submission of inaccurate, incomplete, and erroneous information in connection with its CDP application. Had the information "been accurately presented to the Commission, it would have required additional or different conditions of the CDP or denied the application."

Analysis: Intake velocities can be measured at several locations and Poseidon's submittals describe one method to measure those velocities. Therefore, pursuant to the analysis herein, the Commission finds this contention does not support revocation.

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[12] The PIC states, at page 9-1, that "[t]he sampling methodologies and analysis techniques were derived from recent impingement and entrainment studies conducted for the AES Huntington Beach Generating Station (MBC and Tenera 2005) and the Duke Energy South Bay Power Plant (Tenera 2004). The studies at Huntington Beach were performed as part of the CEC California Environmental Quality Act (CEQA) process for permitting power plant modernization projects, while the South Bay project was for 316(b) compliance."

Poseidon will be using the Encina Power Station's existing intake structure to draw in seawater for the desalination plant (see Exhibit 4 for a diagram of the intake). The outer extent of the intake's two wing walls is 79 feet wide, and then narrows to 49 feet at its mouth where a set of four ten-foot wide bar racks (also called "trash racks") is separated by solid concrete supports. Each trash rack has vertical bars spaced 3-1/2 inches apart to screen large debris and marine life. The intake forebay then tapers into two 12-foot wide intake tunnels. From these tunnels, the seawater flow is split among four six-foot wide conveyance tunnels. Vertical traveling screens are located ahead of each of the power plant's pumps. The screens remove marine life and debris that has passed through the trash racks. Impingement of fish and other aquatic biota can occur therefore at two locations – the bar racks and the traveling screens.

The impingement rate for an intake is largely a function of water velocity. The U.S. EPA's Final Rule implementing Clean Water Act section 316(b) (33 U.S.C. § 1326(b)), establishes technology-based performance requirements for new power plant intake structures. 66 Fed. Reg. 65,256 (Dec. 18, 2001) (codified at 40 C.F.R. parts 9, 122, 123, 124 and 125). The maximum design through-screen velocity at each cooling water intake structure must be no more than 0.5 feet per second ("fps"). 40 C.F.R. §§ 125.94 & 125.99(a)(iii).[13] When velocities are below that level, fish are usually able to swim away from the pull of the intake. The through-screen velocity is measured at the point of impingement and is the average speed at which intake water passes through the open area of the intake screen (taking fouling into account) or other device against which organisms might be impinged or through which they might be entrained. In its section 316(b) regulations, the EPA uses the through-screen velocity as a component of "best technology available" for minimizing adverse environmental impacts. Along with through-screen velocity, the EPA also considers another type of velocity measurement when identifying potential impingement impacts – approach velocity, which is the velocity measured just in front of the screen face or at the opening of the cooling water intake structure in the surface water source.

The EIR for Poseidon's Carlsbad desalination project stated the project would have an intake flow velocity that would not exceed 0.5 fps and that it would operate consistent with EPA guidance for "best technology available" for cooling water intakes, and that under these operating conditions the project "would not result in significant impingement effects." In submittals to Commission and San Diego Regional Water Quality Control Board staffs, Poseidon defined its water flow commitment to be no greater than 0.5 fps at the "intake bar racks" or at the "entrance to the bar racks."[14] Commission staff interpreted Poseidon's commitment to be a maximum 0.5 fps water flow speed directly in front of the bar racks, where impingement would first occur. In November 2007, the Commission approved the project concluding that the project's intake velocity would be operated consistent with EPA guidance and that impingement impacts would be *de minimis.*

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[13] On August 4, 2004, EPA published its Final Rule for existing large power plant cooling water intake structures. On July 9, 2009, EPA suspended the Rule in response to the 2nd Circuit Court of Appeals decision in *Riverkeeper, Inc., v. EPA.* The Implementation Memo accompanying the suspension states that permits for such facilities should include conditions based on Best Professional Judgment pursuant to 40 CFR 401.14, which cites the continuing need to use best technology available.

[14] For example, in Exhibit B of its November 9, 2007, letter to Commission staff, Poseidon states that water velocities *at the intake bar racks* during stand-alone operations would be less than 0.5 ft/s.

Following the Commission's approval of the project, and during the Regional Board's review of Poseidon's Flow, Entrainment and Impingement Minimization Plan, a plan required by Poseidon's NPDES permit, the Commission staff, in consultation with Regional Board staff, discovered that a diagram of the intake that was not made available during the Commission's review showed Poseidon would exceed and could not meet the 0.5 fps velocity flow rate just in front of the bar racks.[15] Poseidon's response was that it has been consistent throughout the agencies' proceedings that the project's intake water flows would be 0.5 fps or less at the intake bar racks, and that Commission staff calculated the intake velocity at the wrong location. Poseidon recently provided a diagram of the intake structure showing that Poseidon is measuring its velocity at a location approximately 20 feet seaward of the bar racks (see Exhibit 5. Please note that Exhibit 5 includes an error – Poseidon's diagram shows an arrow labeled "Coastal Commission point of velocity measurement at outlet of the bar racks"; however, Commission staff assumed Poseidon was measuring its velocities just on the other side of those bar racks, at the point of impingement).

During review of Poseidon's permit application, Commission staff reasonably interpreted Poseidon's commitment to meet the 0.5 fps velocity standard "at the bar rack" or at the "entrance to the bar rack" to be at the point of impingement, directly in front of the bar rack, and not at a distance roughly 20 feet away. Also, by agreeing to meet EPA's "best technology available" standard, staff had no reason to believe Poseidon would measure the velocity rate at a location other than the point of impingement. Poseidon's proposed measurement point, which would use an intake "approach velocity" and not "through-screen velocity," is not "best technology available." As further support, the State Water Resources Control Board's proposed statewide policy on Clean Water Act Section 316(b) regulations for existing power plants recommends reducing the maximum through-screen design intake velocity to 0.5 fps or less.[16]

Nevertheless, this is a complex technical issue, and the EPA's guidance on the section 316(b) regulations recognizes that an intake's velocity can be measured at different locations, for example, the approach velocity can be measured just in front of the screen face or at the opening of the cooling water intake structure in the surface water source[17], all of which are biologically important (see, for example, 40 CFR 125.95(b)). Consequently, when this was presented to the Commission, there was the potential for different interpretations, and Poseidon's proposed measurement point is one of several locations that can be used to measure velocity. The Commission understood at the time of approval that Poseidon measured its expected velocities at the point of impingement at the bar racks and not at the entrance to the intake structure. However, the standard for revocation requires intentional inclusion of inaccurate, erroneous or incomplete information. The Commission does not have evidence of intent. Therefore, the Commission finds that this contention does not meet the grounds for revocation.

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[15] The calculation for determining the velocity of water moving through a pipe or confined channel, such as this intake, is the "fundamental flow equation" $Q=av$, where Q is the intake volume in cubic feet per second, a is the cross-sectional area of the channel in square feet, and v is the velocity in feet per second. The equation illustrates the relationship that the larger an intake's cross-section, the lower the velocity for a given intake volume.

[16] Because the Regional Board focused on co-located operations – i.e., with the power plant continuing its established operations – it did not address the question of where velocity should be measured.

[17] This is the location Poseidon uses to measure its intake velocity.

3. Contention: Poseidon intentionally submitted an incomplete and inaccurate description of the capacity of the proposed desalination facility. Poseidon's September 2009 submittal to the California Infrastructure and Economic Development Bank demonstrates a "clear intention" that Poseidon intends to expand the capacity of the plant beyond 50 MGD and therefore Poseidon's project description "intentionally included incomplete information, and was inaccurate."

Analysis: Staff's review shows that this contention is not supported by other documents in the record before the Commission. Therefore, pursuant to the analysis herein, the Commission finds this contention does not support revocation.

In CDP E-06-013, the Commission approved a seawater desalination plant that would produce up to about 50 MGD of potable water. If Poseidon intends to expand the capacity of the plant, it must first obtain an amendment to the permit. During review of an amendment request, the Commission would evaluate if there are new or additional effects on coastal resources caused by the project amendment request and consider if additional mitigation is needed to bring the project into conformity with the Chapter 3 policies of the Coastal Act.

As shown in the revocation request, Poseidon stated in its application to the California Debt Limit Allocation Committee that it would secure any issued bonds "by a pledge of any revenues generated by additional water sales over and above the precontracted capacity." However, Poseidon states in its October 15, 2009 response to the revocation request that it is not seeking a capacity increase and correctly states that neither its City of Carlsbad approvals nor its Coastal Commission approvals would allow such an increase. Therefore, this contention does not establish grounds for revocation of the permit under Section 13105 of the Commission's regulations.

D. Conclusion

For the reasons set forth above, the Commission finds that the request for revocation does not satisfy the requirements contained in Section 13105(a) and (b) of the Commission's regulations and therefore the revocation request shall be denied.

STATE OF CALIFORNIA---THE NATURAL RESOURCES AGENCY ARNOLD SCHWARZENEGGER, GOVERNOR

CALIFORNIA COASTAL COMMISSION
45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200
FAX (415) 904-5400

November 3, 2009
Permit: **E-06-013**

COASTAL DEVELOPMENT PERMIT

On November 15, 2007, by a vote of 9-3, the California Coastal Commission granted to Poseidon Resources Coastal Development Permit #E-06-013, subject to the attached standard and special conditions, for development consisting of:

Seawater desalination facility and associated pipelines.

The development is located at and near the Encina Generating Station in the City of Carlsbad, San Diego County.

Issued on behalf of the Coastal Commission on November 3, 2009.

PETER DOUGLAS
Executive Director

By: ALISON J. DETTMER
Deputy Director
Energy, Ocean Resources, and Federal Consistency Division

Acknowledgment:

The undersigned permittee acknowledges receipt of this permit and agrees to abide by all terms and conditions thereof.

The undersigned permittee acknowledges that Government Code Section 818.4, which states in pertinent part, that: "A public entity is not liable for injury caused by the issuance... of any permit..." applies to the issuance of this permit.

IMPORTANT: THIS PERMIT IS NOT VALID UNLESS AND UNTIL A COPY OF THE PERMIT WITH THE SIGNED ACKNOWLEDGMENT HAS BEEN RETURNED TO THE COMMISSION OFFICE (14 Cal. Admin. Code Section 13158(a).)

11/3/09
Date

Signature of Permittee or Representative

STANDARD CONDITIONS

1) **Notice of Receipt and Acknowledgment:** This permit is not valid until a copy of the permit is signed by the Permittee or authorized agent, acknowledging receipt of the permit and the acceptance of the terms and conditions, and is returned to the Commission office.

2) **Expiration:** Construction activities for the proposed project must be initiated within two years of issuance of this permit. This permit will expire two years from the date on which the Commission approved the proposed project if development has not begun. Construction of the development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made at least six months prior to the expiration date.

