

# VOLUME 2

Submission to the Regional Water Quality  
Control Board

Agenda Item 6 - Poseidon Resources  
Corporation, Proposed Carlsbad  
Desalination Project (Order No. R9-2006-  
0065, NPDES No. CA0109223).



**POSEIDON**  
R E S O U R C E S

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**Poseidon's Response to Staff's "Overarching Concern" Re: The Inclusion of a "Specific Mitigation Alternative" in the Marine Life Mitigation Plan**

The Executive Officer Summary Report prepared for the February 11, 2009 California Regional Water Quality Control Board, San Diego Region ("Regional Board") meeting stated the following: "Staff's overarching concern, which remains unsatisfied, is that the MLMP fails to include a specific mitigation alternative as the Board required."

Poseidon Resources Corporation ("Poseidon") has prepared the following information from the record of the April 9, 2008 Regional Board meeting to evaluate whether there was direction from the Regional Board and/or staff that compelled Poseidon to focus exclusively on a single mitigation site while preparing its mitigation plan. This memorandum summarizes those documents and provides specific excerpts of relevant language, which indicate that the Regional Board requested a multiple site review as part of the plan.

**A. Background**

Poseidon's mitigation plan has been prepared as an amendment to Poseidon's Flow, Entrainment and Impingement Minimization Plan ("Minimization Plan"), which in turn was required pursuant to Poseidon's National Pollutant Discharge Elimination System ("NPDES") permit issued in 2006, Order No. R9-2006-0065, NPDES Permit No. CA0109223 ("Permit"). Of relevance to the mitigation plan, the Permit states:

"The Discharger shall submit a Flow, Entrainment and Impingement Minimization Plan within 180 days of adoption of the Order. The plan shall assess the feasibility of site-specific plans, procedures, and practices to be implemented and/or mitigation measures to minimize the impacts to marine organisms when the CDP intake requirements exceed the volume of water being discharged by the EPS. The plan shall be subject to the approval of the Regional Water Board and shall be modified as directed by the Regional Water Board."

Permit, Section IV.C.2(e).

The second sentence of Section IV.C.2(e) requires Poseidon to "assess the feasibility of site-specific plans, procedures and practices." Alternatively, or in addition, the Permit requires Poseidon to assess the feasibility of mitigation measures in the Minimization Plan. The Permit provision specifically does not indicate that site-specific mitigation measures are required, or that Poseidon shall prepare a single-site mitigation plan. Nor was there any interpretation during the permitting phase to that effect.

Poseidon's amendment to the Minimization Plan is called the "Marine Life Mitigation Plan," or MLMP. The California Coastal Commission required Poseidon to prepare the MLMP pursuant to a Coastal Development Permit ("CDP") for the desalination plant. The relevant CDP provision was issued in November 2007. Since the purpose of both the Regional Board-ordered mitigation plan and the Coastal Commission's MLMP is to address the potential intake of marine organisms during desalination operations, Poseidon prepared one combined plan called the MLMP.

**B. Status of Mitigation Planning**

Poseidon is seeking the Regional Board's approval of the MLMP. The Coastal Commission approved the plan on August 6, 2008, stating in pertinent part:

**“implementation of the Plan will ensure the project's entrainment-related impacts will be fully mitigated and will enhance and restore the marine resources and biological productivity of coastal waters . . . .”** (Emphasis in original.)<sup>1</sup>

Approval of the MLMP is an important interim step towards selection of the final mitigation site or sites. It does not prejudice the Regional Board's ability to have an important, continuing role in site selection, and plan implementation. See our comments submitted to the Regional Board, January 23, 2008, posted on the agency's website. Nor does it leave the status quo without adequate, present mitigation, as the Poseidon plant does not exist today and will not be operational until late 2011 or early 2012. Approval of the MLMP now, however, is very important to Poseidon's ability to move forward with its project, including the mitigation component.

**C. Regional Board Resolution No. R9-2008-0039 (April 9, 2008)**

On April 9, 2008, the Regional Board conditionally approved Poseidon's Minimization Plan in Resolution No. R9-2008-0039 (the "April Resolution"). The April Resolution required Poseidon to develop an amendment to the Minimization Plan that included a proposal for a mitigation plan. The April Resolution states: "Within six months of adoption of this resolution, Poseidon shall submit to the Regional Board Executive Officer for approval by the Regional Board an amendment to the Plan that includes a specific proposal for mitigation of the impacts, by impingement and entrainment upon marine organisms resulting from the intake of seawater from Agua Hedionda Lagoon, as required by Section VI.C.2(e) of Order No. R9-2006-0065; and shall resolve the concerns identified in the Regional Board's February 19, 2008 letter to Poseidon Resources, and the following additional concerns: a) Identification of impacts from impingement and entrainment; b) Adequate monitoring data to determine the impacts from impingement and entrainment; c) Coordination among participating agencies for the amendment of the Plan as required by Section 13225 of the California Water Code; d) Adequacy of mitigation; and e) Commitment to fully implement the amendment to the Plan."

While the April Resolution required "a specific proposal for mitigation of impacts," there is no language in the April Resolution requiring that the mitigation plan provide for mitigation at a "single site." In fact, by explicitly requiring Poseidon to address those concerns expressed in the Regional Board's February 19, 2008 letter, the April Resolution implies the opposite, as examined more fully below.

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<sup>1</sup> California Coastal Commission Revised Condition Compliance Findings (Item W16a). Condition Compliance for CDP No. E-06-013 – Poseidon Resources (Channelside), LLC; Special Condition 8: Submittal of a Marine Life Mitigation Plan, November 21, 2008, available at <http://documents.coastal.ca.gov/reports/2008/12/W16a-12-2008.pdf>.

D. February 19, 2008 Letter from Regional Board to Poseidon

On February 19, 2008, the Regional Board sent Poseidon a letter commenting on the latest version of the Minimization Plan, which had been submitted by Poseidon on July 2, 2007.<sup>2</sup>

Among other things, the February 19, 2008 letter required Poseidon to add a discussion of possible mitigation opportunities in Agua Hedionda Lagoon to its plan in order to address the Regional Board's concerns. Specifically, item number 5, page 2, raised the concern that Poseidon's submittal did not "identify and evaluate the possible mitigation projects located within the same watershed [Agua Hedionda Lagoon], prior to proposing the out of watershed mitigation in San Dieguito." This statement implies that the Regional Board was interested in the evaluation of additional sites beyond simply the San Dieguito site proposed by Poseidon.

E. March 7, 2008 Poseidon Response and Updated Revised Minimization Plan

In response to the February 19, 2008 Regional Board letter, Poseidon met with Regional Board staff members on March 4, 2008 to receive input on Poseidon's proposed revisions to the Minimization Plan. At this meeting, Regional Board staff requested that Poseidon include additional sites in its mitigation planning.

On March 7, 2008, after consultation with Regional Board staff, Poseidon submitted a detailed letter ("Response"), responding to each specific point brought forth by the Regional Board, and attaching an updated Minimization Plan.<sup>3</sup> Both of these documents provide further illustration of Poseidon's understanding of Regional Board staff's direction to review multiple mitigation sites.

The Response did not propose a "single site" mitigation plan and expressly stated that multiple sites would be evaluated in the final submittal. Items 5, 6, and 7 of Poseidon's Response all indicated that there would be later specific mitigation proposals discussing mitigation "sites," including, but not limited to, Agua Hedionda, e.g. "Identification of 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"; "Identification of contingency measures that will be implemented should any of the mitigation *sites* not meet performance criteria"; "Annual monitoring reports for no less than five years or until the *sites* meet performance criteria" (emphasis added).

Additionally, the updated Minimization Plan, which was revised in response to the February 19, 2008 Regional Board letter and input received at the March 4, 2008 meeting, demonstrates that the review of multiple sites was contemplated. Pursuant to the direction of Regional Board staff at the March 4, 2008 meeting, Chapter 6 of the Minimization Plan was specifically amended to include the contemplation of multiple mitigation sites. See pages 6-9 and 6-10 of the updated Minimization Plan which state that there would be a subsequent submittal of a Restoration Project Implementation Plan that would provide for identification of

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<sup>2</sup> The relevant portions of the February 19, 2008 are attached hereto as Exhibit 1.

<sup>3</sup> The relevant portions of the March 6, 2008 Minimization Plan and March 7, 2008 Response are attached hereto as Exhibit 2.

“specific creation, restoration, or enhancement measures that will be used at *each site*” and “identification of contingency measures that will be implemented should any of the mitigation *sites* not meet performance criteria (emphasis added).” Also, as-built plans “for *each site* included in the Restoration Project” are required under the Minimization Plan (emphasis added). These provisions of the Minimization Plan make clear that Poseidon was intending to submit a plan discussing multiple sites as part of a specific mitigation proposal.

Regional Board had adequate time and ability to respond to these statements if it felt Poseidon had inaccurately captured its preferred method for the development of the mitigation plan, including more than a month before the April 9, 2008 hearing as well as at the hearing itself. Neither staff nor any of the Board members expressed dissatisfaction with the mention of multiple site review in both the Response and the updated Minimization Plan. In fact, this was the version that was adopted conditionally by the Regional Board on April 9, 2008.

F. April 4, 2008 Regional Board, Central Watershed Unit Technical Report

The Central Watershed Unit released a Technical Report<sup>4</sup> several days prior to the April 9, 2008 approval of the Order, which stated: “The proposed process seems to favor a pre-determined outcome (i.e. mitigation in San Dieguito Lagoon). Other mitigation alternatives (e.g. kelp bed enhancement and artificial reef construction) should be considered and evaluated equally as viable mitigation possibilities.” This critique further indicates that Regional Board staff did not want a plan focused on one specific site, and instead Poseidon should consider and evaluate “other mitigation alternatives.”

Additionally, the Technical Report stated: “Poseidon has identified eight alternatives to be considered and further evaluated for selection in their final preferred specific mitigation alternative.” Through this comment, Regional Board staff appears to be acknowledging, with apparent approval, that Poseidon was considering mitigation at several possible sites, including those expressly enumerated: Frazer State Beach, Loma Alta Lagoon and Buena Vista Lagoon, in addition to Agua Hedionda Lagoon and San Dieguito Lagoon.

Finally, had Regional Board staff not wanted multiple sites analyzed as part of the MLMP, this would have been stated here. Instead, staff requests still more additional alternatives for inclusion in the MLMP: “The CWU staff conclude that Poseidon should include these additional alternatives for evaluation as part of their proposed process for the selection of a specific mitigation alternative.”

G. April 9, 2008 Transcript

It is also clear from the April 9, 2008 transcript of the Regional Board meeting that the Regional Board itself considered the possibility of multiple mitigation alternatives.<sup>5</sup> Emphasizing the need for a “full evaluation of the mitigation alternatives,” Regional Board Chairman Wright stated on page 41: “It sounds like there’s a lot more that needs to be done before you have full evaluation of the mitigation alternatives.” This statement indicates that

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<sup>4</sup> The Central Watershed Unit Technical Report is attached hereto as Exhibit 3.

<sup>5</sup> The transcript of the April 9, 2008 Regional Board meeting is attached hereto as Exhibit 4.

Chairman Wright was open to the prospect of multiple mitigation alternatives, and in fact, thought it necessary for the mitigation plan to include a "full evaluation" of such alternatives.

In addition, Poseidon understood both Regional Board and staff to be directing it to review multiple sites. In summing up the proceedings before the Regional Board, Peter MacLaggan stated on page 40: "We will be working – we've decided we will be working with the Regional Board Staff, Coastal Commission Staff, and other resource agencies to meet and reach consensus on the mitigation goals and objectives identifying what may have been overlooked in *Agua Hedionda and other opportunities*. This will lead to selection of a preferred mitigation site plan [and] finalize project scope *locations* implementation. Bring all of that back to you in the next six months; set up future meeting date, and we'll also be going back to the Coastal Commission" (emphasis added).

Taken together, these statements demonstrate that an approach based on multiple mitigation sites was being contemplated by both the Regional Board and Poseidon, as well as the other agencies with which Regional Board directed Poseidon to coordinate in order to develop the MLMP.

**H. Draft Agenda for May 1 and 2, 2008 Interagency Meeting Regarding Poseidon's Mitigation Plan**

In addition, after the Regional Board had given direction to Poseidon to work with additional state, federal and local agencies to develop the plan, the draft agenda for the May 1 and 2 interagency meeting<sup>6</sup> specifically requested the proposal of additional mitigation sites: "Please come prepared to discuss the following: If proposing marine life mitigation, describe the type and *location* of potential mitigation *sites*, and describe how restoration or creation of this particular habitat/vegetation would mitigate for impacts associated with the desalination facility's impacts to marine life in *Agua Hedionda*" (emphasis added). This language makes clear that multiple sites would be taken into consideration during the interagency process of developing the plan.

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<sup>6</sup> Attached hereto as Exhibit 5.

# **EXHIBIT 1**



# California Regional Water Quality Control Board

## San Diego Region



Linda S. Adams  
Secretary for  
Environmental Protection

Over 50 Years Serving San Diego, Orange, and Riverside Counties  
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Item 7, Supporting Document 3  
April 9, 2008

February 19, 2008

**CERTIFIED – REGISTERED MAIL**  
7006 2760 0000 1615 6960

Mr. Peter M. MacLaggan  
Senior Vice President  
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In reply refer to:  
**NCR: 02-1429.02:ebecker**

Dear Mr. MacLaggan:

**Revised Flow, Entrainment and Impingement Minimization Plan & Coastal Habitat Restoration and Enhancement Plan, Order No. R9-2006-0065, NPDES Permit No. CA0109223, The Poseidon Resource Corporation, Carlsbad Desalination Project**

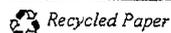
On February 13, 2007, Poseidon submitted a Flow, Entrainment, and Impingement Minimization Plan dated February 12, 2007 (Plan) in compliance with Section VI.C.2.(e) of Order R9-2006-0065. Subsequently, in response to Regional Board and interested parties' comments, Poseidon submitted a revised plan (dated June 29, 2007) on July 2, 2007. To supplement this Plan, Poseidon has also submitted both a Coastal Habitat Restoration and Enhancement Plan (CHREP) dated October 2007 and a revised CHREP dated November 2007.

The Regional Board has the following comments from the review of the Plan and CHREP (referenced above):

**General Comments:**

1. The Plan does not yet integrate all the elements of the statutory requirements of California Water Code (CWC) Section 13142. The proposed project only includes "mitigation", while the statute CWC Section 13142.5(b) also requires that dischargers implement best available technology and mitigation measures. The Plan does not appear to include technology measures for the intake structure to reduce impingement and entrainment (I&E).
2. The Plan provides an evaluation of impacts based upon one year of data, 2004-05 with record rainfall, but does not explicitly evaluate the on-going impacts from Poseidon's operations.

*California Environmental Protection Agency*



3. The Carlsbad desalination project's (CDP) listing of impacts appears to omit specific impacts to target invertebrates.
4. The proposed mitigation project does not appear to account for all pertinent impacts resulting from impingement of invertebrates, entrainment of invertebrates, discharges of brine, etc.
5. The CHREP did not identify and evaluate the possible mitigation projects located within the same watershed, prior to proposing the out of watershed mitigation in San Dieguito Lagoon. The best mitigation for impacting the lagoon would be to replace lost functions by restoring current upland acreage to the historic wetland condition, or by creating new wetlands where there were none historically.
6. The proposed mitigation ratio of 1.1:1.0 isn't fully supported. The Plan should be revised to include an evaluation of other mitigation options that may be available within the watershed. The proposed mitigation ratio appears inadequate in light of several factors generally considered by the Regional Board:
  - a. The proposed mitigation project is located within a different watershed (the San Dieguito Lagoon) instead of the Agua Hedionda Lagoon. A higher ratio may be appropriate for this project because the referenced mitigation project is out-of-kind (i.e., discharger is not actually replacing the lost resources and functions).
  - b. It is not clear that the proposed one-time mitigation is adequate to compensate for the long-term ongoing impacts to beneficial uses, resources, and functions present in Agua Hedionda Lagoon.
  - c. The mitigation project is for restoration of coastal wetland habitat, rather than the lagoon habitat impacted by the operation of the CDP.
7. Poseidon might benefit from convening a joint meeting with the resources agencies (including California Dept Fish and Game, US Fish and Wildlife Service, Army Corps of Engineers, National Marine Fisheries) to discuss the impacts to beneficial uses, resources, and functions by the proposed project, and on the preferred mitigation project so they can discuss agency concerns/comments.

#### **Specific Comments on the Plan**

8. The assessment should address the seasonal and/or daily variations in impingement impacts.
9. The assessment needs to include results of an impingement study for target invertebrates. Table 3.2 includes only results for fish during 2004-05.

10. The assessment states that: "The total amount of impinged organisms for the individual sampling events is presented in Table 3-2" (p.19). The Plan, however, does not clearly identify individual sampling events. The interpretation of the results is hampered by the absence of a presentation of results for impinged organisms (including invertebrates) with dates, times, and flow rates of sampling events.
11. The assessment states that, "The daily biomass of impinged fish during normal operations is 0.96 kgs/day (1.92 lbs/day) for an intake flow of 304 MGD" (p.19). The text discussion should clarify how this figure is determined and how the total impingement results were adjusted to an intake flow of 304 MGD. Also, there is a conversion discrepancy since 0.96kgs converts to 2.12lbs, not 1.92 lbs as indicated in the Plan.
12. The assessment of impacts from entrainment assessment appears to include larval fish but does not clearly include impacts to fish eggs and invertebrates. It is the understanding of the Regional Board that the 2004-05 study was to include monitoring of (at least) entrained Cancer crab megalops and lobster larvae, but the assessment does not appear to include these data. Also, it is unclear that sampling followed a protocol approved by the Regional Board as stated (p.22).
13. The Plan does not clearly identify the supporting data or an explanation of underlying assumptions and calculations that were used to estimate proportional mortality values for larval fish as presented (p.23) in the Plan. Therefore, the Regional Board could not objectively evaluate the validity of the estimated proportional entrainment mortality (12.2%) presented in the Plan.
14. Impacts are based upon the few most commonly entrained (most abundant) species. It is unclear how much more severe impacts may be when populations are small.
15. The Regional Board has the following comments regarding the estimated number of lagoon acres impacted, as presented in the plan since:
  - a. The estimate of the number of lagoon acres used by the three most commonly entrained species is based on a 2000 Coastal Conservancy Inventory (Table 4-2, p.23). It is unclear if this document is accurate or appropriate for the purpose of determining such an important component of the area of habitat production forgone (APF). The reference document (Attachment 4, Table 2), includes the footnote caveat "...This information is not suitable for any regulatory purpose and should not be the basis for any determination relating to impact assessment or mitigation." An accurate delineation of lagoon habitats should be used for this critical component of the APF.

- b. The estimate of the number of lagoon acres used by the three most commonly entrained species appears to exclude salt marsh and brackish/freshwater acreage (p.23). Excluding these intertidal habitats may result in the analysis underestimating this component of the APF.
  - c. The calculation of the APF (p.23) appears to use values for mortality and lagoon acreage that are not fully supported.
  - d. The text should be revised to include a clear explanation of how the estimated lagoon acreage for commonly entrained species was adjusted to include only impacts associated with operations of CDP, rather than impacts from operation of the Encina Power Station.
16. The evaluation concludes that the small fraction of marine organisms lost to entrainment would have "no effect on the species' ability to sustain their population" and goes on to describe the natural rates of high mortality (p. 24). But the argument that there are "excess" larvae appears to omit an important consideration. Besides contributing to marine food webs, the naturally high production of larvae serves as a buffer against catastrophic and cumulative impacts to populations. These are important 'ecological services' that must not be taken lightly or given away without adequate mitigation.
17. The Regional Board prefers that the evaluation of the impact be presented as a rate (loss of x-amount of organisms per year, or impact/year). The proposed mitigation is a fixed amount (\$3 to \$4 million). It seems unlikely that a fixed amount would adequately compensate for a loss that is a rate over multiple, future years. It appears more likely that a proposed fixed amount really only accounts for mitigation for just one year of operation. The Regional Board may find a fixed amount to be acceptable, provided that:
- a. The average annual impact could be reasonably determined and reasonably translated into a dollar amount, and that amount (or correct share) is paid every year of operation – but that is not what is proposed in the Plan or the CHREP.
  - b. A fixed amount might also be reasonable if the CDP mitigates its share by increasing lagoon acreage via restoration or creation. Such in-kind mitigation would (if functional) replace the productivity lost to the operation of the CDP, and the impact would be fully mitigated.

The heading portion of this letter includes a Regional Board code number noted after "In reply refer to." In order to assist us in the processing of your correspondence please

Mr. Peter M. MacLaggan  
Poseidon Resources Corporation  
Revised Flow, Entrainment, and Impingement Plan

5

February 19, 2008

include this code number in the heading or subject line portion of all correspondence and reports to the Regional Board pertaining to this matter.

If you have any questions regarding the above, please contact Mr. Eric Becker at (858) 492-1785, or at [Ebecker@waterboards.ca.gov](mailto:Ebecker@waterboards.ca.gov)

Respectfully,



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cc:

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**NPDES Permit No. CA0109223**

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**Interested Parties**

**Order No. R9-2006-0065**

**NPDES Permit No. CA0109223**

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# **EXHIBIT 2**

P O S E I D O N R E S O U R C E S

SAN DIEGO REGIONAL  
WATER QUALITY  
CONTROL BOARD

March 7, 2008

10:49 AM -7 A 11:45

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RE: NCR: 02-1429.02:cbecker

Dear Mr. Becker:

Enclosed are the Carlsbad Desalination Project revised Flow, Entrainment and Impingement Minimization Plan (Plan) dated March 6, 2008, as well as Poseidon's detailed responses to your comment letter dated February 19, 2008. Poseidon respectfully requests that the Regional Board review and approve the revised Plan pursuant to Order R9-2006-0065.

If you have any questions please feel free to contact me at (619) 595-7802.

Sincerely,



Peter M. MacLaggan  
Senior Vice President

**Poseidon Resources Corporation**

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Project Office: 4600 Carlsbad Boulevard, Carlsbad, CA 92008

10:49 03/10/2008

**Poseidon Resources March 7, 2008 Response  
San Diego Regional Water Quality Control Board Letter dated February 19, 2008  
(NCR: 02-1429.02ebecker**

**1. The Plan does not yet integrate all the elements of the statutory requirements of California Water Code (CWC) Section 13142. The proposed project only includes "mitigation", while the statute CWC Section 13142.5(b) also requires that dischargers implement best available technology and mitigation measures. The Plan does not appear to include technology measures for the intake structure to reduce impingement and entrainment (I&E).**

**Response:** Water Code Section 13142.5(b) requires industrial facilities using seawater for processing to use the best available site, design, technology, and mitigation feasible to minimize impacts to marine life. The Plan has been reorganized so to sequentially analyze the steps that have been take by Poseidon to address each of these provisions:

- o Chapter 2 identifies best available site feasible to minimize Project related impacts to marine life;
- o Chapter 3 identifies best available design feasible to minimize Project related impacts to marine life;
- o Chapter 4 evaluates identifies best available technology feasible to minimize Project related impacts to marine life;
- o Chapter 5 quantifies the unavoidable impacts to marine life; and
- o Chapter 6 identifies best available mitigation feasible to minimize Project related impacts to marine life

**2. The Plan provides an evaluation of impacts based upon one year of data, 2004-05 with record rainfall, but does not explicitly evaluate the on-going impacts from Poseidon's operations.**

**Response:** As described in Chapter 5 of the Plan, the potential entrainment impacts from Poseidon's seawater intake were explicitly assessed using the facility's permitted intake flows of 304 MGD and the potential impingement impacts were assessed assuming these reduced flows and discontinued power plant heat treatment effects.

**3. The Carlsbad desalination project's (CDP) listing of impacts appears to omit specific impacts to target invertebrates.**

**Response:** The requested information has been included in Chapter 5 and Attachments 2 and 5 of the revised Plan.

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**4. The proposed mitigation project does not appear to account for all pertinent impacts resulting from impingement of invertebrates, entrainment of invertebrates, discharges of brine, etc.**

**Response:** Poseidon is using all feasible methods to minimize or reduce its entrainment and impingement impacts. These methods are likely to reduce the Project related impacts to marine life well below the levels identified in Chapter 5 of the Plan. To minimize unavoidable Project related impacts to marine life, Poseidon has voluntarily committed to a state-agency coordinated process to identify the best available mitigation feasible. The objective of the mitigation portion of this plan is to identify mitigation needs, set forth mitigation goals, and present a plan and approach for achieving the goals.

As shown in Chapter 6, the proposed mitigation strategy includes the implementation of project a coastal wetlands restoration plan that will be developed pursuant to the state-agency coordinated process; long-term preservation of Agua Hedionda Lagoon; and/or other activities which will benefit the coastal environment in San Diego County. The proposed restoration plan will be enforceable through conditions of approval of the project and the program's success will be monitored through performance standards, monitoring and reporting.

**5. The CHREP did not identify and evaluate the possible mitigation projects located within the same watershed, prior to proposing the out of watershed mitigation in San Dieguito Lagoon. The best mitigation for impacting the lagoon would be to replace lost functions by restoring current upland acreage to the historic wetland condition, or by creating new wetlands where there were none historically.**

**Response:** Investigations to date have not identified any mitigation opportunities within Agua Hedionda Lagoon (see Section 6.5) that meet the goals of the program. As a result, the proposed mitigation plan includes a core offsite mitigation program that meets the plan goals and objectives that is being developed in parallel with Poseidon's continued effort to identify feasible mitigation opportunities in Agua Hedionda Lagoon.

Poseidon recognizes the Regional Board would prefer to see mitigation in Agua Hedionda Lagoon if feasible. Accordingly, while Section 6.6 of this plan identifies a core offsite mitigation project, the mitigation plan also presents an implementation action schedule that includes additional coordination activities to either (1) confirm the lack of opportunities, or (2) identify if new mitigation options exist within Agua Hedionda Lagoon.

Poseidon and will be contacting the Department of Fish & Game to more fully assess the potential for restoration opportunities in Agua Hedionda Lagoon. If subsequent Agua Hedionda Lagoon mitigation is determined to be feasible, Poseidon will coordinate with

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regulatory agencies to implement such mitigation. If Agua Hedionda Lagoon mitigation is confirmed as infeasible, Poseidon will implement the proposed offsite mitigation project.

**6. The proposed mitigation ratio of 1:1 isn't fully supported. The Plan should be revised to include an evaluation of other mitigation options that may be available within the watershed. The proposed mitigation ratio appears inadequate in light of several factors generally considered by the Regional Board:**

**Response:** See the response to the previous comment regarding Poseidon's plans to further investigation restoration opportunities in the Agua Hedionda Lagoon watershed. Poseidon recognizes that the degree of mitigation required will be dependent on mitigation ratio requirements of the various regulatory agencies. As a result the proposed Plan (Chapter 6) provides for additional coordination with the regulatory agencies to finalize agency-mandated acreage requirements. Poseidon intends to prepare and submit a restoration project implementation plan to the Executive Director of the Regional Board for review and approval which will contain the following:

- Goals, objectives, performance criteria and maintenance and monitoring to ensure the success of the proposed Restoration Plan.
- Identification of 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.
- Identification of contingency measures that will be implemented should any of the mitigation sites not meet performance criteria.
- As-built plans for each site included in the Restoration Project.
- Annual monitoring reports for no less than five years or until the sites meet performance criteria.
- Legal mechanism(s) proposed to ensure permanent protection of each site – e.g., conservation easements, deed restriction, or other methods.

**6. a - The proposed mitigation project is located within a different watershed (the San Dieguito Lagoon) instead of the Agua Hedionda Lagoon. A higher ratio may be appropriate for this project because the referenced mitigation project is out-of-kind (i.e., discharger is not actually replacing the lost resources and functions).**

**Response:** See responses 5 and 6 above.

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**6.b It is not clear that the proposed one-time mitigation is adequate to compensate for the long-term ongoing impacts to beneficial uses, resources, and functions present in Agua Hedionda Lagoon.**

**Response:** As described in Chapter 6, the primary objective of the restoration plan is to create or restore coastal habitat similar to that of Agua Hedionda Lagoon, which will provide measurable long term environmental benefits adequate to fully mitigate unavoidable impingement and entrainment impacts associated with CDP operations. The restoration plan will rely on well-established methods, techniques and technologies for development and nurturing of coastal habitat of high productivity and long-term sustainability. The restoration plan will target coastal restoration and enhancement activities with clearly defined methodology to measure performance and success.

**6.c The mitigation project is for restoration of coastal wetland habitat, rather than the lagoon habitat impacted by the operation of the CDP.**

**Response:** As indicated previously, the intent of the restoration plan is to create habitat comparable to that in Agua Hedionda Lagoon.

**7. Poseidon might benefit from convening a joint meeting with the resources agencies (including California Dept Fish and Game, US Fish and Wildlife Service, Army Corps of Engineers, National Marine Fisheries) to discuss the impacts to beneficial uses, resources, and functions by the proposed project, and on the preferred mitigation project so they can discuss agency concerns/comments.**

**Response:** Chapter 6 of the revised Plan includes an action plan and schedule for coordinating with regulatory and resource agencies to finalize locations and acreages selected for the proposed mitigation. Additionally, Poseidon intends to prepare and submit a restoration project implementation plan to the Executive Director of the Regional Board and the Coastal Commission for review and approval which will contain the following:

- Goals, objectives, performance criteria and maintenance and monitoring to ensure the success of the proposed Restoration Plan.
- Identification of 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.
- Identification of contingency measures that will be implemented should any of the mitigation sites not meet performance criteria.

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- As-built plans for each site included in the Restoration Project.
- Annual monitoring reports for no less than five years or until the sites meet performance criteria.
- Legal mechanism(s) proposed to ensure permanent protection of each site – e.g., conservation easements, deed restriction, or other methods.

*Specific Comments on the Plan*

**8. The assessment should address the seasonal and/or daily variations in impingement impacts.**

**Response:** The results of impingement surveys are summarized in Table 5-1 and the weekly sampling data has been included in Attachment 2 of the revised Plan. These survey data are used in conjunction with intake flows coincident with each that is recorded by the power plant in order to interpolate impingement effects between each of the weekly surveys. These weekly totals are summarized for the annual totals by species including impinged invertebrate species of a size that could be identified in the field. Samples of unknown or unrecognizable impinged species were collected for laboratory verification.

Impingement survey results not only reflect the presence of impingeable fish and invertebrates in the area of the intake screens, but also reflect the variability in their susceptibility to impingement. Many factors, such as debris on the intake screens, turbidity and local currents influence the potential impingement of each species. The majority of these factors have little or no weekly periodicity only a mild seasonality.

**9. The assessment needs to include results of an impingement study for target invertebrates. Table 3.2 includes only results for fish during 2004-05.**

**Response:** Attachment 2 contains all impingement data for invertebrates collected during the 2004/2005 impingement study. Review of the this data indicates that both the number and the total weight of impinged invertebrates was less than 0.1 kgs/day.

**10. The assessment states that: "The total amount of impinged organisms for the individual sampling events is presented in Table 3-2" (p.19). The Plan, however, does not clearly identify individual sampling events. The interpretation of the results is hampered by the absence of a presentation of results for impinged organisms (including invertebrates) with dates, times, and flow rates of sampling events.**

**Response:** Attachment 2 of the Plan includes the requested information.

## CHAPTER 6

### MITIGATION

#### INTRODUCTION

Pursuant to Water Code Section 13142.5(b), this Chapter establishes a state-agency coordinated process for identification of the best available mitigation feasible to minimize Project related impacts to marine life..

- *Section 6.1 describes the proposed approach to mitigation.*
- *Section 6.2 describes the assessment of the impacted area.*
- *Section 6.3 provides an assessment of the wetlands restoration needed to compensate for entrainment impacts of the desalination facility stand-alone operations.*
- *Section 6.4 describes the restoration plan development and related benefits.*
- *Section 6.5 describes opportunities for restoration and preservation of Agua Hedionda Lagoon.*
- *Section 6.6 describes opportunities for an offsite restoration program in San Dieguito Lagoon.*
- *Section 6.7 describes the regulatory assurances that are in place to insure the adequacy of the restoration plan.*

#### 6.1 PROPOSED MITIGATION APPROACH

Poseidon is using all feasible methods to minimize or reduce its entrainment impacts. These methods are likely to reduce the Project related impacts to marine life well below the levels identified in Chapter 5. To minimize unavoidable Project related impacts to marine life, Poseidon has voluntarily committed to a state-agency coordinated process to identify the best available mitigation feasible. The objective of the mitigation portion of this plan is to identify mitigation needs, set forth mitigation goals, and present a plan and approach for achieving the goals.

Recognizing that mitigation opportunities in Agua Hedionda Lagoon may be limited, Poseidon proposes a comprehensive but flexible approach for mitigating potential impacts. This approach is based on:

- Conservatively estimating maximum potential impacts (see Section 6.2),

- Identifying goals and objectives of the mitigation program (see Section 6.4.1),
- Identifying any available mitigation opportunities in Agua Hedionda Lagoon that meet the goals and objectives (see Section 6.5),
- Identifying additional offsite mitigation that meets the mitigation goals (see Section 6.6),
- Developing an action plan and schedule for coordinating with regulatory and resource agencies to finalize locations and acreages selected for the proposed mitigation.

Investigations to date have not identified any mitigation opportunities within Agua Hedionda Lagoon (see Section 6.5) that meet the goals of the program. As a result, the proposed mitigation plan includes a core offsite mitigation program that meets the plan goals and objectives that is being developed in parallel with Poseidon's continued effort to identify feasible mitigation opportunities in Agua Hedionda Lagoon.

Poseidon recognizes the need and priority of implementing mitigation in Agua Hedionda Lagoon if feasible. Poseidon also recognizes that mitigation requirements and regulations of the various review agencies differ, and additional agency coordination is required to insure that needs of all applicable agencies are addressed.

Accordingly, while this plan identifies a core offsite mitigation project, the mitigation plan also presents an implementation action schedule that includes additional coordination activities to either (1) confirm the lack of opportunities, or (2) identify if new mitigation options exist within Agua Hedionda Lagoon.

Under the proposed plan, if subsequent Agua Hedionda Lagoon mitigation is determined to be feasible, Poseidon will coordinate with regulatory agencies to implement such mitigation.

If Agua Hedionda Lagoon mitigation is confirmed as infeasible, Poseidon will implement the proposed offsite mitigation project. Further, it is recognized that the degree of mitigation required will be dependent on mitigation ratio requirements of the various regulatory agencies. As a result, the proposed plan provides for additional coordination with the regulatory agencies to finalize agency-mandated acreage requirements.

Table 6-1 summarizes the implementation action schedule for the proposed plan.

**Table 6-1  
Mitigation Implementation Approach and Schedule**

Element	Actions/Objectives	Schedule
Submittal of draft Minimization Plan to Regional Board	<ul style="list-style-type: none"> <li>Public and agency review of revised draft Plan</li> </ul>	March 2008
Regional Board consideration of Minimization Plan	<ul style="list-style-type: none"> <li>Approval of Plan</li> <li>Regional Board provides directions on Plan implementation</li> </ul>	April 2008
Contacts with California Department of Fish & Game to assess mitigation opportunities in Agua Hedionda Lagoon	<ul style="list-style-type: none"> <li>Assess mitigation opportunities for saltwater marsh creation in Agua Hedionda Lagoon via dredging</li> </ul>	March 2008
Supplemental contacts with other resource agencies	<ul style="list-style-type: none"> <li>Identify (or confirm lack of) additional mitigation opportunities in Agua Hedionda Lagoon</li> </ul>	April 2008
Convene meeting of resource agencies; Regional Board and Coastal Commission.	<ul style="list-style-type: none"> <li>Identify (or confirm lack of) additional mitigation opportunities in Agua Hedionda Lagoon</li> <li>If applicable, address agency requirements for Agua Hedionda Lagoon mitigation and determine overall implementation feasibility</li> <li>Address mitigation rations/requirements for core offsite mitigation project in San Dieguito Lagoon</li> </ul>	April 2008
Finalize and distribute mitigation program implementation details	<ul style="list-style-type: none"> <li>Agency review of implementation details</li> </ul>	May 2008
Modify/finalize implementation program details (if applicable)	<ul style="list-style-type: none"> <li>Agency review and approval</li> <li>May involve additional inter-agency coordination meeting</li> </ul>	June 2008
Coastal Commission consideration of mitigation project(s)	<ul style="list-style-type: none"> <li>Coastal Commission approval of mitigation project</li> </ul>	July 2008

Ten years after the lease is issued, that the CDP will be subject to further environmental review by the State Lands Commission (SLC) to analyze all environmental effects of facility operations and alternative technologies that may reduce any impacts found. SLC may require additional requirements as are reasonable and as are consistent with applicable state and federal laws and regulations.

This approach will insure that the stand-alone CDP operations continue to use the best available site, design, technology and mitigation feasible to minimize Project related impacts to marine life.

## 6.2 CONSERVATIVE ASSESSMENT OF IMPACTED AREA

The assessment of the impacted area due to the desalination facility operation is based on a conservative assumption that the CPD will cause 100 percent mortality to the marine organisms in the seawater diverted from Agua Hedionda Lagoon. This approach to establishing the impact of the desalination plant operation is extremely conservative in that it ignores the design and technology features that have been incorporated in the proposed Project. The following design and technology features are expected to substantially lessen the impacts to marine life.

- **EPS once-through cooling system is expected to continue operating indefinitely.** The magnitude of the entrainment losses identified in Chapter 5 is estimated for continuous operation of the desalination plant on a stand-alone basis notwithstanding the fact that the EPS generating units will be available for service indefinitely. CalISO would ultimately determine when they are no longer needed for grid reliability. In the meantime, seawater pumping by the EPS would likely meet a substantial portion of the CPD flow requirements (e.g., 61 percent in 2007), resulting in a comparable reduction of entrainment and impingement impacts attributable to the CDP.
- **Desalination facility impacts reduced impacts due to modified use of existing facilities.** Potential entrainment mortality that occurs within the existing power plant screens, pumps and condensers upstream of the desalination facility intake would be substantially reduced due to the relatively lower temperature, volume, velocity and turbulence of the desalination operations compared to that of the power plant.
- **Two-thirds of the water is returned to the ocean without further processing.** Only 35 percent of the seawater (104 MGD) actually enters the desalination plant and is subjected to additional processing that would potentially add to the entrainment mortality. The remainder of the seawater (200 MGD) bypasses the desalination facility and is returned to the ocean.
- **Desalination facility incorporates technology to capture marine organisms and return them to the ocean unharmed.** Eighty percent of the marine organisms in the seawater that enters the desalination plant retained by the micro-screens and returned to the ocean. The remaining marine organisms that pass through the micro-screens

are subsequently rejected by the pretreatment filters and returned to the ocean. A substantial number of the organisms that are returned to the ocean are expected to survive.

### 6.3 ESTABLISHING RESTORATION REQUIREMENT

Poseidon is proposing to compensate for the unavoidable impact of stand-alone CDP operation by replacing or restoring comparable marine habitat. The proposed restoration plan is based on the Empirical Transport Model described in Chapter 5 that estimated the portion of the larvae of each target fish species at risk of entrainment with the intake source water. Multiplying the average percent of populations at risk by the physical area from which the fish larvae might be entrained, yields an estimate of the amount of habitat that must be restored to replace the lost fish larvae. This estimate is referred to as the area (acreage) of habitat production foregone (APF).

In order to calculate the APF, the number of lagoon habitat acreage occupied by the three most commonly entrained lagoon fish larvae<sup>1</sup> was multiplied by the average Proportional Entrainment Mortality (PM) for the three lagoon species identified in Chapter 5 (12.2 percent). The estimated acres of lagoon habitat for these species are based on a 2000 Coastal Conservancy Inventory of Agua Hedionda Lagoon habitat shown in Table 6-1.<sup>2</sup>

**TABLE 6-1  
WETLAND PROFILE: AGUA HEDIONDA LAGOON**

**Approximate Wetland Habitat Acreage**

Habitat	Acres	Vegetation Source
Brackish / Freshwater	3	Cattail, bulrush and spiny rush were dominant
Mudflat / Tidal Channel	49	Not specified / Estuarine flats
Open Water	253	Eelgrass occurred in all basins
Riparian	11	Not specified
Salt Marsh	14	
Upland	61	
<b>TOTAL</b>	<b>391</b>	<i>(Riparian not included)</i>

<sup>1</sup> Ninety-eight percent of the fish larvae that would be entrained by the CDP stand-alone operations are gobies, blennies and hypsopops.

<sup>2</sup> The actual acreage will be confirmed through a survey of the lagoon habitats that will be conducted during the final design of Poseidon's Coastal Habitat Restoration and Enhancement Program. To the extent that the lagoon habitat acreage established in the survey is higher or lower than that included in the 2000 Inventory, The wetlands restoration plan would be proportional adjusted to account for the actual acreage identified in the survey.

The areas of Agua Hedionda Lagoon that have potential to be impacted by the CDP operations are those habitats occupied by the three most commonly entrained lagoon fish larvae. These habitats include 49 acres of mudflat/tidal channel and 253 acres of open water. It is not appropriate to include the other lagoon habitats in the APF calculation, such as brackish/freshwater, riparian, salt marsh or upland habitats that are not occupied by the impacted species.

By definition, the APF equals the acres of the lagoon habitat that have the potential to be impacted by the intake operations (302 acres) times the average PM:

$$APF = 302 \text{ acres} \times 0.122 = 36.8 \text{ acres.}$$

Thus, entrainment effect of the stand-alone operation of the desalination plant extends over 12.2 percent, or 36.8 acres of Agua Hedionda Lagoon. The restoration area needed to fully mitigate the stand-alone CDP entrainment losses is 36.8 acres.<sup>3</sup> The restoration requirement is estimated under worst-case conditions when the power plant is no longer operating and the existing pumps are operated solely to deliver 304 MGD of seawater for the operation of the desalination plant.

It is generally accepted that this approach results in an overestimate of the number acres that would be necessary to fully mitigate the CDP entrainment and impingement effects, resulting in a net enhancement of the coastal habitat. This is because the restored habitat provides significant environmental benefits that extend well beyond compensating for the entrainment impacts. For example, the APF calculation does not take into account the enormous ecological value of the restored acreage that will accrue to valuable wetland species completely unaffected by the intake, such as the numerous riparian birds, reptiles, benthic organisms and mammals that will utilize the habitat for foraging, cover and nesting. Nor does the calculation consider the myriad of phytoplankton, zooplankton and invertebrate species that are largely unaffected by the intake operations and benefit directly from the restored wetlands.

Similar to the approach taken throughout this assessment, the APF calculation is also based on a number of very conservative assumptions:

- **Assumes 100 percent mortality of all marine organisms entering the intake.** As indicated previously, this assumption does not take into consideration any of the design and technology features that would be incorporated in the project to avoid impact to marine life. The actual impact to marine life is expected to be substantially lower.

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<sup>3</sup> The methodology used to determine the area impacted by the stand-alone desalination facility operation is based on the recommendation from the Coastal Commission that Poseidon follow the approach used by the California Energy Commission for establishing mitigation requirements for the entrainment effects associated with the operation of the AES Huntington Beach power generation plant.

- **Assumes 100 percent survival of all fish larvae in their natural environment.** In fact, over 90 percent of the fish larvae are lost to predators and do not ever reach adulthood.
- **Assumes species are evenly distributed throughout the entire depth and volume of the water body.** This assumption is very conservative for the site-specific conditions of Agua Hedionda Lagoon because it is well known that some impacted species (i.e., garibaldi) mainly inhabit the rocky area near the entrance to the power plant intake.
- **Assumes the entire habitat from which the entrained fish larvae may have originated is destroyed.** This approach to identifying the restoration requirement for the stand-alone desalination facility assumes that the area of production forgone (APF) is an area of lost habitat for all marine species inhabiting this area. This assumption is extremely conservative because only a small portion of the species inhabiting Agua Hedionda Lagoon would actually enter the power plant intake.

#### **6.4 RESTORATION PLAN DEVELOPMENT**

The main objective of the restoration plan is to implement one or more activities which preserve, restore and enhance existing wetlands, lagoons or other high-productivity near-shore coastal areas located in the vicinity of Agua Hedionda Lagoon and/or elsewhere in San Diego County. Examples of types of activities that may be included in the restoration plan include:

- Wetland Restoration;
- Coastal Lagoon Restoration;
- Restoration of Historic Sediment Elevations to Promote Reestablishment of Eelgrass Beds;
- Marine Fish Hatchery Enhancement;
- Contribution to a Marine Fish Hatchery Stocking Program;
- Artificial Reef Development;
- Kelp Bed Enhancement.

##### **6.4.1 Key Goals and Objectives**

The main objective of the restoration plan is to implement one or more activities which preserve, restore and enhance existing wetlands, lagoons or other high-productivity near-shore coastal areas located in the vicinity of Agua Hedionda Lagoon and/or elsewhere in

San Diego County. The key restoration plan goals are:

- Creation or Restoration of Coastal Habitat. The primary objective of the restoration plan is to create or restore coastal habitat similar to that of Agua Hedionda Lagoon, which will provide measurable long term environmental benefits adequate to mitigate potential impingement and entrainment impacts associated with CDP operations.
- Development of Technically Feasible Project. The restoration plan will rely on well-established methods, techniques and technologies for development and nurturing of coastal habitat of high productivity and long-term sustainability.
- Stakeholder Acceptance for the Selected Project. Implementation of project(s) with a well-defined scope and high priority for the host community and resource agencies and organizations in charge of coastal habitat preservation, restoration development.
- Ability to Measure Performance. The restoration plan will target coastal restoration and enhancement activities with clearly defined methodology to measure performance and success.

#### **6.4.2 Identification of Alternatives**

In order to identify suitable coastal habitat enhancement alternatives, on August 31, 2007, Poseidon issued a request for expression of interest (REI) for development and implementation of coastal habitat restoration project associated with the Carlsbad. To date, Poseidon has received eight Statements of Interest for coastal restoration and enhancement projects in response to the REI issued in August 2007. Seven of these proposals include specific coastal enhancement opportunities listed below:

1. San Dieguito Coastal Habitat Restoration;
2. City of Oceanside Loma Alta Lagoon Restoration;
3. Aqua Hedionda Lagoon – Land Acquisition for Expansion of Ecological Reserve;
4. Aqua Hedionda Lagoon – Eradication of Invasive Exotic Plants and Restoration of Native Vegetation;
5. Carlsbad Aquafarm at Agua Hedionda Lagoon – Abalone Stock Enhancement;

6. Buena Vista Lagoon Ecological Reserve – Completion of Restoration/Enhancement Plan Environmental Analysis;
7. Frazee State Beach – Coastal Bluff Habitat Restoration.

A summary of the scope and key benefits of each of the seven coastal habitat enhancement projects was submitted to the Regional Board in October 2007.<sup>4</sup>

#### **6.4.3 Key Restoration Project Benefits**

The habitat restoration will not only compensate for the unavoidable entrainment and impingement impacts, but will also enhance the coastal environment. The proposed Restoration Plan will create pelagic and benthic habitat, salt marsh and uplands habitat, thereby extending the benefits from the proposed mitigation measure far beyond the area of actual impact of the desalination plant operations. The proposed restoration project will yield the following key benefits:

- Restore coastal wetlands habitat comparable to that found in and around Agua Hedionda Lagoon; and
- Provides sustainable, comprehensive environmental benefits for water quality, habitat diversity for species abundance and for sensitive and endangered species.