3) **Interpretation:** Any questions of intent or interpretation of any condition will be resolved by the Executive Director of the Commission (hereinafter, "Executive Director") or the Commission.

4) **Assignment:** The permit may be assigned to any qualified person, provided the assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5) **Terms and Conditions Run with the Land:** These terms and conditions shall be perpetual, and it is the intention of the Commission and the Permittee to bind all future owners and possessors of the subject property to the terms and conditions.

SPECIAL CONDITIONS

1) **Liability for Costs and Attorneys Fees:** The Permittee shall reimburse the Coastal Commission in full for all Coastal Commission costs and attorneys fees – including (1) those charged by the Office of the Attorney General, and (2) any court costs and attorneys fees that the Coastal Commission may be required by a court to pay – that the Coastal Commission incurs in connection with the defense of any action brought against the Coastal Commission, its officers, employees, agents, successors and assigns challenging the approval or issuance of this permit. The Coastal Commission retains complete authority to conduct and direct the defense of any such action against the Coastal Commission.

2) **Proof of Legal Interest:** PRIOR TO ISSUANCE OF THE PERMIT, the Permittee shall provide for Executive Director review and approval documentation of the Permittee's legal interest in all property within the coastal zone needed to construct and operate the project, including:
   - Lease(s) from the California State Lands Commission for structures on state tidelands. Any conflicts between conditions of the lease(s) and those adopted by the Coastal Commission shall be presented to the Coastal Commission for resolution.
   - Lease(s) or other forms of approval from the power plant owner allowing the Permittee to use portions of the power plant site and Agua Hedionda Lagoon.
   - Lease(s) or other forms of approval from the City of Carlsbad and other local governments for the project's water delivery pipelines.

3) **Lease and Deed Restriction:** PRIOR TO ISSUANCE OF THE PERMIT, the applicant shall provide to the Executive Director for review and approval documentation demonstrating that the applicant has executed and recorded against its leasehold interest(s) in the property governed by this permit a lease restriction (in which any private owner of the fee interest in such property shall join or to which it shall agree to be bound), in a form and content acceptable to the Executive Director (a) indicating that, pursuant to this permit, the California Coastal Commission has authorized development on the Property, subject to terms and conditions that restrict the use and enjoyment of the Property; and (b) imposing all of the Special Conditions of this permit as covenants, conditions and restrictions on the use and enjoyment of the Property. The restriction shall include a legal description of the Property. It shall also indicate that, in the event of an extinguishment or termination of the deed restriction for any reason, the Standard and Special Conditions of this permit shall continue to restrict the use and enjoyment of the Property so long as either this permit or the development it authorizes – or any part, modification, or amendment thereof – remains in existence on or with respect to the Property.

4) **Other Approvals:** PRIOR TO COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit to the Executive Director for review and approval documentation showing that the project has obtained final approvals for project construction and operation from the City of Carlsbad, the Regional Water Quality Control Board, the California Department of Health Services, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service, or documentation showing that these approvals are not needed.

5) **Assumption of Risk and Waiver of Liability:** The Permittee acknowledges and agrees, on behalf of itself and all successors and assigns: (i) that the project site may be subject to hazards from seismic events, liquefaction, storms, waves, floods and erosion; (ii) to assume the risks to the Permittee and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (iii) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; and (iv) that any adverse effects to property caused by the permitted project shall be fully the responsibility of the landowner.

6) **Limits of Development**: This permit authorizes the construction and operation of the Poseidon Carlsbad Desalination Project and associated infrastructure as described in the project description of this staff report, as clarified and modified by these conditions.

7) **Final Plans**: PRIOR TO COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit to the Executive Director for review and approval final plans for the project components located in the coastal zone. The Permittee shall undertake development in accordance with the approved plans and any changes shall be reported to the Executive Director. No material changes within the coastal zone shall occur without a Commission-approved amendment to this coastal development permit unless the Executive Director determines that no amendment is necessary. Changes to the project requiring review for amendment would include changes in the physical, operational, or delivery capacity increases, or extension of water supply distribution pipelines beyond those shown on the final plans.

8) **Marine Life Mitigation Plan:** PRIOR TO ISSUANCE OF THE PERMIT, the Permittee shall submit to and obtain from the Commission approval of a Marine Life Mitigation Plan (the Plan) that complies with the following:
   a) Documentation of the project's expected impacts to marine life due to entrainment and impingement caused by the facility's intake of water from Agua Hedionda Lagoon. This requirement can be satisfied by submitting a full copy of the Permittee's Entrainment Study conducted in 2004-2005 for this project.
   b) To the maximum extent feasible, the mitigation shall take the form of creation, enhancement, or restoration of aquatic and wetland habitat.
   c) Goals, objectives and performance criteria for each of the proposed mitigation sites. It shall identify specific creation, restoration, or enhancement measures that will be used at each site, including grading and planting plans, the timing of the mitigation measures, monitoring that will be implemented to establish baseline conditions and to determine whether the sites are meeting performance criteria. The Plan shall also identify contingency measures that will be implemented should any of the mitigation sites not meet performance criteria.
   d) Requires submittals of "as-built" plans for each site and annual monitoring reports for no less than five years or until the sites meet performance criteria.
   e) Defines legal mechanism(s) proposed to ensure permanent protection of each site – e.g., conservation easements, deed restriction, or other methods.

   The Permittee shall comply with the approved Plan. Prior to implementing the Plan, the Permittee shall submit a proposed wetlands restoration project that complies with the Plan in the form of a separate coastal development permit application for the planned wetlands restoration project.

9) **Change in Seawater Withdrawal:** If at any time during the life of the project Poseidon proposes or is required to withdraw more than an average flow of 304 MGD of seawater, it must obtain first an amendment to this permit.

10) **Energy Minimization and Greenhouse Gas Reduction Plan:** PRIOR TO ISSUANCE OF THE PERMIT, the Permittee shall submit to the Commission a Revised Energy Minimization and Greenhouse Gas Reduction Plan that addresses comments submitted by the staffs of the Coastal Commission, State Lands Commission and the California Air Resources Board. The permit shall not be issued until the Commission has approved a Revised Energy Minimization and Greenhouse Gas Reduction Plan after a public hearing.

11) **Public Access Enhancements:** PRIOR TO COMMENCEMENT OF OPERATIONS, Poseidon shall cause to be dedicated, in accordance with the City of Carlsbad's Precise Development Plan PDP 00-02, the below-described parcels of land. The dedications shall be in the form of easements, title transfers, and/or deed restrictions, whose purpose is to further Coastal Act goals of maximizing public access and recreational opportunities along the coast in the South Carlsbad Coastal Resource Redevelopment Area and maintaining, restoring and enhancing marine resources. The four sites are:
   - Fishing Beach: public access and parking easement in favor of the City of Carlsbad covering approximately 2.4 acres of land along the west shore of Agua Hedionda Lagoon.

- Bluff Area: approximately 10.2 acres of land on the west side of Carlsbad Boulevard opposite the power plant, which shall be dedicated in fee title to the City of Carlsbad for recreational and coastal access uses.
- Hubbs Site: approximately 2 acres of land along the north shore of Agua Hedionda Lagoon to be used for a fish hatchery, aquatic research, and public access, which shall be deed restricted to uses such as fish hatchery, aquatic research, and trails.
- South Power Plant Parking Area: an access easement over approximately 0.3 acres of land on the east side of Carlsbad Boulevard near the south entrance of the power plant that shall be dedicated to the City of Carlsbad for public parking.

12) **Dredging:** This permit does not authorize dredging that may be needed to maintain flows to the desalination facility's intake structure. The Permittee shall submit separate coastal development permit applications for proposed dredging operations.

13) **Visual Resources:** PRIOR TO COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit to the Executive Director for review and approval a Screening Plan. Desalination plant exterior mechanical equipment and facilities, including tanks, heating, air conditioning, refrigeration equipment, plumbing lines, duct work and transformers, shall be screened from view on all sides visible to the public. The design and material used for screening shall be architecturally compatible with the building.

14) **Lighting Plan**: PRIOR TO COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit a Lighting Plan to the Executive Director for review and approval. Exterior lighting for the desalination facilities shall serve the purpose of operations, security and safety only. The Lighting Plan shall demonstrate that project lighting is shielded from surrounding areas, and that only the minimum amount of lighting required for safety purposes is provided to avoid adverse effects on surrounding areas. In general, lighting fixtures shall be shielded downward and away from the ocean, Lagoon and adjacent properties. Construction of the desalination plant and related facilities and improvements shall be in conformance with the approved plan.

15) **Construction Plan:** PRIOR TO COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit to the Executive Director for review and approval a Construction Plan. The Construction Plan shall identify the specific location of all construction areas, all staging areas, and all construction access corridors in site plan view in the coastal zone. The Plan shall identify any expected disruptions to public access to the shoreline and shall include measures to avoid, minimize, or mitigate for those disruptions.

    The Plan shall also identify the type and location of erosion control/water quality best management practices that will be implemented during construction to protect coastal water quality, including the following:
    - Silt fences, or equivalent apparatus, shall be installed at the perimeter of the construction areas to prevent construction-related runoff and/or sediment from entering the dunes and/or the Pacific Ocean.
    - Grading and land alteration outside of the approved construction zone is prohibited.

- Equipment washing, refueling, and/or servicing shall not take place on the beach or sandy dune area. All construction equipment shall be inspected and maintained at an off-site location to prevent leaks and spills of hazardous materials at the project site.
- The construction site shall maintain good construction housekeeping controls and procedures (e.g., clean up all leaks, drips, and other spills immediately; keep materials covered and out of the rain (including covering exposed piles of soil and wastes); dispose of all wastes properly, place trash receptacles on site for that purpose, and cover open trash receptacles during wet weather; remove all construction debris from the beach).
- All erosion and sediment controls shall be in place prior to the commencement of construction as well as at the end of each workday. A copy of the approved Construction Plan shall be kept at the construction job site at all times and all persons involved with the construction shall be briefed on its content and meaning prior to commencement of construction. The Permittee shall notify the Executive Director at least three working days in advance of commencement of construction, and immediately upon completion of construction. The Permittee shall undertake construction in accordance with the approved Construction Plan. Any proposed changes to the approved Construction Plan shall be reported to the Executive Director. No material changes to the approved Construction Plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is necessary.

16) **Storm Water Pollution Prevention Plan:** PRIOR TO COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit for Executive Director review and approval a Storm Water Pollution Prevention Plan (SWPPP). At minimum the SWPPP shall include the following Best Management Practices (BMPs):
    - Gravel bags, silt fences, etc. shall be placed along the edge of all work areas as determined appropriate by the City's construction inspector in order to contain particulates prior to contact with receiving waters.
    - All concrete washing and spoils dumping will occur in a designated location.
    - Construction stockpiles will be covered in order to prevent blow-off or runoff during weather events.
    - A pollution control education plan developed by the General Contractor and implemented throughout all phases of development and construction.
    - Severe weather event erosion control materials and devices shall be stored onsite for use as needed.