#### **6.4.4 Project Deliverables**

Poseidon intends to prepare and submit the following deliverables to the Coastal Commission and the Executive Director of the Regional Board: for review and approval of this restoration plan:

- Restoration Project Implementation Plan which will contain the following:
  - Goals, objectives, performance criteria and maintenance and monitoring to ensure the success of the proposed Restoration Plan.
  - Identification of 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.
  - Identification of contingency measures that will be implemented should any of the mitigation sites not meet performance criteria.

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<sup>4</sup> Poseidon Resources, *Coastal Habitat Restoration and Enhancement Project*, October 2007.

- As-built plans for each site included in the Restoration Project.
- Annual monitoring reports for no less than five years or until the sites meet performance criteria.
- Legal mechanism(s) proposed to ensure permanent protection of each site – e.g., conservation easements, deed restriction, or other methods.

## **6.5 OPPORTUNITIES FOR RESTORATION AND PRESERVATION OF AGUA HEDIONDA LAGOON**

### **6.5.1 Agua Hedionda Lagoon Restoration Opportunities**

Poseidon has made a considerable effort to identify a restoration project in Agua Hedionda Lagoon. We sent our August 2007 Request for Expressions of Interest to a number of the organizations and individuals that are involved with the Carlsbad Watershed Network (CWN), as well as Carlsbad Aqua Farm, Hubbs Research Institute and the Agua Hedionda Lagoon Foundation. Three proposals were received from Agua Hedionda Lagoon interests:

#### **1. Expansion of Agua Hedionda Lagoon Ecological Reserve**

##### **Project Proponent**

The proponent for this project is the Agua Hedionda Lagoon Foundation.

##### **Project Scope**

This project includes the acquisition and preservation of land near the Agua Hedionda Lagoon's Ecological Reserve to serve as a coastal habitat for wildlife and migratory birds. The land is located on the north side of Agua Hedionda Lagoon.

##### **Project Benefits and Merits**

This project will provide a means for protecting and increasing habitat for migrating birds and endangered species. It also will help insure that nearby archeological sites will remain undisturbed and adjacent Ecological Reserve is maintained as useful wildlife habitat. Foot trails through the Reserve will be proposed to the Department of Fish & Game in exchange for adding land to the Reserve. Enhancing the quality of the Agua Hedionda Lagoon Ecological Reserve will also boost eco-tourism in the area. The project is planned to be completed by the end of year 2010.

#### **2. Agua Hedionda Lagoon – Eradication of Invasive Exotic Plants and Restoration of Native Vegetation**

##### **Project Proponent**

The proponent for this project is the Agua Hedionda Lagoon Foundation.

### **Project Scope**

The density, biomass and diversity of invasive plant species in the Agua Hedionda Lagoon Watershed are so extensive, that the ability of the natural plant communities to treat nutrients and contaminants from surface runoff into the lagoon has been diminished significantly. The scope of this project is to remove exotic invasive plant species and replace these species with appropriate native plants to restore the protective function of the lagoon watershed vegetation. The project is planned to be completed by December 2009.

### **Project Benefits and Merits**

This project aims to restore the native vegetation in the Agua Hedionda Watershed, which is an essential step towards re-establishing the hydrologic and ecological functions of these riparian and coastal wetland habitats. The project is expected to boost the natural ability of the native riparian and wetland plant habitats to sequester contaminants carried to the lagoon by surface runoff, to reduce flooding and bank erosion, and diminish sediment transport thereby increasing the biological productivity of the Agua Hedionda Lagoon.

## **3. Agua Hedionda Lagoon – Abalone Stock Enhancement**

### **Project Proponent**

The proponent for this project is Carlsbad Aquafarm.

### **Project Scope**

This project will create a stock of 100,000 abalone at the Carlsbad Aquafarm located in the Agua Hedionda Lagoon and use this stock to replenish the population of abalone near the intake to the lagoon and the project discharge area. Carlsbad Aquafarm is currently concentrating its efforts on commercial farming of the Green Abalone and also culturing both Red and Pink Abalone. The farm is well equipped with the facilities and personnel to spawn and raise abalone, as well as experienced divers familiar with abalone biology and ecology to manage and monitor the success of the project. The abalone stock enhancement project can be completed by 2011.

### **Project Benefits and Merits**

Abalone is a key part of the Southern California coastal ecosystem. However, aggressive harvesting of this aquatic resource has resulted in stock depletion and the recent closure of both commercial and recreational fisheries for all abalone species in this region. This project will help replenish and sustain the abalone stock in the area of the Agua Hedionda Lagoon.

### **6.5.2 Investigation of Additional Restoration Opportunities in Agua Hedionda Lagoon**

Investigations to date have not identified any mitigation opportunities within Agua Hedionda Lagoon that meet the goals of the program. As a result, the proposed mitigation plan includes a core offsite mitigation program that meets the plan goals and objectives that is being developed in parallel with Poseidon's continued effort to identify feasible mitigation opportunities in Agua Hedionda Lagoon.

Poseidon recognizes the Regional Board would prefer to see mitigation in Agua Hedionda Lagoon if feasible. Accordingly, while Section 6.6 of this plan identifies a core offsite mitigation project, the mitigation plan also presents an implementation action schedule that includes additional coordination activities to either (1) confirm the lack of opportunities, or (2) identify if new mitigation options exist within Agua Hedionda Lagoon.

Poseidon and will be contacting the Department of Fish & Game to more fully assess the potential for restoration opportunities in Agua Hedionda Lagoon. If Agua Hedionda Lagoon mitigation is determined to be feasible, Poseidon will coordinate with regulatory agencies to implement such mitigation. If Agua Hedionda Lagoon is confirmed to be infeasible, Poseidon will implement the proposed offsite mitigation project (Section 6.6).

### **6.5.3 Agua Hedionda Lagoon Preservation Opportunities**

As shown in Figure 6-3, Agua Hedionda Lagoon currently supports a wide range of beneficial uses, including recreational activities, such as fishing, and water contact recreation. Nearly all of these uses are directly or indirectly supported by seawater flow and exchange created by circulation of seawater in the lagoon. The existing tidal exchange renews the Lagoon's water quality and flush nutrients, sediment and other watershed pollution, particularly from the Lagoon's upper reaches. In addition, the inflow of fresh supplies of ocean carry waterborne supplies of planktonic organisms that nourish the many organisms and food chains of the Lagoon, including the White Sea Bass restoration program of the Hubbs Sea World Research Institute and the aquaculture operations in the outer Lagoon.

The Lagoon is connected to the Pacific Ocean by means of a manmade channel that is artificially maintained. Seawater circulation throughout the outer, middle and inner lagoons is sustained both by routine dredging of the manmade entrance to prevent its closure. The name, Agua Hedionda, which means "stinking water" in Spanish, reflects a former stagnant condition that existed prior to the dredging of the mouth of the Lagoon.

To avoid this significant loss of highly productive marine habitat, in the absence of the ongoing operations of the EPS, Poseidon has committed to maintain circulation of the seawater, continue routine dredging of the entrance to the lagoon to prevent its closure, and deposit the sand dredged from the lagoon on adjacent beaches so as to maintain,

restore and enhance habitat for grunion spawning and to maintain, restore and enhance opportunities for public access and recreation along the shoreline and within the coastal zone. To help ensure the long-term health and vitality of Agua Hedionda Lagoon and the surrounding watershed, Poseidon is funding watershed education programs at the Agua Hedionda Lagoon Foundation Discovery Center.

## 6.6 OFFSITE MITIGATION PROGRAM

One proposal was received that meets or exceeds the restoration plan objectives is the proposed San Dieguito Wetland Restoration Plan. The proponent of the project is the San Dieguito River Park Joint Powers Authority (JPA). The JPS's proposal is one part of a larger restoration project that has already been approved by the Coastal Commission, on October 12, 2005.<sup>5</sup> Additionally the San Dieguito Wetland Restoration Plan was the subject of a Final Environmental Impact Report that was prepared and certified by the San Dieguito River Park Joint Powers Authority and U.S. Fish and Wildlife Service.

Pursuant to the requirements of the Coastal Commission,<sup>6</sup> Southern California Edison (SCE) is creating 115 acres of tidal wetlands at San Dieguito and will keep the river mouth open in perpetuity. The San Dieguito Wetlands Restoration Project includes a new deep water lagoon on the west side of I-5, extensive finger channels on the east side of I-5 north of the river, California least tern nesting sites and berms along the river to keep the water in the riverine channel flowing to the sea without dropping sediment or flooding the newly created wetlands under normal conditions.

The proponent for Poseidon's proposed restoration project is San Dieguito River Park Joint Powers Authority (local government agency in partnership with the San Dieguito River Valley Conservancy (501 (c) (3) organization). The JPA is the agency responsible for creating a natural open space park in the San Dieguito River Valley, which will one day extend from the ocean at Del Mar to Volcan Mountain, just north of Julian.

The San Dieguito Lagoon is located approximately 12.5 miles south of Agua Hedionda Lagoon, and has been historically one of the largest lagoons in San Diego County. All property within the proposed restoration project is in public ownership. The JPA is responsible for implementing the San Dieguito River Park Master Plan. Features of the Park Master Plan include trails and interpretive programs, enhancement of the lagoon ecosystem through creation of associated native grassland and coastal sage scrub habitat, expansion of tidal wetlands beyond the SCE project limits, and creation of a series of water quality treatment ponds. The JPA is responsible for maintaining the project area and precluding any uses not consistent with the conservation of wetland habitat.

Poseidon's proposed wetlands restoration project would expand the number of acres of functional wetlands and associated habitat in San Dieguito Lagoon, by supplementing the 115-acre SCE Wetlands Restoration Project. The proposed restoration project will

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<sup>5</sup> CDP #.6-04-88

<sup>6</sup> Id.

create at approximately 37 acres of marine wetlands and seasonal marsh habitat from what is now entirely disturbed land. The current state of the land chosen for this project, results from decades of fill, grading and/or agricultural use, rendering it unsuitable for supporting native species that rely on freshwater/intertidal marsh or upland habitat.

Poseidon's proposed Restoration Project would provide approximately 37 acres of coastal wetland habitat in San Dieguito Lagoon above and beyond what is included in the ongoing SCE Wetland Restoration Project. The majority of the coastal habitat will be marine wetlands located at or below the elevation of the mean high tide for this area. As shown in Figures 1 and 2, the key elements of the project are excavation and grading to create new tidal wetlands (Parcel 1), including sub-tidal, intertidal, transitional, and seasonal salt marsh habitats east of I-5.

The central feature of the proposed restoration project is the conversion of disturbed land to more valuable tidal salt marsh or open water wetland which will become a productive in-kind habitat for species similar to these impacted by impingement and entrainment related to the stand-alone desalination plant operations (i.e., gobies, blennies, etc.). All of the acreage that will be converted to tidal wetland habitat is currently disturbed upland that supports weedy, generally non-native (ruderal) vegetation. After restoration to tidal salt marsh, these habitats will be subject to tidal action throughout the year, which will enable salt marsh plants to be healthier and with higher productivity. These goals will be accomplished by grading the site to substantially create an area that is subject to regular tidal inundation.

The restoration site will be graded to match subtidal and the low tidal salt marshes of the San Dieguito Lagoon Restoration Project being constructed by Southern California Edison. Since the new wetlands will be connected to the existing tidal basin through the existing Dieguito River channel, the tidal exchange will maintain the physical and chemical conditions in these wetlands such that marine and tidal salt marsh species (such as gobies and blennies) will be able to inhabit, disperse and persist in the wetlands created by the Poseidon's restoration project. Since Southern California Edison has already committed to maintain the mouth of the lagoon open in perpetuity, tidal circulation in the proposed new wetlands will be unrestricted.

Based on the biological survey of the existing tidal wetlands of the San Dieguito Lagoon completed as a part of the Southern California Edison Restoration Project,<sup>7</sup> these wetlands are of the same type of habitat that would be impacted by desalination plant operations (i.e., gobies, blennies, anchovy, topsmelt, white croaker, etc.). Therefore, the implementation of the proposed restoration project will create in-kind replacement habitat, which has 1:1 restoration value. The 1:1 restoration ratio of the proposed project is consistent with the methodology used by the California Energy Commission for establishing mitigation requirements for the entrainment effects associated with the operation of the AES Huntington Beach and Morro Bay power generation plants.

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<sup>7</sup> SCE, *San Dieguito Wetlands Restoration Project, Final Restoration Plan*, November 2005

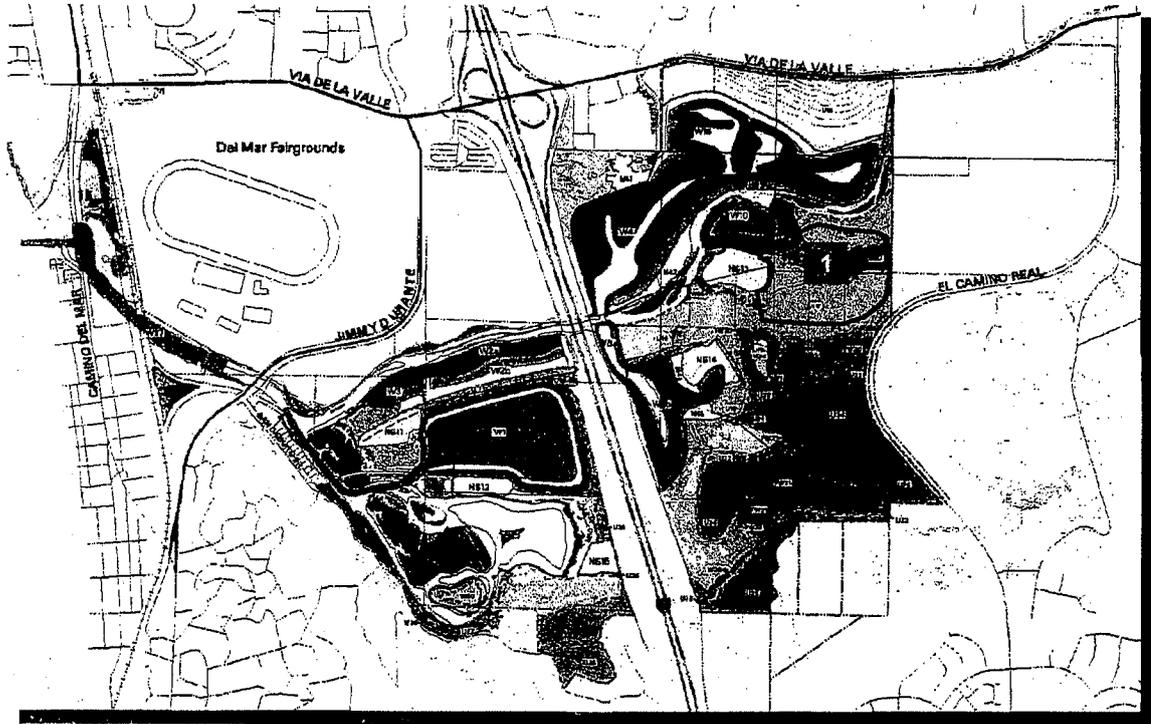


Figure 6-1 – San Dieguito Wetlands Restoration Project

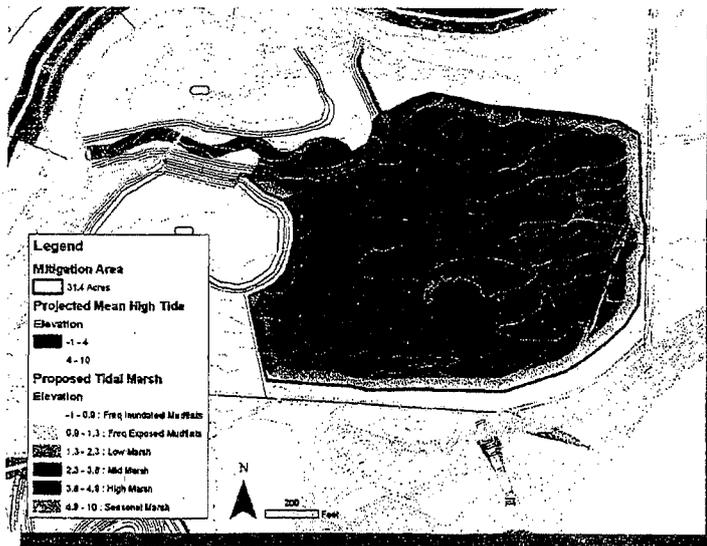


Figure 6-2 – Proposed Restoration Site

The Coastal Commission found this location to be acceptable for mitigation of the entrainment and impingement impacts of the San Onofre Nuclear Generating Station which is 45 miles away from San Dieguito Lagoon and is impacting open water fish species that don't necessarily reside in a lagoon environment. The proposed desalination facility is much closer to the proposed mitigation site (12 miles) and Poseidon is proposing to replace tidally exchanged coastal lagoon habitat with in-kind habitat.

## 6.7 REGULATORY ASSURANCE OF RESTORATION PLAN ADEQUACY

There are a number of regulatory assurances in place to confirm the adequacy of the proposed restoration plan. The Regional Board, Coastal Commission and State Lands Commission have ongoing jurisdiction over the proposed Project to insure the adequacy of the proposed restoration plan.

### 6.7.1 Regional Board

The Regional Board is insuring that Poseidon will provide adequate mitigation consistent with Water Code Section 13142.5(b) through the imposition of Special Condition 12 in the draft Lease Amendment for the proposed project:<sup>8</sup>

- b. *California Water Code Section 13142.5(b) Applicability. Water Code Section 13142.5(b) requires industrial facilities using seawater for processing to use the best available site, design, technology, and mitigation feasible to minimize impacts to marine life. The CDP is planned to operate in conjunction with the EPS by using the EPS cooling water discharge as its source water. When operating in conjunction with the power plant, the desalination plant feedwater intake would not increase the volume or the velocity of the power station cooling water intake nor would it increase the number of organisms impinged by the Encina Power Station cooling water intake structure. Recent studies have shown that nearly 98 percent of the larvae entrained by the EPS are dead at the point of the desalination plant intake. As a result, a de minimis number of organisms remain viable which potentially would be lost due to the incremental entrainment effect of the CDP operation. Due to the fact that the most frequently entrained species are very abundant in the area of the EPS intake, Agua Hedionda Lagoon and the Southern California Bight, species of direct recreational and commercial value would constitute less than 1 percent of all the organisms entrained by the EPS. As a result, the incremental entrainment effects of the CDP operation in conjunction with the EPS would not trigger the need for additional technology or mitigation to minimize impacts to marine life. However, in the event that the EPS were to cease operations, and the discharger were to independently operate the seawater intake and outfall for the*

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<sup>8</sup> Regional Board Order R9-2006-0065 at F-49.

*benefit of the CDP, such independent operation will require additional review pursuant to Water Code Section 13142.5(b). The Regional Water Board review and approval of the Flow Minimization, Entrainment and Impingement Minimization Plan will address any additional review required pursuant to Water Code Section 13142.5(b).*

With the October 2006 approval Order R9-2006-0065, the Regional Board has ongoing jurisdiction over the Project to insure Poseidon is using the best available design, technology, and mitigation measures at all times consistent with Water Code Section 13142.5(b).

#### **6.7.2 State Lands Commission**

The State Lands Commission is insuring that Poseidon will provide adequate mitigation consistent with Public Resources Code 6370, et seq. through the imposition of Special Condition 12 in the draft Lease Amendment for the proposed project:<sup>9</sup>

12. *Poseidon Resources shall use the best available design, technology, and mitigation measures at all times during which this Lease is in effect to minimize the intake (impingement and entrainment) and mortality of all forms of marine life associated with the operation of the desalination facility as determined by the San Diego Regional Water Quality Control Board or any other federal, state, or local entity.*

With the approval of the approval the draft lease for the Project, the State Lands Commission reserves the right to terminate the lease if Poseidon is not using the best available design, technology, and mitigation measures at all times as determined by the San Diego Regional Water Quality Control Board or any other federal, state, or local entity.

#### **6.7.3 Coastal Commission**

The Coastal Commission is insuring that Poseidon will provide adequate mitigation consistent with applicable Coastal Act provisions through the imposition of Special Condition 8:<sup>10</sup>

- 1) *Marine Life Mitigation Plan: PRIOR TO ISSUANCE OF THE PERMIT, the Permittee shall submit to and obtain from the Commission approval of*

<sup>9</sup> State Lands Commission draft Amendment of Lease PRC 8727.1.

<sup>10</sup> See Coastal Commission Recommended Revised Findings Coastal Development Permit for Poseidon Carlsbad Desalination Project, page 91 of 108; <http://documents.coastal.ca.gov/reports/2008/3/W25a-3-2008.pdf>

*a Marine Life Mitigation Plan in the form of an amendment to this permit that includes 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) "As-built" plans for each site and annual monitoring reports for no less than five years or until the sites meet performance criteria.*
- e) Legal mechanism(s) proposed to ensure permanent protection of each site – e.g., conservation easements, deed restriction, or other methods.*

With the approval of the Coastal Development permit for the proposed project conditioned as described above the Coastal Commission is insuring that Poseidon will provide the mitigation needed to address Project related impacts in a manner consistent with applicable Coastal Act provisions.

## **6.8 SUMMARY AND CONCLUSIONS**

Poseidon is using all feasible methods to minimize or reduce its entrainment impacts. These methods are likely to reduce the Project related impacts to marine life well below the levels identified in Chapter 5. To minimize unavoidable Project related impacts to marine life, Poseidon has voluntarily committed to a state-agency coordinated process to identify the best available mitigation feasible. The objective of the mitigation portion of this plan is to identify mitigation needs, set forth mitigation goals, and present a plan and approach for achieving the goals.

As shown in Table 6-2, the proposed mitigation strategy includes the implementation of project a coastal wetlands restoration plan that will be developed pursuant to the state-agency coordinated process; long-term preservation of Agua Hedionda Lagoon; and/or

other activities which will benefit the coastal environment in San Diego County. The restoration plan will be enforceable through conditions of approval of the project and the program's success will be monitored through performance standards, monitoring and reporting.

Additionally, ten years after the lease is issued, that the CDP will be subject to further environmental review by the State Lands Commission (SLC) to analyze all environmental effects of facility operations and alternative technologies that may reduce any impacts found. SLC may require additional requirements as are reasonable and as are consistent with applicable state and federal laws and regulations.

This approach will insure that the stand-alone CDP operations continue to use the best available site, design, technology and mitigation feasible to minimize Project related impacts to marine life.

<b>Table 6-2 Mitigation</b>		
<b>Category</b>	<b>Feature</b>	<b>Result</b>
1. Mitigation	Implementation of project mitigation plan developed pursuant to a state-agency coordinated process described in Chapter 6.	Compensate for the unavoidable entrainment and impingement impacts and enhance the coastal environment.
2. Mitigation	Preservation of Agua Hedionda Lagoon through continued maintenance dredging and Lagoon stewardship.	Preserve and protect 388 acres of highly productive marine habitat; maintain and enhance opportunities for public access and recreation; provide sand for beach replenishment and grunion spawning habitat; maintain adequate water quality to support aquaculture, fish hatchery and natural fish habitat; and provide San Diego County with a new high-quality drinking water supply.
3. Mitigation	Funding watershed education programs at the Agua Hedionda Lagoon Foundation Discovery Center	Helps ensure the long-term health and vitality of Agua Hedionda Lagoon and the surrounding watershed

## CHAPTER 7

### CONCLUSION

#### 7.1 PLAN PURPOSE

The San Diego Regional Water Quality Control Board (Regional Board) adopted Order No. R9-2006-0065 (Permit) for Poseidon Resources Corporation's (Poseidon) Carlsbad Desalination Project (CDP) discharge to the Pacific Ocean via the existing Encina Power Station (EPS) discharge channel. The CDP is planned to operate in conjunction with the EPS by using the EPS cooling water discharge as its source water whenever the power plant is operating.

In the event that the EPS were to cease operations, and Poseidon were to independently operate the seawater intake and outfall for the benefit of the CDP, such independent operation will require additional review pursuant to Water Code Section 13142.5(b). Water Code Section 13142.5(b) requires industrial facilities using seawater for processing to use the best available site, design, technology, and mitigation feasible to minimize impacts to marine life.

This Flow, Entrainment and Impingement Minimization Plan (Plan) is developed in fulfillment of the above-stated requirements and contains site-specific activities, procedures, practices and mitigation plans which Poseidon proposes to implement to minimize impacts to marine organisms when the Carlsbad Desalination Project intake requirements exceed the volume of water being discharged by the EPS.

#### 7.2 PLAN COMPLIANCE

As shown in Table 7-1, the Plan addresses each of the provisions of Water Code Section 13142.5(b):

- Identifies the best available site feasible to minimize Project related impacts to marine life;
- Identifies the best available design feasible to minimize Project related impacts to marine life;
- Identifies the best available technology feasible to minimize Project related impacts to marine life;
- Quantifies the unavoidable impacts to marine life; and
- Establishes a state-agency coordinated process for identification of the best available mitigation feasible to minimize Project related impacts to marine life.

Table 7-1 Design, Technology and Mitigation Measures to Minimize Impacts to Marine Life		
Category	Feature	Result
1. Site	Proposed location at Encina Power Station (EPS)	Best available site for the project, no feasible and less environmentally damaging alternative locations.
1. Design	Use of EPS discharge as source water	Sixty-one percent reduction of entrainment and impingement impacts attributable to the CDP
2. Design	Reduction in inlet screen velocity	Reduction of impingement of marine organisms
3. Design	Reduction in fine screen velocity	Reduction of impingement of marine organisms
4. Design	Ambient temperature processing	Eliminate entrainment mortality associated with the elevated seawater temperature
5. Design	Elimination of heat treatment	Eliminate mortality associated with heat treatment.
1. Technology	Installation of VFDs on CDP intake pumps	Reduce the total intake flow for the desalination facility to no more than that needed at any given time, thereby minimizing the entrainment of marine organisms.
2. Technology	Installation of micro-screens	Micro-screens (120 $\mu$ ) minimize entrainment and impingement impacts to marine organisms by screening the fish larvae and plankton from the seawater.
3. Technology	Installation of low impact prefiltration technology	UF filtrations system minimizes entrainment and impingement impacts to marine organisms by screening the small plankton from the seawater.
4. Technology	Return to the ocean of marine organisms captured by the screens and filters	Minimize entrainment and impingement impacts to marine organisms captured by the screens and filters by returning the organisms to the ocean.
5. Technology	After ten years of operation, State Lands Commission (SLC) to analyze environmental effects of facility and the availability of alternative technologies that may reduce any impacts.	SLC may require Poseidon install additional technology as are reasonable and as are consistent with applicable state and federal laws and regulations. This ensures that the CDP operations at that time are using technologies that the SLC determines may reduce any impacts and are appropriate in light of environmental review.
1. Mitigation	Implementation of project mitigation plan developed pursuant to a state-agency coordinated process described in Chapter 6.	Compensate for unavoidable entrainment and impingement impacts and enhance the coastal environment.
2. Mitigation	Preservation of Agua Hedionda Lagoon through continued maintenance dredging and Lagoon stewardship.	Preserve and protect highly productive marine habitat; maintain and enhance opportunities for public access and recreation; provide sand for beach replenishment and grunion spawning habitat; maintain adequate water quality to support aquaculture, fish hatchery and natural fish habitat; and provide a new high-quality water supply.
3. Mitigation	Fund watershed education programs at the AHL Foundation Discovery Center.	Helps ensure the long-term health and vitality of Agua Hedionda Lagoon and the surrounding watershed.

### 7.3 PROPOSED MITIGATION APPROACH

Poseidon is using all feasible methods to minimize or reduce its entrainment impacts. These methods are likely to reduce the Project related impacts to marine life well below the levels identified in Chapter 5. To minimize unavoidable Project related impacts to marine life, Poseidon has voluntarily committed to a state-agency coordinated process to identify the best available mitigation feasible. The objective of the mitigation portion of this plan is to identify mitigation needs, set forth mitigation goals, and present a plan and approach for achieving the goals.

Recognizing that mitigation opportunities in Agua Hedionda Lagoon may be limited, Poseidon proposes a comprehensive but flexible approach for mitigating potential impacts. This approach is based on:

- Conservatively estimating maximum potential impacts
- Identifying goals and objectives of the mitigation program
- Identifying any available mitigation opportunities in Agua Hedionda Lagoon that meet the goals and objectives
- Identifying additional offsite mitigation that meets the mitigation goals
- Developing an action plan and schedule for coordinating with regulatory and resource agencies to finalize locations and acreages selected for the proposed mitigation.

Investigations to date have not identified any mitigation opportunities within Agua Hedionda Lagoon that meet the goals of the program. As a result, the proposed mitigation plan includes a core offsite mitigation program that meets the plan goals and objectives that is being developed in parallel with Poseidon's continued effort to identify feasible mitigation opportunities in Agua Hedionda Lagoon.

Poseidon recognizes the need and priority of implementing mitigation in Agua Hedionda Lagoon if feasible. Poseidon also recognizes that mitigation requirements and regulations of the various review agencies differ, and additional agency coordination is required to insure that needs of all applicable agencies are addressed.

Accordingly, while this plan identifies a core offsite mitigation project, the mitigation plan also presents an implementation action schedule that includes additional coordination activities to either (1) confirm the lack of opportunities, or (2) identify if new mitigation options exist within Agua Hedionda Lagoon.

Poseidon will be contacting the Department of Fish & Game to more fully assess the potential for restoration opportunities in Agua Hedionda Lagoon. If subsequent Agua Hedionda Lagoon mitigation is determined to be feasible, Poseidon will coordinate with regulatory agencies to implement such mitigation.

If Agua Hedionda Lagoon mitigation is confirmed as infeasible, Poseidon will implement the proposed offsite mitigation project.

Table 7-2 summarizes the implementation action schedule for the proposed mitigation plan.

**Table 7-2  
Mitigation Implementation Approach and Schedule**

Element	Actions/Objectives	Schedule
Submittal of draft Minimization Plan to Regional Board	<ul style="list-style-type: none"> <li>Public and agency review of revised draft Plan</li> </ul>	March 2008
Regional Board consideration of Minimization Plan	<ul style="list-style-type: none"> <li>Approval of Plan</li> <li>Regional Board provides directions on Plan implementation</li> </ul>	April 2008
Contacts with California Department of Fish & Game to assess mitigation opportunities in Agua Hedionda Lagoon	<ul style="list-style-type: none"> <li>Assess mitigation opportunities for saltwater marsh creation in Agua Hedionda Lagoon via dredging</li> </ul>	March 2008
Supplemental contacts with other resource agencies	<ul style="list-style-type: none"> <li>Identify (or confirm lack of) additional mitigation opportunities in Agua Hedionda Lagoon</li> </ul>	April 2008
Convene meeting of resource agencies; Regional Board and Coastal Commission.	<ul style="list-style-type: none"> <li>Identify (or confirm lack of) additional mitigation opportunities in Agua Hedionda Lagoon</li> <li>If applicable, address agency requirements for Agua Hedionda Lagoon mitigation and determine overall implementation feasibility</li> <li>Address mitigation rations/requirements for core offsite mitigation project in San Dieguito Lagoon</li> </ul>	April 2008
Finalize and distribute mitigation program implementation details	<ul style="list-style-type: none"> <li>Agency review of implementation details</li> </ul>	May 2008
Modify/finalize implementation program details (if applicable)	<ul style="list-style-type: none"> <li>Agency review and approval</li> <li>May involve additional inter-agency coordination meeting</li> </ul>	June 2008
Coastal Commission consideration of mitigation project(s)	<ul style="list-style-type: none"> <li>Coastal Commission approval of mitigation project</li> </ul>	July 2008

#### **7.4 REGULATORY ASSURANCE OF PLAN ADEQUACY**

There are a number of regulatory assurances in place to confirm the adequacy of the proposed restoration plan. The Regional Board, Coastal Commission and State Lands Commission have ongoing jurisdiction over the proposed Project to insure the adequacy of the proposed restoration plan.

Additionally, ten years after the lease is issued, that the CDP will be subject to further environmental review by the State Lands Commission (SLC) to analyze all environmental effects of facility operations and alternative technologies that may reduce any impacts found. SLC may require additional requirements as are reasonable and as are consistent with applicable state and federal laws and regulations.

This approach will ensure that the stand-alone CDP operations continue to use the best available site, design, technology and mitigation feasible to minimize Project related impacts to marine life.

# **EXHIBIT 3**



# California Regional Water Quality Control Board

## San Diego Region



Linda S. Adams  
Secretary for  
Environmental Protection

Over 50 Years Serving San Diego, Orange, and Riverside Counties  
Recipient of the 2004 Environmental Award for Outstanding Achievement from USEPA

Arnold Schwarzenegger  
Governor

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<http://www.waterboards.ca.gov/sandiego>

### TECHNICAL REPORT

**TO:** John H. Robertus  
Executive Officer  
**SAN DIEGO REGIONAL WATER QUALITY CONTROL BOARD**

**FROM:** Chiara Clemente, Senior Environmental Scientist, Central Watershed Unit  
Deborah Woodward, PhD, Environmental Scientist  
Michael Porter, Engineering Geologist

**DATE:** April 4, 2008

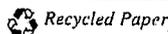
**SUBJECT:** Review of Carlsbad Seawater Desalination Plant Flow, Entrainment, and Impingement Minimization Plan, Poseidon Resources Corporation, dated March 6, 2008

#### Executive Summary

On March 7, 2008, Poseidon submitted a revised version of the subject Plan, and written responses to the Regional Board's comments from a letter dated February 19, 2008. The revised Plan includes an assessment of impacts from impingement and entrainment of marine organisms, and a process for the selection of a specific mitigation alternative. The Central Watershed Unit (CWU) has reviewed the subject plan, focusing on the validity of the assessment of impacts, and suitability of the mitigation process proposed, and alternatives reviewed. In summary, the CWU staff conclude that adoption of the Plan, as currently drafted, would be premature for the following reasons:

1. The proposed plan does not describe a process for agency approval of the calculations and variables used to assess impacts from impingement and entrainment.
2. The proposed mitigation process does not clearly identify the method for the final selection and agency concurrence of the preferred mitigation alternative.
3. There is insufficient sampling data to accurately determine the impacts of impingement and entrainment.
4. The proposed process seems to favor a pre-determined outcome (i.e. mitigation in San Dieguito Lagoon). Other mitigation alternatives (e.g. kelp bed enhancement and artificial reef construction) should be considered and evaluated equally as viable mitigation possibilities.

*California Environmental Protection Agency*



## **I. Assessment of Impacts**

### **A. Sampling Data**

Impacts to marine resources attributable to the Carlsbad Desalination Plant (CDP) are described in Chapter 5 of the Plan. Impact calculations are based on results from a one-year sampling program of impingement and entrainment at the Encina Power Station (EPS). This sampling set is likely to be skewed because it does not account for annual variability and the data were collected during a year that was atypical with regards to rainfall.

It is important that ecological impacts are correctly determined because the Empirical Transport Model (used to estimate larval mortality rates) and calculation of Acres Production Foregone (used to establish the mitigation requirement) directly rely on the sampling results. If impacts are underestimated due to sampling during an atypically wet year, then subsequent modeling and calculations will lead to underestimated mortality and mitigation requirements.

### **B. Calculations**

The Acres of Production Foregone (APF) is an estimate used by Poseidon to calculate the amount of acreage that would compensate for the entrainment loss of fish larvae (and other planktonic organisms) due to operation of the CDP. Its derivation is discussed in Chapter 6 of the Plan. However, the data used to derive this calculation are preliminary, and lack statistical power. Further justification for the values selected to calculate the Acres Production Foregone (APF) is warranted, and, after proper validation of these inputs, the APF should be recalculated. The Plan currently estimates that the restoration area needed to fully mitigate the CDP contribution to entrainment is 36.8 acres.

## **II. Assessment of Mitigation Process**

Poseidon's Plan describes a process to follow for evaluating mitigation alternatives that will compensate for impacts to beneficial uses of Agua Hedionda Lagoon from entrainment and impingement of marine organisms by operations at the CDP. Poseidon's proposed process contains a schedule of actions to identify the appropriate type and amount of mitigation. One of these actions is to convene a meeting with the relevant resource and regulatory agencies, prior to finalizing their specific mitigation alternative. The proposed process is unclear as to how additional alternatives (not currently listed in the Plan) will be considered or what the agency approval mechanism would be for the final selection of the specific mitigation alternative. The Plan does state that if Alternatives 2 through 8 are deemed infeasible, Poseidon will proceed with implementation of Alternative 1 (i.e. Offsite Mitigation Program – San Dieguito Lagoon), described below.

### **III. Assessment of Proposed Mitigation**

The main objective of the mitigation will be to implement one or more activities that will preserve, restore and enhance existing wetlands, lagoons or other high-productivity near-shore coastal areas located in the vicinity of Agua Hedionda and/or elsewhere in San Diego County.

#### **A. Types of Mitigation Alternatives**

Poseidon's proposed Plan states that types of activities that may be included in their final specific mitigation alternative include:

1. Wetland Restoration.
2. Coastal Lagoon Restoration.
3. Restoration of Historic Sediment Elevation to Promote Reestablishment of Eelgrass Beds.
4. Marine Fish Hatchery Stocking Program.
5. Artificial Reef Development.
6. Kelp Bed Enhancement.

Each of these activities has the *potential* to compensate for the direct loss of fish, larvae, and eggs.

#### **B. Habitat Restoration Goals:**

Poseidon's proposed habitat restoration plan goals are:

1. Creation or restoration of coastal habitat.
2. Development of a technically feasible project.
3. Stakeholder acceptance for selected project.
4. Ability to measure performance.

These goals are typical of plans developed to mitigate impacts to beneficial uses of surface waters resources.

#### **C. Alternatives:**

Poseidon has identified eight alternatives to be considered and further evaluated for selection in their final preferred specific mitigation alternative. These alternatives include:

1. San Dieguito Lagoon Coastal Habitat Restoration.

This mitigation would be out-of-watershed and includes the restoration of 37-acres of tidal prism and salt water marsh in San Dieguito Lagoon. This restoration would be good for San Dieguito Lagoon, but would provide very limited compensation for impacts to fish, larvae, and eggs in Agua Hedionda Lagoon – which is located 12-miles north of San Dieguito Lagoon.

2. City of Oceanside Loma Alta Lagoon Restoration.  
This mitigation would be out-of-watershed and Poseidon did not provide the Regional Board with any details on this alternative. This restoration potentially could create positive effects on Loma Alta Lagoon located approximately 5 miles north of Aqua Hedionda Lagoon. The project would provide very limited compensation for impacts to fish, larvae, and eggs in Aqua Hedionda Lagoon.
3. Aqua Hedionda Lagoon – Land Acquisition for Expansion of an Ecological Reserve.  
This mitigation alternative includes the “acquisition and preservation of land near the Aqua Hedionda Lagoon’s Ecological Reserve to serve as coastal habitat for wildlife and migratory birds.” This mitigation alternative would benefit the waterfowl population, but potentially reduce the amount of fish and larvae due to increased waterfowl predation.
4. Aqua Hedionda Lagoon – Eradication of Invasive Plants and Restoration of Native Vegetation. The mitigation alternative proposes to “remove exotic, invasive (terrestrial) plant species and replace these species with appropriate native plants to restore the protective function (surface water quality cleansing) of the lagoon watershed vegetation.” Removing exotic, invasive plant species from a watershed is always desirable. However, it is unclear that the increased amount of biomass in the Lagoon from slightly improved water quality would adequately compensate for the biomass loss from impingement and entrainment by operations at the CDP.
5. Carlsbad Aquafarm at Aqua Hedionda Lagoon – Abalone Stock Enhancement.  
This mitigation alternative proposes to “create a stock of 100,000 abalone at the Carlsbad Aquafarm located in the Aqua Hedionda Lagoon and the use the stock to replenish the population of abalone near the intake to the lagoon and project discharge area.” With respect to improving the near shore ecosystem, abalones are known to consume algae on rocks and reefs, potentially creating habitat opportunities for less competitive species. Juvenile, attached abalones are also a food source for octopus, Cabazon, and Ling cod. This mitigation would directly benefit the abalone population but do nothing to mitigate for the hundreds of other species that suffer mortality from operations at the CDP.
6. Buena Vista Lagoon Ecological Reserve – Completion of Restoration/Enhancement Plan Environmental Analysis.  
This mitigation would be out-of-watershed and Poseidon did not provide the Regional Board with any details on this mitigation alternative. Completion of an Analysis would have limited compensation for impacts to fish, larvae, and eggs in

Aqua Hedionda Lagoon – which is located approximately 5-miles south of Buena Vista Lagoon.

7. Frazee State Beach – Coastal Bluff Habitat Restoration. Poseidon did not provide any details on this alternative.
8. Additional Aqua Hedionda Lagoon Restoration Opportunities. Poseidon's Plan indicates they investigated additional mitigation alternatives, but reportedly did not find any opportunities. Based on this conclusion, Poseidon appears to favor Mitigation Alternative No.1 – the San Dieguito Lagoon Coastal Habitat Restoration. This is unfortunate because the alternatives that are best suited to directly mitigate impacted ecological functions are normally located within the same area (watershed). In addition, the proposed mitigation ratio is lower than that normally accepted for out-of-watershed mitigation projects.

Additional alternatives (e.g. artificial reef development, kelp bed enhancement, marine fish hatchery stocking, or reestablishment of eelgrass in Agua Hedionda Lagoon) that have been found suitable and viable for mitigation of similar impacts elsewhere, do not appear to be included for consideration in the current version of the Plan. The CWU staff conclude that Poseidon should include these additional alternatives for evaluation as part of their proposed process for the selection of a specific mitigation alternative.

# **EXHIBIT 4**

1 San Diego, California, Wednesday, April 9, 2008  
2 (Partial transcript)

3  
4 MR. WRIGHT: I would also say the same thing for  
5 the other organized presentations. And I know you'll do  
6 everything in organized presentations to keep comments  
7 brief and lacking representations. So at this point,  
8 let's hear staff presentation. And approximately how much  
9 time?

10 MR. KELLEY: Probably 15 minutes.

11 MR. WRIGHT: No more than 15 minutes.

12 MR. KELLEY: Mr. Chairman, members of the board,  
13 my name is Brian Kelley. I'm a senior water resource  
14 control engineer in charge of the new core regulatory  
15 unit. And the purpose of this item is to consider  
16 approval of a revised flow entrainment and impingement  
17 minimization plan dated March 6, 2008 as required by Order  
18 Number R9-2006-0065; MPDS number CA0109223 for the  
19 Poseidon Resources Corporation Carlsbad desalination or  
20 desal project. Because of the voluminous amount of  
21 information regarding this matter, I would first like to  
22 provide a brief list of items that are included in your  
23 agenda materials.

24 You have in your first agenda packet for this  
25 item the executive officer summary report project location

1 map and the flow schematic. Copy of order number  
2 R9-2006-0065; copy of a regional board comment letter  
3 dated February 19, 2008 regarding the original flow  
4 entrainment and impingement minimization plan. A copy of  
5 Poseidon's revised flow entrainment and impingement  
6 minimization plan dated March 6, 2008; including  
7 attachments, which is the plan that you will be  
8 considering for adoption today. And also copies of the  
9 four comment letters that we received through March 28,  
10 which was the first mail out of agenda material to the  
11 Regional Board.

12 Then in the second agenda mailing sent on April  
13 four, you have a supplemental executive officer summary  
14 report. A tentative resolution number R9-2008-0039; a  
15 regional board technical report dated April 4, 2008, and  
16 copies of additional comments received since the date of  
17 the first agenda mailing up until the deadline for written  
18 comments, which was the close of business on Wednesday,  
19 April 2, 2008. Two letters, one from the San Diego County  
20 Farm Bureau and one from the Santa Fe Irrigation District,  
21 who inadvertently left out both agenda mailings. Copies  
22 of these have been handed out to you today.

23 I would now like to provide a brief description  
24 of the proposed Carlsbad Desalination Project and the  
25 background of the Regional Board's regulation of water

1 quality aspects of the project.

2           The proposed project would need approximately  
3 304 million gallons per day for MGD of seawater on the  
4 Encina Power Station once through cooling water system  
5 affluent. The Encina Power Station intake is located in  
6 the southwest corner of the Agua Hedionda Lagoon. Can you  
7 see it's right in here. The powerplant is here. This is  
8 the opening to the lagoon. And then here's the discharge  
9 channel. The Carlsbad desalination facility would produce  
10 up to 50 MGD of potable water, up to 57 MGD of combined  
11 concentrated saline waste water and filter backwash waste  
12 water from the facility of with commingle of at least 200  
13 MGD of pass through cooling water from the powerplant, and  
14 the combined flow would be discharged to the Pacific Ocean  
15 via the current Encina Power Station discharge channel  
16 across the beach. So you can see the intake structure  
17 here coming back down through the desalination plant. The  
18 50 MGD will go into the potable water and the remaining  
19 backwash and filter will come up this way and come back  
20 into here. Commingle with the remaining discharge through  
21 the powerplant and then be discharged to the ocean.

22           As originally proposed, the Encina Power Station  
23 seawater intake cooling flows needs would have far  
24 exceeded that of the Carlsbad Desal Facility, the 304 MGD.  
25 More recently however it appears that the flow needed for

1 power generation has been less than the 304 MGD needed for  
2 the desal facility. Last year, based on flow data from  
3 the power station, the cooling water intake flow volume  
4 dropped below the 304 MGD approximately 40 percent at a  
5 time. Regarding regional board regulation of the Carlsbad  
6 desal project, on August 16, 2006, the Regional Board  
7 adopted order Number R9-2006-0065 for the discharge of  
8 waste water from the Poseidon Carlsbad Desal Facility with  
9 the effective date of October 1st, 2006 and an expiration  
10 date of October 1st, 2011, a five year permit.

11 Section 6C2E of the order required Poseidon to  
12 submit for approval by the Regional Board a flow  
13 entrainment and impingement minimization plan within 180  
14 days of adoption of the order. This plan was required in  
15 order to comply with California Water Code Section  
16 13142.5, which mandates that new or expanded industrial  
17 installations used best available site, design,  
18 technology, and mitigation measures feasible to minimize  
19 the intake and mortality; in other words, entrainment and  
20 impingement of all forms of marine life. Approval of this  
21 specific plan, however, is currently not a condition in  
22 the permit for commencement of the discharge from the  
23 Carlsbad Desal Facility. I would also like to point out  
24 that the permit does not provide for the situation when  
25 the desal project is operating in absence of the

1 powerplant operations. The current permit would need to  
2 be modified or a new permit would need to be issued to  
3 incorporate requirements for stand-alone operation of the  
4 desal project.

5           For reference, the Encina Power Station intake  
6 and discharge are regulated under order number  
7 R9-2006-0043, and PDES number CA 0001350, which was  
8 adopted on the same day as the Carlsbad desal permit on  
9 August 16, 2006. And both permits have the same  
10 expiration date of October 1st, 2011. The order contains  
11 a flow rate limitation of 864 MGD. Since the powerplant  
12 has a thermal discharge, it is subject to the requirements  
13 of Section 316B of the Clean Water Act. This requires  
14 that the location design, construction, and capacity of  
15 cooling water intake structures reflect the best available  
16 technology for minimizing adverse environmental impact.