17) **Water Quality Technical Report:** PRIOR TO COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit for Executive Director review and approval a Water Quality Technical Report as specified in the City of Carlsbad Standard Urban Stormwater Mitigation Plan (April 2003) (Carlsbad SUSMP) for the post construction desalination facility, prepared by a licensed Civil Engineer, which shall include plans, descriptions and supporting calculations. The Storm Water Management Plan shall incorporate all feasible Best Management Practices (BMPs) designed to reduce, to the maximum extent practicable, the volume, velocity and pollutant load of stormwater leaving the developed areas of the site. The plan shall include the following criteria:
    - Post-Development peak runoff rates and average volumes shall not exceed pre-development conditions.

- Runoff from all parking areas, turnouts, driveways and other impermeable surfaces (e.g., roofs) shall be collected and directed through a system of structural BMPs including vegetated and/or gravel filter strips or other media filter devices or other equivalent means. The filter elements shall be designed to 1) trap sediment, particulates and other solids and 2) remove or mitigate contaminants through infiltration and/or biological uptake. The drainage system shall also be designed to convey runoff in excess of this standard from the developed site in a non-erosive manner.
- Provisions for maintaining the drainage and filtration systems so that they are functional throughout the life of the approved development. Such maintenance shall include the following: 1) the drainage and filtration system shall be inspected, cleaned and repaired prior to the onset of the storm season, but not later than September 30th each year and 2) should any of the project's surface or subsurface drainage/filtration structures fail or result in increased erosion, the applicant/landowner or successor-in-interest shall be responsible for any necessary repairs to the drainage/filtration system and restoration of the eroded area.
- A drainage system approved by the City Engineer to ensure that runoff resulting from 10-year frequency storms of 6 hours and 24 hours duration under developed conditions, are equal to or less than the runoff from a storm of the same frequency and duration under existing developed conditions. Both 6-hour and 24-hour storm durations shall be analyzed to determine the detention basin capacities necessary to accomplish the desired results.

The Permittee shall implement and maintain the Plan for the life of the project.

COASTAL ENVIRONMENTAL RIGHTS FOUNDATION

SAN DIEGO COASTKEEPER

October 9, 2009

Peter Douglas
Executive Director
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Via Electronic Mail
pdouglas@coastal.ca.gov, tluster@coastal.ca.gov

RECEIVED
OCT 15 2009
CALIFORNIA COASTAL COMMISSION

RE: Poseidon/City of Carlsbad Desalination Project
Request for Revocation of Coastal Development Permit Application E-06-013

Please accept this request for revocation ("Request") of Poseidon Resources (Channelside) LLC's (Poseidon) Coastal Development Permit (CDP), Application E-06-013, on behalf of Surfrider Foundation, San Diego Coastkeeper, and Coastal Environmental Rights Foundation (collectively "Environmental Groups"). Environmental Groups request the Coastal Commission revoke the existing CDP, or alternatively the application if the CDP has not yet issued. 14 CCR § 13104.

As detailed below, based upon any one of Poseidon's numerous instances of intentional submission of inaccurate, incomplete, or erroneous information, adequate grounds for revocation exist. Environmental Groups therefore request a full hearing before the Commission on the Request.

I. Background

Poseidon's proposed project is a seawater desalination facility to be constructed and operated at the site of the Encina Power Station ("EPS") in Carlsbad, San Diego County.[1] The Carlsbad Desalination Project ("Project") will withdraw about 304 million gallons per day (MGD) of water from Agua Hedionda Lagoon. The project was originally proposed to co-locate with EPS. The Project will require 104 MGD of the EPS discharge to produce 50 MGD of potable water. The remaining 200 MGD are needed to dilute the Project's brine discharge, a byproduct of the desalination process.

In September 2007, the owner of EPS announced its intention to shut down the existing plant, and replace it with a dry-cooled plant that will not use seawater for cooling.[2] As a result, the Commission analyzed the Project as a "stand-alone" as opposed to a co-located Project—attributing all impacts under the Coastal Act to the Project instead of the EPS.[3]

[1] EPS is a once-through cooling (OTC) power plant that uses water to cool its generators. It draws in water from Agua Hedionda Lagoon, which passes "once-through" the power plant, absorbs heat from the generators, and is discharged thereafter. Coastal Commission Final Adopted Findings for CDP Approval, August 6, 2008, p. 23-25.
[2] The new power plant is the Carlsbad Energy Center Project, currently undergoing review by the California Energy Commission (CEC). See CEC Status Report, September 2009. (attached)
[3] Coastal Commission Final Adopted Findings for CDP Approval, August 6, 2008, p. 2.

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On November 14, 2007, against staff and the Executive Director's recommendation, the Commission approved the CDP for the Project.[4] In addition to standard conditions of approval, the Commission imposed 17 special conditions upon the Project through the CDP.[5] Specifically, pursuant to Coastal Act sections 30230 and 30231, the Commission imposed a special condition, requiring a Marine Life Mitigation Plan ("MLMP") for restoration of wetlands. The Commission found the Project would result in marine life impacts requiring, at minimum, 37 acres of wetland mitigation.[6] Among other things, this special condition required submission of Poseidon's Entrainment Study (conducted in 2004-2005) for creation of the MLMP based upon the results thereof.[7]

Because the Commission voted against the recommendation of staff, new findings were required. 14 CCR 13096(c). Commission staff and Poseidon disagreed about the Commission's basis for approval, necessitating staff's preparation of five different versions of the findings before final approval.[8] On August 6, 2008, the Commission approved findings for its November 14, 2007 CDP approval. The same day, the Commission also approved Poseidon's MLMP and an Energy Minimization and Greenhouse Gas Reduction Plan ("GHG Plan"), which was also required by special condition of the CDP.[9] As the Commission made revisions to Poseidon's MLMP and GHG Plans as submitted, the Commission approved final findings for its August 6, 2008 decisions on December 10, 2008. [10]

Although the Project received a National Pollution Discharge Elimination System (NPDES) Permit from the San Diego Regional Water Quality Control Board ("Regional Board"), Poseidon was required to prepare a *Flow, Entrainment and Impingement Minimization Plan* (Flow Plan) as a condition of the NPDES permit.[11] Poseidon prepared numerous versions of the Flow Plan, but provided the Commission with a draft of the plan during its review of the CDP in November 2007. Subsequent to the Commission's approval of the CDP, Poseidon revised and finalized the Flow Plan. The Regional Board gave final approval of the Flow Plan for co-located operations on May 13, 2009.[12]

II. Request for Revocation and Initial Review

Section 13105 of the Commission's regulations defines the "grounds" for consideration of a request for revocation:

> *Intentional inclusion of* ***inaccurate, erroneous, or incomplete information*** *in connection with a coastal development permit application, where the commission finds that accurate and complete*

[4] November 2, 2007 Coastal Commission Recommended Findings, p.3; http://www.coastal.ca.gov/meetings/mtg-mm7-11.html
[5] Coastal Commission Final Adopted Findings for CDP Approval, August 6, 2008, p. 8-13.
[6] Coastal Commission Final Adopted Findings for CDP Approval, August 6, 2008, p. 3.
[7] *Id.* at 10.
[8] Findings prepared: on February 21, 2008 for hearing on March 5, 2008; on April 24, 2008 for hearing on May 8, 2008; on May 22, 2008 for hearing June 12, 2008; on July 17, 2008 for hearing on August 6, 2008; on August 5, 2008 as an addendum to July 17, 2008 findings.
[9] http://www.coastal.ca.gov/meetings/mtg-mm8-8.html
[10] http://www.coastal.ca.gov/meetings/mtg-mm8-12.html
[11] Approved on August 16, 2006. R9-2006-0065(NPDES No. CA0109223); Flow Plan required by VI.C.2.e.
[12] Order No. R9-2009-0038, subsequently appealed to and being reviewed by the State Water Resources Control Board

> *information would have caused the commission to require additional or different conditions on a permit or deny an application.*

14 CCR 13105 (emphasis added). Additional regulations further clarify parties who may submit a Request for Revocation and the process for initial review of the Request. Eligibility to Request Revocation:

> *Any person who **did not have an opportunity to fully participate in the original permit proceeding by reason of the permit applicant's intentional inclusion of inaccurate information** or failure to provide adequate public notice as specified in section 13105 may request revocation of a permit by application to the executive director of the commission specifying, with particularity, the grounds for revocation.*

14 CCR 13106 (emphasis added). In regard to initial review:

> *The executive director shall review the stated grounds for revocation and, **unless the request is patently frivolous and without merit**, **shall** initiate revocation proceedings. The executive director may initiate revocation proceedings on his or her own motion when the grounds for revocation have been established pursuant to the provisions of Section 13105.*

Id. As detailed below, the grounds for revocation are easily met. Poseidon intentionally included inaccurate, erroneous and/or incomplete information during the proceedings before the Commission that, had information been fully disclosed, would have required, at a minimum, different conditions of approval. Environmental Groups have been denied an opportunity to fully participate in the original proceedings by reason of Poseidon's submittal of this inaccurate, erroneous, and/or incomplete information.[13] The information, detailed in this Request for Revocation is significant—it cannot be dismissed as "patently frivolous and without merit". Therefore, the Executive Director, in accordance with the clear language of the Commission's regulations, must initiate revocation proceedings.[14]

III. Applied Elements Of The Request For Revocation

Detailed below are specific instances of Poseidon's intentional submittal of information mandating a revocation hearing.

1. Intentionally Withheld Accurate and Complete Impingement Data

Several Coastal Act provisions require the Commission to review the Project's impingement impacts for consistency with Coastal Act marine resource protection mandates. The Project will require 304 MGD of water from Agua Hedionda Lagoon, which is included in the Department of Fish and Game's (DFG) list

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[13] Environmental Groups provided both written and oral testimony throughout the Commission's review of the CDP, and participated at the Commission's November 14, 2007 and August 6, 2008 hearings on the matter. Most recently, Environmental Groups anticipated objecting to the settlement agreement reached by Poseidon and staff as a result of AB 1570. The agenda item was withdrawn by Poseidon at the October 7, 2009 meeting, prompting Environmental Groups to pursue this Request.