17           Unlike the Water Code Section 13142.5B, the  
18 Clean Water Act Section does not include mitigation as a  
19 measure to minimize impacts.

20           On February 13, 2007, Poseidon submitted the  
21 first version of the flow entrainment and impingement  
22 minimization plan. Following regional board and other  
23 interested parties comments on the first plan, Poseidon  
24 submitted a revised plan dated June 29, 2007. To  
25 supplement this plan, Poseidon also submitted a coastal

1 habitat restoration and enhancement plan dated November  
2 2007 as required by the California Coastal Commission.

3           The reason the board sent a letter to Poseidon  
4 dated February 19, 2008 identifying seven general comments  
5 and ten specific comments on the plans submitted up to  
6 that date.

7           On March 7, 2008 Poseidon, submitted a revised  
8 minimization plan dated March 6, 2008. As I mentioned,  
9 this is the plan that's being considered for approval  
10 today. Page six, dash, three of the revised plan contains  
11 a table showing an implementation approach and schedule.  
12 Following regional board approval of the plan the proposed  
13 schedule includes elements for contacting the California  
14 Department of Fish and Game. Contacts with other resource  
15 agencies, convening meetings with all agencies,  
16 distribution of mitigation program details, modification  
17 and finalization of the mitigation program, and final  
18 consideration and approval of the mitigation project or  
19 projects by the coastal provision in July 2008.

20           Furthermore, as stated on Page six, dash, 18,  
21 the State Land's Commission refers the right to terminate  
22 the lease if Poseidon is not using best available design,  
23 technology of mitigation measures at all times as  
24 determined by the regional board or any other federal,  
25 state, or local entity.

1           Based on regional board staff review of the  
2 revised plan and as described in the technical report from  
3 Kiara Clemente, senior environmental scientist for the  
4 central water unit John Robertus dated 2008 resolve  
5 concerning the data and calculations used to determine the  
6 impacts to marine life. The conclusions derived and the  
7 process for agency approval of impact assessment and final  
8 litigation alternative or alternatives. Written comments  
9 have been received from several interested parties, and  
10 copies of these comments are included in your agenda  
11 packet as previously mentioned. The comments from the  
12 California Assembly Member Martin Garrett, the City of  
13 Coronado, and the California State Land's Commission were  
14 received after the written comment deadline. And I have  
15 copies of those letters, if the board would like to accept  
16 them for consideration. Two of the letters are one page  
17 in length mostly promoting--urging the board to move  
18 forward with this project. The other one is four pages  
19 and has some specific issues regarding the revised plan.

20           I can hand those out if you would like to  
21 receive them.

22           MR. RAY: I'd like to see them.

23           MR. WRIGHT: If you would. Would you also  
24 provide a copy of that table. Is it in here.

25           MR. KELLEY: That is not in here. We prepared

1 that after the materials. And we can provide that to you  
2 too.

3 Finally, a copy of tentative resolution  
4 R9-2008-0039 has been prepared for your consideration of  
5 adoption. And as currently worded, the resolution would  
6 approve the revised flow entrainment and impingement  
7 minimization plan dated March 6, 2008 with conditions.

8 The first condition is that Poseidon would be  
9 required to submit an amendment to the plan subject to the  
10 approval of the Regional Board Executive Officer. That  
11 includes a specific proposal for mitigation of the impacts  
12 on marine organisms resulting from the intake of seawater  
13 from Agua Hedionda Lagoon, and resolves the concerns  
14 identified by the Regional Board to date.

15 And the second condition would be that the plan  
16 and any amendments approved by the executive officer are  
17 of limited duration until such time as the Encina Power  
18 Station ceases operations, and the Carlsbad Desal Facility  
19 becomes a stand-alone project. At that time minimization  
20 measures including mitigation need to be re-evaluated for  
21 appropriateness.

22 That concludes my formal presentation. If you  
23 have any questions regarding the plan, I can refer those  
24 to the appropriate regional board staff person, if I can't  
25 answer them myself. Otherwise, I'm available to answer

1 any questions the board may have for me at this time.

2 MR. WRIGHT: Board members, do you have any  
3 questions of Mr. Kelley at this time? Thank you.

4 Let's move to the presentation first by Poseidon  
5 Mr. MacLaggan, Mr. Jenkins, Mr. Mayer, Mr. Nordby, and  
6 Mr. Garrett.

7 Before you begin your presentation,  
8 Mr. MacLaggan, Mr. King had a couple of questions staff.

9 MR. KING: I had a question, Ms. George, in  
10 terms of the condition that's imposed upon us whether or  
11 not there would be work done by Mr. Robertus to see  
12 whether the subsequent submissions resolve the concerns  
13 identified in the February 19th letter. If the subsequent  
14 acts by John Robertus are going to be ministerial, and  
15 we've got a duty that's defined as resolving concerns, do  
16 we need to do that with a little more specificity? And if  
17 we need to start working on an amendment so more specific  
18 language right now that sets forth exactly what he is  
19 going to checklist off rather than leaving something that  
20 sounds discretionary and vague, I would rather refine  
21 that. And if we need to make an amendment, go ahead and  
22 have that language prepared as we're talking through all  
23 this.

24 MS. GEORGE: Well, I think that you can allow  
25 the executive officer. He has delegated authority from

1 the Regional Board to undertake variety of action. But it  
2 would certainly be appropriate to have more specificity in  
3 terms of what he would be -- what the criteria would be  
4 that he would use to evaluate whether the condition has  
5 been met. So we could work on some language to that  
6 effect.

7 MR. KING: Is this something we can be working  
8 on right now that we can get some language with more  
9 specificity, cause that is the concern that I'd rather  
10 raise now than raise later in the show.

11 MR. KELLEY: I think we could work on some  
12 language, maybe some bullet items, that would be a little  
13 bit more specific than the generalities start that.

14 MR. KING: Thank you.

15 MR. WRIGHT: The assumption is we would go along  
16 with this language provides by the executive officer may  
17 very well be or another alternative would be that we would  
18 decide we don't want that to happen. That the board  
19 itself would then take on that role--final approval.

20 MR. ROBERTUS: Is that a possibility?

21 MS. GEORGE: Yes. The permit conditions  
22 specifies the plan should be submitted for regional board  
23 approval so that's what the permit says. The executive  
24 officer can carry out that function. If you want to  
25 reserve that specifically for the board, that's certainly

1 your prerogative.

2 MR. KING: In order to define this as a  
3 ministerial duty as clear -- we want that as an option to  
4 be able to leave it in the hands of the executive officer.  
5 My preference would be to have more specificity within  
6 that particular condition. We can go any number of ways  
7 in regarding to making our final decisions on resolution  
8 before us here. But in terms of where we're going, I  
9 would rather have some language ready to be able to kick  
10 that around.

11 MS. SCHNEIDER: I agree with that. But I do  
12 think for the sake of being efficient that if we could get  
13 the language and we could approve the conditions that he  
14 signs off on after our approval that would be more  
15 efficient probably. So I agree with your approach.

16 MR. WRIGHT: Mr. Robertus.

17 MR. ROBERTUS: Yes, I would like to point out  
18 that what I envision that if you delegate to me the work  
19 to continue on the plan after this date, the board will  
20 approve the plan. The plan is essentially a process by  
21 which the mitigation -- the mitigation determination  
22 resulted from that process. And as it's been presented to  
23 us by Poseidon, in order to initiate the plan, the board  
24 has to take an approval action. It's not clear in the  
25 order that the approval of the plan to initiate

1 implementation of the plan enclosed the approval by the  
2 board of the actual mitigation. I can oversee that  
3 process and do that on your behalf, or I can oversee that  
4 process and when the determination is made with the  
5 decision on the mitigation bring it to you for the part of  
6 the approval along with the other agency.

7           The question there would be to what extent would  
8 the approval of the board by your decision today be a  
9 condition of the approval of the mitigation itself. I  
10 could -- whether you want to delegate that to me or bring  
11 that back to you.

12           MR. WRIGHT: Just for sake of efficiency, if you  
13 can follow Mr. King's suggestion.

14           All right. Now Mr. MacLaggan.

15           MR. MACLAGGAN: Good afternoon, Mr. Chairman,  
16 members of the board. Peter MacLaggan, Poseidon  
17 Resources.

18           It's a pleasure to be back before you with  
19 respect to the Carlsbad desalination project eight years  
20 in the making. It's a critically needed supply element  
21 for the region, and this is one project that we all can be  
22 proud of.

23           Let me just say right up-front with respect to  
24 the discussion you just had, Mr. Chairman, board members,  
25 is our understanding with the respect to the proposed

1 tentative resolution that it does require the final plan  
2 to come back before you for approval. You're in support  
3 of that position. And if there's interest in adding  
4 additional specificity as a board member King had  
5 suggested to clarify exactly what it is that needs to be  
6 done now, and then we also are in favor of that  
7 recommendation.

8           And, Mr. Chairman, with respect to your request  
9 that we contain our presentation to 15 minutes, I will do  
10 everything humanly possible to do so. I'm going to skip  
11 over some matters. I've asked some of our speakers on the  
12 speaker slips before you also to waive their time. So  
13 that stack of cards will diminish as a result.

14           Let me jump right into --

15           MR. WRIGHT: Thank you.

16           MR. MACLAGGAN: There are eight matters that  
17 we're going to discuss. And I'm going to skip over Item  
18 one project summary in an effort to move this along.  
19 We'll discuss why the matter is before the board. What  
20 the plan entails. Why it is a conservative approach. Why  
21 the plan is responsive to the permit requirements. And  
22 the water code requirements. What are the environmental  
23 benefits. And the next steps, our recommendation.

24           So I'd like to take you to Page seven of your  
25 handout, if you will. And we will start there with the

1 question of why this matter is before the board. And your  
2 staff has correctly indicated that the plan is not  
3 required as a precondition of Poseidon's ability to  
4 commence the discharge. It's absolutely right. However,  
5 what's important to us is that the permit does require  
6 that the Regional Water Quality Control Board approve the  
7 plan as a pre-condition of the signs and building to  
8 access seawater when the powerplant is not operating. And  
9 in particular as mentioned by staff due to the  
10 intermittent operation of the powerplant. Action by the  
11 Regional Water Quality Control Board is necessary at this  
12 time to specify the conditions under which Poseidon will  
13 be able to access seawater under the permit.

14           Additionally, State Land's Commission has  
15 delayed its approval of Poseidon's lease for use of the  
16 existing intake and outfall until the Regional Water  
17 Quality Control Board approves the plan.

18           Both the City of Carlsbad and the Coastal  
19 Commission have evaluated the impacts of the project  
20 without the operation of the Encina Power Station and  
21 approved conditions for this mode of operation. An  
22 approval of the plan that's before you, conceptual  
23 approval, that it's being considered at this afternoon  
24 will facilitate ongoing coordination of uninterested state  
25 agencies and ensure that the Regional water Quality

1 Control Board's requirements are being addressed.  
2 Purpose of the plan. An anticipation that the  
3 powerplant might not always satisfy the desalination  
4 facility source water needs. Regional board required to  
5 sign and prepare a flow entrainment and impingement  
6 minimization plan to assess the feasibility of site  
7 specific plans and procedures, practices, implementations  
8 and/or mitigation measures taken together to minimize the  
9 impacts to marine organism when the project requirements  
10 exceed the volume of water being discharged by the Encina  
11 Power Station. This is the question that's before you.  
12 The adequacy of this plan and whether or not it meets the  
13 objective--the permit requirements. Again, it's a  
14 feasibility study of basic investigation of key elements  
15 of the water code, site design, technology, and mitigation  
16 to minimize the impacts to marine organisms.  
17 With respect to development, this plan has been  
18 under development now for 13 months. We've been through  
19 three drafts and 13 months of public review and comment  
20 period. There was initial 45 day of comment period  
21 followed by a nine month comment period and the most  
22 recent draft has been out for 30 days. The point here is  
23 that there's been a lot of activity over the extended  
24 period of time, and we think that the plan has addressed  
25 the basic requirements of the water code, which is to

1 identify the best available site, design, technology to  
2 estimate the unavoidable impacts after taking into  
3 consideration those measures confirmed that mitigation is  
4 feasible, which we have established a state agency  
5 coordinated process for that identification of a preferred  
6 mitigation plan. In terms of the best available site  
7 requirement, this site has been given extensive scrutiny  
8 by both the City of Carlsbad and the Coastal Commission is  
9 the one site that has compatible zoning and land use; the  
10 least environmental impact; the least disruption to the  
11 community. And both the Coastal Commission and the  
12 Carlsbad EIR concluded that there are no feasible less  
13 environmentally damaging sites available for the proposed  
14 project.

15           With respect to design features, there are  
16 several that have been included. But the first and  
17 foremost is that we will use the discharge of the  
18 powerplant as the source water to the extent it is  
19 available, which eliminates the impacts altogether. In  
20 2007, 61 percent of our water would have come from the  
21 powerplant leaving the desalination plant needing to pump  
22 the remaining 39 percent. For its purposes under which  
23 case we would initiate the efforts to minimize through  
24 design features the mortality of marine life related to  
25 reduction of flow, temperature of the seawater, slowing

1 down the velocity of that water moving through the plant.  
2 All of those minimize the mortality of the marine  
3 organisms, who will be eliminated to keep treatment  
4 processes associated with the powerplant operations.  
5         With respect to technology, we have included a  
6 variety of technology measures to provide a broad means of  
7 minimizing the impacts. And rather than going to the  
8 specific details, let me point out for you the conclusion  
9 that the Coastal Commission reached last November on our  
10 Coastal Development Permit; wherein they found that  
11 Poseidon is using all feasible methods to minimize the  
12 reduces impact to marine organisms. With respect to  
13 impingement, the Coastal Commission found that the impacts  
14 were diminimus and insignificant. And then we considered  
15 a number of opportunities to modify the intake to the  
16 powerplant and look at alternative intakes such as  
17 subsurface wells. We've considered four types of wells.  
18 And we looked at these systems from every possible angle.  
19 And here again the alternative intake systems were  
20 determined by the City of Carlsbad as well as the Coastal  
21 Commission not to be the environmentally preferred  
22 alternative. And in the interest of brevity here, I'm  
23 going to leave it at that point. We have more details to  
24 share with you if there's any questions as to how we reach  
25 that conclusion. The point here is that these systems

1 will not work for a facility this size or anything close,  
2 and they have been given careful scrutiny and that  
3 conclusion has been reached by two separate regulatory  
4 bodies.

5           In terms of the plant itself, we think it's an  
6 extremely conservative look at how to address this  
7 problem. In that we have overestimated the entrainment  
8 and impingement impact associated with the project and  
9 accounting for how much mitigation we would require. And  
10 the reason why we did that is we decided it will take all  
11 of the use of the powerplant water. Assume it didn't  
12 happen. Assume that the technology features and the  
13 design features to slow down the water to lessen the  
14 impacts are not providing any benefit. And we assume that  
15 all of the water needed to be moved by the desalination  
16 facility, and that there will be 100 percent mortality to  
17 all the organisms in that water. This is a two, three,  
18 four-fold overestimate of the actual impacts of the  
19 project. And the significance here is for the purposes of  
20 establishing the mitigation requirement, we estimated the  
21 level of impact is considerably greater than anything that  
22 would actually occur. It's very conservative. It piles a  
23 worse case, upon worse case, upon worse case.

24           Moving on to the mitigation approach itself, we  
25 view this as a two-step process. The first step is to

1 take that conservative estimate of the impact we just  
2 described and consider where we might be able to do the  
3 mitigation. Both in Agua Hedionda Lagoon and offsite  
4 mitigation were considered. This is what I refer to as  
5 the feasibility step that is in the plan before you. The  
6 purpose of that plan again being to conduct a feasibility  
7 assessment. We last August issued a request for proposals  
8 for weapons restoration opportunities, and we canvassed  
9 the entire San Diego County community of interested folks  
10 and organizations and professionals and regulators, city  
11 governments, and so on to help us shape this plan. And  
12 they came back with eight proposals. We had a stated  
13 preference that Agua Hedionda Lagoon was our preferred  
14 sites since that's the side of the project where we'd like  
15 to do the restoration. Unfortunately, none of the  
16 projects that came back related to Agua Hedionda Lagoon.  
17 we're looking at (inaudible) high tide line. And our  
18 obligation to restore wetlands is to create a marine  
19 organisms comparable to those that we impact the operation  
20 of the intake. And so we concluded that at this juncture  
21 there was no feasible opportunities in Agua Hedionda  
22 Lagoon and begin looking offsite.

23 But we are about to embark with your staff and  
24 with the Coastal Commission, State Land's Commission  
25 staff, Fish and Game, other resource agencies on step two

1 beneficial uses that have been there for the last 55  
2 years.

3           We are not waiting for the plant to step into  
4 our role as a steward. We are already in the process of  
5 working with the Agua Hedionda Lagoon Foundation. Created  
6 an educational program for the third and fourth graders.  
7 It's called the Agua Hedionda Lagoon Foundation and  
8 Academy for Environmental Science, and we're educating  
9 school kids year round on how to protect a watershed. And  
10 absent ongoing stewardship that we committed to after the  
11 powerplant shuts down we think that this lagoon will  
12 revert back to something far less than it is in its  
13 current state. So this is, in our view, part of the  
14 overall mitigation plan that's before you. A commitment  
15 to preserve this resource regardless of whether or not we  
16 do any restoration at this site or whether we do it  
17 elsewhere.

18           We firmly believe that the plan is responsive to  
19 your permit. I've asked our experts to share with you  
20 briefly why that's the case. Address some of the  
21 questions in the staff report. We have first Dr. Scott  
22 Jenkins from Scripps Institute of Oceanography. Just so  
23 you understand his expertise and involvement on this  
24 project, Dr. Jenkins has been with Scripps Institute of  
25 Oceanography since 1967. Shortly after receiving his Ph.D

1 in 1980, he began conducting studies on Agua Hedionda  
2 Lagoon. He's conducted numerous studies since then right  
3 up to the present. He's been working with Poseidon on  
4 analyzing our project related impacts and management of  
5 the resource since 2000.

6 Following Scott will be David Mayer. David  
7 Mayer is the foremost expert on the west coast on  
8 entrainment and impingement studies. He basically wrote  
9 the book on how to conduct these studies. Has been  
10 involved in virtually every entrainment and impingement  
11 studies that's been conducted up and down the west coast  
12 since 1979.

13 David will be followed by Chris Nordby. Chris  
14 is environmental wetlands restoration specialist. For  
15 many years he was the manager of the Gasteren (sic)  
16 Research Lab at San Diego State University. He's been  
17 actively involved in the restoration projects down in the  
18 Tijuana River Valley and the Biona (sic) wetlands. And  
19 he's been brought on board here with us at Poseidon to  
20 help us identify our weapons restoration program in how we  
21 would implement such a project.

22 I'm going to turn it over to them and then just  
23 a few brief closing remarks when they get done, Mr.  
24 Chairman.

25 MR. MACLAGGAN: Mr. Jenkins.

1           MR. WRIGHT: He already used up 15 minutes, so  
2 next speakers please keep your comments brief.

3           MR. JENKINS: I'm going to address a concern in  
4 the staff report regarding the entrainment study, which  
5 started in '04 and went to '05. And a large portion of  
6 that study was conducted in water year 2005. And the  
7 staff report expressly concerns that 2005 was a year of  
8 abnormally high rainfall. And the implied worry in that  
9 comment was that the high rainfall produced in at a normal  
10 lagoon environment that was unsuitable to sustain the salt  
11 water organisms the entrainment study was targeting. I  
12 want to explain why that's not the case in this particular  
13 lagoon. There's two fundamental reasons for it. Number  
14 one it's a very small water shed. Number two, the Agua  
15 Hedionda Lagoon holds a very large volume of seawater.  
16 Now, in the upper portion of this figure, this table three  
17 of Page nine of the Tetra (sic) Tech study recently  
18 completed on the Agua Hedionda water shed. And the  
19 numbers for 2005 appear across the top. I'm going to take  
20 the maximum daily discharge measured in 2005 from the Agua  
21 Hedionda creek, and I'm going to apply that maximum daily  
22 discharge against the delusion capacity of this lagoon and  
23 show you that the resulting change of the salinity of the  
24 lagoon is very small. So then taking the 144 cubic feet  
25 per seconds maximum flow rate of the creek and applying it

1 over a day that would be an influx of 285 acre feet of  
2 storm water into the lagoon. Now, it's a very deep  
3 lagoon. There's over 1700 acre feet below tide of  
4 seawater in this lagoon. In addition, there's an  
5 additional 1750 feet of high (inaudibly) exchange. That  
6 would be additional water between low tide and high tide.  
7 So the total salt water volume of the lagoon is over 3,450  
8 acre feet. So even the worse case scenario in 2005 the  
9 maximum daily discharge will only result in eight percent  
10 of lagoon water being comprised of storm water. That  
11 would depress the salinity only down to about 30.75 parts  
12 per thousand. That's about a 2.7 part per thousand  
13 depression in salinity. Now, the fluctuation of salinity  
14 in the ocean reaches those levels many times as well in  
15 the coastal ocean around the lagoon.

16 So in conclusion, the lagoon was not transformed  
17 into a fresh water lagoon during the 2005 rainy period.  
18 It still remained a predominantly seawater body.

19 I'm now going to pass the presentation off to  
20 Dr. David Mayer, who's going to explain whether these  
21 kinds of salinity depressions during the 2005 peak runoff  
22 were significant, and he will also show you how his  
23 analysis method of the entrainment losses is independent  
24 of the fluctuations of the population of these seawater  
25 organisms.

1 MR. MAYER: Thank you, Dr. Jenkins.

2 David Mayer. And board members and Chairman  
3 Wright. My background is marine biology and fishery  
4 science trained at the University of Washington.

5 Some decade ago I was doing work at the Yellow  
6 River and where I was using a model there to help assess  
7 entrainment affects of a powerplant that were being  
8 proposed. And the model was called Empirical Transport  
9 Model. It occurred to me at that time that it might be  
10 useful on the Pacific Coast we're looking at entrainment  
11 affects from our coastal powerplants, which are ongoing  
12 rivers, but the Pacific Ocean being regarded in some  
13 places as river flowing past these large intakes. So I  
14 imported this model into the Regional Water Quality  
15 Control Board and later the CC comprehension mission  
16 process of looking at assessing entrainment affects. And  
17 that model over these past ten years has been developed by  
18 a number of renowned university professors in mathematics  
19 and statistics at University of Washington and Santa  
20 Barbara. Most currently Dr. Amundi (sic), that I've  
21 worked with over there a long period of time at U.C. Santa  
22 Cruz, continues to work on this model. There's just some  
23 background to the kind of work that ended up to generate a  
24 number that will later be discussed by Mr. Nordby on how  
25 this mitigation fits together with offsetting the

1 entrainment losses.

2           Scott Jenkins told you our study again in 2004,  
3 and continued for a year on a monthly basis. We collected  
4 samples that are wide number of locations in both the  
5 upper and middle and lower lagoons and the open ocean.  
6 When we sample, we sample over 24 hour basis so we're able  
7 to capture the kinds of larval fish that we're focusing on  
8 a very long-term and very intensive basis.

9           Our findings basically lead us--and you probably  
10 heard this before. The nine percent of all the larval  
11 fish that are entrained at the existing seawater intake  
12 for the powerplant are made up by three species. And the  
13 most of one is a very small species of fish called a gobie  
14 that lives in various tiny mud burrows. The adult gobie  
15 never gets any bigger than about an inch long. It's not  
16 surprising to think that the enormous number of mud flats  
17 in the upper lagoon that those products of their  
18 reproduction are carried down into the lower lagoon where  
19 the intakes located. None of the entrained species are a  
20 major threatened that we found in none of them. Less than  
21 one percent catalase are supported commercial interest  
22 from importance. And the project has no impact on the  
23 species' ability to maintain populations but the loss of  
24 these larvae going through the powerplant we recognize as  
25 something that could be mitigated, and that's what's being

1 proposed, is to create a body or an acreage of wetlands or  
2 habitat that the fish in those areas of new production  
3 will create larvae to offset the losses through the  
4 project and partly. Question.

5 MR. ANDERSON: What were the other two species?

6 MR. MAYER: A blenie, which is again a very  
7 small fish. Probably get's no bigger than about two  
8 inches long. We believe that 90 percent of its population  
9 is found in the aquaculture pet set up in front of the  
10 intake where they're growing muscles and oysters. And  
11 these are fish that live in those little crevices.

12 And the third one is the garaboley (sic), which  
13 is the large fish you see bright yellow on reefs. They  
14 apparently have learned to live in large numbers on the  
15 rocky reef of the breakwater right in front of the intake.  
16 There's a very, very large population there. So those two  
17 species are actually there sort of an artificial habitat  
18 setting.

19 So we look at the entrainment side what's going  
20 through a very small to the powerplant and the proposed  
21 desal project. We use the result of those to scale up to  
22 the proposed volume of the desal project. We use that in  
23 a modeling to come to our conclusions. We also looked at  
24 fish and other ordinances that are actually screened out  
25 by these existing screens and the screens that we use

1 during the Poseidon operation, and that's known as  
2 impingement. We came to very similar conclusions at the  
3 Coastal Commission. We are finding that the losses due to  
4 this are diminimus and insignificant.

5 In general, we believe our results from this  
6 model I described to you, the ETM, its result is used as a  
7 portion to find an estimate of how many acres of habitat  
8 need to be replaced in order to offset the entrainment  
9 losses.

10 As I mentioned earlier, Dr. Amundi, who has  
11 worked with us throughout this decade in Santa Cruz  
12 continues to do so. He conceived of an idea of taking our  
13 result from this model and using the estimated acreages of  
14 habitat--and I'll be heading on as an example where we did  
15 this. And we've done this in many other places along the  
16 coast now--to come up with a number of acres. And this is  
17 referred to a perry (phonetic) production foregone. It's  
18 not that habitat is being destroyed out there. Is that if  
19 we were to try to create habitat to create enough larval  
20 fish that are being entrained that we're assuming 100  
21 percent of them are lost. They're not all lost, but we  
22 assume that for conservatism. How many acres would we do?  
23 so we came up with a result of using this method of 37  
24 acres. This would completely offset 100 percent of all  
25 the entrained larval fish.

1           What I want to leave this spot with you before I  
2 turn it over to Mr. Nordby is that we are focused on  
3 larval fish. We assume 100 percent of those are lost  
4 going through the intake. Along with every 100 gallons of  
5 water going in there's one larval fish for every 100  
6 gallons of water. But along with those larval fish there  
7 are thousand -- tenths of thousand frankly of zoea  
8 planktons, which are crustaceans. And there's nearly  
9 millions of phytoplankton that go through essentially  
10 untouched because they are a hard body, have very hard  
11 shells. Unlike larval fish, they are kind of naked going  
12 through. So in that sense all of that goes through  
13 unharmed yet this new marsh or restoration acres will  
14 produce more zoea plankton and phytoplankton. And I'm not  
15 sure what amounts but in very large quantities, so you  
16 have kind of a doubling of that affect. We're offsetting  
17 something that isn't really being affected. As well as  
18 many other animals that will be described that utilize  
19 these weapons that aren't even affected by any of the  
20 project intakes, seawater intake.

21           Any questions?

22           MR. WRIGHT: I appreciate all the expertise  
23 that's coming before us. But I just want to remind all  
24 the speakers that a mitigation plan is not before us.  
25 That's something that is supposed to be produced at a

1 later time.

2 Chris.

3 MR. GARRETT: I was here to talk about the  
4 environmental benefits of the restoration plan, and I'll  
5 skip right to it since it's not supposed to be before you  
6 today.

7 We have come up as Peter said Poseidon did look  
8 extensively for restoration potential at Agua Hedionda.  
9 We're unable to come up with any viable alternatives.  
10 Looking offsite we saw an opportunity to compliment the  
11 ongoing restoration of San Dieguito Lagoon currently being  
12 constructed by Southern California Edison. And one of the  
13 places we've identified as potentially creating this 37 or  
14 38 acres of weapons is this magenta line that you see  
15 here. I want to stress that this is a conceptual level  
16 mitigation. We'll bring it back before you if you endorse  
17 our attempts to take it forward. And here is our  
18 conceptual restoration. Again, I want to stress that this  
19 is conceptual. It has been modeled hydraulically. It's  
20 shown to be feasible and complimentary with the Southern  
21 California Edison project, and I hope you support it for  
22 further development.

23 And with that I'll turn it over to Chris Garrett  
24 to discuss some legal implications.

25 I want to go through this quickly. I think this

1 fits in the framework of why this is in front of you. As  
2 we have consistently said to all the agencies that have  
3 voted on this project, this board is the agency that the  
4 State and the Water Code and the Coastal Act give primary  
5 jurisdiction to deal with the issues of entrainment and  
6 impingement. It's under Water Code 13142.5B. So we agree  
7 with the number of the opposition letters you received.  
8 This is the statute that you should look to. And in your  
9 consideration today, you should make sure that the plan is  
10 being presented responsive to the condition and the permit  
11 approval we got in 2006 to develop a feasibility  
12 discussion of the plan that would meet water Code  
13 13142.5B.

14           So you have primary jurisdiction. Mr. MacLaggan  
15 mentioned a number of other agencies which have taken  
16 action on this. But I want to stress it's your board not  
17 the Coastal Commission, and not the City of Carlsbad, not  
18 State Land's Commission, which has given the authority  
19 under state law to implement and enforce 13142.5B under  
20 the Coastal Act. The Coastal Commission under 3412B, the  
21 Coastal Act is told to defer to the Regional Board and the  
22 state board on this issue.

23           The other thing I would say is when you hear  
24 from the opponents today, you received a number of  
25 letters, they simply disagree with the plan, but they have

1 not presented any evidence of their own or feasible sites,  
2 designs, or mitigation measures. And it is within the  
3 purview of your board to consider those issues. They have  
4 been considered by other agencies as well, and we hope you  
5 reach the same conclusion that we have the best available  
6 site, design, technology, and mitigation measures provided  
7 for in the plan that's in front of you today.

8           The other thing I want to say is that this  
9 is -- approval of this plan provides a framework for  
10 coordination with other agencies. We agree with the  
11 executive officer's recommendation today. It does allow  
12 you to coordinate with the other agencies, but it is this  
13 board which has the final decision-making authority under  
14 this issue under state law, and you will exercise that  
15 through the subsequent approval of the final mitigation  
16 plan that the executive officer provided for in the  
17 tentative offer -- order in front of you.

18           I'm going to skip over. Very briefly I think  
19 our speakers today have addressed the issues that were  
20 raised by your staff in the central water shed unit  
21 technical report. The data that we used is not atypical  
22 even though there was a higher rainfall when the data was  
23 collected. I think Dr. Jenkins addressed that. We do  
24 provide for final recalculation of the ATF, which was  
25 another question that your staff had in some of the

1 comments.

2 Another comment from your central water shed  
3 unit was what was the agency approval mechanism for final  
4 selection of specific mitigation alternative. And I  
5 believe it's been answered by your executive officer. The  
6 agency approval mechanism will be the approval of the  
7 final mitigation plan consistent with the plan you're  
8 approving today that will be back in front of you when we  
9 submit it within the next six months. We believe the plan  
10 that we put in front of you does provide for full  
11 evaluation mitigation alternatives.

12 In conclusion, your decision today is not a  
13 re-vote on whether the project should receive approval  
14 from the Regional Board. We received that in 2006. That  
15 decision by the way was appealed by all the number of the  
16 opponents in the room today. That appeal was rejected by  
17 the State Board. Their lawsuit against the City of  
18 Carlsbad for approving the project was also rejected by  
19 the courts. They still have pending a lawsuit against the  
20 Coastal Commission. But there's nothing in any of that  
21 litigation that precludes you from moving forward today.

22 The other thing I want to stress is we agree  
23 with the executive officer that the approval of this  
24 framework plan today is not a final vote on the mitigation  
25 plan. Perhaps in an ideal world it would make sense to

1 try to have a set of ministerial conditions that only the  
2 executive officer would need to check off and comply would  
3 not have to come back to the board. But I think given all  
4 the facts and issues that are in front of you, the  
5 comments of your staff, and the primary jurisdiction that  
6 the Board has on this issue, we endorse executive  
7 officer's tentative order, which would provide for the  
8 final plan to come back to this board.

9 MR. KING: Mr. Garrett, I think I misread the  
10 condition here in terms of describing in as the subsequent  
11 ministerial duty. But do you agree that it would still be  
12 helpful in terms of, you know, right now we've got a  
13 dispute over a domaining of the san (inaudible)  
14 feasibility analysis. Wouldn't it still be more helpful  
15 to go through the February 19th letter and identify  
16 exactly which concerns we want you to come back and  
17 address?

18 MR. GARRETT: It certainly wouldn't hurt. More  
19 clarification would be better. But we would say we feel  
20 first of all that we're in accordance with the staff  
21 recommendation. And secondly, the February 19th letter is  
22 fairly specific. And we do feel that we have addressed  
23 all those specific items or will be able to where the  
24 staff has any lingering questions. For example, this  
25 question about the reciprocity of the data 2005 that was

1 one of the specific questions that was raised in their  
2 February letter, and we feel we'll be able to address that  
3 as we have today.

4 MR. WRIGHT: Thank you.

5 Mr. MacLaggan, somehow you squeezed out your 30  
6 minutes and more I might add.

7 MR. MACLAGGAN: I think we have several speakers  
8 who will not be addressing this so hopefully we'll make up  
9 for lost time.

10 Mr. Chairman, let me just jump to what's going  
11 to happen after today.

12 We will be working -- we've decided we will be  
13 working with the Regional Board Staff, Coastal Commission  
14 Staff, and other resource agencies to meet and reach  
15 consensus on the mitigation goals and objectives  
16 identifying that may have been overlooked in Agua Hedionda  
17 and other opportunities. This will lead to selection of a  
18 preferred mitigation site plan finalize project scope  
19 locations implementation. Bring all of that back to you  
20 in the next six months; set up future meeting date, and  
21 we'll also be going back to the Coastal Commission.

22 So with that let me just conclude and state that  
23 you asked us to go out and prepare a feasibility state,  
24 look at site specific plans procedures, methodologies to  
25 be implemented and/or mitigation opportunities the

1 feasibility thereof minimizing (inaudible) organisms. We  
2 believe we addressed that requirement per the permit  
3 conditions, and we respectfully request that the Board  
4 adopt the resolution that's before you. We thank you.

5 MR. WRIGHT: Can you go back to the previous  
6 illustration. In Item 1A through E, it seems like what  
7 you're saying is very different than what Mr. Garrett says  
8 when he indicated that the plan finds for full evaluation  
9 of mitigation alternatives. And you have -- here it's not  
10 what you're saying. It sounds like there's a lot more  
11 that needs to be done before you have a full evaluation of  
12 the mitigation alternatives.

13 MR. MACLAGGAN: We are not aware of any other  
14 opportunities. But we have heard from your staff; we've  
15 heard from the staff of other entities that they want to  
16 make sure we take a hard look at Agua Hedionda to ensure  
17 we haven't overlooked an opportunity. That's the purpose  
18 of the meeting that will be taking place next month with  
19 all of the state agencies together in one room. We're  
20 actually going to meet at the lagoon there in Agua  
21 Hedionda to see if there isn't something that had been  
22 overlooked as part of the solution.

23 MR. WRIGHT: Thanks.

24 And in all the alternatives -- and I think it  
25 came up before and you told me the answer and I still want

1 to make sure it's still not a possibility that I think in  
2 the analysis that they ask you to use reclaim waters as  
3 superior alternative to seawater. There's no way to get  
4 reclaimed water to your --

5 MR. MACLAGGAN: To our facility?

6 This project -- you might be aware of this being  
7 a grower in Carlsbad. Carlsbad is piped throughout with  
8 recycled water. Carlsbad is actually the most aggressive  
9 user of recycled water in this county. Where 20 percent  
10 of their water supply comes from that system. This  
11 project is intended to provide potable drinking water as  
12 supplement to that program. So it's part of the solution.  
13 Conservation, recycling, and the desalination project are  
14 intended to ensure that the full compliment of water uses  
15 of Carlsbad are commute from reliable locally generated  
16 sources.

17 Thank you, Mr. Chairman.

18 MR. WRIGHT: We have a number of elected  
19 officials who have been very patient waiting their turn.  
20 We'll start out with Mayor Lewis. Mr. Lewis is the mayor  
21 of the City of Carlsbad. Welcome.

22 MR. LEWIS: Thank you, Mr. Chairman, I  
23 appreciate being here this afternoon. My name is Bud  
24 Lewis. I'm a member of the City of Carlsbad. I'm here to  
25 speak on behalf of my 100,000 plus residence of our city.

1 As a current vice chair of the City Water Authority and a  
2 former member of the Metropolitan Water Board of  
3 Directors, I've spent 14 years working on this regional  
4 water issue, and tentative has been on desalination.

5 I notice when you gentlemen mentioned that  
6 you're concerned about loss of your hair. I've already  
7 lost mine. I think my eyebrows might be short as we keep  
8 going into this.

9 The water delivery system is unreliable. I'm  
10 sure you're all aware of that. I want to supply  
11 (inaudible) drought; above all restrictions global climate  
12 change, and intense competition for water resources.  
13 Seawater desalination offers San Diego County the most  
14 viable opportunity to create a local supply of water.  
15 This local supply is more dependable than the water we  
16 currently receive from the Delta or the Colorado River.  
17 And I'm sure you're well aware of what's happened to the  
18 Colorado River, and what's happened to the Delta next to  
19 the federal judge up there. We intentionally located the  
20 desalination project next to the powerplant at Agua  
21 Hedionda Lagoon because it is the most available and  
22 environmentally preferred location. Carlsbad is the only  
23 city in the state that had really good (inaudible) within  
24 its boundaries. We recognize that our lagoon is  
25 environmentally and recreational treasures and that the

1 long time stageability is crucial to our citizen's quality  
2 of life. And Poseidon is also (inaudible) safe as  
3 ourselves. This plan that we have before you today is  
4 comprehensively addressed to the needs to protect the  
5 Pacific Ocean and Agua Hedionda Lagoon and ecological  
6 system. And once again, we rely totally upon our staff  
7 and the reports they have as far as getting this  
8 information to you.

9 I personally take you, too, with the repeated  
10 opposition to the project from the staff of the California  
11 Coast Commission and certain representatives of the  
12 Environmental Community.

13 Three years ago I was at a conference with Peter  
14 Douglas in Santa Barbara on desalination. I've known  
15 Peter for a long time, and after the presentation, which  
16 was very negative, we had a discussion. And his basic  
17 thought pattern was this. Number one, we want no more  
18 migration in California. Number two, we want no more jobs  
19 because jobs create migration. So the real issue is not  
20 so much to me what is being discussed here to a degree,  
21 but it's more or less a personal attitude that's taken  
22 place. And Peter was very open about this. If you ask  
23 him about it, he'll tell you. But my family is second,  
24 and third, fourth generation Californians, and we need  
25 jobs for my children, my grandchildren, and those coming

1 after.

2           So if we bound to all these regulatory agencies  
3 without looking at the prospects -- because I've been in  
4 government for 38 years as a local official, and I know  
5 what -- if a staff takes a very strong position with the  
6 few -- the board members one way or the other -- the thing  
7 is dead. I've seen it in the city government all the way  
8 through. I've seen it on the county level all the way  
9 through. So to me you do the best for the most. And this  
10 is what this project is all about. Because I, as a policy  
11 maker, am partially responsible for bringing new jobs,  
12 number one; maintaining the jobs that we have, number two;  
13 and number three, being able to rise above these areas to  
14 keep our folks here in California. Water is the name of  
15 the game. You folks pay a major reason. Some of you are  
16 elected officials on City Council. You know the  
17 importance of water. And so the idea that a small group  
18 can hamper the mast majority, I think that it is something  
19 you have to look at very, very closely.

20           MR. WRIGHT: Mr. Lewis, if you can summarize.  
21 Thank you very much.

22           MR. LEWIS: Thank you very much.

23           MR. WRIGHT: Councilwoman Ann Kulchin from the  
24 City of Carlsbad.

25           MS. KULCHIN: Mr. Chairman and members of the

1 board, hello, my name is Ann Kulchin. I've had the  
2 privilege of serving on the Carlsbad City Council for 28  
3 years. I'm not as old as the mayor. He refers to me as a  
4 kid and I really like it.

5           During my tenure on the city council, I've  
6 worked diligently to assure that the Carlsbad desalination  
7 project before you today would provide a dependable local  
8 source of water to our region while meeting all applicable  
9 environmental regulations.

10           For its beginning the 1998 to today the  
11 desalination project has had ten years of study and public  
12 debate.

13           Today I'm here before you speaking in support of  
14 the proposed minimization plan for the Poseidon  
15 desalination project. As your staff report says, this has  
16 been a controversial project. And that controversy has  
17 created an environment where strong emotions rather than  
18 good science have often become the center attention. We  
19 are all stewards of the Public Trust, Council Members,  
20 Regional Board Members, State Land's commissioners, and  
21 Coastal Commissioners. We cannot let our feelings or  
22 emotions guide the public debate or the decisions that we  
23 as representatives of the public must make. We public  
24 officials find that emotions is brought into the equation  
25 from many sources; including ourselves, our staff, and

1 even our consultants. Sorting through what is fact and  
2 what is opinion is a complex and time consuming process;  
3 particularly when you are dealing with something as  
4 complex as this project. And although this is a complex  
5 project, the plan before you was submitted in February of  
6 2007.

7           Your staff has done much analysis in providing  
8 many comments on the plan. The public has reviewed the  
9 plan and provided many comments. And the opponents of the  
10 project have reviewed the plan and provided many comments.  
11 And the plan has been amended to reflect these comments.

12           After more than a year review and comment, it is  
13 time for this board to take action based on the facts.  
14 The plan before you comprehensively addresses the  
15 feasibility of the best available site, the best design,  
16 the best technology, and the necessary mitigation for  
17 protection of the Pacific Ocean and the Agua Hedionda  
18 Lagoon.

19           It is time for action. I urge you to support  
20 the plan. Thank you for hearing me.

21           MR. WRIGHT: Thank you for focusing your  
22 comments.

23           Councilwoman Julie Nygaard also from the City of  
24 Carlsbad.

25           MS. NYGAARD: Thank you, chairman and members of

1 the board.

2 I'm Julie Nygaard, and I've been a member of the  
3 Carlsbad City Council for over 13 years. I've also served  
4 as a member of the Water Quality Control Board so it's  
5 kind of nice to be home with all of you. And I do  
6 understand what you're being asked to do and with regard  
7 to this project.

8 My comments to you today are perhaps from a  
9 slightly different perspective than most of the speakers  
10 that you'll hear.

11 I want to address success that Carlsbad and the  
12 powerplant operator have had over the past 60 years in  
13 being stewards of the Agua Hedionda Lagoon.

14 Long before the Regional Water Quality Control  
15 Board existed, San Diego Gas & Electric built a powerplant  
16 on the coast in Carlsbad. Agua Hedionda Lagoon did not  
17 exist in its current form. Its natural state is a mud  
18 flat that was filled with stinking water, and because of  
19 that it's called stinking water Agua Hedionda. Agua  
20 Hedionda is manmade, and it's been maintained by a private  
21 power company that's part of the operation for almost 60  
22 years. The healthy echo system you see in the lagoon  
23 today is a result of good stewardship by a private power  
24 company and a local government; not the result of mandates  
25 by state boards and commissions. Carlsbad has been

1 approved -- has a proven track record as a stewardship  
2 with regard to the Agua Hedionda. As an example of this  
3 when the Agua Hedionda was threatened with caulerpa  
4 taxifolia, it was Carlsbad and the power company that  
5 stepped forward to protect the environment and heal the  
6 lagoon.

7           The annual dredging of the outer lagoon, which  
8 is essential to the health of the whole lagoon system, has  
9 been provided by the power company all these years.

10           Two lagoons are proposed to be managed by the  
11 state agency--Buena Vista and Batiguitos has suffered from  
12 neglect and have received little or no maintenance effort  
13 on the part of state agencies responsible for their  
14 health. And we see no hope of change in that attitude in  
15 the near future.

16           Before you today is a project that can help  
17 continue the health and vitality of the Agua Hedionda  
18 Lagoon echo system. The once through cooling of Encina  
19 Power Station will eventually cease. The need for  
20 dredging is part of an operation of the powerplant will  
21 cease, and the responsibility for maintenance of the  
22 lagoon will fall upon the state. With a less and stella  
23 record, state agencies have the stewardship of the lagoon.  
24 This prospect is very disturbing to all of us on the  
25 council and in our community as well.

1           I understand the importance of the minimization  
2 plan. I also understand the eliminating one through  
3 cooling and replacing the existing system with reduced  
4 impact of the desalination plant will only improve the  
5 quality of the lagoon echo system. And the desalination  
6 plant will provide the necessary stewardship of the lagoon  
7 that has historically been provided by the powerplant  
8 operator.

9           You have an opportunity to take a leadership  
10 position to protect the long-term health of the Agua  
11 Hedionda Lagoon by approving this plan. I urge you to  
12 take heart and move forward with it, and thank you for  
13 your consideration.

14           MR. WRIGHT: Thank you.

15           Mr. Jerome Kern and council member from the City  
16 of Oceanside.

17           MR. KERN: Good afternoon. Thank you for your  
18 time. My name is Jerry Kern. I'm council member of the  
19 City of Oceanside. As an elected official of the third  
20 largest city in San Diego County, I have the obligation to  
21 provide water to 175,000 people. And to fulfill this  
22 obligation, the City of Oceanside has become the newest  
23 partner in the desal partner project.

24           Last month I toured Colorado and witnessed the  
25 tremendous stress that Colorado is undergoing. And as you

1 all aware the quantifications limited agreement will limit  
2 the water that we get from the Colorado River, and it will  
3 cap the amount of water we receive.

4           The state water project is also under enormous  
5 strain both environmentally and through regulation.  
6 Casting a doubt over how much water we can consistently  
7 expect from the Delta. All of these challenges make the  
8 Carlsbad desalination project crucial in diversifying our  
9 water supply. In fact, it's probably the most important  
10 water infrastructure power tech in San Diego in recent  
11 (inaudible). The project will produce about 56,000 acre  
12 feet of water of reliable high quality water at a cost  
13 that is assured. This is enough for 300,000 San Diegians,  
14 about ten percent of the current population. The Carlsbad  
15 desalination project is a positive step in the right  
16 direction in our region for future water supply. Poseidon  
17 Resources has demonstrated that their project will be  
18 environmentally responsible and proactive in minimizing  
19 any potential impacts. The longer this project is delayed  
20 the further we go down the road of endangering all our  
21 water supply in California. we need this immediately.

22           On behalf of the City of Oceanside, I urge you  
23 to approve the resolution before you this afternoon.

24 Thank you.

25           MR. WRIGHT: Thank you for your brevity.

1 Mitch Beauchum chairman of the Sweetwater  
2 Authority. And where is your hip helmet?

3 MR. BEAUCHUM: I left it back there. Thank you,  
4 members of the board. My name is Mitch Beauchum. I'm the  
5 chairman of the Sweetwater Authority Board of Directors.  
6 Sweetwater currently provides water service  
7 approximately to 180,000 people in National City and the  
8 western part of Chula Vista. Sweetwater has recently been  
9 named the most reliable waterage in San Diego County  
10 because of the diversity of our water supply. While we  
11 have instituted many conservation measures with our  
12 customer, we believe that seawater desalination is an  
13 important part of the solution in the region long-term  
14 water reliability need.