[14] The term "shall" in the regulations is commonly interpreted to limit the discretion of the decisionmaker. It is effectively an affirmative order.

of 19 high-priority coastal wetlands. DFG also manages a Marine Ecological Reserve within the Lagoon that provides habitat for a number of listed sensitive species.[15]

> Agua Hedionda provides extensive habitat values for a wide variety of marine biological resources and other wildlife. Surveys from 1994-95 found that the Lagoon and nearby wetlands supported 29 fish species and 143 species of benthic invertebrates. Agua Hedionda provides habitat for important commercial and recreational fish species, special listed species, and forage fish used by these other species. Fish in the Lagoon include California halibut, which use the Lagoon as an important nursery area, garibaldi, Northern anchovy, and various gobies, blennies, and others. The Lagoon formerly provided habitat for the endangered tidewater goby *(Eucyclogobius newberry)*. The U.S. Fish and Wildlife Service determined in 2006 that the goby's absence from the Lagoon is due to habitat loss and other anthropogenic factors. The Lagoon is also identified as Essential Fish Habitat (EFH), pursuant to the Magnuson-Stevens Act described above.[16]

The Lagoon is also home to 81 different bird species, including 12 listed as sensitive. Many of these species rely on marine life within the Lagoon and adjoining wetlands.[17]

The Commission is charged with protecting marine resources under the Coastal Act.

> Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

PRC § 30230. The Coastal Act also requires biological productivity and water quality to be maintained and where feasible restored.

> The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored...

PRC § 30231.

Poseidon intentionally submitted inaccurate, erroneous, and/or incomplete information pertaining to the Commission's consideration of the Project's impingement impacts to marine life within Agua Hedionda Lagoon. Impingement occurs "when fish or other organisms are caught on an intake's screening system and are either killed or injured."[18]

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[15] Coastal Commission Final Adopted Findings for CDP Approval, August 6, 2008, p. 16.
[16] Coastal Commission Final Adopted Findings for CDP Approval, August 6, 2008, p. 38.
[17] *Id.*
[18] Coastal Commission Final Adopted Findings for CDP Approval, August 6, 2008, p. 39.

By failing to provide the Commission and the public with accurate information, necessary for both meaningful analysis and true evaluation of the Project under the Coastal Act, Poseidon impeded the public's ability to fully participate in the original permit proceedings. 14 CCR § 13106. Further, had Poseidon presented the Commission information that was not incomplete, inaccurate, and/or erroneous, it would have denied the application, or alternatively imposed different or additional conditions upon the CDP. 14 CCR 13105.

a. Poseidon Intentionally Omitted the Full Impingement Data Set Before the Commission

During the development of the staff report for the Regional Board, and subsequent to the Coastal Commission vote on the CDP, Regional Board staff discovered that the impingement report submitted by Poseidon to the Coastal Commission did not include all the relevant data.[19] Poseidon failed to provide Commission staff with the full impingement dataset. Not until the Regional Board was able to get this data from Poseidon did the full dataset to light.[20]

Before the Regional Board, Poseidon presented the 2004-2005 EPS sampling data, comprised of 52 sample events. Poseidon excluded "two of the sample events, January 12 and February 23" for which "the recorded impingement was observed to be relatively higher than on the other fifty days."[21] In March 2009, Poseidon commissioned numerous studies and statements from experts, to support the exclusion of the two highest impingement data points. Specifically, Poseidon intentionally omitted two data points from the 52 total data points.[22]

> However, staff is correct that there is an error in the calculation used to convert this information to a daily amount. In response to staff's request, we have revised the estimate of the daily impingement effect of the intake operations. Figure 1 (below) shows the average daily flow rate and impinged biomass for 50 of the 52) weekly surveys collected during the impingement survey period. The two remaining samples were outliers and therefore were not included in the analysis in order to get more accurate statistical correlation of the impingement results.[23]

Tellingly, Poseidon responded to the discovery of the inaccurate, erroneous and incomplete information by admitting the consultants "intentionally" deleted data from the complete dataset. Poseidon argued this intentional manipulation of the data was to remove "outlier" data. That argument was not convincing either to the Regional Board staff or to the Coastal Commission staff.[24]

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[19] *Flow, Entrainment and Impingement Minimization Plan* Attachment 9, available at http://www.waterboards.ca.gov/sandiego/press_room/announcements/carlsbad_desalination/updates_3_27_09/3_27_09%20Min%20Plan%20Att%209.pdf

[20] Regional Board staff also failed to elicit impingement data from Poseidon. However, the Regional Board required the full impingement information through its April 2009 conditional approval of the *Flow, Entrainment and Impingement Minimization Plan*. Resolution No. R9-2008-0039, p. 3.

[21] *Id.*

[22] *Flow, Entrainment and Impingement Minimization Plan* Attachment 9

[23] Email communication from Peter MacLaggan, Poseidon Resources, to Chiara Clemente, Regional Board staff, on April 30, 2009 (attached).

[24] See attached Regional Board staff report; see also attached letter from Director Douglas to Regional Board.

The Regional Board's expert, Dr. Raimondi, and Regional Board staff reviewed this data and Poseidon's reports, finding Poseidon's arguments unconvincing, and lacking scientific basis.[25] Importantly, the data used to calculate impingement impacts was collected in 2004-2005. Therefore, the impingement data existed at the time of the Commission's November 2007 CDP approval. Poseidon intentionally elected not to provide this data to the Commission.

Thus, the Coastal Commission, the Science Advisory Panel convened to review the MLMP required pursuant to the CPD, the Commission's expert, and the public were never presented this data, nor given an opportunity to comment upon it during the Commission's review of the CDP.

The omitted relevant information would have resulted in much higher impingement estimates, as detailed below. By Poseidon's own admission, it intentionally withheld the complete and accurate dataset and incorrectly calculated the marine life mortality.[26]

b. Poseidon's Technical Expert Intentionally Submitted an Inaccurate, Erroneous, and Incomplete Impingement Impacts Analysis

At the time of CDP approval, Poseidon represented that impingement impacts would be .96 kg or (2.12 lbs) of fish per day, which the Commission found *de minimis*.

> The *Flow, Entrainment and Impingement Minimization Plan* provides that the project, when operating stand-alone, is expected to impinge approximately 2.12 pounds of fish per day, which Poseidon provides is less than the average daily consumption of an adult pelican (more than 2.5 pounds per day), which for this project the Commission considers de minimis and insignificant.[27]

However, in May 2009, Poseidon admitted the impingement calculation was erroneous.[28] Poseidon opined that a more accurate impingement estimate is 1.56 kg/day, or 3.43lbs/day.[29] However, the Regional Board and Coastal Commission's expert, Dr. Raimondi, found impingement calculations actually resulted in impingement rates of 4.7kg/day at a 50 percent confidence limit, 7.4 kg/day at an 80 percent confidence limit, and 9.1 kg/day at a 95 percent confidence limit.[30] Regardless of the figures used, it is clear Poseidon did not provide accurate data or calculations to the Commission at the time of CDP approval, or thereafter during review of the MLMP.[31]

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[25] Statement of Dr. Pete Raimondi, April 1, 2009, p. 1-2, 6-7.; Regional Board Staff Report, March 27, 2009, p. 13-14; Supplemental Regional Board Staff Report, April 3, 2009, p. 3-10.

[26] Regional Board Staff Report, March 27, 2009, p. 13-14; Supplemental Regional Board Staff Report, April 3, 2009, p. 3-10.

[27] Coastal Commission Final Adopted Findings for CDP Approval, August 6, 2008, p. 39.

[28] See September 3, 2009 Letter from Latham and Watkins to Executive Director Douglas, p. 1. (attached)

[29] *Id.*

[30] Statement of Dr. Pete Raimondi, April 1, 2009, p.3, 5.

[31] Because Poseidon did not provide the Commission with its full entrainment study, a condition of the CDP was creation of a Marine Life Mitigation Plan. CDP E-06-013, special condition 8.

Commission staff learned of the calculation error and wrote to the Regional Board regarding such developments.

> In approving the MLMP, the Commission relied on Panel member recommendations regarding the type of mitigation needed to address Poseidon's entrainment impacts and adopted Panel member Dr. Pete Raimondi's recommended 80% certainty level (instead of Poseidon's suggested 50% level) and his recommended 55.4 acres of mitigation acreage (instead of Poseidon's suggested 37 acres). To be consistent with the Commission's previous findings and MLMP approval, we expect to have the Panel conduct a similar review of Poseidon's updated impingement levels and proposed mitigation approach as part of the upcoming review of Poseidon's permit amendment.[32]

At the time, the Commission expected Poseidon would come back to the Commission for a permit amendment because of changes proposed to the Project, delivery pipelines, new intake velocities, and the corrected, amended impingement calculations.

> We have asked Poseidon to submit an application to amend its permit to address these issues. We expect that a prompt and complete reply by Poseidon will not unduly delay your decision or the project; however, we are concerned that unless these inaccuracies are corrected, the Board may inadvertently adopt a decision that may not be consistent with the Commission's approved Findings and MLMP. [33] (emphasis added).

Critically, an application to amend was never pursued. Instead Poseidon worked with the California Senate to draft an "Urgency Bill" to "gut and amend" an existing veterans' benefits bill – AB 1570. [34] The bill would have effectively made a project-specific exception to the requirement of an extension hearing for Poseidon, should Poseidon fail to meet required conditions of the CDP before a November 2009 deadline.

Poseidon's end-run legislation was promptly suspended due to broad public opposition,[35] and instead, the applicant worked out a purported "settlement agreement" with Coastal Commission staff. This unsigned bullet-point list was negotiated and finalized under threat of legislation, outside the Commission and the public's purview.

With the Settlement Agreement in place, Commission staff is thus no longer pursuing a CDP amendment.[36] Nonetheless, the Commission acknowledged the information was indeed new to the Commission.

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[32] Coastal Commission Letter to Regional Board, May 6, 2009, p. 4. (attached)

[33] *Id.* at p.1-2.

[34] Agreement and Offer Letter from Latham and Watkins to Executive Director (attached)

[35] Over 100 groups around the state signed an opposition letter to AB 1570 (attached).

[36] It should be noted, the Commission staff has gone to extremes to ensure the issuance of the CDP before the regulatory expiration date, as specified in the CDP. Staff has also abandoned attempts to require CDP amendments as allowed under CDP Special Condition 7. Staff similarly no longer attempts to uphold the Special Condition 6 limitation of application of the CDP to permitting construction and operation of the "Project and associated infrastructure as described in the project description of [the] staff report, as clarified and modified by [CDP] conditions."

Further, once this information was disclosed, Poseidon offered to compensate for the erroneous report and inaccurate dataset by "voluntarily" committing to an additional 11 acres of wetlands mitigation.[37] In other words, Poseidon unilaterally, and outside of the Commission or the public's purview, attempted to remedy the fact "*...that accurate and complete information would have caused the commission to require additional or different conditions on a permit or deny an application.*" 14 CCR § 13105.

Poseidon intentionally provided inaccurate, erroneous and/or incomplete information in connection with its CDP; and that information, had it been disclosed, would have led to different conditions placed on approval of the CDP or denial of the application.[38]

Further, the inaccurate, erroneous, and/or incomplete impingement information, as well as the additional wetlands restoration offered to replace the marine life mortality associated with the omitted data, was not available to the public, and consequently Environmental Groups were denied the opportunity to "fully participate in the proceedings."[39] Given these facts and circumstances, the Executive Director must proceed with a revocation hearing and suspend the CDP until such a hearing is held.[40]

2. Intentionally Submitted Inaccurate Information on "Through Screen Velocity"

During the Regional Board's review of Poseidon's *Flow, Entrainment, and Impingement Minimization Plan* in May 2009, Poseidon presented new, different, and more complete information regarding Project intake velocities than those intentionally provided to the Commission in November 2007.[41] After learning of the inconsistencies, the Commission's Executive Director informed the Regional Board that Poseidon would have to return to the Commission.

> Poseidon has changed its project description so that its expected intake velocities during both standalone and co-located operations are above the velocity range reviewed by the Coastal Commission. The **higher velocities, and the higher adverse impingement impacts** that accompany them, require Poseidon to return to the Commission for further action on its coastal development permit.[42] (emphasis added)

The letter contained an attachment, showing Commission staff velocity calculations for Poseidon's operations. The calculations resulted in velocities 40 to 250 percent greater than the originally represented .5 feet per second. [43]

> Based on information Poseidon provided to the Regional Board in January 2009, pumping 304 million gallons per day of seawater through the Encina intake (by either

[37] See Agreement and Offer Letter from Latham and Watkins to Executive Director (offering additional restoration acreage as part of a "settlement agreement.")
[38] 14 CCR section 13105
[39] Id. at section 13106
[40] Id. at section 13107
[41] Coastal Commission Final Adopted Findings for CDP Approval, August 6, 2008, p. 39. ("The impingement rates for a plant's intake system are largely a function of water velocity.")
[42] Coastal Commission Letter to Regional Board, May 6, 2009, p. 1. (attached)
[43] *Id.* at p.6-7.

> Poseidon or the power plant operator) **will always result in velocities higher than 0.5 feet per second at the intake trash racks.**[44] (emphasis added)

In granting the CDP in 2007, the Commission relied upon Poseidon's draft *Revised Flow, Entrainment, and Impingement Minimization Plan*, an earlier version of the one ultimately adopted by the Regional Board in May 2009.

> The primary method of avoiding and minimizing impingement is to maintain intake water velocities below 0.5 feet per second (fps), a rate that the U.S. EPA considers to be "best available technology" for cooling water intakes. This velocity represents the rate from which most fish species are able to swim away from intake screens and avoid being impinged....However, in Exhibit B of its November 9, 2007 letter to Commission staff, Poseidon states that water velocities at the intake bar racks during stand-alone operations would be less than 0.5 fps, which would conform to the U.S. EPA's "Best Technology Available" standard for minimizing impingement impacts. Additionally, as noted previously, Poseidon has stated it intends to apply for an "incidental take permit" from NMFS. With these measures, the project is not likely to cause substantial adverse impingement effects. Furthermore, Poseidon's Exhibit B and its *Revised Flow, Entrainment, and Impingement Minimization Plan* state that it will install variable frequency drives to further decrease water flow intake velocities. With these low velocities, the already de minimis impingement impacts that Poseidon's project may cause are expected to be further reduced and thus mitigated to an insignificant level and consistent with Coastal Act Sections 30230 and 30231.[45]

The disclosure of data before the Regional Board in 2009, known to Poseidon at the time it presented data to the Coastal Commission in 2007, now reveals Poseidon's intentional submission of inaccurate, incomplete, and erroneous information in connection with its CDP application.

The Commission and the public relied upon Poseidon's ***inaccurate, erroneous, or incomplete*** velocity calculations in determining impingement impacts would be *de minimis*. Further, the various safeguards mentioned above, including the installation of variable frequency drives, and an incidental take permit from NMFS, are no longer applicable. Poseidon is no longer applying for a NMFS incidental take permit. Rather, Commission staff is accepting the power plant's application for such a permit as a substitute for Poseidon's fulfillment of this CDP condition.[46]

> Poseidon's proposed project may result in the "take" of species protected under the Marine Mammal Protection Act through entrapment of seals or other marine mammals in the power plant intake. In a June 4, 2007 letter to Commission staff, Poseidon indicated it would apply for an independent "Incidental Harassment Authorization" ("incidental take" permit) under the Marine Mammal Protection Act for any impacts to sea lions, seals, or any other protected marine mammals resulting from construction or operation

[44] *Id.* at p.6.

[45] Coastal Commission Final Adopted Findings for CDP Approval, August 6, 2008, p. 46.

[46] CDP E-06-013, special condition 4 requires final approvals from NMFS. See also, Commission letter to Poseidon, Status of Condition Compliance, September 21, 2009, p.6 (January 2009 letter from power plant owner stating EPS has applied for incidental take permit as compliance with condition).

> of the project. During review of Poseidon's application, the National Marine Fisheries Service would engage in consultation under Section 7 of the federal Endangered Species Act to ensure that the project will not jeopardize the continued existence of any species listed as threatened or endangered under the Act. Past power plant operations have caused documented entrapment of species protected under the federal Endangered Species Act, including two endangered East Pacific green turtles (*Chelonia mydas*) over the past several decades. Poseidon's operations of the intake system at velocities of less than 0.5 feet per second are expected to decrease the likelihood of future sea turtle impingement.[47]

In addition, Poseidon no longer plans to install variable frequency drives at the EPS intake, but only at the Project intake pump.[48] Thus, only one-third of the 304 MGD flows would be operated by the variable frequency drives.[49]

Thus, no safeguards remain to reduce impingement impacts from the increased velocity. Moreover, in light of the significantly higher impingement rates uncovered by the Regional Board, the Project will most certainly violate Coastal Act sections 30230 and 30231. Had the information been accurately presented to the Commission, it would have required additional or different conditions of the CDP or denied the application. 14 CCR 13105.

3. Intentionally Submitted Inaccurate Description of the Facility --Intended Production Capacity

Poseidon submitted a CDP application for a 50 MGD ocean desalination plant. However, subsequent documents submitted to the California Infrastructure and Economic Development Bank, requesting financial assistance of $450 million (a significant increase in cost estimates of $300 million provided multiple agencies) show that Poseidon intends to expand the production capacity of the Project. "The bonds **will also be secured by a pledge of any revenues generated by additional water sales over and above the precontracted capacity**, as well as any reserves and the capitalized interest fund."[50] (emphasis added).

Given there is now documentation submitted to another California agency, subsequent to the completion of the CDP application, of a clear intention to expand the capacity of the Project– it is evident that the description of the project intentionally included incomplete information, and was inaccurate. Increased production "over and above the pre-contracted capacity" is explicitly production capacity beyond 50 MGD because the purchase agreements Poseidon has already contracted to fulfill utilize the entire 50 MGD.[51] Increasing the volume of "product water" capacity will require additional intake volume, and consequently increased entrainment impacts.

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[47] Coastal Commission Final Adopted Findings for CDP Approval, August 6, 2008, p.32.

[48] Final adopted *Flow, Entrainment, and Impingement Minimization Plan*, March 27, 2009, p. 4-24-27.

[49] 104 MGD is pumped in by the Project to create potable water, while an additional 200 MGD is needed to dilute the brine discharge created as a result of the reverse osmosis process. Coastal Commission Final Adopted Findings for CDP Approval, August 6, 2008, p.22

[50] The California Debt Limit Allocation Committee Application For An Allocation Of The State Ceiling On Qualified Private Activity Bonds For An Exempt Facility Project, Carlsbad Desalination Project, p.6.

[51] Coastal Commission Final Adopted Findings for CDP Approval, August 6, 2008, p.17.

Further, because that information would have led to a different analysis of the project's impacts on coastal resources (including marine life mortality and greenhouse gas emissions), the information would have required additional and/or different conditions of approval. Indeed, Commission staff admonished Poseidon of the impacts such changes would have on the CDP and upon coastal resources.

> It appears that many of these changes would allow for increased production (and increased coastal resource impacts) above the level reviewed by the Commission. Please clarify and document the purpose of these changes to determine whether Poseidon may need to apply for a CDP amendment.[52]

Because this information provided to the California Infrastructure and Economic Development Bank was not included in the CDP application, Environmental Groups were denied an opportunity to fully participate in the process.

In conclusion: Poseidon intentionally provided inaccurate, erroneous and/or incomplete information in connection with its CDP as it pertains to the output capacity of the project as well as the associated marine life impacts from additional withdrawal of seawater. That information, had it been disclosed, would have led to different conditions placed on approval of the CDP or denial of the application. 14 CCR §13105.

Further, the accurate, error-free, and/or complete project description was not available to the public in connection with the CDP application and conditions of approval, and consequently Environmental Groups were denied the opportunity to "fully participate in the proceedings." 14 CCR §13106.

IV. Environmental Groups Pursue This Request with Due Diligence

Though the Commission approved the CDP in November 2007, the existence of grounds for revocation has only recently come to light. Poseidon's Flow Plan was not approved until May 13, 2009, and Environmental Groups learned of Poseidon's application to the California Infrastructure and Economic Development Bank in September 2009.

Further, Environmental Groups believed in good faith the Commission would pursue a permit amendment until learning of the agreement reached as a result of Poseidon's attempt at a legislative end-run in AB 1570. Up to the October 7, 2009 hearing, Environmental Groups further believed the Commission would require Poseidon to come before it with a status update on "prior to" issuance and construction conditions of the CDP. Upon learning the Commission did not intend to do so, Environmental Groups promptly pursued this request.

V. Conclusion

In conclusion, the elements of a Revocation Request have been met:

- Poseidon intentionally provided incomplete, inaccurate, and/or erroneous information in connection with its Coastal Development Permit; and

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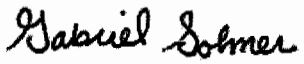
[52] Tom Luster Letter to Peter MacLaggan, September 21, 2009, p. 2.

- That information, had it been disclosed, would have led to different conditions placed on approval of the CDP, or resulted in denial of the application.

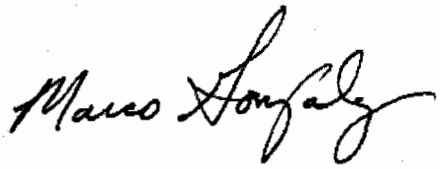
Further, the omission of such information resulted in Environmental Groups' denial of the opportunity to "fully participate in the proceedings." 14 CCR § 13106. Given the above facts and circumstances, the Executive Director may not find this Request for Revocation "patently frivolous and without merit." 14 CCR § 13106. The Director must proceed with a revocation hearing and suspend the CDP until such hearing. 14 CCR § 13107.