15 As a member of the San Diego desal partners,  
16 nine of us now in Oceanside, our agreement to purchase  
17 water from the Carlsbad project will increase Sweetwater's  
18 Authority drought tolerance supply to 36 percent by 2010.  
19 You may ask why a water agency 50 miles from this plant is  
20 involved. We see benefit to the region that we're  
21 participating in that it also benefits us as an agency, so  
22 we're stepping forward as the other partners have done so.  
23 This new water supply will replace for a one point basis  
24 the water we currently import through the San Diego County  
25 Water Authority over the hill from catastrophes or from

1 Colorado.

2           Poseidon Resources desalination project can gain  
3 enthusiastic support from the water agencies, cities,  
4 businesses, residence, and elected officials including our  
5 entire, our entire state and federal delegation. Had you  
6 been at the Coastal Commission hearing, you couldn't  
7 believe it. I couldn't believe that that consensus was  
8 there. But the entire organization is behind us.

9           We appreciate the due diligencethat regulatory  
10 agencies have taken to ensure that this is the most  
11 environmentally benign project possible. We believe that  
12 it has been thoroughly vented, as you saw from the  
13 technicians that presented their story here, and utilizes  
14 every possible avenue for reducing impact to the marine  
15 environment. Every step of the way some within the  
16 regulatory community have attempted to delay the project,  
17 that's been mentioned today already. If they had been  
18 successful, we would be many years, not months, away from  
19 the completion of this project. Thankfully they have been  
20 largely unsuccessful because their arguments do not hold  
21 water.

22           The Sweetwater Authority Board of Directors ask  
23 you to make the right decision -- sorry -- the correct  
24 decision and approve the tentative resolution for the flow  
25 entrainment and impingement minimization plan for the

1 Carlsbad desal plant. Thank you for your time.

2 MR. WRIGHT: Mr. Beauchum, thanks for your  
3 brevity.

4 Again, I'd just like to urge or let the speakers  
5 know that all members of this board are very sensitive to  
6 the needs for augmenting our local water supplies through  
7 reclamation, desalination, conservation, and so on. So we  
8 don't need to focus on that as much as you would like to  
9 perhaps. But I don't think you need to sell -- I guess  
10 what I'm saying is I don't think you need to sell the  
11 Regional Board on the importance of increasing our local  
12 water supplies.

13 With that I'd like to hear from Gail Newton.

14 MS. NEWTON: Good afternoon, Chairman Wright and  
15 board members. I'm Gail Newton. I'm the chief of the  
16 division of environmental planning and management for the  
17 State Land's Commission. And I came down today to make  
18 sure that our letter was in your record, and I heard it  
19 just got admitted, so I will be brief. I will not read  
20 it. I also want to start off with I'm neither in support  
21 of opposition. I filled out a green card. You didn't  
22 have a beige neutral card.

23 My commission has not taken the final action on  
24 this issue yet. My staff is still reviewing materials  
25 provided by Poseidon and others. And more importantly

1 we're still involved in the inter agency cooperation with  
2 the commission, your staff, and the resource agencies. So  
3 some of the high points in the letter, we're still looking  
4 at minimization efforts to make sure that all  
5 minimizations efforts have been taken. And that's item  
6 number one of our letter.

7           And breezing through this. We're very concerned  
8 about the adequacy of mitigation and that it truly  
9 mitigate once they get there for the impacts. Those  
10 impacts are adequately quantified. We're working with the  
11 Coastal Commission Staff, and they have hired an expert to  
12 review the calculations and look more deeply into detail  
13 of this.

14           We're concerned about the speed with which we've  
15 gone to offsite mitigation as opposed to on site within  
16 the local lagoon, and adopt the mitigation ratios. So  
17 we're concerned that usually typically a two to one is  
18 usually used and we're down already to one to one  
19 basically.

20           And probably lastly is to reiterate that all the  
21 agencies are meeting on May first and second down here in  
22 San Diego to go through all the information and to come to  
23 a consensus on exactly what should be happening with  
24 minimization and with all the litigation on site.

25           So with that also I will make sure that my staff

1 includes the recommendation or action you take today in  
2 our staff's report to our commission, and that would be  
3 heard fairly soon within the next couple months.

4 Thanks.

5 MR. WRIGHT: Thank you for your letter and your  
6 presentation.

7 And I would like to especially thank the State  
8 Land's Commission for being engaged in the quality of  
9 water down in San Diego. I was trying to figure out what  
10 side of the fence you were on. I couldn't figure out from  
11 your letter.

12 MS. NEWTON: We are concerned about our public  
13 trust responsibilities.

14 MR. WRIGHT: I understand.

15 Just raising the issues many of which have been  
16 brought out in other letters as well.

17 Mr. Eric Dietz representing Assemblyman George  
18 Plusher.

19 Rachel Solorzano. Field representative for  
20 assembly member Mary Salice.

21 MS. SOLORZANO: Good afternoon. Thank you for  
22 the opportunity to be here. I'm representing assembly  
23 member Mary Salice. And I'll read a very condensed  
24 version of the letter of support that she has.

25 MR. WRIGHT: Would you correct your name for me.

1 MS. SOLORZANO: Solorzano.

2 MR. WRIGHT: Solorzano. Thank you.

3 MS. SOLORZANO: This letter is to inform you of  
4 my support for the Carlsbad desalination plan, and request  
5 that you finalize the discharge permit by approving the  
6 key permit conditions that requires the project to  
7 minimize marine impacts.

8 I am pleased to support Sweetwater Authority who  
9 provides water to thousands of my constituents and their  
10 bid to increase their drop tolerance supplies of 36  
11 percent by 2010 and be less depended on imported water.

12 In 2006, Sweetwater Authority contracted  
13 Poseidon Resources to purchase 2400 acre feet of water  
14 annually. It will be produced at the Carlsbad  
15 desalination plant. This water will account for  
16 approximately ten percent of Sweetwater's annual gain  
17 almost by enough water for about 4800 families each year.  
18 The water produced will give the highest quality meeting  
19 or exceeding all drinking water regulatory standards under  
20 the law. It is also guaranteed never to cost more than  
21 the rate set by the San Diego County Water Authority.  
22 Ensuring that Sweetwater will pass up exceedingly high  
23 water rates to their customers. And this is from the  
24 vigorous passing of public scrutiny to ensure that the  
25 plant will be environmentally friendly and efficiently

1 operated. The project developers made every effort by the  
2 state and federal environmental regulations and has long  
3 since approved their project will not harm the Agua  
4 Hedionda or ocean. In fact, their proposal proposed the  
5 mitigation measures or resources of 37 acers of wetlands  
6 habitat, and will provide for the annual maintenance of  
7 the lagoon.

8 I am proud to support the successful public  
9 private partnership between Poseidon Resources with the  
10 City of Carlsbad, and I urge you to approve this project.  
11 Thank you.

12 MR. WRIGHT: Thank you.

13 Cameron Durckel Director of the San Diego office  
14 of the governor.

15 MR. DURCKEL: Good afternoon. It's a pleasure  
16 to be here and thank you for your service. My name is  
17 Cameron Durckel. I'm with the governor's office here in  
18 San Diego. I'll be very brief.

19 The governor supports desal as a critical  
20 component of the state's water plan. Specifically the  
21 public private partnership in Carlsbad here. And I will  
22 stave off my comments on public private partnerships and  
23 jobs. But please keep this in context. A very important  
24 project to move forward with in an environmentally  
25 sensitive manner.

1           And again, thank you for your time in addressing  
2 this matter.

3           MR. WRIGHT: Thank you for your time. And thank  
4 you to the governor.

5           Mr. Jonathan Hardy. Where is Mr. Hardy?

6           He's a district representative in the office of  
7 Senator Dick Chaney. We have a letter from the senator.

8           Ken Wiseberg or Weinberg. Couldn't read your  
9 writing.

10          MR. WEINBERG: Oh, it's very poor. The kids do  
11 a better job than I do.

12          Thank you, Chairman Wright. I will be brief.

13          I'm Ken Weinberg. I'm the director of Water  
14 Resources for the San Diego County Water Authority. And I  
15 was going to remark on some of the supply issues before  
16 you, but Chairman Wright really hit on the first three  
17 things that are really on the top of our list for local  
18 supply development; conservation, recycling, and seawater  
19 desalination.

20          I'd like to thank your board for your past  
21 support of local supply development. It's very important  
22 to this region. And I think what I will stress is that we  
23 are doing all three of those things. We are doing them  
24 all aggressively, but there is a sense of urgency. I  
25 mean, some of the previous speakers spoke about the

1 federal decision that limits pumping through the Delta.

2           These next several years are going to be  
3 extremely precarious for us in terms of supply  
4 reliability. And we were counting on this project to be  
5 online by 2011 or so. So there is a sense of urgency  
6 here. It's going to take years for the state to work  
7 through the issues in the Delta and fix the Delta.  
8 Through the course of my career, last almost 20 years, the  
9 state's been working on that issue.

10           So, yes, we need this for supply reliability,  
11 but there is a pressing need, and our board would really  
12 urge the Regional Board to continue to support this  
13 project and to move it forward through the process. Thank  
14 you.

15           MR. WRIGHT: Thanks very much.

16           Marcela Escobar. President of Atlantis Group.

17           MS. ESCOBAR: Thank you, Chairman Wright. And I  
18 will keep my comments brief. I also have a letter.

19           I'm here today before you requesting that you  
20 support the plan as presented by your staff. As a former  
21 planning director for the City of Carlsbad and as a  
22 Carlsbad resident, I have over 21 years experience as a  
23 regulator enforcing wetland use matters.

24           When I worked for the City of Carlsbad, I  
25 experienced firsthand how important this project would be,

1 not just for our city but for all of the region in order  
2 to be able to meet our daily water supplies. We examined  
3 all of the alternatives very closely, and we feel that the  
4 project before you is an environmentally responsible  
5 solution to meet the needs for the region. That's why we  
6 can be comfortable that the plan that is before you that  
7 is being recommended by your staff with those conditions  
8 is one that will be able to be approved consistent with  
9 all of the regulations.

10 And there are other comments in my letter, but I  
11 wanted to try to keep it brief. Thank you.

12 MR. ANDERSON: Excuse me. Could you identify  
13 yourself.

14 MS. ESCOBAR: Marcela Escobar.

15 MR. WRIGHT: We have a number of speakers  
16 representing water districts. We've already heard from  
17 elected officials. We have a number of -- can't tell for  
18 sure whether Mr. Munoz is from the Agua Hedionda Lagoon  
19 Foundation. I'll hold off on that one.

20 Oh, I'm sorry. You're already there so go  
21 ahead. I was trying to lump like groups together here and  
22 make this more organized. Go ahead, though.

23 MR. MUNOZ: Thank you very much for allowing me  
24 to jump up at that half opportunity there.

25 I'm president of the Agua Hedionda Lagoon

1 Foundation. We've been around since 1989, 1990. But in  
2 the past couple years we've really expanded our growth  
3 about three or four times over, and we've gotten a lot of  
4 visibility in the community. We are very supportive of  
5 the desalination project, and specifically with what's  
6 before you this afternoon, the plan.

7 This plan required for Poseidon to look at  
8 feasibility mitigation, and they've done that. This is a  
9 milestone. We think this milestone should be approved at  
10 this point. While they did look offsite, believe me no  
11 one would like the mitigation to occur in our lagoon more  
12 than our group. And sometimes on these complexed  
13 situations we need to look at things two or three times.  
14 Well, by approving this plan, we'll get that second chance  
15 because we're going to have a major meeting, as was noted  
16 to you earlier, to look again and exhaust any  
17 possibilities for mitigation in our lagoon or closer to  
18 home, if you will. And this is something that we're all  
19 very excited about. We're going to participate very  
20 aggressively in this.

21 The last call or solicitation to look at this  
22 mitigation plan last August, you know, it had some limited  
23 success. But we think with this new round there's going  
24 to be some new things that could be uncovered. There's  
25 been some opportunities at the regional level with RP's

1 that have just gone out in the last handful of weeks that  
2 we add new components and new opportunities for us to  
3 mitigate within public urinals and closer to the site of  
4 the desalination project.

5           Having said that, I do want to point out for  
6 those who have been around the county and the area for  
7 more than 15 years or so offsite mitigation is not a total  
8 failure. Batiguitos Lagoon would not be restored as it is  
9 today if it were not for the impacts at the Port of Los  
10 Angeles, and that's 90 miles away. Here we're talking  
11 about nine miles away. So I think you have enough to show  
12 that they met the feasibility for the mitigation plan and  
13 allow us to take a second look and make sure there's  
14 nothing closer to home that we can find out as far as the  
15 mitigation plan that can then come to you later as well.  
16 If you need a progress report before then or something,  
17 that might be fine. But we think it's important to take  
18 advantage of the balance point right now as other speakers  
19 have mentioned, elected officials, times passing, and  
20 that's creating issues. The time that has past me allow  
21 more mitigation options to surface, and then if not you  
22 can go forward with what's been laid out.

23           So we think you're at a balance point and the  
24 Lagoon Foundation is very much in support as our council  
25 members have spoken were being supportive in a parallel

1 manner and urge you to approve what's before you today so  
2 that the mitigations can go from feasibility to a final  
3 plan.

4 MR. WRIGHT: Will you identify yourself for the  
5 court reporter and spell your last name.

6 MR. MUNOZ: Eric Munoz, M-u-n-o-z. President of  
7 the Agua Hedionda Lagoon Foundation.

8 MR. WRIGHT: Thank you.

9 Mr. Michael Barden. While Mr. Barden is coming  
10 forward. I don't see him.

11 I know Dennis is here. Dennis Bostad. While  
12 Dennis is coming forward, Rua Petty, Gary Arant, and  
13 William Rucker if you'd be ready.

14 MR. BOSTAD: Dennis Bostad, general manager of  
15 Sweetwater Authority. I have nothing further to add other  
16 than to urge you to pass the resolution. Thank you.

17 MR. WRIGHT: Wow, thank you.

18 Hard to follow.

19 MR. PETTY: Rua Petty. I'm president of the  
20 rainfall Municipal Water District and also on the board of  
21 directors of the San Diego County Water Authority. I'll  
22 abbreviate my comments to the fact that my agency is part  
23 of the agencies that are under contract with Poseidon.  
24 Seventy percent of our water is agricultural. And right  
25 now you're looking at an individual that is living the

1 problem of our water supply here in California. If you're  
2 not aware of it, the agricultural community has cut back  
3 30 percent here in San Diego.

4 And my comment is that time is of the essence.  
5 Jobs are five billion dollar industry here in San Diego is  
6 at risk, and part of that is because of our lack of water.  
7 So I'm here to urge you to support moving forward post  
8 taste because providing water here in San Diego is not an  
9 easy task. Thank you.

10 MR. WRIGHT: Thank you.

11 Mr. Arant.

12 MR. ARANT: Gary Arant, Valley Center Municipal  
13 Water District. I'm the general manager of that agency.  
14 I'm also a director from the San Diego County Water  
15 Authority Board of Directors. And I'm formerly a member  
16 of this body. I served from 1983 to 1997. I don't want  
17 to discourage you when I tell you that in the 14 years  
18 I've served on this board and the 11 years since then the  
19 Tijuana River pollution, the Regional Board restructuring,  
20 and under funding the Regional Board programs, and the  
21 San Diego Bay cleanup, and how we are going to get the  
22 Port Authority involved were issues that we dealt with my  
23 entire time on the board. You do have some new things,  
24 and I'm kind of jealous. And that is you're not dealing  
25 with expandable diapers and bird waste removal from

1 beaches, so that's interesting.

2 But you're also dealing with this desal project,  
3 and as a rural points out Valley Center is an agricultural  
4 agency. And knowing what I know about water and the sound  
5 of the chainsaws moving the avocado trees and citrus  
6 trees, we have a serious water problem right now. Not two  
7 years from now or three years from now, but we have a  
8 water problem right now.

9 As one of the nine agencies under contract with  
10 the desal water, I can't emphasize how important this is.  
11 You all know that it's been explained that your adoption  
12 of this resolution today is not a parallel effort, but  
13 it's in the critical path of moving this project forward.

14 So with that I will urge you to adopt resolution  
15 R9-2006-0065. Thank you very much.

16 MR. WRIGHT: Thanks very much.

17 William Rucker.

18 MR. RUCKER: Yes, I am William Rucker. The  
19 general manager with Vallecitos Water District with about  
20 30 years service at Vallecitos. And we serve a little  
21 over 81,000 people. We're one of the nine member agencies  
22 that have entered into long-term contract to meet 44  
23 percent of our demand.

24 We would urge you to adopt this minimization  
25 plan and keep this thing moving forward. Thank you.

1 MR. WRIGHT: Thank you.

2 Mr. Robert Simmons.

3 MR. SIMMONS: Mr. Chairman and members of the  
4 board, will somebody give me a verbal cue when I'm about  
5 30 seconds away from running out of time.

6 MR. WRIGHT: I'll do that, sir.

7 MR. SIMMONS: Thank you very much.

8 My name is Robert Simmons. I'm former chief  
9 trial lawyer for the Sierra Club in a number of federal  
10 court litigation matters over the years that concerns  
11 water supply and the protection of coastal marine recovery  
12 agencies on issues that are very similar to those before  
13 you now. In addition to that over the last 20 years, I've  
14 emphasized environmental and water issues both as  
15 professor of law as well as environmental attorney.

16 I feel incompetent to stand here and express my  
17 strong support for the Poseidon plan. I think it responds  
18 soundly and directly to the request you've made, the  
19 conditions that you've expressed after your last hearing.  
20 It complies with all applicable laws. It's a good plan,  
21 and I urge you to endorse it today.

22 I know that there are a number of opponents.  
23 colleagues of mine or at least former colleagues of mine  
24 in the environmental community who will soon come up  
25 before you and argue that you shouldn't take action today.

1 You should postpone consideration by some future date. I  
2 just want to remind you that these are the same people who  
3 have been actively opposing the entire project for the  
4 past five years in and out of court every step of the way  
5 until today, and they failed each step because they have  
6 not had any good sound legal as well as factual arguments.  
7 I know that they're not in the mainstream of the  
8 environmental community. I know where that community is.  
9 I know that the majority of environmentalists in this  
10 economy as well as the overwhelming majority of the public  
11 in this area agree with me, and that is that reasonable  
12 impacts to coastal geniuses is not inconsistent. Doesn't  
13 conflict with the production of new water supply to serve  
14 this water starving area.

15 I know, Mr. Chairman, you don't want me to talk  
16 about water supply, but let me approach it briefly from  
17 this perspective.

18 And that is this. The Poseidon plant will  
19 produce water that will serve 110,000 families in this  
20 region, and we need it as soon as possible.

21 MR. WRIGHT: Mr. Simmons, you have 30 seconds.

22 MR. SIMMONS: Beyond that there's a critical  
23 long-term need to divorce ourselves from the near total  
24 dependance upon imported water. Water conservation alone  
25 nor with water recycling; they won't accomplish this goal.

1 But add desalination to the other two strategies and we  
2 can achieve this dream of goal of water self sufficiency.

3           Gentlemen and ladies, maybe not in bylaw tact,  
4 but certainly yours in the lifetimes of our children. If  
5 we move fast, we need to do that. And I appeal you to  
6 endorse this plan today and move that certainty along so  
7 that we can rely upon it. Thank you.

8           MR. WRIGHT: Next we have Steve Cedie followed  
9 by Douglas Metz, Bill Clavenger, Bill Smith.

10           Is Mr. Cedie here? Mr. Metz.

11           MR. METZ: Thank you, Chairman Wright and  
12 members of the board. My name is Douglas Metz, M-e-t-z.

13           I appear in my capacity as a member of the  
14 infrastructure committee of the San Diego Regional Chamber  
15 of Commerce.

16           I urge that the board without further delay  
17 approve Poseidon's proposed flow entrainment and  
18 impingement plan. This decision will be amply supported  
19 by several findings. I'll summarize only three in my one  
20 page as submission.

21           First of all, the project sponsors and local  
22 governments have exercised due diligence in undertaking  
23 environmental studies evidencing minimal adverse impact.  
24 In particular the plan has been under review for 12 months  
25 and was extensively revised on two occasions in response

1 to the comments received from the board staff and the  
2 public. The plan assures, utilizes rather, best available  
3 site design, technology, and mitigation measures.

4 Second, the plan assures maintenance of the  
5 water quality of a well functioning lagoon and of the  
6 surrounding marine habitat, and is augmented by mitigation  
7 measures to be implemented subsequently.

8 Last and very important of equal by preceding  
9 speaker, time is of the essence. And I urge that the  
10 project after over eight years in the making not be  
11 further delayed by being burdened with conditions  
12 requiring experimentation with untested water intake and  
13 discharge technologies. Thank you very much.

14 MR. METZ: Thank you Mr. Metz. Bill  
15 Clavenger.

16 MR. KING: If I can disclose for the record Doug  
17 King Law Group. This is completely individual capacity  
18 that he is here. We're not representing any individual  
19 clients on this matter.

20 MR. WRIGHT: Mr. Schmidt.

21 MR. SCHMIDT: Chairman and members, Jim Schmidt,  
22 retired banker attorney. I've served in three positions  
23 in the state government, and I now serve on four public  
24 boards all without pay by the way.

25 Anyway, an overriding issue I think is that we

1 must have more sources of water you've heard that. The  
2 opponents -- one thing about growth, which I know the  
3 opponents oppose growth. The reason we're growing is  
4 besides foreign immigration people are living too long,  
5 that's one of the reasons. There's births over deaths.  
6 So are they going to oppose the use of prescription drugs.  
7 I'm worried about that. Because my cholesterol is way  
8 down 100 points because of prescription drug, if you want  
9 to cut down drug.

10           Anyway, we face a water shortage. It's not just  
11 Carlsbad; as indicated it's Sweetwater and other areas.

12           In my article I gave you, which I wrote last  
13 year before I testified, I talked about the horror stories  
14 of Monterey, and Santa Barbara the horror stories. I'll  
15 never will forget in Monterey and Carmel--I left there  
16 about 30 years--ago every place you went to a men's room  
17 and above the urinal it said do not flush. You can't  
18 forget things like that.

19           Now the Coastal Commission and the same  
20 opponents you'll have today, the same people, but labor  
21 business were there, Chamber of Commerce, local government  
22 all in favor. The night of three voting included both  
23 members of the San Diego City area. Both members of  
24 San Diego were in favor. This will be the 11th plant in  
25 California. Not the first one, the 11th plant. The

1 governor is pushing it, and again all the assembly  
2 members, all the state senators, all the members of  
3 congress support this.

4           So I would just urge you very strongly to  
5 support this. Make it happen.

6           We have to have water. I want to be able to  
7 water my lawn. That is one of the things I saw up in  
8 Santa Barbara. My friends told me they couldn't water  
9 their lawns. The company that sprays lawns green made a  
10 lot of money. That's unfortunate. Thank you very much.

11           MR. WRIGHT: Thank you.

12           Chuck Badger followed by Mike Madigan, Gary  
13 Knight and an Angelika Villagrana.

14           MR. BADGER: Good afternoon, Chairman Wright and  
15 other board members. My name is Chuck Badger,  
16 B-a-d-g-e-r. I'm a third generation citrus farmer from  
17 the North County.

18           My grandfather first came here in 1922, and he  
19 came here to farm. He soon realized that water was going  
20 to be his most important challenge. He also started the  
21 Santa Fe irrigation district. He also served on the  
22 Metropolitan Water Board.

23           My father continued to farm and be involved in  
24 water. In fact, he served on this board a few years ago  
25 and the seat is now being occupied by Mr. Anderson.

1           Eric Larson our executive director sent you a  
2 letter. In that he details the drought in the Colorado  
3 River you already know about. The couple of the  
4 regulatory drought at the Delta, and of course the 30  
5 percent cut back that you've already heard about.

6           One thing I haven't heard discussed a lot about  
7 today is the failure of our state legislators to put any  
8 water bonds on ballots this year that will help bring us  
9 need of water. But really that's why it's very important  
10 for local government agencies and regulatory agencies to  
11 help us with water here in San Diego. You know that we  
12 need the water.

13           I was making decisions today on which lemon  
14 groves not to water and which ones should get water  
15 because of the drought. It's been very difficult for a  
16 lot of us.

17           All I want to do is conclude by saying if we  
18 want agriculture in San Diego to continue to provide  
19 abundant local products for San Diegans as well as  
20 providing viable open space we need reliable water. My  
21 father and grandfather worked hard to secure water for my  
22 future, and I'm working hard to secure water for my  
23 children's future. So I hope that you can help by  
24 approving this resolution. Thank you.

25           MR. WRIGHT: Congratulations on your position as

1 president of the Farm Bureau.

2 MR. ANDERSON: I need to disclose that I'm a  
3 member of the Farm Bureau Board.

4 MR. WRIGHT: Mr. Madigan.

5 MR. MADIGAN: Thank you, Mr. Chairman. My name  
6 is Mike Madigan. I'm a past chair of the San Diego  
7 County Water Authority Board. I'm a past chair of the  
8 California Water Commission, and for seven years chairman  
9 of the Bay Delta advisory council to the CalFed process.

10 I'm here to do two things. First, I have  
11 letters in support from Senator Mark Whiland, Assembly  
12 Member Shirley Martin, Assembly Member George Plusher, and  
13 Assembly Member Martin Garrett whose staff members were  
14 here earlier and not able to stay. I'd like to deliver  
15 these to your staff, if that's acceptable. Thank you.

16 Secondly, to urge you to approve this plan in  
17 support of which I will offer you the following four  
18 reasons. One, obviously you have asked for this plan, and  
19 it is now submitted to you as requested, and it identifies  
20 that multiple mitigation plans are feasible.

21 Two, your action on this item today will bring  
22 you into alignment with the current status of the  
23 desalination project of both the Coastal Commission and  
24 the City of Carlsbad, and will allow you to both exercise  
25 your statutory role on entrainment mitigation and work

1 jointly with those other agencies on the selection for the  
2 final mitigation plan.

3           Three, a continuance, a delay will only serve  
4 the cause of delay.

5           And four, for all the reasons which you well  
6 understand this project is even more important today than  
7 it was when it was first brought to you.

8           Thank you for listening.

9           MR. WRIGHT: Thank you.

10          Mr. Gary Knight.

11          MR. KNIGHT: Chairman Wright and all board  
12 members, cut my comments about why we need water you know  
13 why. The point I want to make this day is there will be  
14 no project that we can put forward to you that will have  
15 zero impacts. We know desalination projects running and  
16 operating throughout the world. I presented Monday to a  
17 trade delegation from Sweden. When I told them about  
18 these meetings and other meetings occurring on this, they  
19 looked at me and asked why can't you get it done. The  
20 rest of the world has been able to.

21          So we look at this project as being submitted to  
22 you for the impacts. They have minimized it by using best  
23 practices, and they provide the mitigation as requested.  
24 we would urge you that you approve this resolution and  
25 help us get the water that we already know we need. Thank

1 you.

2 MR. WRIGHT: Angelika Villagrana.

3 MS. VILLAGRANA: Thank you, Mr. Chairman and  
4 members of the board, Mr. Robertus. My name is Angelica  
5 Villagrana representing the San Diego Regional Chamber of  
6 Commerce; our 3,000 member companies and their 400,000  
7 employees.

8 water reliability for our region has always been  
9 one of our most important goals. And therefore, we're  
10 very interested in any alternative that minimizes our  
11 dependence of imported water and diversifies our water  
12 supply portfolio. We believe desalination is one such  
13 alternatives and a good one. In our opinion, Poseidon  
14 Resources has designed a project with minimal  
15 environmental impacts. We believe by preparing the flow  
16 entrainment and impingement minimization plan Poseidon  
17 Resources has provided a road map as to how the project  
18 can move forward using the best available site, design,  
19 technology, and mitigation feasible to minimize impacts on  
20 marine life. Reliable new water needed and the  
21 development of local supply makes sense.

22 Additional infrastructure for importing more  
23 water could cost lots and lots of money with limited  
24 assurance of water supply reliability. At the time when  
25 the entire state in south were suffering from drought in

1 environmental water supply issues, we have the opportunity  
2 to bring online an environmentally responsible source of  
3 drinking water right here in our backyard. Let's not  
4 waste that opportunity. It is in all of our interest to  
5 move this important water supply alternative forward,  
6 (inaudible) water supply in your support.

7 And our letter of support is in your agenda  
8 package. And if I may, Mr. Chairman, (inaudible) wanted  
9 to be here in support, but they are in Sacramento at a  
10 legislative meeting. Mr. Joe (inaudible) President and  
11 chairman, and he has asked me to supply you with a letter  
12 of their support, if that's permissible. And for your  
13 information by Derrick 550 life sciences companies here in  
14 the San Diego region, I have copies of the letter for you.  
15 Thank you very much.

16 MR. WRIGHT: Thank you.

17 Lanie Lutar, Kevin Sharrar, Evelyn Peterson, and Gina  
18 McBride.

19 MS. LUTAR: Good afternoon. My name is Lani  
20 Lutar. I represent the San Diego County Taxpayer's  
21 Association.

22 The Board of the Taxpayer's Association stands  
23 strongly in support of the Carlsbad desalination project.  
24 What is most appealing to our organization is the fact  
25 that this project is being billed as a public/private

1 partnership between the Poseidon and the nine San Diego  
2 County Public Water agencies. The private sector's  
3 involvement has ensured that the region to taxpayers have  
4 been insulated from postulated cost increases and the risk  
5 associated with permitting a multifaceted infrastructure  
6 project.

7           Additionally, the 30 year contract signed by the  
8 public water agencies guaranteed a price of water accounts  
9 and will never exceed what the rate pairs with otherwise  
10 paid for imported water. This is a significant protection  
11 and will guarantee rate pairs are not subject to price  
12 fluctuation, and it's very important to the Taxpayer's  
13 Association.

14           After ten years in the process, we believe it's  
15 time to approve Carlsbad desalination plan and would urge  
16 you for your support. Thank you very much.

17           MR. WRIGHT: Ted Owen followed by Kevin  
18 Sharrar.

19           MS. MCBRIDE: Good afternoon, Mr. Chairman and  
20 members, I'm not Ted Owen. Ted apologizes he had to  
21 leave. I am Gina McBride. I am chair elect of the  
22 Carlsbad Chamber of Commerce. Ted is the president and  
23 CEO.

24           I'm here to speak for our chamber in support of  
25 the Carlsbad desalination project. We represent more than

1 75,000 workers in our 1700 member organizations across the  
2 area.

3           The plan to minimize environmental impacts that  
4 is before you today meets all of the requirements of the  
5 permit this board issued nearly two years ago. The  
6 chamber believes that developing an environmentally  
7 responsible solution to the region's water need is a key  
8 component to achieving our goal of water reliability.  
9 This is why we support the City of Carlsbad public private  
10 partnership with Poseidon Resources to build an operated  
11 desalination plant at no risk to the city or its  
12 taxpayers.

13           For the City of Carlsbad, the desalination  
14 project is a water supply, water storage environment, and  
15 enhancement project. The Agua Hedionda Lagoon is a vital  
16 resource for our city. Many companies and individuals  
17 depend on the Lagoon and nearby beaches including a  
18 thriving agricultural farm, help SeaWorld Research  
19 Institute, and several water recreational facilities. In  
20 fact, the entire business community has a stake in  
21 preserving the natural habitat and the coastal environment  
22 that make north county a great place to visit or do  
23 business.

24           The business community along with the state and  
25 congressional delegation, public water agencies,

1 environmental group, and everyday rate payers including  
2 according to a public opinion poll 81 percent of the  
3 San Diego County registered voters standing united in  
4 support of moving forward on the Carlsbad desalination  
5 project.

6           Finally, the Chamber recently awarded their  
7 first ever Environmental and Spirit Award to Poseidon  
8 Resources because of the projects demonstrated commitment  
9 to the environment; especially to the Agua Hedionda  
10 Lagoon.

11           We need to move forward on this project now, and  
12 we urge your approval today. Thank you for your  
13 consideration.

14           MR. WRIGHT: Kevin Sharrar.

15           MR. SHARRAR: Thanks for the opportunity to  
16 speak to you today. My name is Kevin Sharrar, and this is  
17 my eleven year old daughter Savannah.

18           MR. WRIGHT: Welcome Savannah.

19           MR. SHARRAR: Savannah and her brother and  
20 mother and I are very fortunate enough to live in which I  
21 believe is the greatest community in the country and  
22 that's in Carlsbad. We have beaches and lagoons and we  
23 can all see today the flower fields, and so many other  
24 places to enjoy our national environment. My family  
25 really loves it here. My wife and I hope that when

1 Savannah and her brother Braden go off to college and find  
2 themselves families that they come home and call Carlsbad  
3 their home as well. Quite honestly I worry about  
4 San Diego County and some of the challenges we face in the  
5 future that holds for my daughter and my son. The  
6 devastating wildfires last year reminded all of us that we  
7 certainly have our fair share of challenges.

8 I don't believe that enough attention is paid to  
9 our water supply. Something too many of us I think take  
10 for granted. Our water supply depends on outside sources  
11 and that the Colorado River and Northern California. We  
12 don't have enough water supply to call our own. To be  
13 candid, we just can't continue to keep our heads in the  
14 sand collectively. I acknowledge that this board's  
15 commitment to that. That being said, we can't just go on  
16 hoping everything will be okay. It's up to all of us now  
17 to fix these problems so that future generations like  
18 Savannah's will be afforded to live in the San Diego that  
19 we all come to enjoy. We need a water supply that's  
20 dependable and environmentally sensitive. The longer we  
21 wait the worse the situation will get.

22 I believe Savannah has something to ask of you  
23 today.

24 MS. SAVANNAH SHARRAR. I respectfully ask you to  
25 please approve the Carlsbad water project today. Thank

1 you.

2 MR. WRIGHT: Savannah, I thank you for your  
3 presentation.

4 Evelyn Peterson.

5 MS. PETERSON: Good afternoon, members of the  
6 board. I'm Evelyn Peterson. I'm here representing the  
7 Industrial Environmental Association, the IEA, which  
8 endorsed the Carlsbad desalination project in 2005.

9 The IEA promotes environmentally responsibility  
10 through effective communication and interaction with our  
11 members, government regulatory agencies, business, and the  
12 community. Our members endeavor to achieve a balanced  
13 relationship between environmental protection, public  
14 health, and economically sustainable growth. We believe  
15 that an affordable and reliable supply of water is  
16 imperative to the future of San Diego's industrial  
17 community, which provides jobs for thousands of San  
18 Diegans.

19 In October 2006, your board issued a discharge  
20 permit for this project but required a flow entrainment  
21 and impingement minimization plan be submitted to provide  
22 additional regulatory safeguard. We believe that the plan  
23 before you today prepared by Poseidon clearly meets the  
24 requirements under the permit you issued. Approval from  
25 your board is necessary to move the project forward to the

1 State Land's Commission and the California Coastal  
2 Commission for the final project approval. San Diego  
3 water supply conditions continue to worsen and time is not  
4 on our side. We cannot afford further delays.

5 The IEA strongly urges you to approve the  
6 tentative resolution and allow this project to move  
7 forward. Thank you.

8 Gina McBride.

9 MR. WRIGHT: At this time I'd like to take a ten  
10 minute break. And we need to give our court reporter some  
11 rest. I think all of us need to stretch.

12 (Brief Recess.)

13 MR. WRIGHT: Meeting to order.

14 We have an organized presentation whereby  
15 Gabriel Solmer, Joe Geever, and Livia Borak. I don't know  
16 if Ed Kimura is a part of that. He's not.

17 But seating time the organized presentation, and  
18 I assume Ed Kimura, Lori Porter, Sara Craisha, Bruce  
19 Resnick, Connor Revrick, Dan Hortell, Jerod Griswald, Lana  
20 McGuire, Jill Hickman, Julie Truhn, Ben McCue, Christin  
21 Mendosa, Angelina Callahan, Rachel Dorfman, Ellen Chuhn,  
22 and Marty Benson.

23 Okay. Ms. Solmer, we're ready for you. How  
24 much time do you need?

25 MS. SOLMER: We just request 15 minutes for the

1 presentation.

2 MR. WRIGHT: Fifteen minutes is fine.

3 MS. SOLMER: Thank you so much. I thank you for  
4 your patience today. It's been a long day. Thank you for  
5 granting this ordinance presentation. I think is the best  
6 way to get information across to you. As you've heard,  
7 we've had 20 people exceed their time to this  
8 presentation; groups like Wild Coast Desal Response Group,  
9 Residence for Responsible Desalination, and all the  
10 individuals that you've heard. We've all joined San Diego  
11 Coastkeeper and Surfrider today.

12 I will start off this organized presentation,  
13 and I'll give it over to Joe Geever from the Surfrider  
14 Foundation to tell you a little bit more about our  
15 concerns with the plan. We're not going to go into the  
16 project today. I think you've had more than enough  
17 information on that issue.

18 Then we'll go to Livia Borak to talk about some  
19 of the legal ramifications of today's decision, and then  
20 I'll come back up to wrap up.

21 So I think in the fever to get to the new  
22 sources of water we've gotten ahead of ourselves. And so  
23 let's just go through some facts that are before you.

24 You have a mandate of Section 13225 of Port of  
25 Cologne to coordinate with other agencies, and we think

1 that that's very important for that reference to be  
2 provided in the presentation as well. There's an agency  
3 coordination meeting. You've heard this again scheduled  
4 for May first and May second where these issues are going  
5 to be discussed. That's why it's a little perplexing to  
6 us why you are poised to make a decision two weeks -- two  
7 and a half weeks before that meeting occurs. You need to  
8 coordinate not just because of the mandate of Port of  
9 Cologne but to take advantage of the agency resources and  
10 expertise on this issue. We certainly don't support the  
11 overly restrictive proposal within the plan itself of how  
12 you should move forward. We think that how you move  
13 forward should be decided in consultation with the other  
14 agencies. And again that plan and any proposals within it  
15 are not before you. They certainly weren't noticed for  
16 this agenda, so we don't need to get into that. And with  
17 all due respect, that proposed schedule would only take  
18 affect if you approve to the plan sort of closing the barn  
19 doors after the cow has already been out.

20           You've heard arguments a lot today about  
21 prejudice to citizens, to the applicant if you wait on  
22 this issue. Let me make it clear, you don't have a valid  
23 plan that has been adequately noticed before you to vote  
24 on. Even if, as we all do, we would want to move ahead on  
25 a legally noticed plan, that's not before you today. So

1 there's nothing that you can do today to slow or speed up  
2 the process in anyway, so those comments really shouldn't  
3 come into your decision-making. Again, you're not slowing  
4 down the process by not moving through today no matter how  
5 other people would like to spin that.

6           Just on a practical matter, I think most of you  
7 have heard that the Coastal Commission has canceled its  
8 June meeting where they were to decide some of these  
9 issues, so again you have plenty of time to bring this  
10 issue back before you, if you did want to legally notice  
11 the plan for your approval before we get to the Coastal  
12 Commission and before any of this gets held up.

13           And indeed it does make sense to wait to that  
14 time since there is a lot of new information. I don't  
15 know how many of you have seen the state board scoping  
16 document and its policy for intake on powerplants. That  
17 certainly goes to the heart of the matter of these intake  
18 issues. There's a lot of useful information. Those  
19 workshops are taking place this and next month; certainly  
20 direct your attention to that process.

21           Again, before turning it over to Joe Geever, I  
22 just want to talk a little bit about the public review of  
23 this process. This plan, and I think we should all be  
24 clear about what we are talking about, the flow  
25 impingement and entrainment minimization plan has not been

1 available to you for a year. It's been available to you  
2 for just about a month in its revised form.

3           And the technical report that is on the agenda  
4 today that is before you, although we certainly agree with  
5 its conclusion that says the plan is lacking in a number  
6 of areas, it was only written on Friday, five days ago,  
7 and wasn't available to the public until after the public  
8 comment period had closed.

9           So given the emphasis that you gave on the last  
10 issue, if you can remember back to issue six on your  
11 agenda, that you wanted to make sure that all responses to  
12 comments were before this board before it acted. We're  
13 perplexed that you consider an issue where not only do we  
14 not have responses from the staff to our comments; we  
15 weren't even able to comment on what's before you today.

16           So I'll turn it over to Joe Geever for more  
17 detail on our underlying concerns and be back up for a  
18 wrap up. Thank you.

19           MR. GEEVER: Chairman Wright and board members,  
20 thank you very much. My name is Joe Geever I'm a  
21 California policy coordinator for Surfrider Foundation. I  
22 hope you've had a chance to read our comment letter of  
23 April first that outlined our concerns about the substance  
24 of the draft revised plan. I just note that we have not  
25 yet received a response to those comments.

1           I think the race to get this item on the agenda  
2 has resulted in a confusing set of documents what's  
3 conflicting language in the staff's document entitled  
4 technical report and the tentative resolution. Language  
5 in the agenda didn't help because it said you will be  
6 considering only the technical report. The technical  
7 report dated April fourth recommends against approving the  
8 plan, if the resolution recommends approving the draft  
9 plan and delegating final approval for the executive  
10 director.

11           As you've heard State Land's Commission Staff,  
12 Coastal Commission Staff, and your staff recommend against  
13 prematurely approving this draft plan. We are also very  
14 concerned about the board prematurely voting to approve  
15 this draft plan. By its own admission, the plan as a  
16 regard to compensatory restoration project is still a  
17 draft proposal not ready for approval. It also seems as  
18 if the vote today would approve other aspects of the plan  
19 that may be considered final. For example, the plan seems  
20 final in its conclusions about technologies to reduce the  
21 intake and mortality of marine life. However, the  
22 technologies discussed in the plan have not been subject  
23 to review and are unproven. More disturbing, this draft  
24 plan seems to be final in its conclusion that after the  
25 fact restoration is both legally sufficient and the only

1 feasible alternative. We disagree. In fact, the draft  
2 plan identified alternative intake systems that eliminate  
3 the intake and mortality of marine life. They just refuse  
4 to pay for them.

5           Given the staff's conclusion that the plan is  
6 insufficient, we're left wondering what it is that you're  
7 voting to approve. What is gained by your action today?  
8 Again, today is the first we've heard that this is not a  
9 vote on the technical report as stated in the agenda.

10           So is this a final vote on the conclusions about  
11 the best available design and technology to minimize  
12 intake and mortality of marine life. Is it a vote that  
13 assumption studies and conclusion in the draft plan are  
14 final. We want to remind you that any decision today  
15 cannot be possibly be a final decision that after the fact  
16 restoration is legal. That would be patently incongruent  
17 with Port of Cologne. Set of timeless process of the not.  
18 We recommend that you grant Poseidon an extension of the  
19 deadline prescribed in the MPDES permit, that seems  
20 prudent. We wouldn't oppose an extension of time to  
21 complete a coordinated multi agency review in fact we  
22 believe an extension will likely result in a quicker  
23 process towards final approval of the project by the  
24 several agencies.

25           Therefore, once again we employ you to postpone

1 any decision on the revised plan until the several  
2 agencies have coordinated their actions. We are only  
3 talking about a couple of months delay. Thank you very  
4 much.

5 MS. BORAK: Good afternoon. I'm Livia Borak  
6 with San Diego Coastkeeper. And to build upon what Joe  
7 said there has been a lot of confusion today. To be  
8 clear, I'm going to be referencing the plan, the  
9 impingement and entrainment flow minimization plan. It's  
10 not clear if this plan is an assessment of impact or what  
11 it's assessing or what's being approved today. But we  
12 should be clear about what the permit, MPS (sic) permit,  
13 that's been granted to Poseidon actually says. And that  
14 permit requires to assess the feasibility of sites,  
15 specific plans, procedures, practices to implement or  
16 mitigation members to minimize impact marine organisms.

17 Now, this is different from Port of Cologne.  
18 Port of Cologne requires minimization of entrainment and  
19 impingement. This is different. We need to be clear  
20 about the difference between mitigation and minimization.  
21 Port of Cologne requires minimization and mitigation as  
22 well as best technology, best design, and best site are  
23 all ways to minimize impacts.

24 As you've heard, the State Water Board has  
25 acknowledged the difference between 316B and Port of

1 Cologne. And we acknowledge that they are different. And  
2 one thing we are all in agreement staff, the state board,  
3 and Poseidon is that Port of Cologne applies to this  
4 project. And this has to be assessed. The state board --  
5 this board has the duty to assess whether or not Poseidon  
6 has minimized intake mortality, not minimize impacts, not  
7 minimize mitigation. As Poseidon states and as staff  
8 states in the letter to Poseidon from Regional Board  
9 Staff, it's not clear that this plan has even addressed  
10 Port of Cologne and addressed minimization. And it's  
11 clear from Poseidon's response that they feel they don't  
12 need to do that. That they've addressed best available  
13 site, design, technology to minimize project related  
14 impacts. That's not the dictate -- that's not what's  
15 dictated by Port of Cologne. And just to reiterate,  
16 mitigation is not the same as minimization. One is before  
17 the fact and one is after the fact. Minimization happens  
18 before. Mitigation is supposed to be something that takes  
19 care of all the impacts after the fact, after all  
20 minimization has been done that is feasible. There is no  
21 analysis like this that is contained in this plan. So  
22 that's a separate requirement from what Poseidon is  
23 telling you. And as far as what analysis is required,  
24 it's not supposed to be fragmented and sequential as it is  
25 in Poseidon's letter states that they sequentially

1 analyzed the steps that have been taken by Poseidon to  
2 address the provision that they feel they need to address.  
3 They've fragmented the whole process. Port of Cologne  
4 requires a holistic approach to inviting impact. Not  
5 putting a horse before the cart or a cart before the  
6 horse. The plan basically says this is our site. We need  
7 to produce this much water we require 300 for MGD, so this  
8 is what we can afford and this is what we're going to do  
9 to mitigate not mandate the Port of Cologne. And that  
10 basically takes the mandate of Port of Cologne and turns  
11 it on its head allowing a project proponent to choose what  
12 exactly they what to mitigate and say for us this is not  
13 the best, that's not what best available means. Legally  
14 defensible plan will not only meet the requirement that  
15 you've imposed on Poseidon and the MPS permit for this  
16 plan, but also meet the mandate for Port of Cologne, which  
17 has not been done. As the Regional Board, you require  
18 this information, you deserve all this information, not  
19 only because it's required but also you need to analyze  
20 impact of the project. You need to analyze what is  
21 possible for the project to minimize impact before you can  
22 decide what mitigation actually is.

23 One other speaker said we can't put our head in  
24 the sand. I think that's true. And what we would like to  
25 say is nobody should put their head in the sand about what

1 impacts or what minimization is required by this project.  
2 Everything needs to be analyzed before anything can be  
3 approved. And I would like to now turn over the rest of  
4 the presentation for conclusion by Ms. Gabriel Solmer.  
5 Thank you.

6 MS. SOLMER: Thanks so much Livia.

7 Just to wrap up and just to make sure that it's  
8 absolutely clear, I think I didn't realize Coastkeeper was  
9 a mainstream environmental organization. And certainly  
10 that hasn't been my experience. But, you know, I think  
11 that the environmental groups have been a little more  
12 aligned in this process.

13 We don't have an objection to a legally  
14 sufficient plan moving forward. If that was sufficient  
15 today, you know you wouldn't hear any objection from us  
16 except for maybe on the noticing issue, which we do think  
17 is a problem. But let's just be clear. The future and  
18 the timetable is in Poseidon's hands. They were directed  
19 to give you a legal sufficient plan that hadn't happened  
20 yet. When that happens, we have no reservations with you  
21 correctly noticing that, giving adequate time to comment  
22 on it, and then voting on it. We certainly will stand by  
23 those points.

24 Just to wrap up quickly, again the revised plan  
25 is still incomplete. I think you've heard that from a

1 number of people. Even in Poseidon's own words it is not  
2 right for final approval. They want you to approve this  
3 intermediary process. Which they're calling a plan,  
4 proponents call it a plan, but it's not the same as this  
5 plan called for in your permit.

6           And again, contrary to the argument that this  
7 delay today will reduce delays with the final project, we  
8 think it's only going to create more delay. It's going to  
9 create more confusion on this project.

10           Just again to finally correct some apprehensions  
11 made. I won't go through all of them. But an important  
12 one is you heard a lot of people say this project has been  
13 approved by a number of different agencies. Any time that  
14 you've heard the words that the Coastal Commission has  
15 found anything. That's not accurate. The Coastal  
16 Commission is voting on revised findings next month. So  
17 until they do that, unless anyone can see the future, it's  
18 not correct to say that the Coastal Commission made those  
19 findings.

20           In conclusion, we would urge your very careful  
21 and consideration on all these issues. Again, we very  
22 specifically did not get into the permits of desal and the  
23 project, the underlying project. But please consider how  
24 and when to act for the best use of all of us. Thanks.

25           MR. WRIGHT: Questions of Ms. Solmer.

1 MR. ANDERSON: Yes, I do.

2 I was kind of curious about the Riverkeeper  
3 case, and I think I understand the context as the focus  
4 should be on minimization of impacts. But do you mind  
5 providing the board with the actual judgment or ruling so  
6 we can kind of analyze it and make sure it's in context.

7 MS. SOLMER: Did you want a summary of it now or  
8 actual --

9 MR. ANDERSON: Either one. Maybe executive  
10 summary with the rulings.

11 MS. SOLMER: We can certainly give you the  
12 ruling. If you'd like the summary, I'll have Livia Borak,  
13 who's our president give you a 30 second review if you'd  
14 like on how that impacts your decision today. But I can  
15 certainly get you the rule itself.

16 MR. ANDERSON: I'll leave the other part to the  
17 chair's discretion.

18 MR. WRIGHT: Do you have a question of  
19 Ms. Solmer and Ms. Borak?

20 MR. RAYFIELD: In your written comments, I  
21 believe you mention Coastkeeper was planning on  
22 contracting with an outside expert to review the plan. Is  
23 that still the idea or are you still -- is Coastkeeper  
24 still going to go ahead and do that?

25 MS. SOLMER: Yeah, that's a joint project

1 between Coastkeeper and Feder (inaudible) Foundation. We  
2 have a contract with that contractor in Colorado.

3 MR. RAYFIELD: That was my next question.

4 MS. SOLMER: And Joe Geever can provide you  
5 specific information about that contractor. But  
6 specifically we were concerned that they didn't have the  
7 time to look at the revised plan, the one that was  
8 submitted just a month ago.

9 MR. RAYFIELD: Do you have a completion date  
10 since you've already contracted with whatever  
11 organizations?

12 MS. SOLMER: Yeah, I think we're in the weeks to  
13 months range. Not any longer than that. But Joe can give  
14 you something more specific.

15 MR. RAYFIELD: I'd appreciate a more definitive  
16 time frame. Thank you.

17 MR. WRIGHT: Mr. Geever.

18 MR. GEEVER: Yeah, we've been talking with --  
19 I'll try to answer both of your questions, if that's okay.  
20 We've been talking with the consulting firm that worked  
21 with USCPA on the 316B rule. They are going to be  
22 reviewing the documents and the plan and the mitigation  
23 proposal. And that's why they haven't gotten engaged in  
24 reviewing the mitigation proposal because there is none.  
25 There is nothing to review. And so giving a date on when

1 that review would be final is just kind of hard. I think  
2 it's almost the same thing as approving this plan right  
3 now. There is no plan to approve and there is no plan for  
4 us to review. But I can tell you that they're awaiting  
5 that. They are going to turn around as quickly as  
6 possible. We want that for -- you know, cause these other  
7 agencies are going to be coming right behind you so we  
8 need that in preparation for everyone's decision. But  
9 until we have a mitigation proposal in front of us it's  
10 impossible to review.

11 Briefly about the Riverkeeper case. We agree  
12 with Poseidon that Riverkeeper applies only to cooling  
13 water intakes. And that's because the federal law only  
14 deals with cooling water intakes. But the state law deals  
15 with cooling, heating, any industrial use of ocean water.  
16 But it does include cooling. So the decision in the  
17 Riverkeeper case the rule that EPA had promulgated  
18 included exclusions from what they call their performance  
19 standards, which was to reduce entrainment by 90 percent,  
20 reduce these standards that they were using for minimizing  
21 entrainment and impingement. A lot of that rule got  
22 remanded back to USCPA to rewrite it. But a couple of the  
23 provisions in there were strictly prohibited from the  
24 remand. So using a cost benefit analysis was thrown out.  
25 And they can't put that back in the rule according to

1 Riverkeeper two. And using after the fact restoration was  
2 also thrown out. And a lot of what this plan kind of  
3 relies on is using after the fact restoration and then  
4 using a cost benefit analysis to show that any of the  
5 other alternative intakes are infeasible or whatever.  
6 Port of Cologne doesn't distinguish between cooling,  
7 heating, or any other industrial process. So if you take  
8 the ruling from Riverkeeper two, apply it to cooling water  
9 in Port of Cologne or anything else, there's no  
10 distinction between cooling, heating, and industrial  
11 processes for Port of Cologne. So arguably that ruling in  
12 Riverkeeper two applies for Port of Cologne as well.  
13 which would prohibit them from using cost benefit analysis  
14 or after-the-fact restoration.

15 Does that get it what you're --

16 MR. WRIGHT: Ms. Borak, you have 30 seconds  
17 worth of clarity for us.

18 MS. BORAK: Yeah, just to add to what Joe said,  
19 I would just add Riverkeeper two though it does apply to  
20 Clean Water Act 316B. The facts that they -- Clean Water  
21 Act also is a technology enforcing statute of 316B and it  
22 requires best available technology. And in the decision  
23 the court basically said that EPA was defined a beacon, as  
24 you will, of what the technology is. And in doing that  
25 costs benefit analysis was not appropriate. And in

1 finding that whatever the best technology is, that is cost  
2 effectiveness can be utilized after that in finding out  
3 what kind of rages for technology that EPA can have as a  
4 substitute for this best technology. The best performing  
5 technology is it. So the best available technology is  
6 what is the best technology that can be reasonably born by  
7 the industry. And that would lend courts for interpreting  
8 Port or Cologne kind of an analysis to go by.

9 MR. WRIGHT: Mr. MacLagan, you have three  
10 minutes.

11 MS. SOLMER: I'm sorry. I believe you have one  
12 more speaker. He'd still like to speak.

13 MR. WRIGHT: I'm sorry, I didn't realized he was  
14 here.

15 MR. KIMURA: I raised my hand. My name is Ed  
16 Kimura with the Sierra Club San Diego Chapter.

17 Chairman Wright and members of the board, we  
18 reviewed the Poseidon Resource flow minimization and  
19 pension plan and we find totally inadequate, and I can  
20 explain the reason.

21 First as I explained in my letter nor in their  
22 fish management Group, as well as the State of California  
23 Marine Life Management Act now requires a holistic  
24 approach to evaluate the impacts on the marine life. And  
25 in order to ensure the protection of the health of the

1 marine resources. The equal systems approach evaluates  
2 the many interaction in the like various marine organisms  
3 when subjected to stresses human or natural. This  
4 holistic approach is the departure from the past, which is  
5 directed to the evaluation of stress on individual  
6 species. This time it's taken the whole group of impacts.

7           Now, here are some of the objections. First the  
8 plan fails to follow this equal system approach. The  
9 impingement and entrainment plan not only focuses  
10 primarily on the fish and fish larval, it fails to  
11 integrate the interactions among all the marine organisms  
12 from the bottom of the food chain all the way up to the  
13 top. And when they are subjected to losses from  
14 impingement and entrainment, the plant concludes that the  
15 impingement and losses are, quote, diminimus in deciding  
16 that this amounts to 2.1 pounds of fish per day. However,  
17 it fails to point out that in the yearly basis there are  
18 over 19,000 fishes and over 96 species that were killed by  
19 impingement. The plan provides very little information on  
20 other important marine organisms besides fish larval and  
21 entrain.

22           Second, the plan fails to provide a  
23 comprehensive monitoring program that evaluates the  
24 current health of the marine equal systems within the  
25 impacted area, as well as a reference area not impacted by

1 the seawater intakes.

2 Third, the plant proposes they micro screen to  
3 minimize entrainment losses, but it has no plan on how  
4 they're going to evaluate this or when they were going to  
5 implement it.

6 And fourth, the proposed mitigation plan not  
7 only focuses on fish but fails to off set the losses of  
8 the rest of the marine organisms. The powerplant diverts  
9 seawater from Agua Hedionda which contains both residence  
10 species of marine organisms as well as non residence that  
11 come in from the coastal areas. The plan provides no  
12 information on these marine organisms such as the species  
13 and abundance. Without this information, we doubt whether  
14 any mitigation plan can succeed. So we ask you not to  
15 approve of this plan, and we have some real concerns about  
16 the proposed alternative condition requirements  
17 resolution. Thank you.

18 MR. WRIGHT: Thank you Mr. Kimura.

19 Mr. McLaggan, do you have some brief comments?

20 MR. GARRETT: Within Mr. McLaggans time, I just  
21 want to take 30 seconds to address two points that we just  
22 heard. One is the notice question and the second is a  
23 river key Port of Cologne what legal standards are you  
24 looking at question.

25 On the notice question, I'm looking at the board

1 agenda. I think it's very clear the plan in front of you  
2 is the plan that was dated March 6, 2008, that's what the  
3 agenda says. Which your staff report said was submitted  
4 to the staff on March seventh, that's the plan you are  
5 approving, that's what was agendized. It seems like many  
6 other people who spoke on the project had no trouble  
7 understanding what plan was in front of the board for your  
8 approval today. Again, this is a plan that has been  
9 available that we revised in response to staff questions,  
10 and it has been available for several months if not years.  
11 And since the board established the condition which  
12 required the plan, I think the opponents have been on  
13 notice that this type of plan was going to be in front of  
14 the board. And they've had two years since 2006 to hire  
15 whatever experts they wanted on whatever alternative plan  
16 they wanted to have the board adopt.

17 On the Riverkeeper question, I agree with Joe  
18 Geever. I'm not sure Joe Geever agrees with everybody  
19 else that presented. Riverkeeper doesn't apply here. One  
20 of the issues in 2006 was the whole question about rules  
21 for powerplants, the 316B rules, and Riverkeeper, which is  
22 a federal court case interpreting federal rules for  
23 powerplant intakes. Do those apply to a desalination  
24 plan? The answer from your board at that time was no they  
25 do not. Instead Port of Cologne Section 13142.5 does

1 apply. Your staff had a very nice chart showing the two  
2 different regulatory regiments in pointing out the  
3 differences between Riverkeeper and the federal statutes  
4 and 316B and the Port of Cologne Act 13142.5. That  
5 section of the water code, which again gives you primary  
6 jurisdiction over all other agencies to decide issues on  
7 impingement and entrainment does provide for balancing.  
8 You are to be looking at the framework which is put forth  
9 in our plan as to best available technology and a feasible  
10 mitigation. Those are the standards that are at Port of  
11 Cologne. They're not necessarily in Riverkeeper or 316B.

12 MR. WRIGHT: Mr. MacLaggan, he used part of your  
13 time.

14 MR. MACLAGGAN: Very briefly, Mr. Chairman, I  
15 thank you for your patient this afternoon.

16 Just by way of rebuttal to the Surfrider  
17 Coastkeeper presentation. A few points.

18 First of all, Mr. Geever stated that Poseidon  
19 ruled out service intake solely due to cost reason and  
20 that's absolutely incorrect. There are three reasons.  
21 Cost being one of the three but the other two being more  
22 important. First of all, we don't have adequate sediment  
23 cover offshore to put sub-service intakes in the area that  
24 Carlsbad plant. Consequently, we would have to dig up  
25 hundreds of acres of sea floor; basically, kelp bed, hard

1 bottom, habitat land to the sea floor plumbing system that  
2 looks like a reverse leech field, cover that with sand and  
3 pump water on that and process marine destroying several  
4 hundred acres of offshore habitat, valuable habitat, as  
5 well as putting pump stations on the beach--several;  
6 either ten or 20 pump stations. All of which were  
7 concluded at the Coastal Commission as well as the City of  
8 Carlsbad. Not to be the most environmentally responsible  
9 alternative. The existing intake or use of the existing  
10 intake both entities found to be most environmentally  
11 responsible preferred alternative.

12 Second point, the comment was made that the  
13 Surfrider Coastkeepers only had 30 days to review the  
14 draft plan. I will remind you that the second draft plan  
15 was not on the Regional Board's website for nine months.  
16 We received no comments whatsoever except from your staff.  
17 And the third draft was responsive to those comments in  
18 the fashion we simply added more information, more  
19 details. So the plan itself has not changed for almost a  
20 year now. There was ample opportunity for comment, and  
21 all we did was boast on what was there. So if it was fine  
22 before adding more information, not changing the substance  
23 of the recommendation shouldn't change the acceptability  
24 of that plan. We see no reason for delay. The plan  
25 before you is not contrary to your permit requirements as

1 suggested. We met the feasibility requirement of our  
2 charge under the permit. We have an opportunity to  
3 prepare now a final mitigation plan that will be back  
4 before you in the months ahead. If we wait for a perfect  
5 solution, we will never see the benefits of this water  
6 supply project. This is precisely why the Port of Cologne  
7 Act is referred to as a balancing statute. Your charge as  
8 a board is to look at the environmental impacts and the  
9 need to support the economy and housing and all the other  
10 beneficial uses of water supply and balance those two and  
11 come to a reasonable decision that protects both. You  
12 need to support human life in the area along with the need  
13 to protect environment. We think we struck a balance in  
14 that regard if the plan moves in that direction.

15 Consistent with Port of Cologne 13142.5B has a  
16 feasibility component, and it provides for mitigation  
17 after you've exhausted your feasible technology measures.  
18 Our plan has exhausted the feasible technology measures.  
19 City of Carlsbad EIR, the Coastal Commission decision  
20 agree with that. They said there are no additional  
21 feasible measures be taken. We are now all focused on  
22 mitigation. So what you do by your action today by  
23 approving the draft resolution, you bring your staff to  
24 the same point with the other two entities are as we move  
25 forward with this joint statewide coordination. You say

1 to your staff by conceptionally approving this plan we're  
2 pass the mitigation design components. We're focusing our  
3 attention now on how we mitigate, and make sure we have  
4 enough mitigation. We've got the right site. The  
5 implementation scheduled the planning consistent with --

6 MR. WRIGHT: Will you wrap up, Mr. MacLaggan.

7 MR. MACLAGGAN: Yes, Mr. Chairman, we  
8 respectfully request that the board approve resolution.  
9 The resolution is before you. Thank you very much.

10 MR. WRIGHT: Mr. King has a question.

11 MR. KING: A question for Mr. Garrett. Did you  
12 have a black line comparison to the second and third draft  
13 of the plan?

14 MR. GARRETT: No, I don't.

15 MR. MACLAGGAN: Mr. MacLaggan. Just a comment  
16 on the black line. Black line will not be helpful because  
17 one of the comments we got from your staff was to provide  
18 greater clarity as to how we addressed each of the  
19 elements on statute. We did a wholesale reorganization on  
20 the plan breaking it down into new chapter format. So if  
21 I did a black line it would look like it's an entirely  
22 different report. It's just we took information and  
23 reorganized it in its presentation. Well, there isn't a  
24 tremendous amount of new information. I can highlight  
25 what's new between the two drafts if that would be

1 helpful. If you did a side by side black line, it would  
2 look like we did a wholesale rework of the report. It's  
3 just reorganization is what that amounted to.

4 MR. ANDERSON: Just a real quick question.

5 On your analysis you analyzed an awful lot of  
6 minimization technologies and some of those are new. As  
7 this process moves forward, you may discover some actually  
8 more feasible at a later date. I would encourage you to  
9 consider using them as they become feasible.

10 My second thing, some analysis of the reclaim  
11 water option would make me feel a lot happier, but  
12 everything else it generally supports.

13 MR. MACLAGGAN: May I just make one quick point  
14 regarding Dr. Anderson's comment about future  
15 technologies?

16 MR. WRIGHT: You're pushing limits here.

17 MR. MACLAGGAN: I understand. I just want to  
18 make sure the board understands.

19 What your staff is working on is an interim  
20 solution on the powerplant continues to operate. We are  
21 inherently limited under those conditions. The powerplant  
22 ceases altogether all the new technologies are back before  
23 you, and your staff has full authority to require of us.

24 MR. WRIGHT: Another question, Mr. MacLaggan.

25 MR. RAYFIELD: Yeah, I'm sorry.

1           That's the way I understood the report. And I  
2 learned today that you're Guaranteeing the price or  
3 someone is guaranteeing the price of the water produced by  
4 the plant to be the same as imported water cost. And I  
5 find those two statements that, you know, that we are back  
6 to ground zero and technology and the like when the  
7 powerplant shuts down, but yet you have a financial cap,  
8 if you will, on the cost of the produced water. How do  
9 you do that?

10           MR. MACLAGGAN: That's our inherent risk as a  
11 developer of this project to make sure we continue to  
12 produce water at an affordable price. If the technology  
13 is required of us ten years from now is deemed available  
14 and feasible, presumably it has a reasonable cost to  
15 implement as well and we won't be able to afford to do it.  
16 Recognizing again that this statute has feasibility  
17 component. Part of that is cost. Part of it is that does  
18 the technology work? Is it environmental --

19           MR. RAYFIELD: Sure. Lots of issues there.

20           MR. MACLAGGAN: We think that that's part of the  
21 question that will be before you when you require us of  
22 that. Is it affordable in a reasonable sense. That  
23 doesn't mean our enterprise has to continue to be one that  
24 is profitable from your perspective.

25           MR. RAYFIELD: As I understand the conditions.

1 MR. MACLAGGAN: There is an upper limit as to  
2 what the cost would be we consider feasible.

3 MR. RAYFIELD: As part of that guarantee, if you  
4 will, competitive price for your water versus the imported  
5 water? Is there a substantiation in there from your group  
6 that helps with that?

7 MR. MACLAGGAN: There is. And just so you  
8 understand. What we have committed to do is never charge  
9 more for the water. The price of the awarded purchase of  
10 imported water plus an increment of \$250 per acre foot  
11 that is available to our customers from the Metropolitan  
12 Water District to offset a demand on the imported water  
13 systems and substantiate to encourage things just like we  
14 are trying to do.

15 MR. RAYFIELD: So the matter is substantive into  
16 the \$250 per feet.

17 MR. MACLAGGAN: For the first 25 years of  
18 operation.

19 MR. RAYFIELD: So when we are talking about caps  
20 too, I heard someone say that there is a cap on the  
21 mitigation measure costs.

22 MR. MACLAGGAN: No, sir, that was a misinterpretation  
23 of our report. We recognize that we have an obligation to  
24 mitigate to the extent feasible. We've identified via --

25 MR. RAYFIELD: In that case feasibility being

1 technical and not financial?

2 MR. MACLAGGAN: Feasibility being the  
3 information that Mr. Mayer walked you through showed you  
4 how we arrived at the 37 acres of restoration required of  
5 the project. Now it's our challenge to go find a site  
6 where we can do that in a affordable fashion. I don't  
7 have any expectation that that number is going to go down.  
8 If anything, it's going to go up. We did not set -- we  
9 suggested in the State Land's letter we set a \$3 million  
10 cap on mitigation. I can assure you we are going to pay a  
11 lot more than \$3 million dollars mitigation for we have  
12 not set any financial. For limits, we just said our  
13 commitment is to provide at least 37 acers to what was  
14 restoration. And the location to be determined, we  
15 identified feasible sites we think that can occur.

16 MR. RAYFIELD: I understand that. But somewhere  
17 during this session today I did hear the statement that  
18 there was a cap on mitigation.

19 MR. MACLAGGAN: It was suggested by the State  
20 Land's Commission staff, and that was incorrect  
21 interpretation of our proposal.

22 MR. RAYFIELD: Thank you.

23 MR. WRIGHT: Mr. Kelley.

24 MR. KELLEY: Just to clarify the agenda notice  
25 language, the words "technical report" refer to the March

1 sixth revised flow entrainment/impingement minimization  
2 plan. They do not refer to the staff technical report  
3 dated April fourth, that's a different document.

4 And I would just refer the staff's  
5 recommendation over to Mr. Robertus.

6 MR. RAYFIELD: Are you saying we made an error  
7 on the notice and called the document by the wrong name;  
8 is that what you're fundamentally saying?

9 MR. KELLEY: I guess we consider it a technical  
10 report. You could call it different things.

11 MR. RAYFIELD: Yeah, but there was something  
12 called a technical report out there or they came out? I'm  
13 just trying to get this --

14 MR. KELLEY: Yeah, later a staff technical  
15 report did come out.

16 MR. RAYFIELD: But that's not what it meant by  
17 the words --

18 MR. KELLEY: We also refer to the plan as a  
19 technical report. Maybe that was a misnomer.

20 MR. RAYFIELD: Okay, one other question. We had  
21 a February 19th letter that raised issues in question and  
22 so forth. Was every one of those issues addressed to your  
23 satisfaction?

24 MR. KELLEY: Not at this time. And I will say  
25 one additional comment on that. And that although

1 Poseidon provided all the additional attachments and  
2 specific data based on our review over the last 30 days,  
3 since that has come in, it has raised a couple of  
4 additional questions that we didn't include in that  
5 February letter as well. Because really now we can see  
6 the actual data, but then it raises questions on how they  
7 use that data to come up with the actual number. So  
8 that's still a question for us. We'd like clarification  
9 for that.

10 MR. RAYFIELD: Thank you. One last question.  
11 Are you convinced that what we have in front of  
12 us in fact represents the best available technology?

13 MR. KELLEY: I would say for the cooperation where  
14 the Poseidon project is in conjunction with the cooling water  
15 discharge and the powerplant has its own requirements for the  
16 best available technology and they're using the same ones, then  
17 I would say yes. But once that ends and ceases, then I would  
18 say we'd have to reevaluate it.

19 MR. RAYFIELD: Mayer question mark after that.  
20 So you're okay with the best available  
21 technology, but there's still outstanding issues that need  
22 clarification analysis or whatever?

23 MR. KELLEY: That's my understanding.

24 MR. RAYFIELD: Thank you.

25 MR. WRIGHT: Mr. King.

1           MR. KING: You stated earlier that 40 percent of  
2 the time the intake water from the power station is below  
3 what would be the 300 million gallons per day. How far  
4 below.

5           MR. KELLEY: Gosh, I didn't get a number on the  
6 minimum and maximum. I'd have to look that up and see if  
7 I could get that. Sometimes with the plant it goes down  
8 fairly low, so it could be, you know, maybe 90 percent  
9 they would need to makeup, so it does fluctuate throughout  
10 the day and depending on the power needs of the regions.  
11 Maybe Mr. MacLaggan has some details on here.

12           So there are times when the actual flow goes to  
13 almost zero. I think those are times when maybe they have  
14 to do some work on the plan or they have to shut it down  
15 for heat treatment and things like that, so with those do  
16 occur.

17           MR. KING: What it means zero is correlated with  
18 40 percent of the time or zero is one day out of the year?

19           MR. KELLEY: It's just a short period of time.

20           MR. KING: Cause 40 percent of the time is quite  
21 a bit of a time. And I'm wondering how far below is the  
22 typical level when it's below the 300 MGD.

23           MR. KELLEY: It looks like somewhere between 100  
24 and 200 MGD would be the majority of the time when a  
25 coastal level, as looking at the graphs.

1           MR. WRIGHT: Mr. Geever, did you have a table to  
2 share some light on that. Why don't you give it to  
3 Mr. Kelley.

4           MR. KING: Couple other questions quickly. This  
5 is part of what we were covering today. But is it true  
6 that the powerplant shuts down and the desal plant doesn't  
7 happen, does the lagoon just lies fallow and turns back  
8 into its natural state which is not a lagoon?

9           MR. KELLEY: Most likely if there is no other  
10 agency or project that would keep it open then it would  
11 just revert back to its natural state or original state.

12          MR. KING: Can we kind of back to the issue of  
13 the notice. More the substantive issue of the notice  
14 here. The changes between the second and third draft; a  
15 lot of restructuring or would you say that degree of  
16 substantive changes between those two drafts can --

17          MR. KELLEY: Yeah. I would say as mentioned earlier  
18 that the majority of it was providing detailed data to support  
19 what was in the first draft and the second draft. So it gives  
20 us the data so that we can go look and see if the amount of the  
21 mitigation is comparable to what impacts they're actually  
22 having. And we're still really evaluating that. It is  
23 difficult to do in 30 days.

24          MR. WRIGHT: I think we're ready to turn this  
25 over to Catherine.

1 MS. GEORGE: I may want to respond briefly to  
2 some of the legal points raised.

3 would you like that before you hear from  
4 Mr. Robertus.

5 MR. WRIGHT: Yes.

6 MS. GEORGE: Just on the legal notice issue  
7 raised by Coastkeeper. I do think that there's been  
8 adequate legal notice for this proceeding. And I realize  
9 that the technical report by staff was not circulated  
10 until the fourth. There is certainly an opportunity for  
11 oral comments and also late comments. Written comments  
12 are routinely received when there's a good reason for  
13 that. So I think that's been adequately addressed.

14 I don't think that -- if you go forward and  
15 approve the tentative resolution with some changes that  
16 you requested earlier today, I don't think that you are  
17 precluding the kind of joint agency coordination process  
18 referred to in Water Code Section 13225. I think you're  
19 allowing that to go forward in meeting that requirement.

20 With regard to the Riverkeeper case, I agree for  
21 the most part with Coastkeeper and with a Poseidon  
22 representative that the Riverkeeper two case does not  
23 apply directly to the desalination facility. I do agree  
24 that you're required to comply with Water Code Section  
25 13142.5 in making a final approval of the plan that you

1 receive from Poseidon. And you're not making that final  
2 approval today.

3           Let's see. I wanted to point out that I  
4 disagree with Coastkeeper in the context of Section  
5 13142.5 that all mitigation is considered after the fact  
6 restoration. That was the subject of the Riverkeeper  
7 case. The mitigation can constitute minimization and meet  
8 that requirement in Section 13142.5. At least at this  
9 point, there was a recent court of appeals -- state court  
10 decision whereas the wetlands that exclusively recognize  
11 that. Came after Riverkeeper two. Although that case has  
12 been with the Supreme Court. The California Supreme Court  
13 has granted petition for review. So we'll see we may have  
14 more clarity in the future.

15           And I did want to just remind you that the  
16 permit provides that you can direct Poseidon to modify  
17 their plan in the future, so you retain that right. And  
18 also that there will be a need to comply anew with Section  
19 13142.5 at the Point Encina Power Station completely  
20 ceases operation.

21           And then lastly, it looks like one of the  
22 representatives, I think, Mr. Garrett mentioned that the  
23 Regional Board has primary jurisdiction over all issues  
24 regarding impingement and entrainment. I can't confirm  
25 that that statement is completely accurate. Although I do

1 agree that the Regional Board has the authority to  
2 implement and comply with Section 13142.5.

3 If there are any questions, I'd be happy to  
4 answer them.

5 MR. ANDERSON: I think you did address, I didn't  
6 quite catch it, the feasibility versus whether it's  
7 economically feasible. There was some decision about that  
8 or just flat out feasible. And your opinion was?

9 MS. GEORGE: I didn't express an opinion on  
10 that. I probably don't have one.

11 MR. ANDERSON: Okay.

12 MR. WRIGHT: The economic feasibility is not  
13 before us at any rate. I mean, we haven't gone into any  
14 kind of discussion on that aspect of it looking at  
15 subsidies and so on and so on.

16 Mr. Robertus.

17 MR. ROBERTUS: I recommend action today to  
18 approve the plan. And I know that the technical report  
19 was misconstrued. I think that the plan may be better  
20 expressed as a process. I'm concerned that if the board  
21 doesn't take action today it will exacerbate any attempts  
22 to get the right parties together and to take action to  
23 drive this to a conclusion. There are about 40 months  
24 left on the permit that this board has already adopted.  
25 There is virtually no action that you take to approve or

1 disapprove this fully opposition study that pertains to  
2 the ability to the discharge for the next 40 months. As  
3 you've heard, it will make a difference when they start  
4 the period subsequent to that when the Poseidon -- when it  
5 comes to pass, if it comes to pass, is operating in a  
6 stand-alone mode. Then the question of minimization and  
7 mitigation will be brought fully to bear on the Poseidon  
8 facility. And the other consideration of 316B wants to  
9 (inaudible) entrainment that's taking place in the  
10 facility at this time. That complicates the issue while  
11 they're co-operating an electrical powerplant with one  
12 MPDS permit and then the perspective -- and the Poseidon  
13 facility operating with another MPDS permit. That's the  
14 subject of the flow minimization issue today.

15           So my practical recommendation is to adopt this  
16 so that the process will move forward. I am not convinced  
17 that the parties will come to the table as highlighted in  
18 the schedule that Poseidon had. We have a tentative  
19 resolution with an errata sheet.

20           MR. WRIGHT: Do you have a copy of that?

21           MR. ROBERTUS: Yes, I have a copy. I will pass  
22 that at this time and request that you review it. My  
23 recommendation is you adopt it with the errata.

24           MS. SCHNEIDER: We will be approaching if we go  
25 that route.

1 MR. WRIGHT: Members of the board, have you had  
2 a chance to digest the errata sheet in the light of  
3 extensive testimony we heard today and as well as the  
4 reading of the voluminous materials?

5 MR. GARRETT: Mr. Chairman, would there be an  
6 opportunity for the applicant to respond to one of the  
7 items in errata that we haven't seen before?

8 MR. WRIGHT: Yes. But make it brief please.  
9 We'll also hear from Ms. Solmer.

10 MR. GARRETT: My name is Chris Garrett, a lawyer  
11 that works for Poseidon. I wanted to just address Item C  
12 in the errata. You may vaguely recall my statement that  
13 the board has primary jurisdiction on these issues. That  
14 both the Water Code and the Coastal Act give the Water  
15 Code -- give the water Board responsibility. And my  
16 concern is that this might be misinterpreted as requiring  
17 approval from other agencies and/or their staff before the  
18 Regional Board could take action.

19 So I would suggest that deletion of Item C or to  
20 have that rephrased so that it's considering of the input  
21 from participating agencies. Perhaps make it clear with  
22 the agencies or their staff as well. But as phrased here,  
23 my concern is that this would require before the Regional  
24 Board could act that you would have to have the other  
25 agencies approve it, and we would not want to get stuck in

1 that loop. Nor do we think it's consistent with the  
2 primary jurisdiction of the board.

3 MR. WRIGHT: We need to run it by our  
4 attorney.

5 MS. GEORGE: I'm not familiar with the Coastal  
6 Act provision that Mr. Garrett -- the specific provision.  
7 I can't review it to determine what it says. I think the  
8 wording there may be some way to modify it so it addresses  
9 his concern and still allows you to achieve the kind of  
10 joint coordination that you're looking for. So I'm trying  
11 to think while I'm talking about some alternative  
12 language. Although, I don't think consensus necessarily  
13 implies approval by other agencies.

14 MR. ROBERTUS: Would coordination as required by  
15 the supported code and section?

16 MS. GEORGE: That would be terrific, yes.

17 MR. WRIGHT: Consensus has changed to  
18 coordination.

19 MR. RAYFIELD: And as required by the Port of  
20 Cologne. It's siting that specific section.

21 MS. GEORGE: So C would read: Coordination  
22 among participating agencies for the amendment of the plan  
23 as required by Section 13225 of the California water  
24 Code.

25 MR. WRIGHT: What's the section again.

1 MS. GEORGE: 13225.

2 Ms. Solmer.

3 MR. GARRETT: You're catching us off guard with  
4 these last minutes. I guess the one thing I want a little  
5 bit of clarification. The other parts of the revised plan  
6 that do seem final, you know, their conclusions, studies  
7 all that other stuff. That is a final act?

8 MR. WRIGHT: I don't say it's final at all.  
9 This is a process.

10 MR. KING: You still have the extensive range of  
11 comments on the February 11th letter. We haven't signed  
12 off on any of those.

13 MR. GEEVER: What are we approving. I'm not  
14 sure how this advances anything, and why you're approving  
15 anything.

16 I guess I'd like to make one comment about --  
17 without identifying what the best design of the facility  
18 is and what the best available technology to meet that  
19 design are prior to, you know, in contemplation of the  
20 cooling water intake not being available, you're allowing  
21 a design that would preclude the use of the best available  
22 technology for -- actually, just eliminating the intake  
23 and mortality of marine life. So I mean, I think it  
24 requires looking a little bit ahead into the future, and  
25 ensuring that the design of the facility, especially a

1 \$300 million facility, is designed in a way that allows  
2 the use of the best available technology when that becomes  
3 required. And I guess I take a little bit of --

4 MR. KING: Could you limit this to the errata.  
5 Look at what's blacked line.

6 MR. GARRETT: Okay.

7 MS. SOLMER: I think we can resolve this. The  
8 concern is under the number two of the via resolved the  
9 San Diego Board hereby conditionally approves the plan. I  
10 think that that's confusing. Because after that you said  
11 that you're going to require in six months an amendment to  
12 this plan. So, if we can change number two to say that  
13 we -- that the board hereby approves this process that's  
14 been described. What we don't want what happened today  
15 where different people are referring to different  
16 documents of the same thing. And, again, you know, please  
17 don't insult our intelligence that you provide a document  
18 called a technical report and then you say actually this  
19 plan that we provided is called a technical report and we  
20 didn't mean to submit this. So I think that if we can  
21 change that number two to say that we're conditionally  
22 approving this process with the errata, that would make  
23 sense and, you know, put everyone on the same page and  
24 would not delay anything. Then we have the same six month  
25 period that we're going to come back and we're certainly

1 okay with the consensus in the errata.

2 MS. GEORGE: What about the San Diego Water  
3 Board hereby conditionally approve the plan subject to the  
4 following conditions being satisfied.

5 MS. SOLMER: I think the concern there is you're  
6 approving a plan that has a lot of information; 300 pages  
7 of information. And I don't think that you can condition  
8 out all of those different things. I think rather than  
9 conditioning out what you don't want to approve, just in  
10 plain language just say what you are approving which is  
11 this process which I think is otherwise understood by the  
12 other resolution, and then you're going to come back with  
13 the information that hasn't been provided in that six  
14 month period.

15 MR. KING: Just get a last round what we are  
16 doing here. Let's look at one errata at a time. We  
17 propose specific changes to this particular section here.  
18 And we've proposed changes to Section C. Otherwise nobody  
19 has commented on there's a change in line one of paragraph  
20 three. Shall submit to the Regional Board executive  
21 officer for the approval by the Regional Board. And  
22 nobody's commented on that change?

23 MS. SCHNEIDER: That's correct.

24 MR. KING: And the additional changes and the  
25 following additional concerns that are listed in A through

1 E. And then paragraph four we've stricken through  
2 executive officer so that the subsequent changes will come  
3 back to the board instead of the executive officer. So if  
4 question can hammer out any changes --

5 MS. SCHNEIDER: I don't have any changes on  
6 that.

7 MR. KING: We are talking about different things  
8 at a time.

9 MR. WRIGHT: If we can zero in on the Errata  
10 sheet.

11 MR. RAYFIELD: I do have one concern on the  
12 errata sheet. Not the Regional Board part, but the last  
13 sentence. In paragraph three that says shall resolve the  
14 concerns identified in the Regional Board's February 19  
15 letter.

16 And we heard from Brian earlier that there are  
17 additional concerns that they've uncovered. And I don't  
18 know that there's items listed as A, B, C, D, and E. I  
19 think -- are they, Brian?

20 MR. KELLEY: Yes, that was the intent.

21 MR. RAYFIELD: And is that the full set?

22 MR. KELLEY: I believe so.

23 MR. RAYFIELD: I guess that's okay.

24 Also Item D, appropriateness of mitigation  
25 sounds really open to interpretation and rather vague to

1 me. I'm not sure what we mean by that. And if we could  
2 remember what we meant by that six months from now.

3 Can you elaborate what we're measuring here. I  
4 mean, this is kind of -- we're setting a standard or  
5 measurement. We're going to measure for appropriateness,  
6 but what are we really going to look at.

7 MR. WRIGHT: Mr. King, do you have a --

8 MR. KING: I do. The more legal term of art is  
9 adequacy of mitigation. Appropriateness. I agree with  
10 the adequacy is it sufficient.

11 MR. RAYFIELD: Is it sufficient. That was the  
12 word I was looking at too. So that would work for me.  
13 And actually that's to the extent of my --

14 MR. WRIGHT: Sufficiency.

15 MR. RAYFIELD: My comments are sufficiency.

16 MR. KING: No, adequacy.

17 MR. WRIGHT: Is George adequacy?

18 MS. GEORGE: Okay.

19 MR. WRIGHT: Any other comments about the errata  
20 sheet?

21 Do we need to -- I guess we need to take some  
22 action on -- well, before we do that I really think that  
23 we ought to deal with that as part of the larger motion  
24 and take a look at the resolved section of the board, the  
25 order.

1 I agree with the concern that's been raised  
2 about Item two under the resolve section. That's preceded  
3 by a statement that says the plan dated da-da-da does not  
4 include specific implementation provisions as required in  
5 section so on, so on. And does not as yet resolve the  
6 concerns noted in the Regional Board's February 19, 2008  
7 letter. Poseidon Resources.

8 And then in the next sentence Item two it says  
9 the San Diego Water Board hereby conditionally approves  
10 the plan. So I have a hard time resolving those two  
11 paragraphs, and that's why I think that we're really  
12 talking more about a process. And even then I have some  
13 questions about the process. But it's a little -- to call  
14 it a plan, when it's not a plan. I guess it's a plan to  
15 plan a plan.

16 MR. KING: If I could jump. We should read the  
17 whole resolution section together and try to read it  
18 harmoniously here.

19 If -- it says specifically why in paragraph one  
20 that the word "conditional" is in paragraph number two.  
21 And in paragraph three and four we say how the conditions  
22 were to play out. Three gives exactly what the condition  
23 is. And four is not related to the conditional section of  
24 it. But there's no such thing right now as a define term  
25 of a process. I don't want to throw another word in there

1 as something new, even though we are trying to split the  
2 baby here and make everybody happy. But it's adding  
3 vagaries into an operative document here. Three  
4 paragraphs together say something clear, if you read it  
5 together for harmony. There's a reason why we're  
6 attaching conditions to an approval. This is what the  
7 condition is. And it's a conditional approval and this is  
8 what the condition is.

9 MR. WRIGHT: I hear what you're saying. I'm  
10 just still uneasy about how we're throwing around the use  
11 of the word "plan." Even if I'm reading all of these  
12 items I wonder if --

13 MS. SCHNEIDER: But title of the resolution.  
14 That means we need to change the title of the resolution  
15 if we don't. It says it's conditional -- the title is a  
16 tentative resolution in a number of conditional approval  
17 of revised flow entrainment and impingement minimization  
18 plan. So we would need to change the title if we're not  
19 going to approve the plan, the minimization plan.

20 MS. RITSCHER: I'd like to jump in and just  
21 agree with Mr. King. I don't think at this point no one  
22 knows what the process means and what it's referring to,  
23 so you can't just say we approved the process. We haven't  
24 defined what that is. I think if there is going to be an  
25 approval, it is appropriate to approve what has been put

1 before us. The latest version of the document -- approve  
2 this plan except for this, this, and this. Or subject to  
3 this condition and this condition. And that's I believe  
4 what is before us. Is it written the best possible way?  
5 I mean, maybe there could be some slight words missing. I  
6 think Ms. George suggested slight words were missing from  
7 Item number two.

8 I agree with Mr. King you can not simply approve  
9 something that we have no definition of.

10 MR. KING: On that note, I'd like to make a  
11 motion to adopt the errata sheet as written with the  
12 exceptions that the word "consensus" in Paragraph three  
13 Subsection C change to coordination.

14 MS. RITSCHER: Coordination among.

15 MR. KING: The word "consensus" is stricken  
16 through and substitution the word "coordination" is  
17 written. Inserted at the word plan as required under  
18 Section --

19 MS. SCHNEIDER: 13225.

20 MR. KING: Is it 1322.5?

21 MS. GEORGE: No, 13225.

22 MR. KING: 13225 of the California Water Code.  
23 The word appropriateness stricken from Subsection D and  
24 change to adequacy, and otherwise adopted as written.

25 MS. RITSCHER: Second.

1 MS. GEORGE: Third. You're voting on the  
2 errata?  
3 MR. KING: The errata.  
4 MS. GEORGE: That would be incorporated into a  
5 motion eventually?  
6 MR. KING: Correct.  
7 MS. SCHNEIDER: I second to that.  
8 MR. WRIGHT: Is there a motion made by Mr. King  
9 in the section -- made by Elizabeth Schneider.  
10 I'm getting groggy here.  
11 Is there a discussion to the motion? All those  
12 in favor of the motion All say aye.  
13 MR. ANDERSON: Aye.  
14 MR. KING: Aye.  
15 MR. WEBER: Aye.  
16 MR. RAYFIELD: Aye.  
17 MS. RITSCHER: Aye.  
18 MS. SCHNEIDER: Aye.  
19 MR. WRIGHT: The motion is approved  
20 unanimously.  
21 Now, we're ready for vote on the tentative  
22 resolution as modified with the errata sheet. So is there  
23 a motion to approve the tentative resolution number  
24 R9-2008-0039?  
25 MS. SCHNEIDER: I move to conditionally approve

1 the Resolution Number R9-2008-0039 as amended.

2 MR. RAYFIELD: Second.

3 MS. GEORGE: Can I make a clarification. I  
4 believe you said conditionally approve the resolution.  
5 And it should be that you approve resolution --

6 MR. KING: Adopt.

7 MS. GEORGE: Adopt the resolution.

8 MS. SCHNEIDER: Accepted.

9 MR. ANDERSON: Second.

10 MR. WRIGHT: Are you speaking to the motion?

11 MR. RAYFIELD: Well, I'm speaking to the motion,  
12 yeah. Actually, I share your concern about approves the  
13 plan. And a concern that was mentioned by some of our  
14 comments. What we're really doing is accepting this plan  
15 to forward it on to a joint agency meeting and so forth.  
16 And I'm wondering if the person that made the motion  
17 would -- if we could change approve, because we're really  
18 not we are expecting some additional stuff, to accept the  
19 plan. A little different twist. And I don't mean to --

20 MS. SCHNEIDER: Do you need approval on the  
21 resolution, John? That was my motion to approve the  
22 resolution.

23 MR. RAYFIELD: I was just talking about a  
24 wording change in the resolution that we're approving.

25 MR. KING: Is there a vote on this motion?

1 MR. WRIGHT: That is the motion.

2 MS. SCHNEIDER: No, it's discussion. I'm asking  
3 a question before I --

4 John, did you ask us to approve the resolution  
5 today?

6 MR. ROBERTUS: Yeah, the word -- operative word  
7 I believe is "approve." That's in the language of the MPS  
8 permit. The word "approve."

9 MR. WRIGHT: And you're simply offering an  
10 editorial change.

11 MR. RAYFIELD: Well, actually I think it's more  
12 than an editorial.

13 MS. SCHNEIDER: We either approve or deny the  
14 resolution. So I motion to approve, and he second it.

15 MR. KING: A motion to call the question.

16 MR. WRIGHT: The question has been called for.  
17 My inclination is not to support the resolution. I am  
18 continued to be concerned about the word "plan." And I'm  
19 also concerned that it may appear that we are approving  
20 the plan that presumably is going to be considered by a  
21 number of other agencies, and it makes us look as though  
22 we're very supportive of the plan, and I don't think  
23 that's the case at least. At least I don't feel the plan  
24 is ripe enough, let's put it that way, to receive our  
25 approval.

1 Any other comments?  
2 MR. KING: I call the question.  
3 MR. WRIGHT: The question has been called for  
4 all those in favor say aye.  
5 MR. ANDERSON: Aye.  
6 MR. KING: Aye.  
7 MS. RITSCHER: Aye.  
8 MR. WEBER: Aye.  
9 MS. SCHNEIDER: Aye.  
10 MR. WRIGHT: Those against say no.  
11 MR. RAYFIELD: No.  
12 MR. WRIGHT: Motion carries five to two.  
13 MS. RITSCHER: And there were no extensions?  
14 MR. WRIGHT: No extensions, no.  
15 Well, there being no other matters motion to  
16 adjourn. We have a motion to adjourn. We are adjourned.  
17 (End of partial transcript)  
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1 CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
2 SAN DIEGO REGION

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4 In the Matter of the )  
Public Hearing )  
5 RE: All items on the )  
6 agenda, including, but )  
not limited to, )  
7 Poseidon Resources )  
Corporation, Proposed )  
8 Desalination Project. )  
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PARTIAL TRANSCRIPT OF PROCEEDINGS

15

San Diego, California

16

Wednesday, April 9, 2008

17

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19 Reported by:

20 GIDGETTE NIEVES

21 CSR No. 10142

22

23 Job No.:

24 A8287WQSD(P)

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1 CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
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PARTIAL TRANSCRIPT OF PROCEEDINGS, taken at  
9174 Sky Park Court, San Diego, California,  
commencing on wednesday, April 9, 2008, heard before  
THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD,  
reported by GIDGETTE NIEVES, CSR No. 10142,  
a Certified Shorthand Reporter in and for  
the state of California.

1 APPEARANCES:

2 CHAIRPERSON: Richard Wright  
3 VICE CHAIRPERSON: David King  
4 BOARD MEMBERS: Susan Ritschel  
5 Eric Anderson  
Elizabeth Pearson Schneider  
Wayne Weber  
6 EXECUTIVE OFFICER: John Robertus  
7 LEGAL COUNSEL: Catherine George  
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# **EXHIBIT 5**

**Draft Agendas**

**Developing Preferred Mitigation Options  
for Poseidon's  
Marine Life Mitigation Plan  
May 1, 2008**

**&**

**Developing Preferred Mitigation Options  
for Poseidon's  
Energy Minimization and Greenhouse Gas Reduction Plan  
May 2, 2008**

**at**

**Agua Hedionda Lagoon Foundation  
1580 Cannon Road, Carlsbad CA**

*Note:* Coastal Commission staff will be requesting from participants at these meetings information about potential mitigation ideas. Before the meeting, please contact Sara Townsend and let her know if you'll be presenting mitigation options.