Respectfully Submitted,

Joe Geever
Surfrider Foundation
California Policy Coordinator
jgeever@surfrider.org
(949) 636-8426



Gabriel Solmer
San Diego Coastkeeper
Legal Director
Gabe@sdcoastkeeper.org



Marco A. Gonzalez
Coastal Environmental Rights Foundation
Executive Director
marco@cerf.org

Attachments:

1. Coastal Commission Letter to Regional Board, May 6, 2009
2. Final Adopted *Flow, Entrainment and Impingement Minimization Plan*
3. San Diego Regional Water Quality Control Board Staff Report
4. San Diego Regional Water Quality Control Board Supplemental Staff Report
5. Order No. R9-2009-0065
6. Statement of Dr. Raimondi
7. Environmental Groups Comment Letter to Regional Board
8. Environmental Groups Supplemental Comment Letter to Regional Board
9. Email from Peter MacLaggan to Chiara Clemente
10. February 19, 2008 Letter to Poseidon from Regional Board
11. Coastal Commission Final Adopted Findings for CDP Approval, August 6, 2008
12. Agreement and Offer Letter from Latham and Watkins to Executive Director
13. Environmental Groups' Letter to Commissioners for October 7, 2009 Hearing
    a. Including Agreement and Offer Letter
    b. Including AB 1570
    c. Including AB 1570 Opposition Letter
14. Resolution No. R9-2008-0039
15. Tom Luster Letter to Peter MacLaggan re Status of Prior to Issuance and Prior to Construction Requirements of CDP, September 21, 2009
16. San Diego Coastkeeper Appeal of R9-2009-0038 to State Board
17. Final Statement of Decision *Sufrider v. California Coastal Commission*
18. State Board Office of Chief Counsel Letter re Appeal
19. Poseidon CDLAC Bond Application

TENERA Environmental

CARLSBAD SEAWATER DESALINATION PROJECT

Technical Memorandum

ASSESSMENT OF POTENTIAL IMPINGEMENT AND ENTRAINMENT ATTRIBUTED TO DESALINATION PLANT OPERATIONS AND ASSOCIATED AREA OF PRODUCTION FORGONE

Prepared

By Tenera Environmental, Inc.

For

Poseidon Resources Channelside, LLC

May 2007

INTORDUCTION

The purpose of this technical memorandum (TM) is to present an estimate to of the maximum impingement and entrainment of marine organisms that could be attributed to the operations of the 50 MGD Carlsbad Seawater Desalination Facility (CDF) based on the most recent data collection study completed during the period of June 1, 2004 to May 31, 2005 at the Encina Power Generation Station (EPS). This memorandum also provides an estimate of the maximum area (acreage) of production forgone (APF) associated with the operation of the intake of the desalination plant under a stand-alone operational condition, when the plant collects 304 MGD of seawater through the existing system of the EPS to produce 50 MGD of drinking water and the power plant does not generate energy.

The data collected during the June'04/May'05 period and used for this study represent the most contemporary data on entrainment and impingement applicable to the CDF project. These impingement and entrainment data were collected in accordance with a published study plan (see Appendix 1), which plant was reviewed and approved by the San Diego Regional Water Quality Control Board, representatives of the California Department of Fish and Game, the National Marine Fisheries Service, and by an EPA-appointed independent consultant. The study plan, as appended to this technical memorandum, includes a review of the previous impingement and entrainment study results and methods completed in 1980 and a rationale, plan, and methods for completion of the 2004/2205 study results of which are used in this memorandum.

ASSESSMENT OF ENTRAINMENT EFFECT AND APF

The analysis presented in this TM employed entrainment impacts expressed as proportional losses as calculated using the empirical transport modeling (ETM) method (see Appendix 1- Study Plan, for description of model and formula). The ETM method is widely approved by numerous State and Federal agencies, and ETM results have been employed recently by these agencies in combination with an mitigation method referred to as area of production foregone (APF), as is also done in this TM.

All of the ETM values computed for this analysis were based on a total flow of 304 mgd collected through the existing EPS intake system. Of this total flow of 304 mgd, an average of 104 mgd would be used for production of drinking water and 200 mgd for dilution of concentrated seawater. The results of the ETM calculations are summarized in Table 1.

Table 1. ETM values for Encina Power Station larval fish entrainment for the period of 01 Jun 2004 to 31 May 2005, based on steady annual intake flow of 304 mgd.

	ETM Estimate	ETM Std.Err.	ETM + SE	ETM - SE
ETM Model Data for 3070 - Gobies	0.21599	0.30835	0.52434	-0.09236
ETM Model Data for 1495 - Blennies	0.08635	0.1347	0.22104	-0.04835
ETM Model Data for 1849 - Hypsopops	0.06484	0.13969	0.20452	-0.07485
AVERAGE	**0.122393**			
ETM Model Data for 3062 – White Croaker	0.00138	0.00281	0.00419	-0.00143
ETM Model Data for 1496 – Northern Anchovy	0.00165	0.00257	0.00422	-0.00092
ETM Model Data for 1219 – California Halibut	0.00151	0.00238	0.00389	-0.00087
ETM Model Data for 1471 - Queenfish	0.00365	0.00487	0.00852	-0.00123
ETM Model Data for 1494 – Spot Fin Croaker	0.00634	0.01531	0.02165	-0.00896
AVERAGE	**0.002906**			

The average ETM for the three most commonly entrained species living in Agua Hedionda Lagoon (gobies, blennies and hypsopops) of 0.122393 (i.e., 12.2 %) was used to assess the potential area of impact of the intake operations. This approach makes it possible to establish a definitive habitat value for the source water, and is consistent with the approach taken by the California Energy Commission and their independent consultants for the Morro Bay Power Plant (MBPP) in assessing and mitigating the entrainment effects of the proposed combined cycle project. In this case, as is the case at the CDF and EPS in Agua Hedionda, the MBPP is located inside the harbor near the bay's ocean entrance and the primarily entrained species are bay species of larvae. The average Pm value used was based on the three lagoon species was 12.2 % (0.122393 was rounded to 12.2 % to reflect the accuracy of data collection).

In order to calculate the Area of Production Foregone (in acres), the number of lagoon habitat acres used by the three most commonly entrained lagoon species was multiplied by the average Pm of the three species. The estimated acres of lagoon habitat for these species are based on a 2000 Coastal Conservancy inventory of Agua Hedionda Lagoon habitat (see Table 2).

Table 2. Wetland Profile: Agua Hedionda Lagoon[1]

Approximate Wetland Habitat Acreage 330 (11)
Approximate Historic Acreage 695

Habitat	Acres	Vegetation Source		
Brackish/ Freshwater	3	Cattail, bulrush and spiny rush were dominant		(11[2], 1[3])
Mudflat/Tidal Channel	49	Not specified		(1)
		Estuarine flats		
Open Water	253	Eelgrass occurred in all basins		(11,1)
Riparian	11		Not specified	(11)
Salt Marsh	14	(11,1)		
Upland	61	(11)		
	391	(brackish/freshwater, riparian, saltmarsh and upland not included)		

The calculation of APF (acres of lagoon habitat, Table 2, multiplied by the average Pm, Table 1) excluded the lagoon's acres of upland habitat (61 acres), riparian habitat (11 acres), salt marsh habitat (14 acres) and brackish/freshwater habitat (3 acres), a total of 89 acres. These habitats were excluded from the estimate because they would not contribute to the species that were found to be entrained by the EPS intake. Using the average Pm value of 12.2 % for the three lagoon species of entrained larvae and the estimated 302 acres of Agua Hedionda habitat supporting these species' larval populations, the APF value is 36.8 acres (302 acres x 0.122 = 36.8 acres).

IMPINGEMENT ASSESSMENT

A number of juvenile and adult fishes and other marine life are impinged on the existing screens across the intake flow. The amount of impinged organisms generally varies with the amount of flow, but it not in a direct or linear manner. The daily biomass of

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[2] MEC Analytical Systems Inc., 1993. San Dieguito Lagoon restoration project Lagoon restoration project regional coastal lagoon resources summary.56 pp and appendix. This report provides a summary of habitat types, fish, bird and benthic invertebrate populations at 16 coastal wetlands south of Anaheim Bay. It is primarily a synopsis of existing information; sources used in identifying and quantifying habitat types include aerial photographs taken in early 1993. It discusses restoration of habitats at San Dieguito Lagoon given present and historic conditions of other coastal wetlands in the region. This report was prepared as part of the San Dieguito Restoration Project undertaken by Southern California Edison to mitigate for damage to coastal marine resources from the operation of the San Onofore Nuclear Generating Station.

[3] MEC Analytical Systems Inc., 1995. 1994 and 1995 field survey report of the ecological resources of Agua Hedionda Lagoon.47 pp., plus appendices. *This report summarizes the results of field surveys conducted between April 1994 and June 1995 at Agua Hedionda Lagoon. The surveys collected data on eelgrass, salt marsh vegetation, birds, fish, and benthic invertebrates. Data were also collected for water quality. The surveys were designed to provide adequate environmental information to support agency review of a dredging project. The survey design and methods were developed in consultation with state and federal regulatory agencies.*

impinged fish during normal power plant operations declined from the previous February 1979 to January1980 study that reported a rate of 2.46 kg/day, to impingement rates during June 2004 to June 2005 of 0.96 kg/day. The results of the June 2004 to June 2005 impingement study are summarized in Table 3 for the abundance and weight of sampled fish. Table 3 pr esents impingement losses during both normal operations and heat treatment operations. It should be noted that as described in the certified Environmental Impact Report for the Carlsbad seawater desalination project, the desalination plant will be shut down during periods of tunnel heat treatment. Therefore, the desalination plant operations do not contribute to the heat-treatment related impingement losses. The results of the 2004-2005 impingement survey indicate that by not heat treating CDF will reduce the number of impinged fish sampled by approximately 80 percent and the weight of impinged fish sampled by approximately 83 percent.

Analysis of the impingement data presented in Table 3 indicates that the impingement effect attributed to the desalination plant operation would be minimal. The total daily weight of the impinged marine organisms when the desalination plant is operating on a stand-alone basis at 304 MGD and the power plant is not operating is estimated at 1.92 lbs/day (0.96 kg/day). To put this figure in perspective, it is helpful to note that 1.92 lbs/day of impinged organisms represents 0.0000001 percent of the total volume of material flowing through the intake.

TABLE 3 Number and weight of fishes, sharks, and rays impinged during normal operation and heat treatment surveys at EPS from June 2004 to June 2005.