Please come prepared to briefly discuss the following:

- **May 1<sup>st</sup>:** If proposing marine life mitigation, describe the type and location of potential mitigation sites, and describe how restoration or creation of this particular habitat/vegetation would mitigate for impacts associated with the desalination facility's impacts to marine life in Agua Hedionda. Please also let us know if a site visit would be possible later in the day on May 1<sup>st</sup> or 2<sup>nd</sup>.
- **May 2<sup>nd</sup>:** If proposing energy minimization or greenhouse gas reduction measures, describe the proposed measures and how they will reduce or offset electrical use and/or GHG emissions. *Note:* Our intent is to develop a plan that can easily transition to the anticipated requirements of AB 32 (Global Warming Solutions Act of 2006), so where possible, please describe how the proposed measures conform to the criteria contained in AB 32 – i.e., are they “real, permanent, quantifiable, verifiable, and enforceable,” and would they be “in addition” to measures already required?
- For both types of mitigation options, please describe the information that Poseidon would likely need if it decides to pursue those options, such as contracts, agreements, other permits, etc.
- **Note:** We will not be making final decisions at this meeting as to specific mitigation options. Rather, we will review the information discussed and presented, coordinate with the involved agencies and with Poseidon, and develop final proposed mitigation plans based on this further coordination and review.

*May 1, 2008*

**Marine Life Impacts  
Draft Agenda**

*10:00am- 1:00 pm*

1. Introductions (by all)
2. Review of meeting purpose and the Coastal Commission review process (by Coastal Commission staff – Tom Luster)
3. Results of Coastal Commission staff review of Poseidon's entrainment study and proposed mitigation at San Dieguito (Tom L.).
4. Description of preferred additional mitigation options (Tom L.). These include:
  - Restoration and/or creation of wetland/estuarine habitats similar to those affected at Agua Hedionda (e.g., mudflats, tidal channels, salt marsh, etc.).
  - Water quality restoration projects within Agua Hedionda lagoon or watershed.
  - Others?
5. Comments/discussion by other involved regulatory agencies – State Lands Commission & Regional Water Quality Control Board, Department of Fish & Game, etc.
6. Presentations by meeting attendees of potential/proposed mitigation options and roundtable discussion of those options (*Note: we anticipate that this agenda item will take the bulk of the meeting time. Time allotted to each presentation may be based on priority of options and the expected number of presentations.*)

**Lunch Break**

*1:00 pm- 2:00 pm*

**Meeting Continued**

*2:00pm-??*

Meeting may be continued if necessary and/or for site visits to potential mitigation sites.

**May 2, 2008**

**Energy Minimization and Greenhouse Gas Emissions  
Draft Agenda**

**10:00am- 1:00 pm**

1. Introductions (all)
2. Review of meeting purpose and the Coastal Commission review process (by Coastal Commission staff – Tom Luster)
3. Commission staff's proposed Energy Minimization & Greenhouse Gas Reduction Plan template (Tom L.).
4. Current status of Coastal Commission staff review of Poseidon's plan and proposed mitigation (Tom L.).
5. Discussion of Poseidon's tree planting proposal.
6. Comments/discussion from other agencies, including California Department of Forestry, CA Energy Commission, CA Air Resources Board, and San Diego Control District regarding preferred options, current and potential regulations, etc.
7. Presentations by meeting attendees of potential/proposed mitigation options and roundtable discussion of those options (*Note: we anticipate that this agenda item will take the bulk of the meeting time. Time allotted to each presentation may be based on priority of options and the expected number of presentations.*)

**Lunch Break**

**1:00 pm- 2:00 pm**

**Meeting Continued**

**2:00pm-??**

Meeting may be continued if necessary and/or for site visits to potential mitigation sites.

5

Supplemental Expert Opinion  
Mr. Chris Nordby- Nordby Biological Consulting

My name is Chris Nordby of Nordby Biological Consulting and I am an expert in the field of tidal wetlands restoration. Poseidon Resources Corporation asked me to prepare this supplemental statement to explain that the Marine Life Mitigation Plan will more than adequately account for CDP's *de minimis* impingement impacts.

**CDP's Impingement-Related Impacts Will Be No More Than 1.56 kg/day—a *De Minimis* Amount**

The Encina Power Station hired Tenera Environmental to conduct an Impingement Mortality and Entrainment (IM&E) Study to comply with new 316(b) rules that the EPA promulgated in 2004. In 2004-2005, Tenera collected impingement and entrainment data pursuant to the Board-approved IM&E Study.

Since CDP will use EPS's existing intake structure, Tenera used the data it collected for the IM&E Study to estimate CDP's impingement-related impacts. In order to isolate and account for impacts related to CDP's stand-alone efforts, Tenera had to make several adjustments. This process of adjusting EPS's impingement data to project CDP's impingement-related impacts has caused some confusion and may warrant additional explanation.

In Section 5 of its Revised Flow, Entrainment, Impingement Minimization Plan ("Minimization Plan"), Poseidon mistakenly identified Table 5-1. The Table's caption indicates that the impingement data set forth therein represents the number and weight of fishes, sharks and rays that will be impinged when CDP operates with a flow rate of 304 MGD—a total count of 19,408 organisms weighing 351,672 grams. The Regional Board staff correctly pointed out that this Table actually represents 52-day totals for EPS's operations; it does not adjust for CDP's stand-alone operations. Therefore, Tenera erred by dividing these totals by 365 days to project CDP's daily impingement impacts.

In response to this comment, Tenera adjusted its methodology for isolating CDP's impingement-related impacts. Tenera conducted a regression analysis that factored in EPS's impinged biomass (kg) observed during weekly 24-hour surveys against the flow rates (MGD) measured during the 50 impingement surveys conducted from June 2004 to June 2005. The resulting regression equation was solved in order to project a daily impingement rate at desalination plant flow rates of 304 MGD.

The results of Tenera's regression analysis indicate that CDP's operations will result in the impingement of 1.56 kg/day. This level of impingement represents a *de minimis* impingement impact. Moreover, this figure overstates CDP's impact because it does not account for technology measures that CDP will take to further reduce impingement and entrainment, including reducing the intake's through-flow velocity to 0.5 fps or below—a threshold level that minimizes impingement mortality to acceptable levels (*see* Poseidon's Comment, § V), and the installation of micro-screens, law impact pretreatment technology, and variable frequency drives, which will even further reduce impingement losses.

**Poseidon's Mitigation Project Will Account for CDP's *De Minimis* Impingement-Related Impacts**

As is set forth in the MLMP, Poseidon's mitigation project will restore up to 55.4 acres of estuarine wetlands. The primary/express objective of this project is to mitigate for unavoidable entrainment-

Supplemental Expert Opinion  
Mr. Chris Nordby- Nordby Biological Consulting

related impacts. Because impingement-related impacts are *de minimis*, mitigation is not necessary to offset impingement. Nevertheless, in addition to accomplishing the stated objective (mitigating for entrainment-related impacts), the mitigation project will provide the incidental benefit of mitigating for whatever *de minimis* impingement-related impacts are associated with CDP's operations. In effect, the MLMP accomplishes two objectives: it mitigates for both entrainment and impingement-related impacts.

Fish productivity in shallow tidal wetlands is extremely high due to high primary productivity, efficient transfer of energy, and nursery functions that promote rapid growth and provide refugia from predators. The biomass of fishes in estuaries is often among the greatest biomass of higher trophic levels in natural ecosystems in the world (Day et al., 1989).

Allen (1982) conducted a study of fish productivity of the littoral zone of Upper Newport Bay where he calculated fish productivity at 9.35 gDW/m<sup>2</sup>/yr. The mudflats and tidal channels that Allen sampled in Upper Newport Bay are analogous to the habitat that would be created by Poseidon as mitigation for impacts associated with the CDP. Allen's measurements were conservative in that he did not include mullet, an abundant but difficult to sample species whose large size would have increased biomass estimates; and he reported very low densities of arrow goby, a small but extremely abundant species in many southern California wetlands.

There are few studies of fish productivity in southern California wetlands that are similar to Allen's; however, there are fish density data available from the other southern California systems from the same time period that can be compared to Upper Newport Bay. Nordby and Zedler (1991) sampled fishes at Tijuana Estuary and Los Penasquitos Lagoon from 1986 to 1989 and from 1987 to 1989, respectively. Allen sampled monthly while Nordby and Zedler sampled quarterly. Fish densities are compared for summer months when densities are highest (Table 1). While there is considerable variability to from month to month and year to year, the densities of the dominant estuarine fishes in Allen's Newport Bay studies are typical of southern California estuaries. Tijuana Estuary consistently had the highest fish densities. Typified by continuous tidal flushing and shallow, dendritic channels, Tijuana Estuary serves as the model estuarine system to be created by Poseidon compared to Upper Newport Bay. Although density is an indirect indicator of productivity, it is reasonable that systems with similar densities of these species would have similar productivities.

**Poseidon's Mitigation Project Will Yield 2.4-3.5 Times the Amount of Fish Impinged**

Because the density of fishes sampled in Allen's study was typical of the density of fishes in other southern California coastal wetlands, it is reasonable to assume that his conservative productivity measurement for Upper Newport Bay would be applicable to Poseidon's mitigation. Based on Allen's estimate of approximately 9 g/m<sup>2</sup>/yr, 37 acres of restored coastal wetland habitat would yield 1,348 kg/yr fish biomass; 55 acres would yield 2,003 kg/yr fish biomass.

As described above, CDP's operations will result in the impingement of no more than 1.56 kg of organisms per day. On an annual basis, this is equal to 569 kg. By restoring 37 acres, Poseidon will yield 1348 kg fish biomass—a mitigation ratio of 2.4. By restoring 55 acres, Poseidon will yield 2003 kg fish biomass—a mitigation ratio of 3.5. Given that Poseidon's mitigation project yield between 2.4 and 3.5 times the amount of fish that are impinged by CDP's operations, Poseidon will more than adequately account for CDP's *de minimis* impingement impacts.

Supplemental Expert Opinion  
Mr. Chris Nordby- Nordby Biological Consulting

Literature Cited:

1. Larry Glen Allen, *Seasonal Abundance, Composition and Productivity of the Littoral Fish Assemblage in Upper Newport Bay, California*, 80 Fishery Bulletin 4, 769-90 (1982).
2. John W. Day et al., *Estuarine Ecology* (John Wiley and Sons, Inc.) (1989).
3. C.S. Nordby & J.B. Zedler, *Responses of Fish and Macrobenthic Assemblages to Hydrologic Disturbances in Tijuana Estuary and Los Penasquitos Lagoon, California*, 14 Estuaries 1, 80-93 (1991).

# Responses of Fish and Macrobenthic Assemblages to Hydrologic Disturbances in Tijuana Estuary and Los Peñasquitos Lagoon, California

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**ABSTRACT:** Changes in the assemblages of fishes and benthic macro-invertebrates were evaluated in relation to wastewater inflows at Tijuana Estuary and impounded streamflows and mouth closure at Los Peñasquitos Lagoon. Freshwater from sewage spills or winter rains lowered water salinities and had major impacts on the channel organisms of both southern California coastal wetlands. Benthic infaunal assemblages responded more rapidly to reduced salinity than did fishes, with continued salinity reduction leading to the extirpation of most species. Both the fish and benthic invertebrate assemblages became dominated by species with early ages of maturity and protracted spawning seasons. Between-system comparisons showed that good tidal flushing reduced negative impacts on both the fish and benthic assemblages.

## Introduction

Southern California estuaries and lagoons are subject to interannual variability in rainfall, streamflow, and disturbances such as sedimentation, dredging, and wastewater inflows. Two San Diego County wetlands, Tijuana Estuary (TJE; 32°34'N, 117°7'W) and Los Peñasquitos Lagoon (LPL; 32°56'N, 117°15'W) differ in many respects, including size and watershed, but especially in disturbance and tidal histories.

TJE has been open to tidal flushing except for periodic closures in the early 1960s and prolonged closure in 1984 (Zedler and Nordby 1986). LPL has been primarily closed to tidal flushing for most of this century (Bradshaw, unpublished report). A comparison of primary productivity of the two systems (Zedler et al. 1980) demonstrated higher accumulation of biomass of vascular plants at LPL, possibly due to impoundment of freshwater during the growing season. TJE and LPL represent extremes in southern California coastal wetlands (e.g., mouth usually open vs. usually closed) and the differences between the two systems could be explained in terms of the reliability of communication with the Pacific Ocean. In the last decade, human disturbance of these systems has intensified. A comparison of the channel communities of these two wetlands was undertaken to understand the responses to the wider range and increased severity of stresses resulting from these multiple disturbances.

## Study Sites

### TIJUANA ESTUARY

Tijuana Estuary is located in the southwestern corner of the continental U.S. (Fig. 1) and is included in the Tijuana River National Estuarine Research Reserve, administered by the National Oceanic and Atmospheric Administration (NOAA). The reserve includes approximately 1,012 ha (2,500 acres), 60 ha of which are tidal channels. The Tijuana River, with a watershed of 1,731 km<sup>2</sup>, bisects the estuary into a northern and southern portion and rarely provides much freshwater input except in years with sewage-augmented flows.

In recent years, several disturbances at Tijuana Estuary have changed the salt marsh and channel communities dramatically (Zedler and Beare 1986; Zedler and Nordby 1986; Nordby 1987, 1988). Coastal dune sands were destabilized by trampling, and high tides coupled with sea storms washed large volumes of sand into the main channels of the estuary in 1983 (Zedler and Nordby 1986). The sedimentation events immediately affected channel biota through burial and increased turbidity (Nordby 1987). Later, the reduced tidal prism allowed sand to accumulate, and the tidal inlet closed in April 1984. Dredging to reopen the inlet (in December 1984) removed large numbers of channel organisms, and affected others by suspending sediments. During the eight-month closure of the estuary, hy-

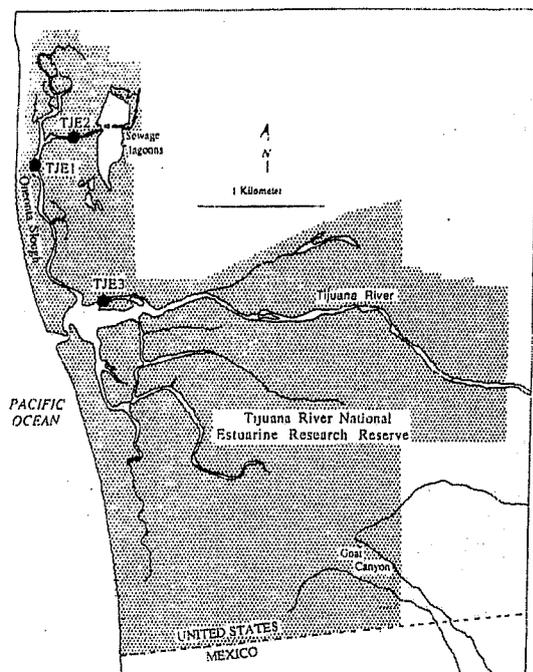


Fig. 1. Fish and invertebrate sampling stations at Tijuana Estuary (TJE). Stippled area represents the boundaries of the Tijuana River National Estuarine Research Reserve.

persaline conditions (60‰ in channels) developed through the long dry season, roughly May through November. Three fish species *Gillichthys mirabilis* (longjaw mudsucker), *Paralichthys californicus* (California halibut), and *Hypsopsetta guttulata* (diamond turbot) declined in abundance, and the dominant bivalve species *Nutallia nuttallii* (purple clam) became extinct at Tijuana Estuary (Nordby 1987).

The Tijuana River usually has very little or no flow in summer months when rainfall is low and evaporation rates are high (Zedler et al. 1984). For over 50 years, the river has received raw sewage flows from the City of Tijuana, Mexico (City of San Diego 1988), increasing in volume to an estimated average of 10–12 million gallons per day (MGD) in recent years (Seamans 1988). It has been estimated that a prolonged input of 12.5 MGD of raw or treated sewage would negatively impact the channel biota of the system (Zedler et al. 1984). Renegade flows were estimated at 22 MGD in 1987–1988 (Seamans 1988). Intermittent sewage flows also enter the estuary from Goat Canyon and Smuggler's Gulch. The latter conveyed 4–5 MGD of sewage to the estuary in recent years (City of San Diego 1988). In 1988 the International Boundary and Water Commission built an interceptor to collect and return those flows to the Tijuana treatment system. No interceptor was built at Goat Can-

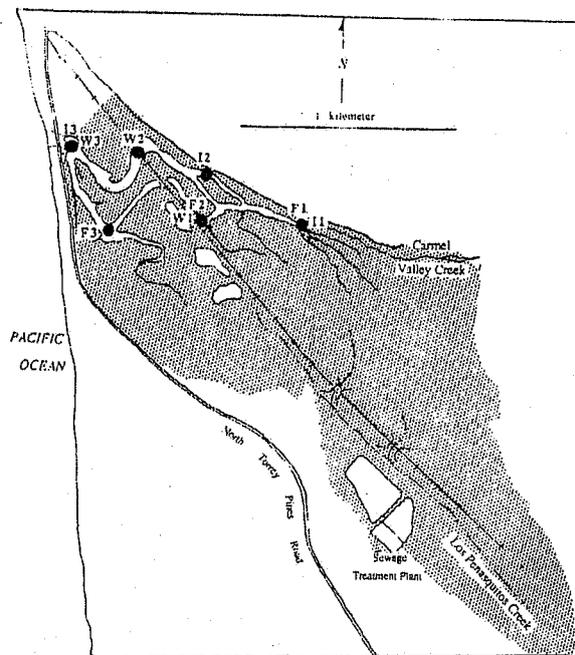


Fig. 2. Fish, invertebrate, and water quality sampling stations at Los Peñasquitos Lagoon (LPL). F = Fish site. I = Invertebrate site. W = Water quality site. Stippled area represents the approximate extent of coastal wetland habitat.

yon, which carries intermittent sewage spills to the southern arm of Tijuana Estuary (Fig. 1).

#### LOS PEÑASQUITOS LAGOON

Los Peñasquitos Lagoon is a small coastal wetland of approximately 142 ha, 12 ha of which are channel habitat. The lagoon is the terminus of a small watershed (246 km<sup>2</sup>) and is fed by two creeks: Carmel Valley Creek to the east and Los Peñasquitos Creek to the southeast (Fig. 2). Historically, both streams were seasonal, with little or no flow during summer and autumn. Recently, agricultural and residential run-off have increased flows of Carmel Valley Creek to year-round so that brackish marsh has encroached into the salt marsh.

In recent decades, LPL has evolved from a tidal estuary to a lagoon that is usually closed to tidal flushing. Construction of a railroad embankment across the center of the lagoon in 1925 isolated channels and thereby greatly reduced tidal volume and circulation. In 1932–1933, construction of a highway along the barrier beach resulted in more fill and constriction at the mouth. The tidal prism of the lagoon is no longer large enough to maintain an opening to the ocean. Consequently, mechanical removal of the sand and cobble sill at the mouth is necessary to provide occasional tidal circulation. The lagoon is nearly always nontidal in summer,

and impounded seawater increases in salinity through the summer and autumn due to evaporation. In the cool wet season, storm run-off flows into the lagoon and decreases water salinity. Only major rainfalls raise the lagoon water level high enough to break through the sand berm at the mouth. The extremes in salinity cause conditions that are stressful to channel organisms (Bradshaw, unpublished report).

Wastewater flows also affect this lagoon. From 1962 to 1972 a sewage treatment facility discharged 0.5–1.0 MGD of treated effluent into the lagoon, increasing nitrate and phosphate loads and reducing water salinity. While the wastewater line was connected to the metropolitan sewer system in 1972, the pumps transporting the sewage to the treatment facility on Pt. Loma have failed repeatedly. A raw sewage spill of about 20 MGD occurred in March 1987. There were flood events during the wet seasons of 1986, 1987, and 1988. Organic matter from sewage spills, tidal closure, and floods probably interact to cause both salinity and oxygen stress to organisms. Persistence of these conditions for 2 to 3 d can eliminate most of the channel fauna. Only species that survive rapid reduction in salinity and dissolved oxygen or reinvade from the nearshore habitat via extreme high tides, storm waves, or brief tidal openings, persist from year to year.

### Sampling Stations and Methods

#### TIJUANA ESTUARY STATIONS

This study was conducted primarily in the northern arm of the estuary known as Oneonta Slough (Fig. 1). Sampling stations were chosen to reflect differences in channel morphometry (width, depth, and substrate type) and distance from the mouth. During the study, chronic wastewater inflows entered the system via the Tijuana River, while sewage spills from broken pipelines intermittently flowed across the southern portion of the marsh to the mouth. Areas near the mouth received more sewage than did areas further from the mouth.

Station TJE1 was 15 m wide, usually less than 1 m deep during sampling and had a sand substrate. This site was located about 900 m from the mouth. At station TJE1, extremely high tides (2.38 m MLLW) and coincident storm-induced waves washed dune sand into the channel on two occasions during the study period: December 31, 1986, and December 31, 1987. Several centimeters of dune sand were deposited at this sampling site on those dates. In April 1987, the north arm of the estuary was dredged to restore the tidal prism lost from sediment deposited that winter. Dredging was performed by drag line from the western bank of

the channel beginning approximately 0.25 km north of TJE1 and ending roughly adjacent to TJE3 (Fig. 1). Following the dune wash-over of 1987, a shorter length of the southern main channel was bulldozed to remove sediment.

Station TJE2 was located in a man-made channel that was excavated in the early 1900s to link the former sewage lagoons with the main channels (Fig. 1). This was the deepest site (usually about 1 m), with eroding banks. The channel was 10 to 11 m wide at this site with a substrate that was composed of a clay/mud mixture with broken shell fragments in the upper 10 to 15 cm over a bed of coarse sand/gravel. TJE2 was located approximately 1,800 m from the mouth.

Site TJE3 was situated in the mouth region on a side channel paralleling the Tijuana River. This was the shallowest site (<0.5 m) and had sloping banks. The channel was 6 to 7 m wide with a sand substrate. TJE3 received sewage flows directly from the Tijuana River.

#### LOS PEÑASQUITOS LAGOON STATIONS

Sampling stations at LPL were chosen to represent a spatial continuum from the mouth to the terminal tidal creeks in the eastern end of the lagoon (Fig. 2). Station LPL1 was located in the extreme eastern end of the lagoon. The channel at this site was 5 to 7 m wide, 40 to 90 cm in depth depending upon season, with a clay substrate. Station LPL2 was located in a blind diverticulum which resulted from the construction of the railroad berm. This site was approximately half-way between the mouth and LPL1. The channel was 8 m wide and 30 to 90 cm deep with a clay/mud substrate. Station LPL3 was the widest site (>40 m), 30 to 100 cm deep with a mud substrate and was located in the mouth region.

#### SAMPLING PROTOCOL

Fishes and benthic invertebrates were collected quarterly from each wetland. All samples were collected during daylight hours on moderate to low tides. Each system was sampled within the same 1-wk period. TJE has been sampled for 3 yr, from June 1986 to March 1989, while LPL has been sampled for 2 yr, from June 1987 to March 1989. However, due to different start-up times for various stages of invertebrate sampling, and due to a lag in the analysis of some benthic invertebrate samples, the numbers of samples are not identical (Table 1).

At each site, two "blocking nets" (13.7 m long, 1.8 m deep, 3-mm mesh) were used to confine all fishes within a section of the channel. A beach seine (3.7 m long, 1.8 m deep, with a 2 × 2 m bag, 3-mm mesh) was then drawn in a circular manner

TABLE 1. Sampling schedule for the collection of fishes and benthic invertebrates at Tijuana Estuary (TJE) and Los Peñasquitos Lagoon (LPL).

	TJE	LPL
Fishes	12 quarterly samples June 1986–March 1989	8 quarterly samples June 1987–March 1989
Bivalves	10 quarterly samples September 1986–December 1989	7 quarterly samples June 1987–December 1988
Polychaetes and other benthic forms	7 quarterly samples June 1987–December 1988	7 quarterly samples June 1987–December 1988

within the two blocking nets and pulled to shore. Hauls were repeated until the number of fish captured declined to near zero, usually 4–5 hauls. The blocking nets were then drawn together in a semi-circle to catch any fishes that were hiding in the blocking nets.

The areas sampled differed both within each wetland and between the two systems. The earliest samples at TJE were taken from relatively large areas. For example, June 1986 samples at TJE1, TJE2, and TJE3 were taken from areas of 520 m<sup>2</sup>, 300 m<sup>2</sup>, and 150 m<sup>2</sup>, respectively. These areas were reduced to a standard area of 110 m<sup>2</sup>, 110 m<sup>2</sup>, and 70 m<sup>2</sup> for TJE1, TJE2, and TJE3, respectively, after preliminary analysis demonstrated that the number of species collected was not affected and densities were not significantly reduced.

The areas sampled at LPL were modeled after those at TJE. Thus, stations LPL1–LPL3 included areas of 70 m<sup>2</sup>, 70 m<sup>2</sup>, and 110 m<sup>2</sup>, respectively. The numbers of fishes collected are expressed as densities (number m<sup>-2</sup>) for comparative purposes.

To test the effectiveness of the fish sampling method and to demonstrate the catchability of individual species, the numbers of fish captured per haul were compared. A test of the number of hauls required to provide an adequate sample was also performed by plotting the number of fish caught against the prior cumulative catch. These tests were performed in March 1987.

Benthic invertebrates were collected using a 15-cm diameter (177 cm<sup>2</sup>) coring device pressed into the sediment to a depth of 20 cm. The core was then sieved through a 1-mm mesh screen, with large organisms tallied in the field and the remaining specimens fixed in 3% formalin and transported to the laboratory for identification. Three replicate samples consisting of three pooled cores each were taken per site for a total of nine cores (0.16 m<sup>2</sup>) per station. Sampling sites corresponded to fish sampling stations at TJE. At LPL, three stations within the main channel were sampled (Fig. 2).

Water quality was monitored approximately bi-weekly at LPL and quarterly at TJE. Sampling sites at TJE were the same as benthic invertebrate and

fish sampling sites. Sampling stations at LPL were chosen to reflect extremes in water quality. These extremes represent a spatial continuum from the mouth of the lagoon to the terminal creeks (Fig. 2). Station LPL1 was nearest the freshwater inflows from Carmel Valley Creek, while station LPL3 was nearest the mouth and was the most affected by seawater when the mouth was open.

Water temperature and dissolved oxygen were measured using a Yellow Springs Instrument Model 51B DO/temperature meter. Salinity was measured to the nearest part per thousand using an American Optical salinity refractometer.

Sediments were analyzed for grain size using the Emery Settling Tube (Emery 1938), a 164-cm long water-filled glass tube that allows differential settling and separation of particles into size classes. This analysis was employed at TJE1 and TJE2 only.

Statistical tests of patterns of fish and benthic invertebrate distributions and abundances were conducted for each wetland. To test for differences in the number of fish species collected at each sampling station, a two-way ANOVA without replication was performed with stations and surveys as treatments. Because the assumption of no interaction may not have been met, these results are presented as an index of species distributions rather than a strict test of the null hypothesis. A one-way ANOVA was employed to test for differences in the sizes of *Atherinops affinis* (topsmelt) present each June at TJE1. A two-way ANOVA was performed on the square roots of bivalve densities using stations and surveys as treatments. Density data for bivalve assemblages were transformed to make the variances equal and distributions normal ( $n = 3$  pooled cores).

## Results

### ENVIRONMENTAL CONDITIONS

The streamflow of the Tijuana River is characterized by high variability in both mean annual and monthly flows. Streamflow records from 1937 to 1977 document a mean annual discharge of 5,500 MGD with a coefficient of variability of 325% (Zedler and Beare 1986). Due to high variability in both

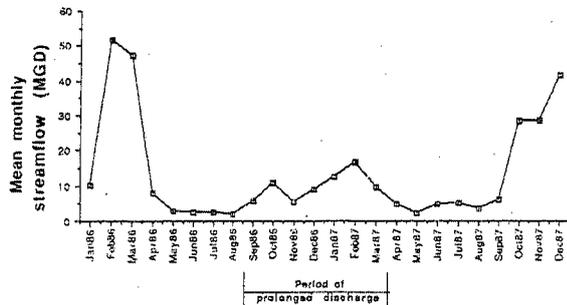


Fig. 3. Mean monthly streamflow for the Tijuana River 1986-1987. Data from the International Water and-Boundary Commission (IBWC).

streamflow and rainfall, there is no means of separating "normal" streamflow from wastewater flows. For this study, we will refer to all flows as wastewater flows, realizing that considerable amounts of freshwater may enter the system following winter rainfall events.

The volume of wastewater entering the United States via the Tijuana River varied widely from 1986 through 1987 (Fig. 3). A peak discharge in winter 1986 was followed by about 6 months of low flow. Flow volumes were on the order of 5 to 20 MGD in late 1986 and early 1987 but increased again in late 1987.

At LPL, water salinity and dissolved oxygen lev-

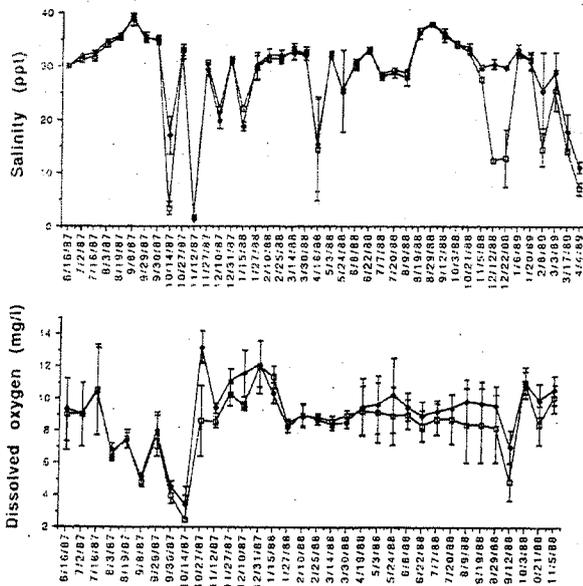


Fig. 4. Mean water salinity and dissolved oxygen at three sampling sites at Los Peñasquitos Lagoon (LPL). Error bars = ± one standard error.

TABLE 2. Fish species collected at Tijuana Estuary (TJE) and Los Peñasquitos Lagoon (LPL).

Taxon	Common Name	TJE 1986-1988	LPL 1987- 1988
<b>Atherinidae</b>			
<i>Atherinops affinis</i>	topsmelt	15,437	1,875
<b>Blennidae</b>			
<i>Hypsoblennius gentilis</i>	bay blenny	4	0
<i>Hypsoblennius gilberti</i>	rockpool blenny	1	0
<i>Hypsoblennius jenkinsi</i>	mussel blenny	1	0
<b>Bothidae</b>			
<i>Paralichthys californicus</i>	California halibut	283	12
<b>Cottidae</b>			
<i>Leptocottus armatus</i>	staghorn sculpin	1,431	346
<i>Artedius</i> sp.	sculpin	2	0
<b>Cyprinodontidae</b>			
<i>Fundulus parvipinnis</i>	California killifish	2,367	107
<b>Engraulidae</b>			
<i>Anchoa compressa</i>	deepbody anchovy	11	67
<b>Girellidae</b>			
<i>Girella nigricans</i>	opaleye	82	0
<b>Gobiidae</b>			
<i>Clevelandia ios</i>	arrow goby	60,097	816
<i>Gillichthys mirabilis</i>	longjaw mudsucker	275	877
<i>Ilypnus gilberti</i>	cheekspot goby	50	22
<i>Lepidogobius lepidus</i>	bay goby	0	9
<i>Quietula y-cauda</i>	shadow goby	3	0
<b>Mugilidae</b>			
<i>Mugil cephalus</i>	striped mullet	5	3
<b>Pleuronectidae</b>			
<i>Hypsopsetta guttulata</i>	diamond turbot	83	14
<i>Pleuronichthys ritteri</i>	spotted turbot	4	0
<b>Poeciliidae</b>			
<i>Gambusia affinis</i>	mosquitofish	0	937
<b>Rhinobatidae</b>			
<i>Rhinobatos productus</i>	shovelnose guitarfish	2	0
<b>Serranidae</b>			
<i>Paralabrax clathratus</i>	kelp bass	12	0
<b>Sciaenidae</b>			
<i>Seriphus politus</i>	queenfish	1	0
<b>Syngnathidae</b>			
<i>Syngnathus leptorhynchus</i>	bay pipefish	14	2
Total fishes collected		80,165	5,087
Total species encountered		21	13
Total sampling effort (cumulative area in m <sup>2</sup> )		4,795	1,985
Number of quarterly samples		12	8

els fluctuated widely when the mouth was closed (Fig. 4). During this study period rapid reductions in salinity and dissolved oxygen occurred during October 1987 and December 1988.

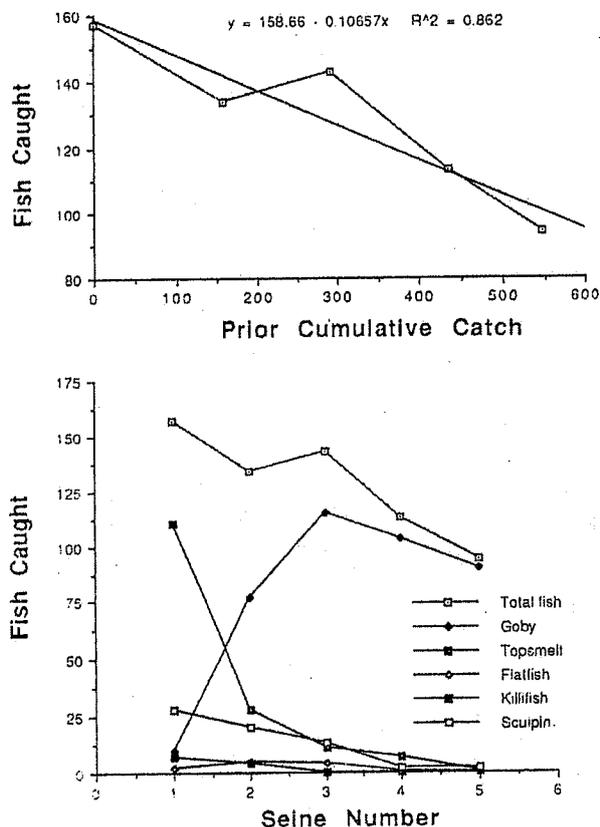


Fig. 5. Tests of the sampling efficiency of the method of collecting fish used in this study. Top: repeated seining of a blocked channel plotted against prior cumulative catch. Bottom: species composition of repeated seinings.

#### FISHES

The two wetlands exhibited obvious differences in fish assemblages (Table 2) in terms of dominants (total individuals collected) and species richness (number of species). At TJE, 21 species of fish representing 14 families were collected over the 3-yr period. Three species dominated the samples: 75% were *Clevelandia ios* (arrow goby), 19% *Atherinops affinis*, and 3% *Fundulus parvipinnis* (California killifish). The remaining 18 species comprised only 3% of the total combined. In contrast, 13 species from 10 families were collected at LPL. Dominants included four species: 36% were *Atherinops affinis*, 18% *Gambusia affinis* (mosquitofish), 17% *Gillichthys mirabilis*, and 16% *Clevelandia ios*.

A test of the sampling procedure used in this study illustrates its effectiveness in capturing the majority of the fishes contained within the two blocking nets (Fig. 5). Repeated seining was especially needed to sample the small, numerically dominant *Clevelandia ios*. The number of *C. ios* cap-

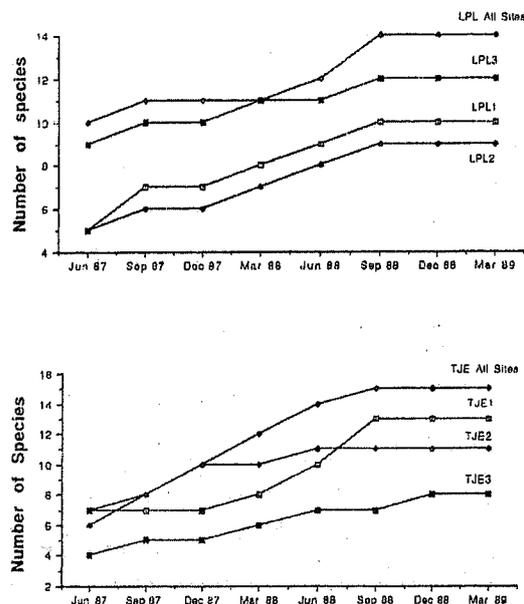


Fig. 6. Cumulative species curves for fishes collected at Tijuana Estuary (TJE) and Los Peñasquitos Lagoon (LPL) from June 1987 to March 1989.

tured per seine increased on the second and third sweeps and remained high throughout the fourth and fifth efforts. Conversely, *Atherinops affinis* densities declined dramatically after the first seine, illustrating the relative ease with which this pelagic species was captured.

The differences in the number of species encountered in each wetland are partially due to a greater sampling effort at TJE. Many of the species taken at TJE were collected in 1986, a year before sampling began at LPL. There was also some disparity in areas sampled, with the total area at LPL somewhat smaller than at TJE. When the 1986 data from TJE are omitted from comparisons, the cumulative species curves for each wetland are similar with curves leveling after the sixth quarterly sample (Fig. 6), suggesting that both wetlands were adequately assessed for species richness.

A comparison of absolute and relative abundances demonstrated system-wide changes at TJE during the study (Table 3). The fish assemblage shifted from one codominated by *Atherinops affinis* and *Clevelandia ios* in 1986 to one in which *Clevelandia ios* was by far the numerical dominant. The relative abundance of *Atherinops affinis* remained fairly constant in LPL (Table 3). While *Clevelandia ios* dominated TJE, it was a relatively minor species at LPL. Conversely, *Gillichthys mirabilis* was important at LPL but rare at TJE. *Atherinops affinis* was common in both wetlands but declined throughout

TABLE 3. Annual relative abundance (% of total) of the dominant channel organisms collected at Tijuana Estuary (TJE) and Los Peñasquitos Lagoon (LPL). X = no data.

Species	TJE			LPL	
	1986-1987	1987-1988	1988-1989	1987-1988	1988-1989
<b>Fishes</b>					
<i>Atherinops affinis</i>	52%	14%	7%	38%	36%
<i>Clevelandia ios</i>	41%	58%	90%	22%	14%
<i>Fundulus parvipinnis</i>	4%	19%	1%	4%	2%
<i>Gillichthys mirabilis</i>	0%	<1%	<1%	28%	14%
<i>Gambusia affinis</i>	0%	0%	0%	<1%	24%
Total fishes collected	20,888	4,976	54,301	1,253	3,834
<b>Bivalves</b>					
<i>Tagelus californianus</i>	73%	33%	27%	35%	50%
<i>Protothaca staminea</i>	19%	34%	42%	2%	8%
<i>Macoma nasuta</i>	2%	17%	19%	7%	5%
<i>Cryptomya californica</i>	0%	6%	4%	0%	8%
Total bivalves collected	658	490	651	55	40
<b>Polychaetes</b>					
Capitellidae	X	33%	50%	22%	36%
Spionidae					
<i>Boccardia</i> spp.	X	<1%	5%	19%	7%
<i>Polydora</i> spp.	X	18%	20%	28%	21%
<i>Nephtys</i> spp.	X	16%	1%	0%	0%
<i>Pseudopolydora</i> spp.	X	0%	0%	5%	3%
<i>Spiophanes missionensis</i>	X	0%	8%	0%	0%
Opheliidae					
<i>Armandia brevis</i>	X	<1%	5%	<1%	<1%
<i>Euzonus mucronata</i>	X	0%	0%	<1%	25%
Unidentified taxa	X	3%	0%	4%	0%
Total polychaetes collected		276	1,422	709	659

the study period at TJE. *Gambusia affinis* was common at LPL but absent from TJE.

The total numbers of fish species have also changed. At TJE, species richness fell from a high of 14 in September 1986 to a low of 6 in December 1988 and March 1989 (Fig. 7). The most dramatic change in species richness occurred between September 1986 and June 1987, a time of prolonged sewage discharge. Each quarterly sampling period in 1986-1987 yielded more species than the corresponding sampling period in 1987-1988. The

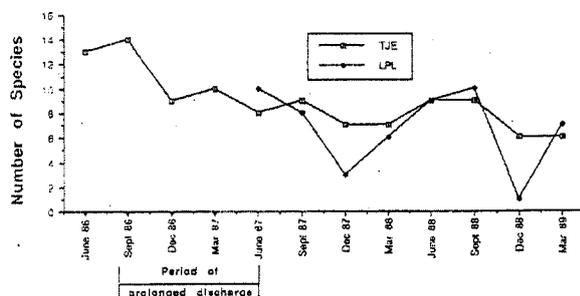


Fig. 7. Total number of fish species collected from each of three sampling sites at Tijuana Estuary (TJE) and Los Peñasquitos Lagoon (LPL).

number of fish species differed significantly with sampling station ( $p < 0.05$ ; Fig. 8).

At LPL, species richness was highest in June and September and lowest in December (Fig. 7). There were no significant differences among stations ( $p > 0.05$ ). A maximum of 10 species was collected from LPL during any single sampling period.

Fishes also declined in density and size. At TJE,

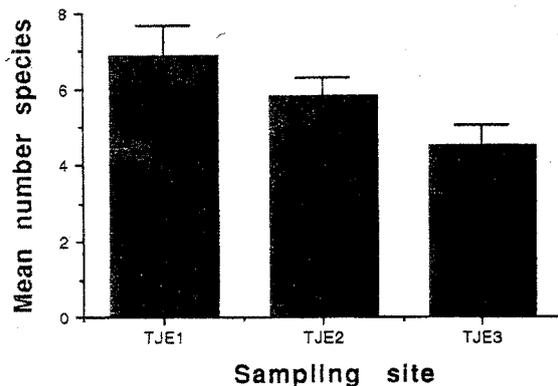


Fig. 8. Mean number fish species ( $n = 12$ ) collected at three sampling sites at Tijuana Estuary (TJE). Error bars =  $\pm$  one standard error.

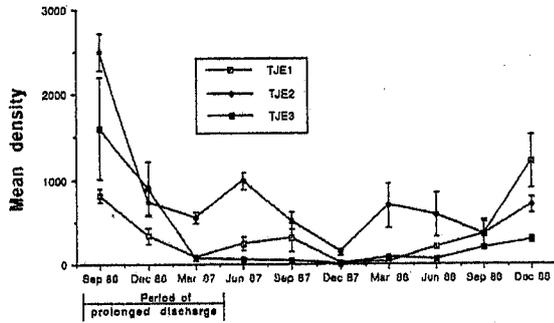


Fig. 10. Mean densities (no.  $m^{-2}$ ) of all bivalves collected from each of three sampling sites at Tijuana Estuary (TJE). Error bars =  $\pm$  one standard error.

(two-way ANOVA,  $p < 0.01$ ); the interaction was also significant ( $p < 0.01$ ), primarily because there were zero bivalves collected on some dates at some stations.

Two of the three dominant bivalve species were found in highest densities at station TJE2 compared to TJE1 and TJE3 (Fig. 11). Both *Protothaca staminea* and *Macoma nasuta* showed a strong site

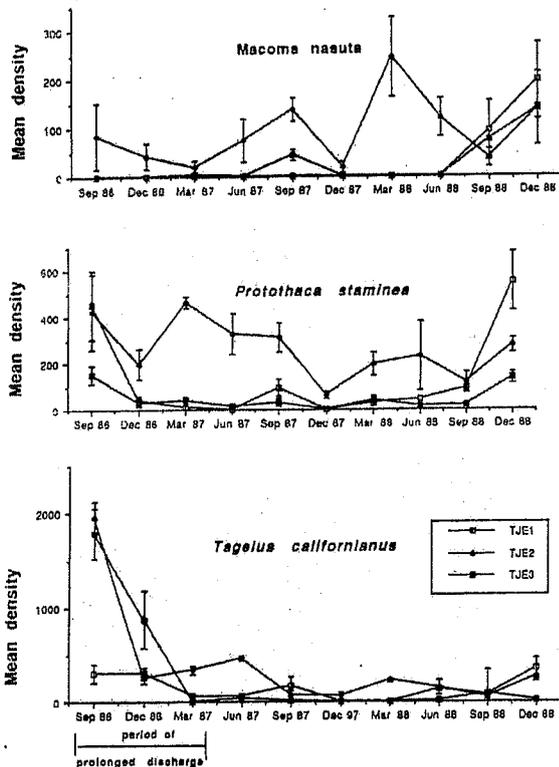


Fig. 11. Mean densities (no.  $m^{-2}$ ) of the dominant bivalve species collected at each of three sampling sites at Tijuana Estuary (TJE). Error bars =  $\pm$  one standard error. Note different vertical scales.

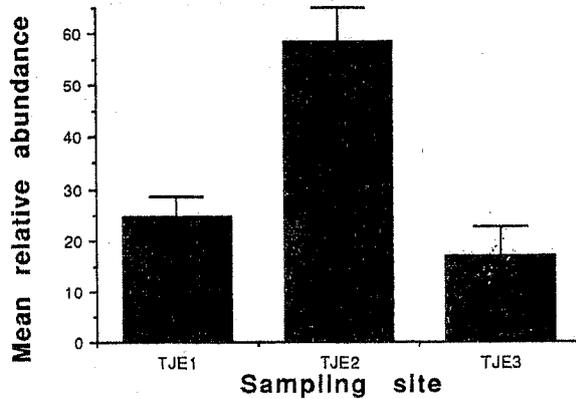


Fig. 12. Mean number of bivalve species collected from each of three sampling sites at Tijuana Estuary (TJE). Data are means for 10 sampling dates. Error bars =  $\pm$  one standard error.

preference for TJE2. *Tagelus californianus* did not demonstrate a clear site preference but occurred at all sampling stations. TJE2 also supported higher mean relative abundances of bivalves than did stations TJE1 and TJE3 (Fig. 12).

Sediments analyzed at TJE2 had  $\phi$  values (Table 6) that indicated a very coarse grain size and a high degree of variation about the mean grain size (sorting and skewness). Sediments from station TJE1 were coarse and well sorted. This site was buried with several centimeters of dune sand on two occasions during the study and was dredged once to remove sediments.

As with the fish assemblage, benthic invertebrates at TJE showed a shift in dominance and an overall decline in total number of individuals collected (Table 3). In 1986, *Tagelus californianus* dominated the collections while *Cryptomya californica* was absent. *Callianassa californiensis*, a commensal of *Cryptomya*, was collected in low densities in 1986. By 1987, *T. californianus* had declined

TABLE 6. Phi values determined from sediment analysis for Tijuana Estuary site TJE1 (from Duggan 1989).

Station	Date	Mean Grain Size <sup>a</sup> (mm)	Sorting <sup>b</sup>	Skewness <sup>c</sup>
TJE1	Sept. 1986	2.22	0.65	-0.11
TJE1	Jan. 1987	1.90	0.81	0.05
TJE2	May 1987	1.04	1.65	0.09
TJE2	Sept. 1987	0.75	1.81	-0.41

<sup>a</sup> 2 mm to 1 mm indicates very coarse grain size, 0.5 to 1.00 indicates coarse sand (from Krumbein and Pettijohn 1938).

<sup>b</sup> 0.5 to 1.0 indicates moderately well to moderately sorted; 1.0 to 2.0 indicates poorly sorted, with sorting a measure of dispersion of grain size around the mean grain size of that sample (from Folk and Ward 1957).

<sup>c</sup> -0.10 to +0.10 indicates nearly symmetrical distribution of grain size around the mean; -1.0 to -0.3 indicates negatively skewed (from Folk and Ward 1957).