			Normal Operations Sample Totals				Heat Treatment	
	Taxon	Common Name	Sample Count	Sample Weight (g)	Bar Rack Count	Bar Rack Weight (g)	Sample Count	Sample Weight (g)
1	*Atherinops affinis*	topsmelt	5,242	42,299	10	262	15,696	67,497
2	*Cymatogaster aggregata*	shiner surfperch	2,827	28,374	-	-	18,361	196,568
3	*Anchoa compressa*	deepbody anchovy	2,079	11,606	2	21	23,356	254,266
4	*Seriphus politus*	queenfish	1,304	7,499	2	17	929	21,390
5	*Xenistius californiensis*	salema	1,061	2,390	-	-	1,577	6,154
6	*Anchoa delicatissima*	slough anchovy	1,056	3,144	-	-	7	10
7	Atherinopsidae	silverside	999	4,454	-	-	2,105	8,661
8	*Hyperprosopon argenteum*	walleye surfperch	605	23,962	1	21	2,547	125,434
9	*Engraulis mordax*	northern anchovy	537	786	-	-	92	374
10	*Leuresthes tenuis*	California grunion	489	2,280	-	-	7,067	40,849
11	*Heterostichus rostratus*	giant kelpfish	344	2,612	-	-	908	9,088
12	*Paralabrax maculatofasciatus*	spotted sand bass	303	4,604	-	-	1,536	107,563
13	*Sardinops sagax*	Pacific sardine	268	1,480	-	-	6,578	26,266
14	*Roncador stearnsi*	spotfin croaker	182	8,354	2	3,000	106	17,160
15	*Paralabrax nebulifer*	barred sand bass	151	1,541	-	-	1,993	32,759

16	*Gymnura marmorata*	Calif. butterfly ray	146	60,629	1	390	70	36,821
17	*Phanerodon furcatus*	white surfperch	144	4,686	-		53	823
18	*Strongylura exilis*	California needlefish	135	6,025	-		158	11,899
19	*Paralabrax clathratus*	kelp bass	111	680	-		976	13,279
20	*Porichthys myriaster*	specklefin midshipman	103	28,189	-		218	66,860
21	unidentified chub	unidentified chub	96	877	-		7	44
22	*Paralichthys californicus*	California halibut	95	1,729	-		21	4,769
23	*Anisotremus davidsoni*	sargo	94	1,662	-		963	68,528
24	*Urolophus halleri*	round stingray	79	20,589	-		1,090	300,793
25	*Atractoscion nobilis*	white seabass	70	11,295	6	872	1,618	332,056
26	*Hypsopsetta guttulata*	diamond turbot	66	10,679	1	85	112	24,384
27	*Micrometrus minimus*	dwarf surfperch	57	562	-	-	-	
28	*Syngnathus spp.*	pipefishes	55	161	-		56	90
29	*Atherinopsis californiensis*	jacksmelt	54	1,152	-		4,468	45,152
30	*Myliobatis californica*	bat ray	50	19,899	4	5,965	132	68,572
31	*Menticirrhus undulatus*	California corbina	43	1,906	-		16	4,925
32	*Amphistichus argenteus*	barred surfperch	43	1,306	-		34	2,528
33	*Fundulus parvipinnis*	California killifish	43	299	-		16	41
34	unidentified fish, damaged	unid. damaged fish	36	1,060	1	70	8	262
35	Ictaluridae	catfish unid.	35	4,279	-	-	-	
36	*Leptocottus armatus*	Pacific staghorn sculpin	32	280	-		5	26
37	*Sphyraena argentea*	California barracuda	29	397	-		46	1,667
38	*Lepomis cyanellus*	green sunfish	29	1,170	-	-	-	
39	*Umbrina roncador*	yellowfin croaker	28	573	-		127	22,399
40	*Lepomis macrochirus*	bluegill	20	670	-	-	-	
41	*Ophichthus zophochir*	yellow snake eel	18	5,349	-		51	17,303
42	*Citharichthys stigmaeus*	speckled sanddab	17	62	-		1	30
43	*Brachyistius frenatus*	kelp surfperch	16	182	-		17	598
44	*Cheilotrema saturnum*	black croaker	15	103	-		288	9,029
45	*Embiotoca jacksoni*	black surfperch	14	1,240	-		69	5,367
46	*Genyonemus lineatus*	white croaker	12	171	-		9	79
47	*Platyrhinoidis triseriata*	thornback	11	4,731	1	1,500	-	
48	*Chromis punctipinnis*	blacksmith	10	396	-		151	4,431
49	unidentified fish	unidentified fish	10	811	-	-	-	
50	*Porichthys notatus*	plainfin midshipman	9	1,792	-	-	-	
51	*Hermosilla azurea*	zebra perch	9	1,097	-		62	3,518
52	*Micropterus salmoides*	large mouth bass	9	27	-	-	-	
53	*Trachurus symmetricus*	jack mackerel	7	7	-		15	702
54	*Hypsoblennius gentilis*	bay blenny	7	37	-		440	2,814
55	*Heterostichus* spp.	kelpfish	7	48	-	-	-	
56	Engraulidae	anchovies	6	3	-	-	-	
57	*Anchoa* spp.	anchovy	6	27	-	-	-	
58	*Peprilus simillimus*	Pacific butterfish	5	91	-		1	33
59	*Rhacochilus vacca*	pile surfperch	4	915	-	-	-	
60	*Sebastes atrovirens*	kelp rockfish	4	40	-	-	-	
61	*Pleuronichthys verticalis*	hornyhead turbot	4	190	-		2	251
62	*Pylodictis olivaris*	flathead catfish	4	480	-	-	-	
63	Pleuronectiformes unid.	flatfishes	4	62	-	-	-	
64	*Syngnathus leptorhynchus*	bay pipefish	3	9	-	-	-	

65	*Hypsoblennius gilberti*	rockpool blenny	3	16	-	-		8	77
66	*Mustelus californicus*	gray smoothhound	3	1,850	-	-		22	19,876
67	*Cheilopogon pinnatibarbatus*	smallhead flyingfish	3	604	-	-	-	-	
68	*Ameiurus natalis*	yellow bullhead	3	220	-	-	-	-	
69	*Lepomis* spp.	sunfishes	3	196	-	-	-	-	
70	*Girella nigricans*	opaleye	2	346	-	-		355	30,824
71	*Rhinobatos productus*	shovelnose guitarfish	2	461		2	6,200	-	
72	*Acanthogobius flavimanus*	yellowfin goby	2	55	-	-	-	-	
73	*Scomber japonicus*	Pacific mackerel	2	10	-	-		15	880
74	*Hypsoblennius* spp.	blennies	2	11	-	-		113	489
75	*Hypsoblennius jenkinsi*	mussel blenny	2	17	-	-		175	946
76	*Paralabrax* spp.	sand bass	2	2	-	-		6	19
77	*Scorpaena guttata*	Calif. scorpionfish	2	76	-	-	-	-	
78	*Hyporhamphus rosae*	California halfbeak	2	23	-	-		1	-
79	*Symphurus atricauda*	California tonguefish	2	15	-	-	-	-	
80	*Tilapia* spp.	tilapias	2	7	-	-	-	-	
81	*Sarda chiliensis*	Pacific bonito	2	1,010	-	-		2	540
82	*Albula vulpes*	bonefish	2	1,192	-	-		1	900
83	Sciaenidae unid.	croaker	2	3	-	-		17	1,212
84	*Oxylebius pictus*	painted greenling	1	5	-	-	-	-	
85	*Lyopsetta exilis*	slender sole	1	26	-	-	-	-	
86	*Citharichthys sordidus*	Pacific sanddab	1	1	-	-	-	-	
87	*Gibbonsia montereyensis*	crevice kelpfish	1	8	-	-	-	-	
88	*Pleuronichthys ritteri*	spotted turbot	1	7	-	-		13	2,745
89	*Gillichthys mirabilis*	longjaw mudsucker	1	34	-	-	-	-	
90	*Dorosoma petenense*	threadfin shad	1	3	-	-	-	-	
91	*Porichthys* spp.	midshipman	1	200	-	-	-	-	
92	*Cynoscion parvipinnis*	shortfin corvina	1	900	-	-	-	-	
93	*Mugil cephalus*	striped mullet	1	3	-	-		5	3,854
94	*Paraclinus integripinnis*	reef finspot	1	4	-	-		4	12
95	*Hyperprosopon* spp.	surfperch	1	115	-	-		7	552
96	*Ameiurus nebulosus*	brown bullhead	1	100	-	-	-	-	
97	*Micropterus dolomieu*	smallmouth bass	1	150	-	-	-	-	
98	*Citharichthys* spp.	sanddabs	-	-	-	-		1	3
99	*Triakis semifasciata*	leopard shark	-	-	-	-		2	688
100	*Medialuna californiensis*	halfmoon	-	-	-	-		53	1,864
101	*Torpedo californica*	Pacific electric ray	-	-		1	3,750	-	
102	Scorpaenidae	scorpionfishes	-	-	-	-		2	64
103	*Halichoeres semicinctus*	rock wrasse	-	-	-	-		1	33
104	*Hypsypops rubicundus*	garibaldi	-	-	-	-		5	1,897
105	*Seriola lalandi*	yellowtail jack	-	-	-	-		21	978
106	*Dasyatis dipterura*	diamond stingray	-	-	-	-		2	1,468
107	*Heterodontus francisci*	horn shark	-	-	-	-		1	850
108	Zoarcidae	eelpouts	-	-	-	-		1	17
			19,408	351,672		34	22,152	94,991	2,034,900

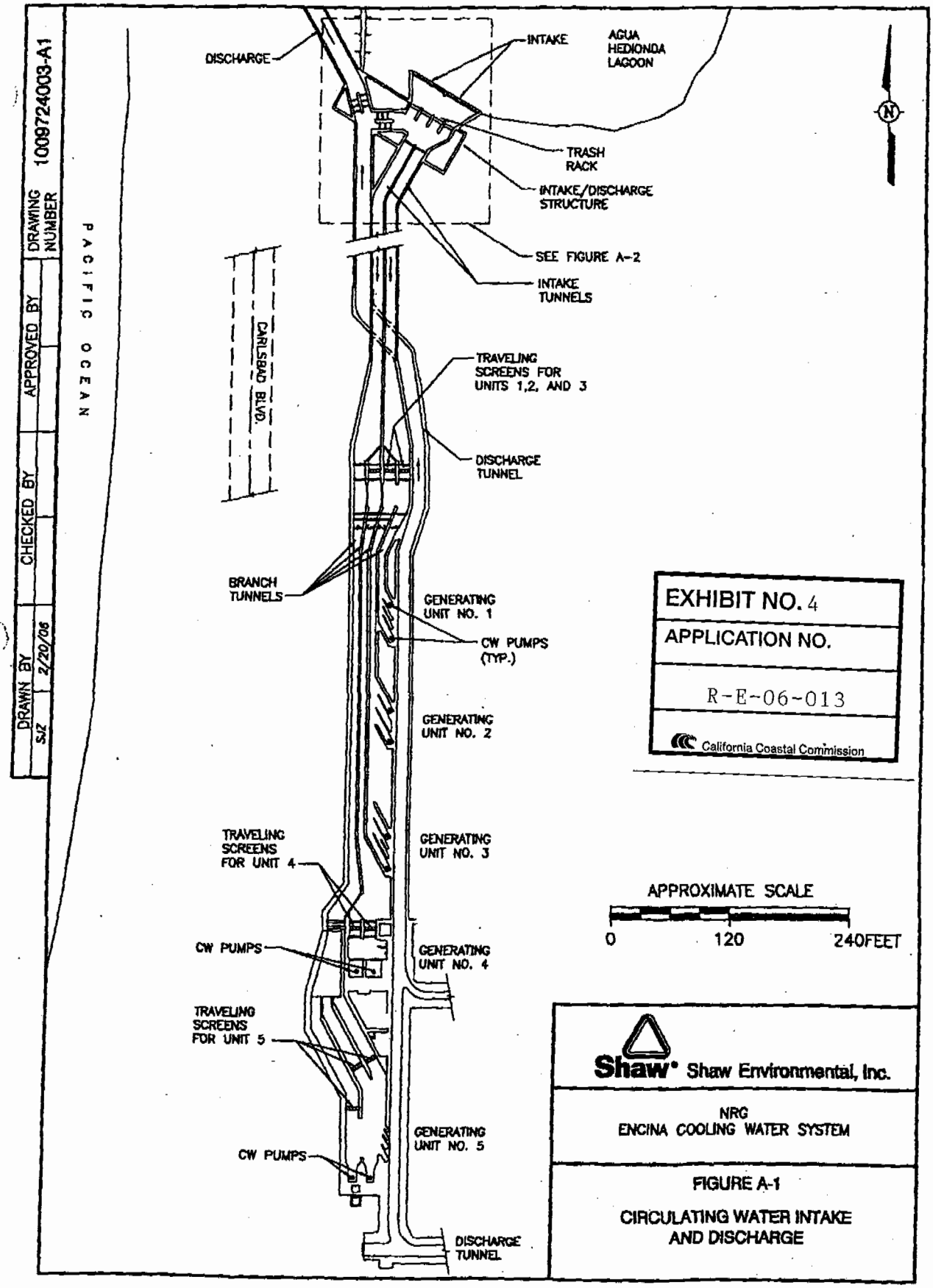


EXHIBIT NO. 4

APPLICATION NO.

R-E-06-013

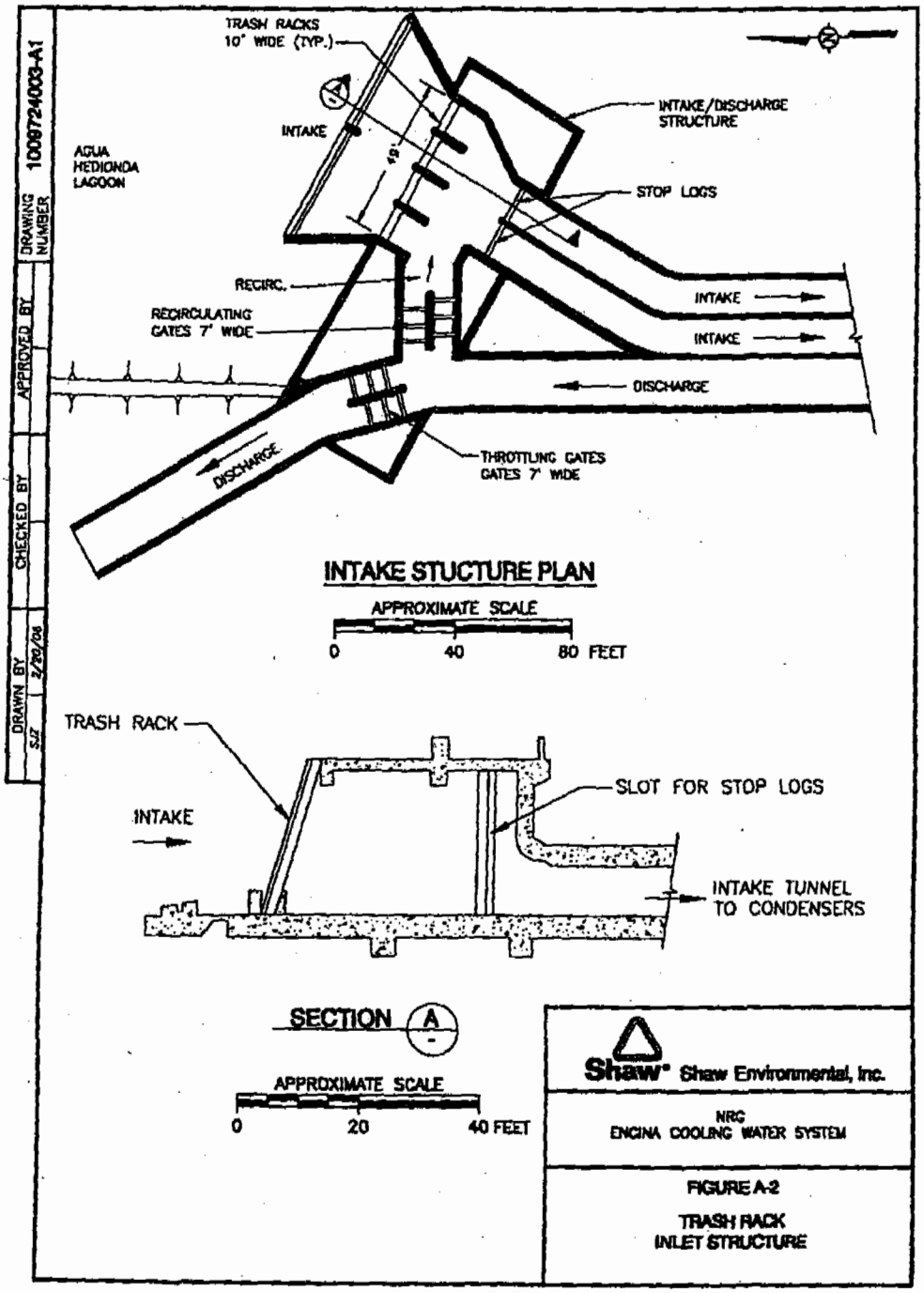
California Coastal Commission

Shaw® Shaw Environmental, Inc.

NRG
ENCINA COOLING WATER SYSTEM

FIGURE A-1

CIRCULATING WATER INTAKE AND DISCHARGE


TRASH RACKS
10' WIDE (TYP.)
INTAKE
AGUA
HEDIONDA
LAGOON
INTAKE/DISCHARGE
STRUCTURE
STOP LOGS
RECIRC.
RECIRCULATING
GATES 7' WIDE
INTAKE
INTAKE
DISCHARGE
DISCHARGE
THROTTLING GATES
GATES 7' WIDE
INTAKE STUCTURE PLAN
APPROXIMATE SCALE
0
40
80 FEET
TRASH RACK
INTAKE
SLOT FOR STOP LOGS
INTAKE TUNNEL
TO CONDENSERS
SECTION A
APPROXIMATE SCALE
0
20
40 FEET
DRAWING NUMBER 1006724003-A1
APPROVED BY
CHECKED BY
DRAWN BY
SIZE
2/20/06
Shaw Shaw Environmental, Inc.
NRC
ENCINA COOLING WATER SYSTEM
FIGURE A-2
TRASH RACK
INLET STRUCTURE

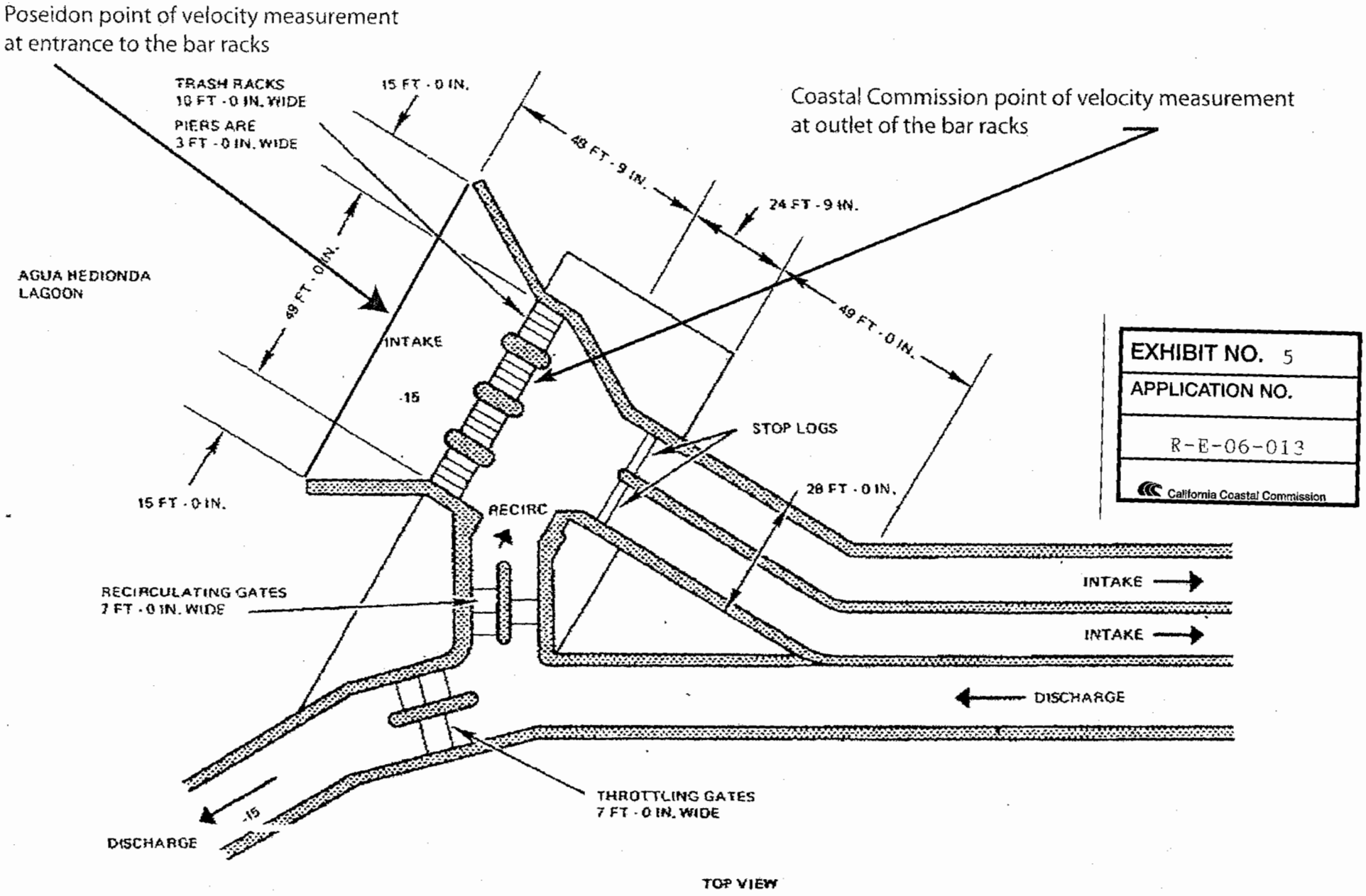


Figure 1. San Diego Gas & Electric Encina Intake Structures (prepared by SDG&E, Figure No. 3.1-3).