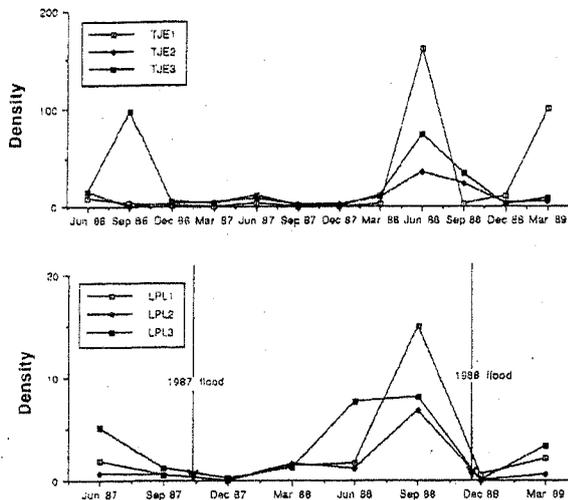


Fig. 9. Mean densities (no.  $m^{-2}$ ) of all fishes collected at each of three sampling sites at Tijuana Estuary (TJE) and three sites at Los Peñasquitos Lagoon (LPL). Note different vertical scales.

the density of fishes collected decreased from a peak in September 1986 to relatively low values throughout 1987 before rising dramatically in March and June 1988 (Fig. 9). Mean density of fishes at LPL declined after a June peak to levels near zero in December, following the 1987 flood, and peaked again in September 1988, before crashing as a result of the 1988 flood (Fig. 9).

The maximum and mean sizes of *Atherinops affinis* captured at station TJE1 in June of each year declined dramatically (Table 4). There were significant differences in sizes present each June ( $p < 0.001$ ). Station TJE1 was chosen for this example because it typically yielded the highest numbers of this species.

#### BENTHIC INVERTEBRATES

Fifty-eight taxa of benthic invertebrates were collected from TJE from September 1986 to June 1988 (Table 5). The collections were nearly equally represented by polychaetes and bivalves. The dominant bivalve species included *Tagelus californianus*, *Protothaca staminea*, and *Macoma nasuta*, while capitellids and spionids dominated the polychaete fraction. The decapod crustacean *Callinassa californiensis* was also abundant.

TABLE 4. Sizes of *Atherinops affinis* (fork length in mm) collected at station TJE1 during June of three consecutive years. SE =  $\pm$  one standard error.

Year	Maximum Size	Mean Size	SE	n
1986	188	110.3	$\pm 1.2$	292
1987	121	91.6	$\pm 2.8$	109
1988	68	47.2	$\pm 0.6$	124

TABLE 5. Numbers of individuals of benthic invertebrates collected at Tijuana Estuary (TJE) and Los Peñasquitos Lagoon (LPL). Taxa comprising less than 5% are presented as "others."

Taxon	TJE 1986-1988	LPL 1987-1988
Sipunculid worms		
<i>Themiste</i> sp.	17	0
Echinoid echinoderms		
<i>Dendraster excentricus</i>	6	3
Nemertean worms	93	3
Polychaete worms		
Capitellidae	814	399
Spionidae		
<i>Boccardia</i> spp.	68 (5 spp)	183 (4 spp)
<i>Polydora cornuta</i>	124	18
<i>Polydora ligni</i>	143	92
<i>Polydora</i> spp.	63 (2 spp)	210 (2 spp)
<i>Spiophanes missionensis</i>	117	0
Opheliidae		
<i>Euzonus mucronata</i>	0	162
Other taxa combined	437	161
Total polychaetes collected	1,698	1,207
Total families collected	13	11
Total species collected	35	20
Bivalve molluscs		
<i>Tagelus californianus</i>	797	40
<i>Protothaca staminea</i>	554	4
<i>Macoma nasuta</i>	221	6
<i>Laevicardium substriatum</i>	30	8
<i>Spisula</i> sp.	0	17
Other species combined	227	17
Total bivalves collected	1,799	92
Total species collected	18	12
Decapod crustaceans		
<i>Callinassa californiensis</i>	234	3
Phoronida		
<i>Phoronis</i> sp.	1	114
Total sampling area (cumulative area in $m^2$ )	5.25 $m^2$	3.82 $m^2$
Total number quarterly samples	11	8

By comparison, 37 taxa of benthic invertebrates were collected from LPL (Table 5). There, the benthic assemblage was dominated by three taxa of polychaetes and had relatively few bivalves. Polychaetes were dominated by capitellids, spionids, and the opheliid, *Euzonus mucronata*. Only 95 individual bivalves representing 12 species were collected from LPL.

#### BIVALVES

At TJE, bivalve densities were greatest in September 1986 when as many as 2,500  $m^{-2}$  were collected at station TJE2 (Fig. 10). Densities declined during the prolonged period of wastewater discharge. There were significant differences in bivalve densities among stations and on different dates

TABLE 7. Mean length (in mm) of the dominant bivalves collected from Tijuana Estuary November 23, 1986, and January 24, 1987. SE equals one standard error (from R. Duggan 1989).

Species	11/23/86			1/24/87		
	Mean	SE	n	Mean	SE	n
<i>Tagelus californianus</i>	40.3	2.2	302	38.4	0.4	164
<i>Protothaca staminea</i>	11.2	0.3	126	10.8	0.6	90

while *Protothaca staminea*, *Cryptomya*, and *Callinassa* had increased. In the three quarterly samples analyzed for 1988, *T. californianus* continued to decline and *P. staminea* continued to increase. *Cryptomya californica* and *Macoma nasuta* remained near 1987–1988 levels (Table 3).

A comparison of the mean sizes of the two dominant bivalve species (Table 7) suggests that the majority of the individuals encountered in this study were 0 to 1 year old with a few specimens slightly older (Shaw 1986; R. Duggan, SDSU, personal communication). Thus, newly recruited individuals comprised the majority of those collected.

#### POLYCHAETES

The abundance of polychaetes collected at TJE increased from 1987 to 1988, especially at station TJE3, nearest the Tijuana River (Fig. 13). The dominant taxa during this peak were capitellids and spionids, primarily *Polydora nuchalis* and *P. cornuta*.

At LPL, polychaetes were the dominant benthic form during the 2-yr study period. Capitellids, spionids (*Polydora* spp.) and the opheliid, *Euzonus mucronata*, dominated. Prior to the October 1987 flood, mean polychaete densities were highest near the mouth (station LPL3, Fig. 14). After flooding, mean densities fell to levels near zero at all sites. By September 1988, peak densities were encountered with the greatest values again at station LPL3.

A comparison of the annual relative abundances demonstrates the instability of both systems (Table 3). The relative abundance of each of the dominant taxa at TJE changed substantially, especially among the spionids where *Nephtys* spp. decreased and *Boccardia* spp. and *Spiophanes missionensis* increased from the previous year. The changes at LPL were less dramatic but included the decrease of *Boccardia* spp. and the sudden increase of *Euzonus mucronata*.

#### Discussion

Three lines of reasoning lead us to conclude that hydrologic disturbances, especially reduced salinity, are responsible for the patterns that have been found at both Tijuana Estuary (TJE) and Los Peñasquitos Lagoon (LPL). The trends over the course of the study are reduced species richness and abun-

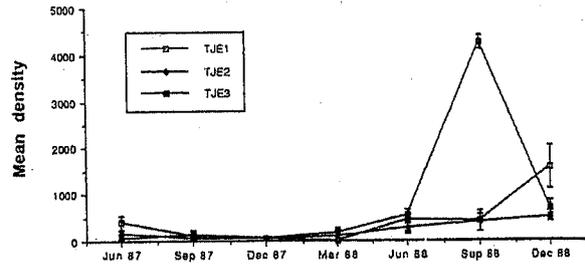


Fig. 13. Mean densities (no. m<sup>-2</sup>) of polychaetes collected from each of three sampling sites at Tijuana Estuary (TJE). Error bars = ± one standard error.

dances, population structures skewed toward young animals, and dominance by species with early reproductive maturity and prolonged spawning periods. First, an examination of historic data in southern California coastal wetlands, including TJE, shows that summer streamflows were rare or absent prior to the late 1970s. At that time, a very different benthic assemblage was present at TJE consisting of larger, and presumably older, bivalves (Hosmer 1977). Second, comparison of sampling sites within TJE indicates that the least-disturbed station (farthest from wastewater and not dredged) serves as a refuge for species that have been eliminated elsewhere. Finally, comparison of TJE with LPL, where reduced salinity is more severe due to annual impoundment of flood waters, shows that the fauna is most depleted where the hydrologic disturbances have been greatest. The history of impacts leads to concern regarding future planned modifications to regional streamflows.

#### HISTORIC COMPARISON

Weather and streamflow records for the San Diego area (Zedler et al. 1984) show that there were no major flood years between 1944 and 1978. Streamflow in the lower Tijuana River was minimal, even in winter, with many years of no measurable flow entering Tijuana Estuary. It is reasonable to assume that the channels were essentially

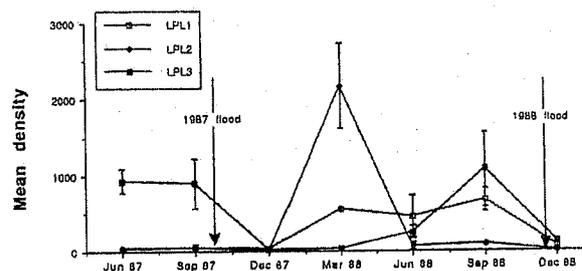


Fig. 14. Mean densities (no. m<sup>-2</sup>) of polychaetes collected from each of three sites at Los Peñasquitos Lagoon (LPL). Error bars = ± one standard error.

marine at this time. The only historic salinity measurements were made by Purer (1942) in 1939 during a year of average (approx. 25 cm) rainfall and near-average streamflow. The lowest salinity she found at Tijuana Estuary in monthly sampling of three stations was 24‰ in March 1939. Even in a month with 10 cm of rainfall (March 1940), salinities were above 30‰.

The responses of the macrobenthic invertebrates of coastal wetlands to salinity reductions are more apparent than those of the fish assemblages, largely because of their inability to avoid exposure to unfavorable conditions. For this reason, we have concentrated our discussion of the historic comparison on the these assemblages. As previously mentioned, there was some disparity in sampling area with TJE1 and TJE2 equal at 110 m<sup>2</sup> and TJE3 at 70 m<sup>2</sup>. While such disparity might have influenced fish distribution and abundance, it would not have affected benthic assemblages that were collected from equal areas and equal effort at all stations at all times. Thus, the strong intra-wetland patterns in the benthos at TJE are not artifacts of sampling design.

The benthos of Tijuana Estuary and Mugu Lagoon (34°N, 119°W) were sampled in the 1970s by Peterson (1972, 1975). His data for live bivalves characterize the low-disturbance assemblage in saline habitats. *Nuttallia (Sanguinolaria) nuttallii* and *Protothaca staminea* were the most abundant bivalves at both study sites. *Tagelus californianus*, *Cryptomya californica*, *Macoma nasuta*, and *Laevicardium substriatum* were also present but in lower numbers. Samples from Mugu Lagoon taken before and after the 1969 flood suggested that the population of *Tagelus californianus* was reduced by freshwater inflows (Peterson 1972). To test the tolerance of different bivalves to reduced salinity, Peterson simulated flood conditions in the laboratory (6-h periods with seawater diluted to increasing degrees). He found that *Tagelus californianus* and *Laevicardium substriatum* were intolerant of the lowest salinities (3–10‰) while *Protothaca staminea* and *Macoma nasuta* survived 0‰.

Our findings for Tijuana Estuary under continuous wastewater inflows are consistent with Peterson's conclusion that bivalve communities are strongly affected by lowered salinity. The species that are now dominant, *T. californianus*, *P. staminea*, and *M. nasuta*, were least abundant at TJE3, the site nearest the source of wastewater inflow (Fig. 11).

Hosmer (1977) examined bivalve composition and size structure at Tijuana Estuary before wastewater flows were a consistent problem. Large individuals were abundant. The mean sizes for the dominant bivalves were 71 mm for *Nuttallia nut-*

*tallii*, 22 mm for *Protothaca staminea*, and 27 mm for *Tagelus californianus*. His results contrast strongly with those of the present study. *Nuttallia nuttallii* no longer exists at Tijuana Estuary, and *P. staminea* is, on the average, half as large (Table 7). The mean size of *Tagelus californianus* in 1986–1987 was larger than that reported by Hosmer (1977), but he had problems in sampling this species and suggested that larger specimens may have eluded him.

While predisturbance data on fishes at TJE are lacking, the effects of a major winter storm on the fishes of Mugu Lagoon have been documented (Onuf and Quammen 1983). They found that *Atherinops affinis* and *Cymatogaster aggregatus* (shiner surfperch), the two dominant pre-flood fishes, suffered heavier reduction in numbers than did other species. They concluded that fishes that spend the majority of their time in the water column were more affected than were benthic fishes, and attributed this to the reduction of low tide volume within the lagoon as a result of flood-induced sedimentation. The sewage flows at TJE have not resulted in a noticeable decrease in tidal prism. The decline in *A. affinis*, the formerly dominant pelagic species, thus appears to be the result of salinity rather than loss of open water habitat.

#### COMPARISON OF STATIONS WITHIN TIJUANA ESTUARY

At TJE, continual wastewater inflows pose a threat to the channel biota. However, the influx of nonsaline water to this tidal wetland had less drastic impacts than the flooding at LPL when it is nontidal.

The importance of salinity reduction is suggested by comparisons of the sampling stations near to and far from the freshwater inflows. At the mouth station (TJE3), channel organisms declined throughout the study period but increased in late 1988. Bivalve densities declined drastically from highs of more than 2,500 m<sup>-2</sup>, mostly *Tagelus californianus*, in September 1986 to much lower densities for the remainder of the study (Fig. 10). Bivalves at the other two stations did not show similar responses. Polychaete densities were low until September 1988, when mean densities greater than 4,000 m<sup>-2</sup> were encountered (Fig. 13). Fishes likewise declined at TJE3 throughout the study until June 1988, with the assemblage shifting from one co-dominated by *Atherinops affinis* and *Clevelandia ios* to one in which *Clevelandia ios* was the sole dominant. The highest densities of fish encountered in the study occurred in June 1988 (Fig. 9). This increase may have been a response to the elimination of wastewater flows in Smuggler's Gulch. The Smuggler's Gulch sewage interceptor was com-

pleted in April 1988 and operated throughout the 1988 summer; however, it failed to return flows on several occasions in fall 1988.

Station TJE1, which was disturbed by dredging, also demonstrated a general decline in channel organisms. Overall bivalve density declined from peaks in 1986, with little recovery until December 1988. Polychaete densities rose in 1988 to a peak mean density greater than  $1,500 \text{ m}^{-2}$ . Fish densities declined from 1986 until spawning peaks in June and December 1988.

Analyses of sediments before and after the 1988 dune washover (Table 6) showed that the substrate at TJE1 changed little, possibly because sedimentation events have long recurred at this site. Any impacts to the channel organisms at TJE1 were probably due to conditions other than sediment type, such as changes in water quality or direct disturbance due to dredging.

Station TJE2 acted as a refuge for two of the three important bivalves, *Protothaca staminea* and *Macoma nasuta*. Although the channel was not formed naturally (it was dredged in the early 1900s to connect the former sewage lagoons to the main channel and, ultimately, the ocean), it has had several decades to develop a rich fauna. The strong site preference of *M. nasuta* and *P. staminea* for station TJE2 is not explained by sediment type, since all three species inhabit a wide range of sediment types at TJE (Hosmer 1977), and each of the sampling stations contained sediments suitable for all three species. The high bivalve abundances at TJE2 are more likely due to isolation from wastewater and dredging disturbances. Mean polychaete densities were lowest at TJE2, a pattern that may be explained by their preference for finer sediments.

Station TJE3, at the mouth of the estuary, was directly in the path of the wastewater conveyed by the Tijuana River. This site supported the lowest mean density of bivalves and, at least in September 1989, very high densities of opportunistic polychaetes. In addition, the fewest fish species were collected here.

Populations of southern California coastal wetland fishes have marked seasonality, with highest densities in summer and low densities in winter; however, there are inconsistencies in TJE populations that suggest that this system did not display typical seasonality. These include the low densities encountered in June 1986 and June 1987 (Fig. 8) and the low species richness in June 1987 and March 1989 (Fig. 7). We suggest that this departure from typical seasonal patterns can be attributed to the impacts of modified hydrology.

The shift in the structure of the fish assemblage at TJE to one dominated by *Clevelandia ios* may be

due partly from reduced predation pressure. *Clevelandia ios* is preyed upon by a number of estuarine species including *Paralichthys californicus*, *Hypsopsetta guttulata*, *Leptocottus armatus* (Pacific staghorn sculpin), and *Fundulus parvipinnis*, according to MacDonald (1975). Although not reported as a predator of *Clevelandia ios*, *Gillichthys mirabilis* has been observed to be an aggressive predator and cannibal. All of these potential predators have declined in density following mouth closure in 1984 (Nordby 1987) and the multiple disturbances discussed herein. An additional factor that may allow *Clevelandia ios* to dominate disturbed areas is its life history strategy. *Clevelandia ios* matures within one year (Brothers 1975) and spawns from September through June. In 1981, peak spawning at TJE occurred in March, April, and May, with lesser peaks in September and January (Nordby 1982). Larvae were collected in densities greater than  $60 \text{ m}^{-3}$  in April 1981.

Other components of the channel assemblage are also quick to mature. The dominant polychaetes at both LPL and TJE were species that reach sexual maturity rapidly. Some capitellid species mature sexually in as little as one month and may reproduce year-round (Grassle and Grassle 1976).

High densities of capitellids and *Polydora* spp. may have been encouraged by sewage spills. Both taxa are associated with pollution. Capitellids are considered enrichment opportunists (Pearson and Rosenberg 1978) while *Polydora cornuta* has been reported from areas of high organic matter (Pearson 1975).

In Los Angeles Harbor, Crippen and Reisch (1969) found that *Capitella* sp. and *Polydora cornuta* were most abundant in polluted to very polluted areas. Capitellids have also been shown to increase in density when the source of disturbance ceases, for example, abatement of a pollution source (Rosenberg 1976; Sanders et al. 1980). Thus, the reason for their sudden increase at TJE3 in September 1988 does not necessarily indicate increased wastewater flows.

#### TIJUANA ESTUARY-LOS PEÑASQUITOS LAGOON COMPARISON

Hydrologic disturbances had a greater impact on the channel assemblage at LPL than TJE. During nontidal conditions at LPL, both fish and benthic invertebrate assemblages experienced seasonal storms and changes in water quality. Populations plummeted following flooding in fall 1987. In spring and summer 1988, the channel organisms recovered, until the December storm event in 1988, which again decimated populations.

There were few spatial patterns in fish and ben-

thic invertebrate distributions within LPL despite stations specifically chosen near the mouth and near freshwater inflows. The small size of the lagoon and its usual closure made its waters relatively homogeneous. Polychaetes were generally more dense at the mouth (LPL3) but were also found in high densities at the other stations at some times of the year. *Gambusia affinis* was found in highest densities at the station most affected by freshwater (LPL1).

Freshwater input to LPL is increasing as the watershed is developed. Flows from Carmel Valley Creek continued throughout the summer and autumn of 1988, a period that is usually dry. This flow has resulted in the encroachment of brackish marsh into the salt marsh and introduced high numbers of *Gambusia affinis* to the landward edges of the lagoon. A long-term increase in freshwater input into the lagoon may jeopardize this coastal wetland.

#### FUTURE HYDROLOGIC DISTURBANCES

Several municipalities and water utility districts in San Diego County are proposing to discharge treated wastewater into coastal streams, since the ocean outfalls are now at capacity. The California Regional Water Quality Control Board, San Diego Region (1988) projects releases of 10 to 30 MGD by the year 2015 for 10 county streams. All of these streams have natural flow peaks in the winter and many have little or no flow in summer. While plans call for the reuse of treated wastewater for irrigation, streamflows would still be augmented in winter, and the period of heavy flow would no doubt be extended. Shifts in wetland vegetation from dominance by salt marsh halophytes to brackish marsh species (*Typha* and *Scirpus* spp.) have been predicted previously (Zedler et al. 1984). Based on our analyses of channel assemblage responses to hydrologic disturbances, we now predict major impacts to fishes and macroinvertebrates. Discharge of treated wastewater to small coastal wetlands such as LPL, which are frequently closed to tidal flushing, will likely result in the extermination of most or all of the channel biota or replacement with fresh/brackish water species. In many cases these include exotic fish species such as *Acanthogobius flavimanus* (yellowfin goby) and *Gambusia affinis* and invertebrates such as the Asian bivalves *Corbicula fluminea* and *Musculista senhousia*.

#### Conclusion

The two coastal wetlands compared in this study differ in types and degrees of disturbance. Tijuana Estuary (TJE) has been subjected to continuous, long-term wastewater inflows while Los Peñasquitos Lagoon (LPL) has had flooding once in 1987 and once in 1988. The channel biota of each system

were altered by these events, but short-term recovery appears to be greater at TJE, where tidal flushing is now continuous.

At TJE, the structure of the fish assemblage has shifted toward dominance by species with an extended spawning season and rapid maturity. Bivalve populations are composed of young individuals as the result of disturbance events. Polychaete populations are dominated by taxa associated with pollution and that have prolonged spawning seasons and mature rapidly. The sampling station farthest from the wastewater inflows harbored significantly higher densities of bivalves than did the other sites. The sampling station nearest the source of wastewater supported the fewest fish species.

At LPL, the channel assemblage is dominated by species that can survive salinity shock and very low levels of dissolved oxygen, are easily reintroduced during brief periods of mouth opening, or are introduced from freshwater inflows. Density and diversity of all species mirrors the changes in water chemistry; both decrease as water quality deteriorates and increase after water quality improves.

Neither of these coastal wetlands has a channel assemblage that is characteristic of pristine tidal ecosystems. Long histories of disturbance have shifted their composition to a small group of species that is tolerant of reduced salinity. Resilience in the short term is conferred by opportunistic life histories and quick reestablishment following the return of tidal influence. Recovery in the long term would require elimination of the hydrologic disturbances and time for native species to reinvade from refuges within the region's coastal water bodies.

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This manuscript is dedicated to Jordan Dale Covin, friend and colleague, who passed away during its preparation.

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## SEASONAL ABUNDANCE, COMPOSITION, AND PRODUCTIVITY OF THE LITTORAL FISH ASSEMBLAGE IN UPPER NEWPORT BAY, CALIFORNIA

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### ABSTRACT

This study was designed to characterize the littoral fish populations by 1) composition and principal species, 2) diversity and seasonal dynamics, 3) productivity, and 4) important environmental factors.

Monthly samples (January 1978 to January 1979) obtained with four quantitative sampling methods at three stations in upper Newport Bay yielded 55,561 fishes from 32 species which weighed 103.5 kg. The top five species made up over 98% of the total number of individuals. One species, *Atherinops affinis*, predominated in numbers (76.7% of all fishes) and biomass (79.8%). This dominance was reflected in the low overall  $H'$  diversity values for numbers ( $H' = 0.89$ ) and biomass ( $H'_b = 0.84$ ). Number of species, number of individuals, and biomass were greatest during the spring and summer.

Quantitative clustering of species based on individual samples revealed five species groups which reflected both microhabitat and seasonal differences in the littoral ichthyofauna. Species Group I was made up of five resident species—*A. affinis*, *Fundulus parvipinnis*, *Clellandia ros*, *Gillichthys mirabilis*, and *Gambusia affinis*. Species Groups II-VI were composed of summer and winter periodics and rare species.

The mean annual production (9.35 g dry weight  $m^{-2}$  determined by the Ricker production model) of the littoral zone fishes was among the highest of reported values for comparable studies. This high annual production was mainly the result of the rapid growth of large numbers of juveniles that utilized the littoral zone as a nursery ground. Young-of-the-year *Atherinops affinis* contributed 85% of this total production.

Canonical correlation analysis indicated that temperature and salinity together may influence littoral fish abundance. These two abiotic factors accounted for 83% of the variation in the abundances of individual species. Emigration from the littoral zone, therefore, seems to be cued by seasonal fluctuations in temperature and salinity. I propose that this offshore movement forms an important energy link between the highly productive littoral zone and local, near-shore marine environment.

Semienclosed bays and estuaries are among the most productive areas on Earth, ranking with oceanic regions of upwelling, African savannas, coral reefs, and kelp beds (Haedrich and Hall 1976) in terms of animal tissue produced per year. Bays and estuaries harbor large stocks of nearshore fishes and are important feeding and nursery grounds for many species of fish, including commercially important ones. However, the high productivity of fishes is accompanied by low diversity (Allen and Horn 1975) which probably reflects the stressful ecological conditions in bays and estuaries and the high physiological cost of adaptation to them (Haedrich and Hall 1976). The few studies that have dealt with pro-

ductivity in estuarine fishes were summarized by Wiley et al. (1972) and Adams (1976b).

Utilization of temperate embayments by juvenile and adult fishes is markedly seasonal with high abundances corresponding to the warmer, highly productive months of spring through autumn. Seasonal species typically spend one spring-autumn period in the shallows of a bay growing at an accelerated rate in the warm, highly productive waters (Cronin and Mansueti 1971).

Most studies to date dealing with composition and temporal changes of bay-estuarine fish populations have been conducted on the Gulf of Mexico and Atlantic coasts of the United States where estuaries are larger and more numerous than those on the Pacific coast (e.g., Bechtel and Copeland 1970; Dahlberg and Odum 1970; Derickson and Price 1973; McErlean et al. 1973; Oviatt and Nixon 1973; Recksiek and McCleave

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1973; Haedrich and Haedrich 1974; Targett and McCleave 1974; Livingston 1976; Moore 1978; Shenker and Dean 1979; Orth and Heck 1980). Although quantitative in nature, many of these investigations suffer from the inefficient (Kjelson and Johnson 1978) trawl sampling gear used and the high mobility of most fishes. Adams (1976a, b) used dropnet samples to accurately assess the density and productivity of the fishes of two North Carolina eelgrass beds. Weinstein et al. (1980) used a combination of block nets, seines, and rotenone collections to derive accurate quantitative estimates of fishes in shallow marsh habitats in the Cape Fear River Estuary, N.C.

Previous investigations of fishes in Newport Bay have included a species list (Frey et al. 1970), a general species account (Bane 1968), two individual species accounts (Fronk 1969; Bane and Robinson 1970), and two studies on the population ecology of the fauna based on juveniles and adults (Posejpal 1969; Allen 1976). An assessment of the ichthyoplankton and demersal fish populations during 1974-75 (Allen and White in press) is the most comprehensive work to date.

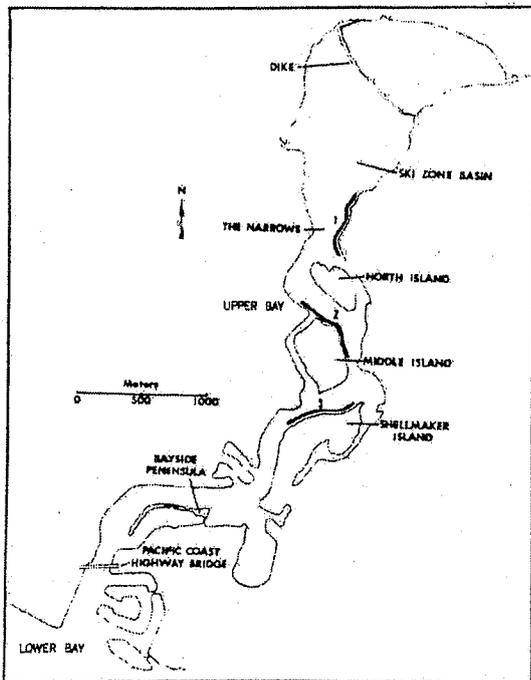


FIGURE 1.—Map of upper Newport Bay, Orange County, Calif., with the locations of the three sampling stations.

Despite these studies, a substantial component of the ichthyofauna, the littoral fishes of the upper bay (0-2 m depth from mean higher high water), had not been adequately sampled. In a study of the demersal ichthyofauna of Newport Bay during 1974-75 (Allen 1976), I found that three—*Atherinops affinis*, *Fundulus parvipinnis*, and *Cymatogaster aggregata*—of the five most numerous species were the ones that occurred in the shallow water over the mudflats which cover about 60-70% of the surface area of the upper bay reserve. Despite their high numerical ranking, the relative abundances of these littoral species were underestimated because sampling was carried out almost exclusively by otter trawls in the deeper channels of the upper bay. The recognition of this gap in our knowledge served as the impetus for the present study.

The main purposes of this study were to characterize the littoral ichthyofauna of upper Newport Bay quantitatively by 1) composition and principal species, 2) diversity and seasonal dynamics, 3) productivity, and 4) key environmental factors that are influencing this fish assemblage.

## METHODS AND MATERIALS

### Study Area

Newport Bay (lat. 33°37'30"N, long. 117° 51' 20"W) is located in Orange County, Calif., 56 km southeast of Los Angeles and 140 km north of the Mexican border (Fig. 1). The upper portion is the only large, relatively unaltered bay-estuarine habitat in California south of Morro Bay (lat. 34.5°N). The low to moderately polluted lower portion, commonly called Newport Harbor, has been severely altered by dredging activities, landfills, and bulkheads to accommodate more than 9,000 boats. The study area, the upper two-thirds of the upper bay, is bordered almost completely by marsh vegetation and mudflats. The California Department of Fish and Game purchased and set aside this area as an ecological reserve in 1975.

Three stations, about 0.5 km in length, were spaced evenly along the shore of the upper Newport Bay (Fig. 1). Sampling was stratified based on prior information on the uniqueness of the fish fauna of the three areas (Allen 1976). This design also allowed thorough coverage of the study area. Each station was situated on a littoral (inter-tidal) mudflat area adjacent to marsh vegetation

and was divided into equal size. Select month was random assumptions and pling on any part month. Each station pool (panne) which islands.

### Sampling

Monthly sample tions during the 13 to January 1979 for Sampling was carried near high tide to Two days were used stations, stations 1 and 3 the second.

Four types of sampling each station as follows:

1) A 15.2 m × 1.8 m mesh in the wings and 1.8 × 1.8 m bag was used. Hauls were made by and 15 m off the shore was then hauled to shore by line lines attached to the net. Each haul was

2) A 4.6 m × 1.2 m mesh was pulled 10 m shore (at a depth to Two hauls were made haul in the panne at a sampled an area of 62.4 m<sup>2</sup> sampling routine occurred April 1978 when no dry panne.]

3) A 2.45 × 2.45 × 1 m mesh was used to and bottom at 0.5-1.5 m depth. The frame, released by plastic buckets were ; the frame for flotation maneuvered into position disturbed for 10 min. pursued by the chain line nylon line. The DN sa

4) A small, square e

and was divided into 10 numbered sections of equal size. Selection of the section sampled each month was random in order to satisfy statistical assumptions and minimize the impact of sampling on any particular section from month to month. Each station included a tidal creek or pool (panne) which was sampled on the marsh islands.

### Sampling Procedures

Monthly samples were taken at the three stations during the 13-mo period from January 1978 to January 1979 for a total of 39 station samples. Sampling was carried out within  $\pm 3$  h of daytime neap high tide to minimize tidal level effects. Two days were usually required to sample three stations, stations 1 and 2 the first day and station 3 the second.

Four types of sampling gear were employed at each station as follows:

1) A 15.2 m  $\times$  1.8 m bag seine (BS) with 6.4 mm mesh in the wings and 3.2 mm mesh in the 1.8  $\times$  1.8 m bag was used twice at each station. Hauls were made by setting the net parallel to and 15 m off the shore at a depth of 1-2 m. The BS was then hauled to shore using 15 m polypropylene lines attached to 1.8 m brails on each end of the net. Each haul sampled an area of 220 m<sup>2</sup>.

2) A 4.6 m  $\times$  1.2 m small seine (SS) with 3.2 mm mesh was pulled 10 m along and 2 m from the shore (at a depth to 1 m) and pivoted to shore. Two hauls were made in the inshore area and one haul in the panne at each station. Each haul sampled an area of 62.4 m<sup>2</sup>. [One exception to the sampling routine occurred at station 3 panne in April 1978 when no sample was taken due to a dry panne.]

3) A 2.45  $\times$  2.45  $\times$  1.0 m dropnet (DN) with 3.2 mm mesh was used to sample the water column and bottom at 0.5-1.5 m depth. The DN was suspended from a 5.0  $\times$  5.0  $\times$  1.0 m aluminum pipe frame, released by pins at each corner. Two 19 l plastic buckets were attached to each corner of the frame for flotation. The net and frame were maneuvered into position, anchored, and left undisturbed for 10 min. After release the DN was pursed by the chain line and hauled to shore by nylon line. The DN sampled an area of 6.0 m<sup>2</sup>.

4) A small, square enclosure (SE) was used in

conjunction with an anesthetic (quinaldine mixed 1:5 with isopropyl alcohol) with the intent of sampling small burrow inhabiting fishes, especially gobies. The SE was constructed of heavy duck material mounted on a 1.0  $\times$  1.0  $\times$  1.0 m collapsible frame of 25.0 mm PVC pipe and sampled 1.0 m<sup>2</sup> of bottom. The SE was set at three randomly chosen positions in an undisturbed portion of each station section at a depth of 0.5-1.0 m. The bottom of the SE was forced into the upper few centimeters of substrate and the quinaldine mixture added to the enclosed water column. The enclosed volume and shallow substrate was then thoroughly searched for 10 min using a long-handled dip net of 1.0 mm mesh.

A detailed comparison of the effectiveness of these four methods is the subject of a separate paper (Horn and Allen<sup>2</sup>).

Ten samples were taken at each of the three stations each month (2 BS samples, 3 SS samples, 2 DN samples, 3 SE samples) for a total of 30 samples/mo and 289 samples over the study (minus one SS haul in April 1978 at station 3).

Catches were either frozen on Dry Ice<sup>3</sup> or preserved in 10% buffered Formalin. Specimens >150 mm SL were injected abdominally with 10% buffered Formalin. Subsamples of frozen specimens were oven dried (40°C) for 48-72 h for dry weight determination. Mean dry weights were based on a minimum of 20 individuals/size-class of each common species at each station each month.

Data on six abiotic factors were recorded or determined for each station: temperature, salinity, dissolved oxygen, sediment particle size, depth of capture (by individual samples), and distance into the upper Newport Bay from the Highway 1 bridge (see Fig. 1).

### Production Estimation

Production is the total amount of tissue produced during any given time interval including that of individuals which do not survive to the end of that time interval (Ivlev 1966). Productivity is the rate of production of biomass per unit of time (Wiley et al. 1972). Production of a fish stock

<sup>2</sup>Horn, M. H., and L. G. Allen. Comparison of methods for sampling shallow-water estuarine fish populations. Manuscr. in prep. California State University, Fullerton, Fullerton, CA 92634.

<sup>3</sup>Reference to trade names does not imply endorsement by the National Marine Fisheries Service, NOAA.

is the product of the density of fish and the growth of the individuals (Ricker 1946).

An HP9100A program was developed with the aid of Joel Weintraub (California State University, Fullerton) to calculate the production of each recognizable size-class of the common species, those which were collected in at least 2 consecutive months at each station. The model used was that proposed by Ricker (1946) and modified by Allen (1950) and is calculated as follows:

$$P = G\bar{B}$$

where  $G = \frac{\log_e \bar{w}_2 - \log_e \bar{w}_1}{\Delta t}$  is the instantaneous coefficient of growth;

$\bar{B} = \frac{B_1(e^{G-Z} - 1)}{G - Z}$  is the average biomass over the time interval;

$Z = \frac{-(\log_e N_2 - \log_e N_1)}{\Delta t}$  is the instantaneous coefficient of population change of the immediate sampling area (station) attributable to mortality and migration;

$B$  is the biomass density of fishes at  $t_1$ ;  $w_1$ ,  $w_2$  are the mean weights of individuals at time  $t_1$  and  $t_2$ ; and  $N_1$ ,  $N_2$  are the numbers of fishes present at  $t_1$  and  $t_2$ .  $G - Z$  is the net rate of increase in biomass during  $\Delta t$  (1 mo).

The model assumes that production data need not be corrected for immigration and emigration of fishes in and out of the sampling area, provided the density and growth by size-class are estimated frequently enough to accurately assess the abundance and growth of fishes actually in the sampling area (Chapman 1968).

In the present study, growth increments were estimated from length-frequency data for fishes from all three stations each month for each size-class. The length data, therefore, were representative of the entire population of the size-class in the upper Newport Bay and served to minimize the effects which localized movements into and out of a particular station have on monthly growth values. The average weight,  $\bar{w}$ , of a size-class per month was calculated as follows: 1) Dry weight equivalent for the median length in a size interval (5 mm intervals) was determined using standard length to dry weight curves for each common species; 2) the proportion (range 0-1) of

individuals represented in the size interval was multiplied by the dry weight equivalent for the interval; 3) the products were then summed for all size intervals contained within the particular size-class of the species yielding an average weight,  $\bar{w}$ . This method proved to be more accurate than simply taking the mean length of the entire size-class and determining the dry weight equivalent.

The "best estimate" of biomass density ( $B$ ) for each discernible size-class was determined in the following manner: 1) The biomass density (wet weight) derived from the method (BS, SS, DN, or SE) shown to be most effective at sampling the particular species was used. Table 1 lists the species with corresponding collecting gear ranked by their effectiveness at capturing the species. This list is based on a comparative study of the sampling methods (Horn and Allen footnote 2); 2) if, as in a few cases, the biomass estimated was inordinately high, due to a large catch in one replicate sample, the estimate defaulted to the next gear type in the rank order; 3) the biomass estimate in wet weight was converted to a dry weight (DW) equivalent by a conversion factor determined for each species and entered into the production model as  $B_1$  (g DW/m<sup>2</sup>). Production is the total of all positive values for size-classes during a time period (1 mo in this case) at each station. Negative values were due to sampling error and emigration and were not included in production estimates.

Large individuals (>100 mm SL) of *Mugil cephalus* were not included in production esti-

TABLE 1.—Methods for best estimate of species densities ranked by effectiveness (Horn and Allen text footnote 2). BS = bag seine; SS = small seine; DN = dropnet; SE = square enclosure.

Species	Methods ranked by effectiveness
<i>Aithya affinis</i>	BS, SS
<i>Fundulus parvipinnis</i>	SS, BS
<i>Clovalandia ios</i>	SE, SS, DN
<i>Anchoa compressa</i>	BS, SS, DN
<i>Gambusia affinis</i>	SS, BS
<i>Cymatogaster aggregata</i>	BS, DN, SS
<i>Gillichthys mirabilis</i>	SS, SE, BS
<i>Anchoa hepsetus</i>	BS, SS
<i>Mugil cephalus</i>	SS, BS
<i>Engraulis mordax</i>	BS, SS
<i>Leuraethes tenuis</i>	BS, SS
<i>Quilichthys ycauda</i>	DN, SS
<i>Hypophthalmichthys gilberti</i>	DN, SS
<i>Syngnathus spp.</i>	SS, DN
<i>Hypsopselta guttulata</i>	SS, DN
<i>Lepomis macrochirus</i>	BS, SS
<i>Lepomis cyanellus</i>	BS, SS
All other species	BS, SS

mates because ties could not be of this mobil

#### Cumulative Sp

The cumula- ary (low fish d) was plotted ag- in order to asse- random seque- ment of the 30- four methods. I subhabitat with- species curves- were based on- sure that all po- toral zone at a- ed.

#### Diversity

Both the Sha- tion (Shannon : richness were u- pooled station ar- non-Wiener ind- and evenness in

#### Cluster Analysis

The Ecologica- veloped by R. W- sity of Southern- determine speci- species abundan- (multiple regres- effects of abioti- abundance (can-

The cluster ar- index of dissimi- 1975). This inde- ing without assu- population. A squ- cies counts was c- this index to ove-

Canonical corr- termine whether- tors interacted- dances in the 39- period. Two sepa- yses were made:

e size interval was equivalent for the e then summed for thin the particular lding an average d to be more accu- mean length of the ing the dry weight

mass density (B) for determined in the mass density (wet od (BS, SS, DN, or e at sampling the able I lists the spe- ting gear ranked uring the species. ative study of the Allen footnote 2); mass estimated was arge catch in one e defaulted to the er; 3) the biomass nverted to a dry conversion factor d entered into the m<sup>2</sup>). Production is r size-classes dur- case) at each sta- to sampling error cluded in produc-

m SL) of *Mugil* production esti-

imate of spe- iveness (Horn S = bag seine; SE = square

- ods ranked by ffectiveness
- BS, SS
  - SS, BS
  - SE, SS, DN
  - SS, SS, DN
  - SS, BS
  - SS, DN, SS
  - SS, SE, BS
  - SS, SS
  - SS, BS
  - SS, SS
  - SS, SS

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mates because quantitative estimates of densi- ties could not be obtained for the large members of this mobile species.

Data Analysis

Cumulative Species Curve

The cumulative number of species in Febru- ary (low fish density) and June (high fish density) was plotted against the number of samples taken in order to assess the adequacy of sampling. Two random sequences were used for the arrange- ment of the 30 samples taken each month by the four methods. Each method sampled a unique subhabitat within the littoral zone. Cumulative species curves (reflecting presence/absence) were based on a combination of methods to in- sure that all possible species occupying the lit- toral zone at a particular time were represent- ed.

Diversity

Both the Shannon-Wiener information func- tion (Shannon and Weaver 1949) and species richness were used as measures of diversity for pooled station and upper bay samples. The Shan- non-Wiener index reflects both species richness and evenness in a sample.

Cluster Analysis and Canonical Correlation

The Ecological Analysis Package (EAP) de- veloped by R. W. Smith was used at the Uni- versity of Southern California Computer Center to determine species associations (cluster analysis), species abundance correlations to abiotic factors (multiple regression subprogram), and possible effects of abiotic factors on individual species abundance (canonical correlation).

The cluster analysis utilized the Bray-Curtis index of dissimilarity (Clifford and Stephenson 1975). This index allowed quantitative cluster- ing without assuming normality in the sampled population. A square-root transformation of spe- cies counts was done to counter the tendency of this index to overemphasize dominant species.

Canonical correlation analysis was used to determine whether and to what extent abiotic fac- tors interacted with individual species abun- dances in the 39 station samples over the study period. Two separate canonical correlation anal- yses were made: The first run included six abiotic

factors—temperature (TEMP), salinity (SAL), dissolved oxygen (DO), distance into the upper bay from the Highway I bridge (DSTUPB), aver- age particle size of the sediment (APRTSZ), and depth of capture (DPTHCAP); the second in- cluded only temperature and salinity to deter- mine the amount of variation these two factors accounted for alone.

RESULTS

Temperature and Salinity Patterns

Water temperatures of the littoral zone at all three stations increased steadily during the peri- od January-June from 14°-15°C to 26°-28°C (Fig. 2). The temperatures remained high (>25°C) throughout the summer months and then de- clined gradually until November. Between No- vember and December the temperature dropped sharply at each station. Temperatures in the pannes were generally higher than the tempera-

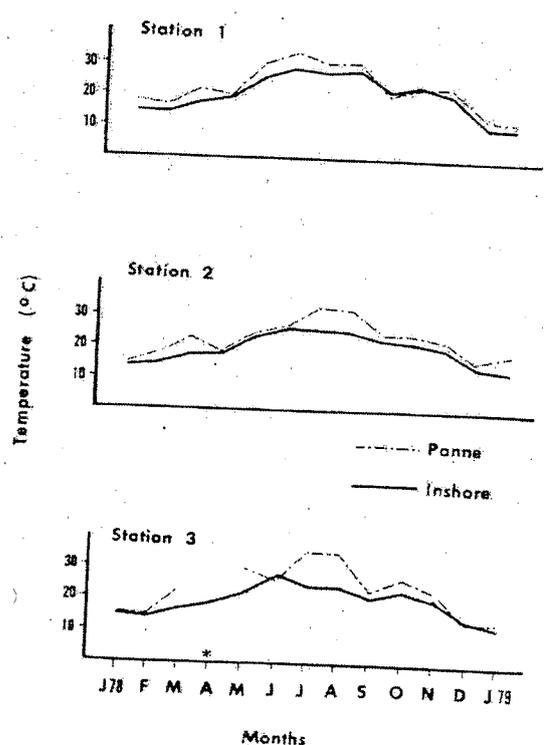


FIGURE 2.—Month-to-month variation (January 1978-January 1979) in water temperature (°C) for the alongshore area and panne at each of the three sampling stations. (\* = panne dried-up.)

tures along the shore especially in the summer months (July-September).

Salinity varied more than temperature (Fig. 3) due to rainfall and periodic runoff from surrounding urban areas. In general all stations had low salinities during January through March 1978, a period of heavy rainfall. After May 1978, salinities remained high (between 25 and 32 ppt) with decreases in June 1978 (stations 1 and 3, unknown cause), September 1978 (all stations due to heavy rainfall), and January 1979 (station 3 due to rainfall). Panne salinities at station 1 were consistently low (usually <6 ppt) indicating a constant freshwater input. The panne at stations 2 and 3, however, usually had salinities equal to or higher than the alongshore area due to evaporation.

### Total Catch

Sampling during the 13-mo period yielded 55,561 individuals of 32 species that weighed a total of 103.5 kg (Table 2).

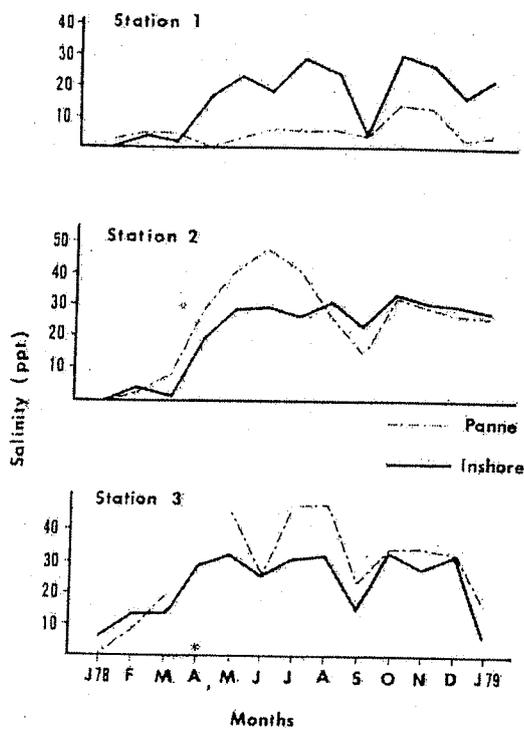


FIGURE 3.—Month-to-month variation (January 1978-January 1979) in salinity (ppt) for the alongshore area and panne at each of the three sampling stations. (\* = panne dried-up.)

*Atherinops affinis* greatly predominated in numbers (76.7%) and biomass (79.9%). *Fundulus parripinnis* ranked second in both numbers (12.1%) and biomass (7.6%), followed in order by *Gambusia affinis* (5.5% numbers), *Clevelandia ios* (2.4% numbers), and *Anchoa compressa* (1.2% numbers). These five species accounted for 98% of the total number of individuals and 96% of the total biomass (Table 2). The skewed distribution of number of individuals among species was reflected in the relatively low overall  $H'$  diversity values of 0.89 for numbers ( $H'_N$ ) and 0.84 for biomass ( $H'_B$ ). The vast majority of individuals of most species were either young-of-the-year or juveniles.

Station 1—A total of 13,859 individuals representing 19 species was collected during the year. The catch totaled 22.7 kg. All three of these totals were the lowest of those from the three stations. Overall  $H'$  diversity for numbers was 1.17 and for biomass, 0.89. *Atherinops affinis* ranked first in numbers (55.2%) and biomass (76.7%) but was less abundant here than at stations 2 and 3. *Gambusia affinis* (20.6%) and *Fundulus parripinnis* (19.1%) were common at this station especially in the panne.

Station 2—The greatest number of individuals (24,813) and biomass (42.9 kg) were collected at this site. Although 27 species were captured, over 90% of these individuals were from one species, *Atherinops affinis*. The large number of attached eggs and small (<20 mm) fish caught in July (52% of all *A. affinis*) indicated that this area was a breeding site for *A. affinis*. *Fundulus parripinnis* (4.4%) was second in numerical rank.  $H'$  for numbers (0.49) and biomass (0.70) were low.

Station 3—A total of 16,889 fishes belonging to 23 species were obtained at this station. *Atherinops affinis* made up 74.4% of the individuals and 78.8% of the 37.9 kg total biomass. Other important species in order of decreasing numerical abundance were *Fundulus parripinnis* (17.6%), *Clevelandia ios* (3.4%), *Cymatogaster aggregata* (1.3%), and *Anchoa compressa* (1.3%). Overall,  $H'_N$  and  $H'_B$  were 0.87 and 0.85, respectively.

### Cumulative Species Curves

Cumulative species curves from February and June (Fig. 4) reached an asymptote before 20 samples (about 66% of total samples), indicating

predominated in (79.9%). *Fundulus* in both numbers followed in order by (bers), *Clevelandia compressa* (1.2% accounted for 98% totals and 96% of the weighed distribution. The species was generally  $H'$  diversity 0.84 for bio-individuals of the year or

individuals represented during the year. Three of these totals were from the three stations.  $H'$  was 1.17 and *effinis* ranked first (76.7%) but was ranked 2 and 3. *Gambusia parvipinnis* especially in

per of individuals were collected at were captured, were from one species (large number of m) fish caught in that this area. *Fundulus parvipinnis* ranked first (76.7%) but was ranked 2 and 3. *Gambusia parvipinnis* especially in

shes belonging to station. *Atherina* the individuals biomass. Other im- asing numerical *parvipinnis* (17.6%), *aster aggregata* (8%). Overall,  $H'$  ectively.

Curves in February and ptote before 20 les), indicating

TABLE 2.—Monthly abundance and biomass for fish species inhabiting the littoral zone of upper Newport Bay totaled for stations 1-3 (January 1978-January 1979).

Species	January 1978		February		March		April		May		June		July	
	No.	Wt (g)	No.	Wt (g)	No.	Wt (g)	No.	Wt (g)	No.	Wt (g)	No.	Wt (g)	No.	Wt (g)
<i>Atherinops affinis</i>	15	70.5	5	158.3	4	92.0	15	59.1	322	1,212.1	6,296	2,377.6	19,817	19,093.3
<i>Fundulus parvipinnis</i>	377	315.7	208	189.3	181	90.4	17	20.7	35	92.2	89	112.3	758	854.8
<i>Gambusia affinis</i>	46	10.3	23	7.1	9	3.2	5	2.8	56	7.1	235	107.4	573	342.9
<i>Clevelandia ios</i>	49	21.4	39	14.3	80	12.9	47	6.1	100	22.4	74	15.8	485	109.0
<i>Anchoa compressa</i>	26	82.9	1	1.2	15	29.4	136	629.3	317	4,393.4	98	1,154.6	77	920.5
<i>Cymatogaster aggregata</i>	12	2.4	38	5.9	14	3.5	5	11.5	141	196.8	4	5.7		
<i>Gillichthys mirabilis</i>	10	6.5	1	0.2	29	16.8	47	86.7	17	39.6	49	127.1	52	141.4
<i>Anchoa delicatissima</i>	41	78.0	11	7.1	1	1.5	1	555.5	1	550.0			1	3.0
<i>Engraulis mordax</i>														
<i>Leuresthes tenuis</i>														
<i>Chirocentrus</i>	1	1.0											81	89.4
<i>Myoxocephalus thompsoni</i>														
<i>Lepomis gibberti</i>														
<i>Lepomis cyanellus</i>														
<i>Syngnathus auliscus</i>			1	5.2										
<i>Hyposopsella guttulata</i>														
<i>Leopomis macrochirus</i>	2	8.1	4	22.2	2	4.1								
<i>Syngnathus leptorhynchus</i>														
<i>Lepidocottus armatus</i>														
<i>Acanthogobius lixianus</i>					1	1.0		2.1	2	4.7	1	1.6		
<i>Paralichthys californicus</i>								0.5	10	3.9	9	3.9		
<i>Pimphales promelas</i>														
<i>Morone saxatilis</i>														
<i>Urolophus halleri</i>			2	0.2										
<i>Mustelus californicus</i>														
<i>Seriophilus politus</i>														
<i>Cynoscion nobilis</i>														
<i>Sphyrna argentea</i>														
<i>Girella nigricans</i>														
<i>Symphurus atricauda</i>														
<i>Parichthys myriaster</i>														
<i>Umbrina roncadora</i>														
Totals	579	596.8	334	420.2	335	254.8	267	1,394.3	1,029	6,577.9	6,882	4,248.3	21,907	21,667.6
n	10		12		10		11		15		14		16	
$H'$	1.29	1.46	1.33	1.27	1.37	1.55	1.61	1.22	1.76	1.07	0.44	1.24	0.45	0.56

TABLE 2.—Continued.

Species	August		September		October		November		December		January 1979		Totals			
	No.	Wt (g)	No.	Wt (g)	No.	Wt (g)	No.	Wt (g)	No.	Wt (g)	No.	Wt (g)	No.	% No.	Wt (g)	% Wt
<i>Atherinops affinis</i>	4,645	13,181.2	4,122	9,606.2	2,902	14,016.0	2,474	12,409.8	1,143	5,738.8	831	4,650.1	42,591	76.67	82,665.0	79.86
<i>Fundulus parvipinnis</i>	312	250.1	1,707	2,323.0	1,023	2,638.8	1,356	738.0	593	259.7	66	26.5	6,722	12.10	7,920.5	7.65
<i>Gambusia affinis</i>	252	42.4	1,029	399.4	680	126.2	149	15.2	20	2.1			3,077	5.54	1,066.1	1.03
<i>Clevalandia ias</i>	68	16.4	151	47.6	66	16.3	142	31.3	28	3.9	5	1.1	1,334	2.40	312.7	0.30
<i>Anchoa compressa</i>	7	104.9	3	53.1	4	104.8							684	1.23	7,474.1	7.22
<i>Cymatogaster aggregata</i>	61	390.9	2	16.6			2	34.1	1	22.6	1	12.4	223	0.40	690.6	0.67
<i>Gillichthys mirabilis</i>	4	27.0	1	20.0	4	37.1	1	12.0			6	0.3	203	0.37	426.3	0.41
<i>Anchoa deicacissima</i>	64	234.4	26	71.7	1	3.5							195	0.35	471.0	0.46
<i>Mugil cephalus</i>									68	13.3	9	1.5	132	0.24	1,206.9	1.17
<i>Engraulis mordax</i>			29	58.6	2	7.2					1		113	0.20	155.2	0.15
<i>Lauresthes tenuis</i>	85	57.8	3	2.3									88	0.16	60.1	0.06
<i>Quivula ycauda</i>	5	1.9	4	1.5	2	0.4	1	0.1					53	0.10	25.1	0.02
<i>Ilypnus gilbarti</i>							1	0.1					38	0.07	8.1	0.01
<i>Lepomis cyanellus</i>			31	49.3			1	0.1					32	0.06	54.5	0.05
<i>Syngnathus auliscus</i>	1	0.4			1	0.1							20	0.04	16.1	0.02
<i>Hypsopsetta guttulata</i>							1	2.9			2	0.2	19	0.03	36.1	0.03
<i>Lepomis macrochirus</i>													8	0.01	34.4	0.03
<i>Syngnathus leptorhynchus</i>	1	2.8	3	5.2									8	0.01	13.0	0.01
<i>Leptocottus armatus</i>											1	0.3	4	0.01	7.3	0.01
<i>Acanthogobius flavimanus</i>													3	0.01	4.5	0.01
<i>Paralichthys californicus</i>													2	<0.01	5.4	0.01
<i>Pimephales promelas</i>													2	<0.01	0.2	<0.01
<i>Morone saxatilis</i>													1	<0.01	317.1	0.31
<i>Urolophus halleri</i>	1	430.0											1	<0.01	430.0	0.42
<i>Mustelus californicus</i>					1	0.3							1	<0.01	58.0	0.06
<i>Scorpaenopsis</i>													1	<0.01	0.3	<0.01
<i>Sphyræna argentea</i>							1	4.2					1	<0.01	6.6	0.01
<i>Girella nigricans</i>													1	<0.01	4.2	0.01
<i>Symphurus atricauda</i>													1	<0.01	0.4	<0.01
<i>Porichthys myriaster</i>													1	<0.01	0.2	<0.01
<i>Umbrina roncadore</i>	1	44.2					1	0.1					1	<0.01	0.1	<0.01
Totals	5,507	14,784.4	7,111	12,648.7	4,686	16,950.7	4,129	13,247.8	1,853	6,040.4	922	4,692.4	55,561		103,514.3	
n	14		13		11		11		6		9		32			
H'	0.69	0.55	1.10	0.77	0.99	0.54	0.92	0.27	0.90	0.23	0.42	0.06	0.89		0.84	

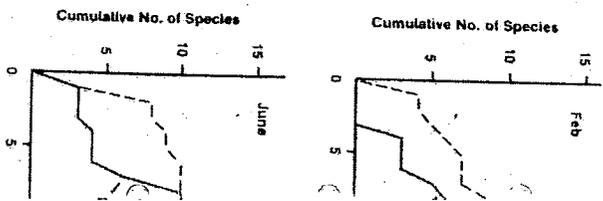


FIGURE 1.—(Cumulative number of samples of upper Newport Bay fish June 1978) during the two random sequences.

that the range of adequately sampled cumulation of species is generally more rapid

#### Seasonal Abundance

Fish abundance markedly during the fall, reaching a pattern opposite to that of May of 1976 to a 1 increased sharply in June. Both the number of species and the number of samples to increase d

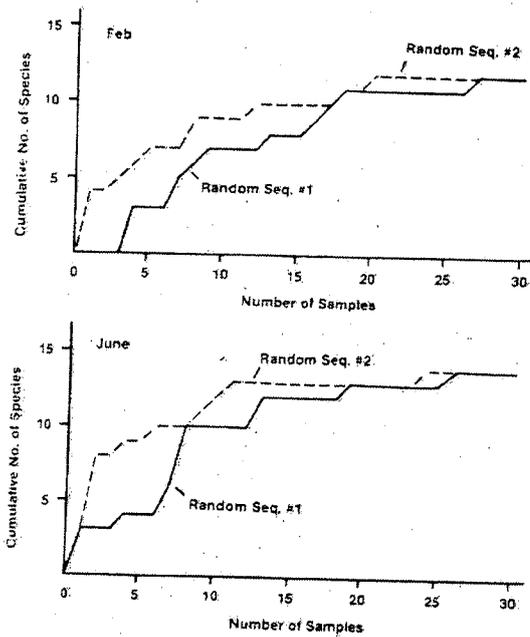


FIGURE 4.—Cumulative number of species as a function of the number of samples of all methods at stations 1-3 combined in upper Newport Bay for two different months (February and June 1978) during the study period. Curves were generated by two random sequences for each month.

that the range of fish species in the area had been adequately sampled by the four methods. Accumulation of species in June, however, was generally more rapid than in February.

### Seasonal Abundance and Diversity

Fish abundance and diversity fluctuated markedly during the 13 mo of the study (Fig. 5). As a whole, the ichthyofauna of the littoral zone showed increased species richness from 10 species in January to 16 species in July 1978. The number of species was elevated (>14) for the entire spring-summer period from May to August 1978. Richness then decreased through the fall, reaching its lowest point of six species in December 1978. Diversity  $H'$  values fluctuated in a pattern opposite to that of species richness.  $H'$  decreased during the summer from a high in May of 1.76 to a low in June of 0.44.  $H'_b$  also decreased sharply in summer but unlike  $H'$  continued to decline for the remainder of the study. Both the number of individuals and biomass began to increase dramatically during May 1978

and reached peaks of 21,907 individuals and 21.7 kg in June. Both numbers and biomass decreased in August with number of individuals increasing again in September. Biomass declined once again in September during a period of rainfall and then increased in October. In the months from October 1978 to January 1979 a rapid decline in both numbers and biomass was evident and was especially pronounced from November to December. A greater number of individuals (992-579) and much greater biomass (4,692-597 g) was obtained in January 1979 than in January 1978.

### Species Associations

Cluster analysis based on individual samples yielded five species groups which, upon further

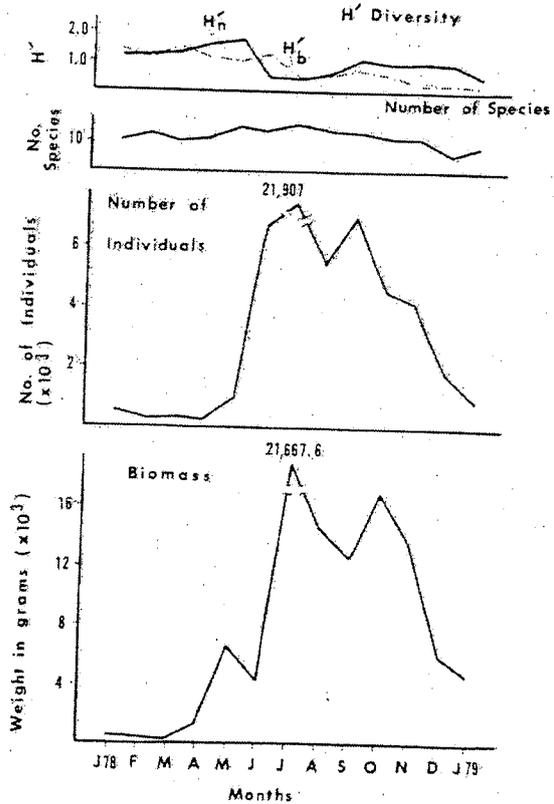


FIGURE 5.—Monthly variation (January 1978-January 1979) in total number of species, diversity  $H'$  (for numbers,  $H'_n$ , and biomass,  $H'_b$ ), number of individuals and biomass (g) for fishes collected by all methods at stations 1-3 combined in the littoral zone of upper Newport Bay.

examination, reflected both spatial (microhabitat) and seasonal differences in the littoral ichthyofauna (Fig. 6).

Group I was a loosely associated group of the five resident species (maintain populations year round in littoral zone) which could be further divided into three subgroups. Subgroup A had only one member, *Atherinops affinis*, an abundant schooling species, *Clevelandia ios* and *Gillichthys mirabilis* which comprised subgroup B are burrow-inhabiting gobiids of the shallows and pannes. Subgroup C included two species, *Fundulus parvipinnis* and *Gambusia affinis*, which inhabited pannes and other high intertidal areas. *Clevelandia ios*, *G. mirabilis*, and *F. parvipinnis* are residents of salt marshes in California and other west coast estuaries and are probably the species most threatened by alterations of these habitats.

Group II consisted of three midwater schooling species—*Anchoa compressa*, *A. delicatissima*, and *Cymatogaster aggregata*—most of which were caught mainly from January to August.

Group III was made up of three distinctly seasonal, benthic species: Two gobiids, *Quietula ycauda* and *Ilypnus gilberti*, and a cottid, *Leptocottus armatus*, which was relatively rare dur-

ing 1978 compared with previous years (pers. obs.).

Group IV included an engraulid, *Engraulis mordax*; syngnathids, *Syngnathus* spp. (including *S. auliseus* and *S. leptorhynchus*); and the pleuronectid, *Hypsopsetta guttulata*. These species were seasonally present in mid- to late summer. Members of this group were only loosely associated (> 80% distance).

Group V was composed of four species which were collected at times of low salinities. *Lepomis macrochirus* and juveniles of *Mugil cephalus* were sampled together early in the year (January-March 1978). *Lepomis cyanellus* and *Leuresthes tenuis* were found together only in September.

Group VI included 12 rare species, most of which could be considered summer periodics in the littoral zone in 1978. These were *Umbrina roncadora*, *Urolophus halleri*, *Paralichthys californicus*, *Mustelus californicus*, *Cynoscion nobilis*, *Acanthogobius flavimanus*, *Sphyræna argentea*, *Girella nigricans*, *Symphurus atricauda*, *Porichthys myriaster*, *Morone saxatilis*, and *Seriplus politus*.

Members of the species groups identified in the dendrogram (Fig. 6) are illustrated in dia-

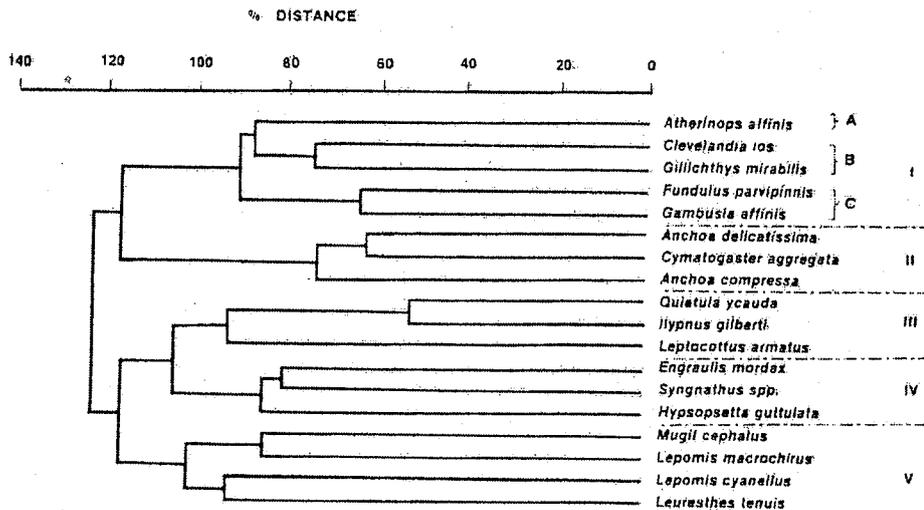


FIGURE 6.—Dendrogram of the clustering of littoral fish species by individual samples taken at stations 1-3 in upper Newport Bay; five species groups (Roman numerals) are recognized according to the Bray-Curtis index of dissimilarity (% distance). A, B, and C are subgroups of species Group I.

grams (Fig. alongshore a time period—September 1978). Only species-time segments. These diagrams show seasonality with

During the heavy rainfalls (I, II, and V) dances (Fig. during this period collected only. Representation of juveniles and associated *M. cephalus* were littoral areas

The spring-ber 1978 was temperatures creased number (Fig. 8). Green *Enteromorpha Ulva lobata*, entire upper for large number groups, except time. Juvenile large number. *Cymatogaster* station 3. You very abundant ions I and 3.

By October appeared. The od was marked and abundant cles were men few juvenile 3

Annual production (month) of the g DW/m<sup>2</sup> per *Atherinops affinis* production followed and *Fundulus* Productivity spring-summer counting for 75 (Table 3, Fig.

grams (Figs. 7-9), depicting occurrences in the alongshore area or panne during three different time periods (January-March 1978, April-September 1978, and October 1978-January 1979). Only species with  $\geq 5$  individuals during each time segment were included in the diagrams. These diagrams illustrate the high degree of seasonality within this fish assemblage.

During the January-March 1978 period of heavy rainfall, members of three species groups (I, II, and V) were present in relatively low abundances (Fig. 7). A halocline existed at station 3 during this period, and *Atherinops affinis* was collected only seaward of the halocline at this station. Representatives of group V, *Mugil cephalus* juveniles and *Lepomis macrochirus*, were found associated with very low salinities. Large *M. cephalus* were observed in both the channel and littoral areas during most of the year.

The spring-summer period of April-September 1978 was characterized by increased water temperatures and salinities, accompanied by increased numbers of species and individual fishes (Fig. 8). Green algal beds, composed primarily of *Euteromorpha* sp., *Chaetomorpha linum*, and *Ulva lobata*, developed along the shore of the entire upper bay, and served as a nursery area for large numbers of juvenile fishes. All species groups, except V, were represented during this time. Juveniles of *Atherinops affinis* occurred in large numbers in the shallows with juvenile *Cymatogaster aggregata* also being abundant at station 3. Young-of-the-year *F. parvipinnis* were very abundant in the pannes, especially at stations 1 and 3.

By October the extensive algal beds had disappeared. The October 1978-January 1979 period was marked by decreased number of species and abundance (Fig. 9). The only common species were members of group I (residents) with a few juvenile *M. cephalus* representing group V.

Productivity

Annual production (mean of three stations by month) of the entire upper Newport Bay was 9.35 g DW/m<sup>2</sup> per year (Table 3). Young-of-the-year *Atherinops affinis* contributed 85.1% to total production followed by *Anchoa compressa* (4.9%) and *Fundulus parvipinnis* (4.2%).

Productivity was highly seasonal, with the spring-summer period (April-September) accounting for 75.9% of the total annual production (Table 3, Fig. 10). Productivity, which was very

TABLE 3.—Monthly mean production (g DW/m<sup>2</sup>) for individual species inhabiting the littoral zone (excluding panne) of upper Newport Bay (February 1978-January 1979).

Species	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Total annual	% total production
<i>Atherinops affinis</i> (adult)					0.1049	0.6754	5.1397	0.0826	1.2942	0.6428		0.1307	0.1329	1.42
<i>A. affinis</i> (78 class)					0.0800	0.1323	0.0352	0.0026	0.1033				7.9638	85.15
<i>Fundulus parvipinnis</i>	0.0005		0.0007	0.0240	0.0167	0.0093	0.0068		0.0431				0.3953	4.23
<i>Chaveaundia</i> sp.	0.0142		0.0045	0.1127	0.0051	0.0093	0.0068		0.0075			0.0145	0.0818	0.87
<i>Anchoa compressa</i>			0.0014		0.2524	0.0485	0.0154						0.4532	4.87
<i>Gillichthys mirabilis</i>					0.0868	0.0361	0.0102	0.0020					0.1387	1.48
<i>Hypobasella gutturalis</i>					0.0082	0.0020							0.0102	0.11
<i>Mugil cephalus</i>	0.0006	0.0004			0.0013	0.0011	0.0001	0.0017				0.0003	0.0013	0.01
<i>Anchoa delicatissima</i>	0.0030	0.0002	0.0039	0.0084									0.0186	0.20
<i>Quebula ycauda</i>													0.0011	0.01
<i>Engraulis mordax</i>							0.0046	0.0003					0.0049	0.05
<i>Cymatogaster aggregata</i>				0.0074	0.0072	0.0023		0.0101	0.0008				0.0279	0.30
<i>Myxus gilberti</i>						0.1197							0.1197	1.28
<i>Lepomis macrochirus</i>	0.0008												0.0008	0.01
Monthly total	0.0194	0.0007	0.0105	0.1832	0.5647	1.0277	5.2120	0.0967	1.4490	0.6428	0	0.1455	9.3522 g DW/m <sup>2</sup> /yr	
														April-September: 7.0949-75.96%

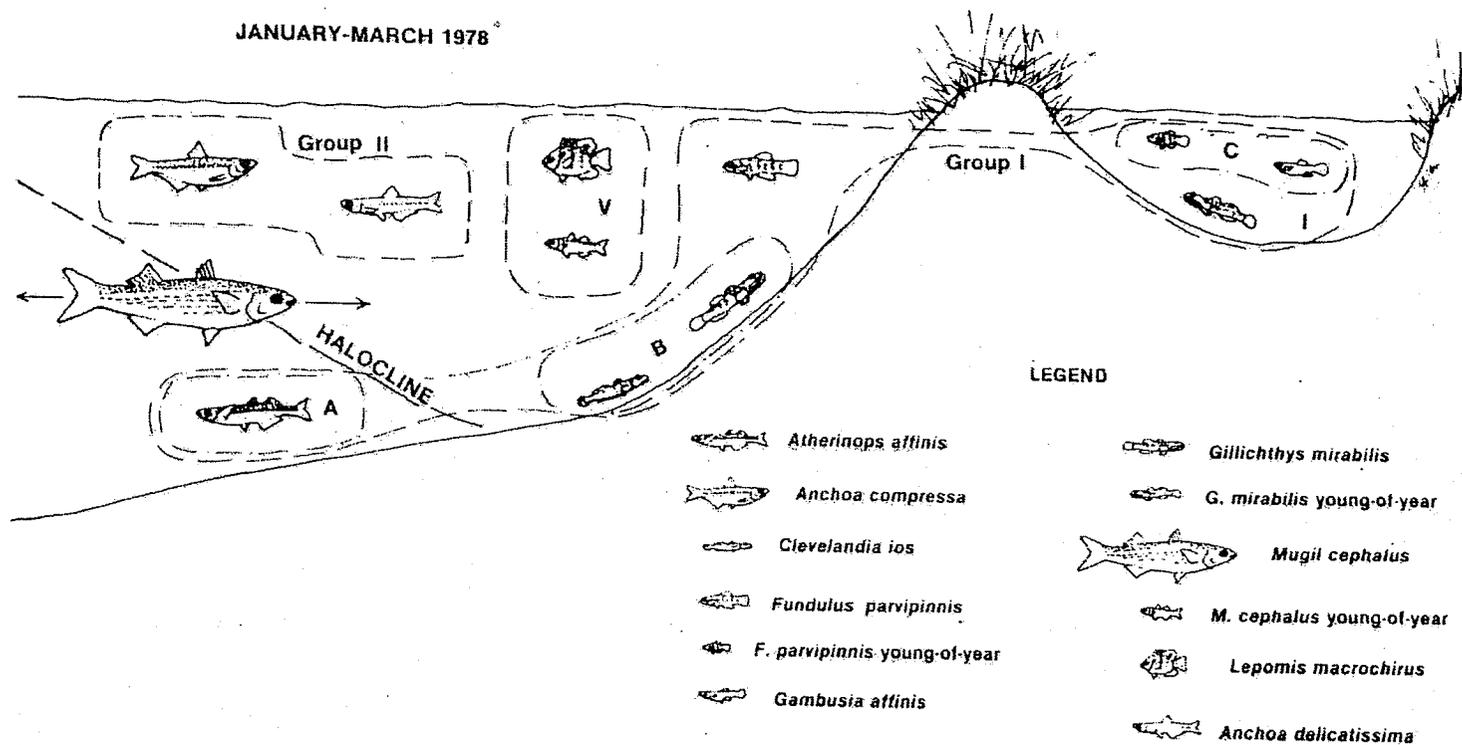
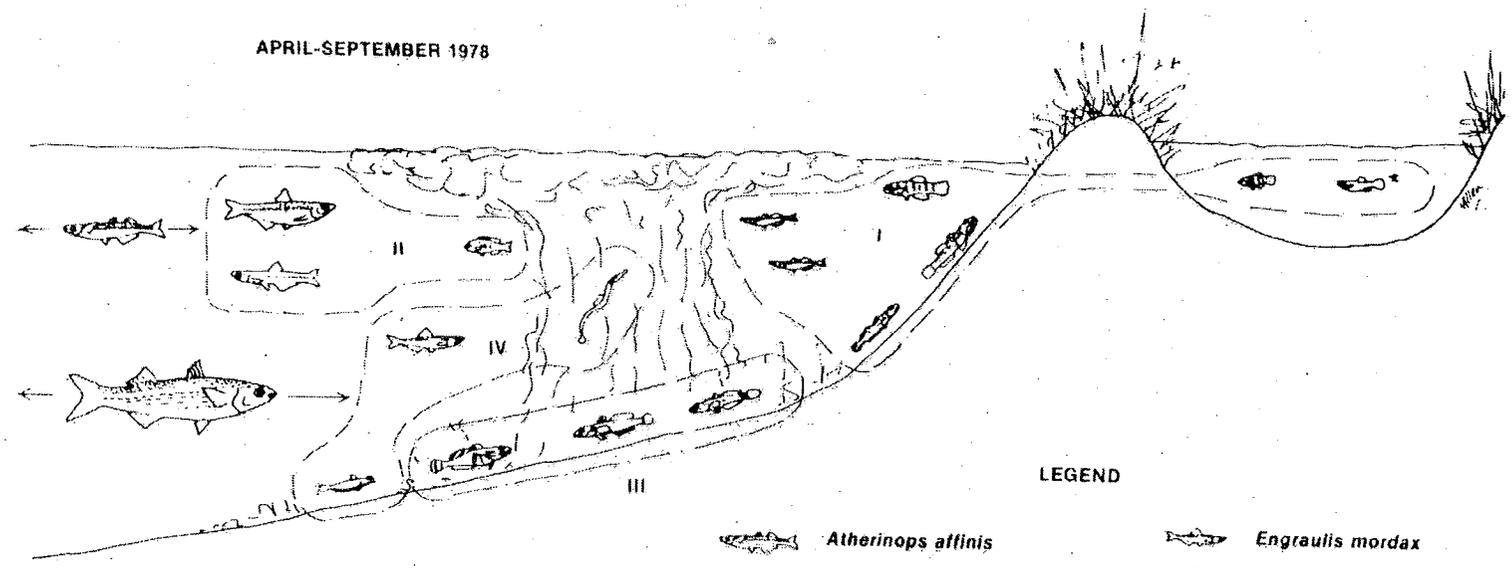


FIGURE 7.— Diagrammatic representation of the principal species inhabiting the littoral zone (alongshore and pannel of upper Newport Bay during January-March) 1978. Inclusion level for species was 5 individuals in the samples during the period. Dashed lines enclose species from groups derived in the dendrogram of Figure 6. Arrows indicate fish-shore-offshore occurrence.

APRIL-SEPTEMBER 1978



LEGEND

- |   |   |
|---|---|
|  <i>Atherinops affinis</i>           |  <i>Engraulis mordax</i>             |
|  <i>A. affinis</i> young-of-year     |  <i>Fundulus parvipinnis</i>         |
|  <i>Anchoa compressa</i>             |  <i>F. parvipinnis</i> young-of-year |
|  <i>Anchoa delicatissima</i>         |  <i>Gambusia affinis</i>             |
|  <i>Clevelandia ios</i>             |  <i>Gillichthys mirabilis</i>       |
|  <i>C. aggregata</i> young-of-year |  <i>Ilypnus gilberti</i>           |
|  <i>Syngnathus</i> spp.            |  <i>Leptocottus armatus</i>        |
|  <i>H. guttulata</i> young-of-year |  <i>Quietula ycauda</i>            |
|   |  <i>Mugil cephalus</i>             |

\*Station 1 only

FIGURE 8. —Diagrammatic representation of the principal species inhabiting the littoral zone of upper Newport Bay during April-September 1978. Wavy vertical lines represent the large algal beds present during this period. Other information is the same as in Figure 7. (*Syngnathus* spp. includes *S. leptochrychus* and *S. ooliscus*.)



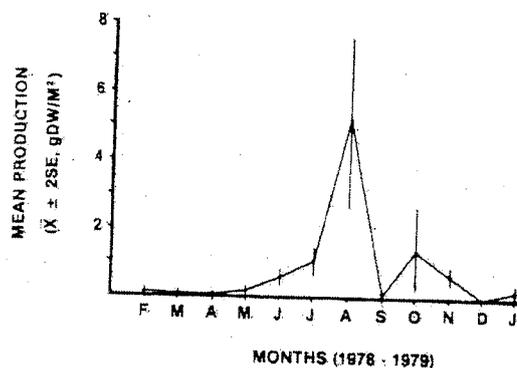


FIGURE 10.—Monthly variation in mean production ( $\bar{X} \pm 2 SE$ , g DW/m<sup>2</sup>) of the littoral fishes from three stations in upper Newport Bay (February 1978-January 1979).

low from February to May 1978, increased rapidly from June to a peak in August (5.2 g DW/m<sup>2</sup>). Monthly production then declined drastically in September, a period of heavy rainfall during which many of the larger young-of-the-year *Atherinops affinis* emigrated from the study area. Production increased in October but then showed a steady decline to zero in December, a time of a sharp decrease in mean water temperature in the upper bay.

### Relationship of Abiotic Factors to Fish Abundance and Distribution

Temperature was found to have a significant, positive correlation ( $P < 0.01$ ,  $df = 37$ ) with number of species ( $r = 0.42$ ), number of individuals ( $r = 0.48$ ), and biomass ( $r = 0.54$ ) when station totals were considered. Similarly, salinity was significantly correlated with number of individuals ( $r = 0.36$ ) and biomass ( $r = 0.64$ ) (Table 4).

Temperature was the factor which yielded the highest number of significant correlations (6) with individual species, followed by salinity, dissolved oxygen, distance into the upper bay, and depth of capture, each with four (Table 4).

An analysis of intercorrelations among abiotic factors yielded three significant ( $P < 0.05$ ,  $df = 37$ ) positive relationships: 1) Temperature and salinity ( $r = 0.48$ ); 2) temperature and dissolved oxygen ( $r = 0.53$ ); and 3) dissolved oxygen and distance into the upper bay ( $r = 0.32$ ).

According to canonical correlation analysis, the six abiotic variables accounted for 93% of the variation in individual species abundances along the first canonical axis (Table 5). A second run indicated that 83% of the variation in species abundances could be accounted for by temperature and salinity alone. This finding strongly implies that interactive effects of temperature

TABLE 4.—Correlation coefficients ( $r$ ) of individual species numbers and of total number of species, number of individuals, and biomass with six environmental factors. TEMP = temperature, SAL = salinity, DO = dissolved oxygen, DSTUPB = distance into upper Newport Bay from Highway 1 bridge, APRTSZ = average particle size of sediments, DPTHCAP = depth of capture.

Species	Abiotic factors					
	TEMP	SAL	DO	DSTUPB	APRTSZ	DPTHCAP
<i>Atherinops affinis</i>	0.55**	0.57**	0.21	0.00	-0.12	0.23
<i>Fundulus parvipinnis</i>	0.18	0.15	-0.31*	0.00	-0.06	0.03
<i>Anchoa compressa</i>	0.38*	0.21	0.35*	-0.01	0.05	0.24
<i>Clevelandia ios</i>	0.43**	0.22	0.08	-0.09	-0.16	0.23
<i>Mugil caphalus</i>	-0.62**	-0.29	-0.10	0.11	0.28	0.02
<i>Gillichthys mirabilis</i>	0.25	-0.22	0.44**	0.31*	0.01	0.00
<i>Anchoa delicatissima</i>	0.10	0.08	-0.22	-0.22	0.05	-0.02
<i>Gambusia affinis</i>	0.21	-0.25	0.16	0.58**	-0.07	-0.02
<i>Hypsopsetta guttulata</i>	0.30	0.21	0.43**	0.26	-0.10	0.28
<i>Cymatogaster aggregata</i>	0.14	0.28	-0.01	-0.34*	0.01	0.14
<i>Quietula ycauda</i>	0.46**	0.35*	0.19	-0.16	0.01	0.35*
<i>Hypnus gilberti</i>	0.39*	0.31*	0.23	-0.10	0.11	0.33*
<i>Lepomis macrochirus</i>	-0.29	-0.44*	-0.23	0.10	0.09	0.04
<i>Lepomis cyanellus</i>	0.06	-0.27	-0.29	0.16	-0.20	0.05
<i>Engraulis mordax</i>	0.22	0.16	0.00	0.13	-0.07	0.33*
<i>Leuresthes tenuis</i>	0.16	0.14	-0.09	-0.15	0.10	-0.01
<i>Leptocottus armatus</i>	0.29	0.13	0.38	-0.09	-0.01	0.05
<i>Syngnathus</i> spp.	0.53	0.23	0.35	0.08	-0.07	0.33*
Species totals (by station)						
No. of species	0.42**	0.05	—	—	—	—
No. of individuals	0.48**	0.36*	—	—	—	—
Biomass	0.54**	0.64**	—	—	—	—

\* - significant at 0.05 level.  
 \*\* - significant at 0.01 level.

TABLE 5.—Summary of two canonical correlation runs of individual species abundances against environmental variables.

Axis	R <sup>2</sup>	R	X <sup>2</sup>	df
Run No. 1 (6 environmental, 18 species)				
1	0.93	0.96	212.9*	128
2	0.84	0.92	144.1*	102
3	0.73	0.85	96.3	80
Run No. 2 (temperature, salinity only, 18 species)				
1	0.83	0.91	77.8*	36
2	0.61	0.78	26.5	17

\* significant at 0.01.

and salinity were important in influencing species abundance.

The 18 most common species were ordinated along temperature and salinity axes using simple correlation values ( $r$ ) as an index of relative influence of these two factors (Fig. 11). Thirteen of the 18 species were positioned in the upper right quadrant indicating that they were all positively correlated with temperature and salinity. Three species, *Gambusia affinis*, *Gillichthys mirabilis*, and *Lepomis cyanellus*, located in the upper left quadrant correlated positively

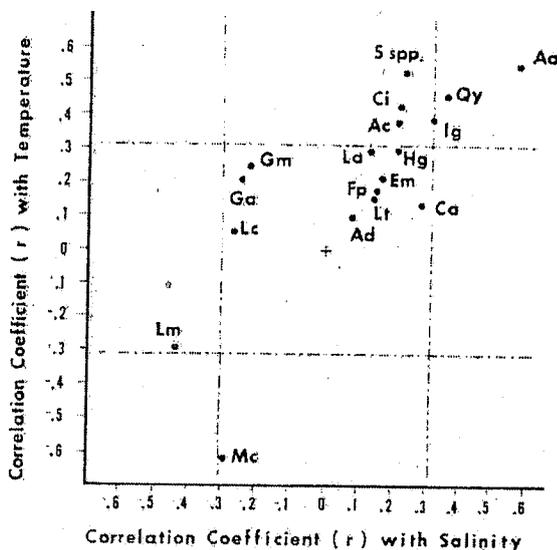


FIGURE 11.—Ordination of 18 common species of the littoral zone of upper Newport Bay on correlation coefficients ( $r$ ) for temperature (y-axis) and salinity (x-axis). Dashed lines indicate 0.05 significance levels. Aa—*Atherinops affinis*, Ac—*Anchoa compressa*, Ad—*Anchoa delicatissima*, Ca—*Cymatogaster aggregata*, Ci—*Clevelandia ios*, Em—*Engraulis mordax*, Fp—*Fundulus parvipinnis*, Ga—*Gambusia affinis*, Gm—*Gillichthys mirabilis*, Hg—*Hyppossetta guttulata*, Ig—*Hyppus gilberti*, La—*Leptocottus armatus*, Lm—*Lepomis macrochirus*, Lt—*Leuresthes tenuis*, Mc—*Mugil cephalus*, Qy—*Quietula ycauda*, S spp.—*Syngnathus* spp.

with temperature, but negatively with salinity. The lower left quadrant includes two species, *Lepomis macrochirus* and *Mugil cephalus*, with negative temperature and salinity influences. No species were positioned in the negative temperature, positive salinity quadrant probably because this situation rarely occurred in the littoral zone in 1978.

## DISCUSSION

### Composition, Diversity, and Seasonal Dynamics

The ichthyofauna of the littoral zone in upper Newport Bay was numerically dominated by a few, low trophic-level species (five species accounted for >98% of all specimens collected), a situation similar to that found in many estuarine fish populations (Allen and Horn 1975). *Atherinops affinis* is an opportunistic feeder and has been characterized as both a herbivore/detritivore (Allen 1980) in upper Newport Bay and a low-level carnivore (Fronk 1969; Quast 1968). The second most abundant fish, *Fundulus parvipinnis*, is a low-level carnivore that feeds on small crustaceans and insects (Allen 1980; Fritz 1975). *Gambusia affinis*, *Clevelandia ios*, and *Anchoa compressa* are, likewise, low-level carnivores, feeding mainly on insects, benthic microinvertebrates, and zooplankton (Allen 1980).

Large individuals of *Mugil cephalus* were not sampled effectively, but probably constituted a significant proportion of biomass within these fish assemblages. Adult *M. cephalus* fed mainly on detritus and pennate diatoms (Allen 1980). This essentially herbivorous diet closely matches that described by Odum (1970) for *M. cephalus*.

The overall  $H'$  diversity values ( $H'$  range 0.42-1.76; overall 0.89) for the littoral zone were comparable to values derived from other studies of bay-estuarine fish faunas and to other studies in Newport Bay. Haedrich and Haedrich (1974) derived values of 0.33-1.03 for Mystic River Estuary, Mass.; Stephens et al. (1974) presented indices of 0.65-2.08 for Los Angeles Harbor, Calif.; Allen and Horn (1975) published values of 0.03-1.11 for Colorado Lagoon, Alamitos Bay, Calif.; and Quinn (1980) calculated values of 0.21-2.59 (overall 1.9) for Serpentine Creek in subtropical Queensland. Using otter trawl data, I calculated  $H'$  values of 0.20-1.96 (overall 0.98) for the upper Newport Bay in 1974-75 (Allen 1976). The concurrent bimonthly portion of this study (Horn

and Allen 1978) showed that the lower channel was relatively wide; these embayments reflected dominance by a few species. The effect of increased salinity was only one or two species. The range 0.23-1.57 for those for number of species reflected the dominance of the 32 reported species. Fish populations at different levels had similar species. The migration of fish from the warmer months to the bay-estuarine nursery grounds.

The general species and abundance patterns in Newport Bay have been described by Richards 1962; and Horn 1975. The estuarine fish populations detected summer between peaks in Newport Bay (Allen 1976).

Studies of salinity variations have shown that is 6 mo out of the year. Fish abundance in winter months, the range-Caiman increases in the range of fish (Allen 1978). This coastal range is narrower range (18.3°-27.9°C). However, the variation in salinity from June to the end of Abiotic

and Allen 1981) obtained a bimonthly range for numbers of 0.48-2.17 (overall 1.05) when the deeper channel areas were also sampled. The relatively wide range of  $H'$  values in all of the above studies reflects the differential utilization of these embayments by fishes on a seasonal basis. At the same time, the low overall diversity reflects dominance both in numbers and biomass by a few species. The seasonal usage has the effect of increasing annual diversity, although only one or two species dominate numerically at any one time. The  $H'$  values for biomass ( $H'_b$ ) range 0.28-1.55; overall 0.84) were fairly close to those for numbers and, again, mainly reflected the dominance of *A. affinis* (~80%). In all, 26 of the 32 reported species had young-of-the-year fishes, making up a significant portion of their populations. Fluctuations in juvenile population levels had a substantial effect on the littoral fish populations. Juvenile recruitment plus the immigration of adult fishes presumably for reproduction or for exploitation of high productivity in warmer months were the principal causes for seasonal changes in the ichthyofauna. These activities reflect the widely recognized function of bay-estuarine environments as spawning and nursery grounds (Haedrich and Hall 1976).

The general pattern of increased number of species and numbers of individuals during the late spring through fall period in upper Newport Bay has been observed in many other studies of temperate bay-estuarine fishes (e.g., Percy and Richards 1962; Dahlberg and Odum 1970; Allen and Horn 1975; Adams 1976a). Several studies of estuarine fish populations have, in addition, detected summer depressions in abundance between peaks in spring and fall in other estuaries (Livingston 1976; Horn 1980) and in lower Newport Bay (Allen 1976).

Studies of subtropical estuarine fish populations have shown a trend in seasonal abundances that is 6 mo out of phase with the above observations. Fish abundances were highest during the winter months (November-March) in the Huizache-Cáimanero Lagoon of Mexico due to increases in members of both demersal and pelagic fishes (Amezuea-Linares 1977; Warburton 1978). This coastal lagoon system is subject to a narrower range of temperatures over the year (18.3°-27.9°C) than most temperate systems. However, the Mexican system undergoes wide variation in salinity, especially during the rainy season from July to October (see section Influence of Abiotic Factors).

## Species Associations

Species groupings were subject to strong seasonal influence and bore a striking resemblance to the classification scheme of Atlantic nearshore fish communities proposed by Tyler (1971). According to Tyler's classification the Atlantic nearshore fish communities can be divided into regular and periodic components. Periodic components can be winter seasonals, summer seasonals, or occasional. The upper Newport Bay fish assemblage had regulars (group I) and periodics (groups II-V). The "anchovy" group (II), the "goby" group (III), and the "*Engraulis-Hypsopsetta*" group (IV) were all summer seasonals. Group V had both winter seasonals in *Mugil cephalus* and *Lepomis macrochirus* and summer seasonals in *Lepomis cyanellus* and *Leuresthes tenuis*. The latter group, however, could best be characterized by the affinity of its components to lower salinities rather than to a particular time of year. The occasional component was represented by the 12 species of group VI which also occurred in the summer. Thus Tyler's classification may have a broader application than he originally proposed, and perhaps holds true for many estuarine ichthyofaunas.

## Species Densities and Productivity

Density estimates for some species of littoral fishes are particularly difficult to obtain. Such species include small, burrow-inhabiting fishes of the family Gobiidae and other small benthic fishes such as killifishes, flatfishes, and sculpins which escape under a seine or through the mesh of various nets. This study attempted to obtain density values for all littoral fishes, especially for the elusive species listed above. By setting up the procedure for choosing the "best estimate" of density from among four different sampling methods, actual densities of the species have been more closely approximated.

If the biomass density of *Atherinops affinis* for the entire study is calculated by dividing its total biomass by the total area of coverage by all four sampling gears, a biomass density of 3.3 g/m<sup>2</sup> (or about 0.83 g DW/m<sup>2</sup>) is obtained. This density value is lower than the estimate of 1.16 g DW/m<sup>2</sup> derived through the best estimate process (Table 6). In this particular case, most densities were mean values of six bag seines which were very effective (99%) at capturing *A. affinis* (Horn and Allen footnote 2). Biomass density for the gobiid,

TABLE 6.—Grand mean estimate of biomass density (g DW/m<sup>2</sup>) for common species in the littoral zone (excluding panne) over the 13-mo period (January 1978-January 1979) from the best estimate criteria.

Species	$\bar{X}$ g DW/m <sup>2</sup> ± 1 SE
<i>Atherinops affinis</i> (adult)	0.1043 ± 0.0602
<i>A. affinis</i>	1.1590 ± 0.2573
<i>Fundulus parvipinnis</i>	0.1064 ± 0.0223
<i>Gambusia affinis</i>	0.0015 ± 0.0028
<i>Clevelandia ios</i>	0.0261 ± 0.0117
<i>Anchoa compressa</i>	0.1195 ± 0.0493
<i>Cyprinogaster aggregata</i>	0.0167 ± 0.0158
<i>Gillichthys mirabilis</i>	0.0131 ± 0.0035
<i>Anchoa delicatissima</i>	0.0077 ± 0.0053
<i>Mugil cephalus</i>	0.0024 ± 0.0018
<i>Quietula ycauda</i>	0.0029 ± 0.0025
<i>Ilypnus gilberti</i>	0.0021 ± 0.0021
<i>Hypsopssetta guttulata</i>	0.0043 ± 0.0036
<i>Engraulis mordax</i>	0.0019 ± 0.0018
<i>Lepomis macrochirus</i>	0.0005 ± 0.0005
<i>Lepomis cyanellus</i>	0.0003 ± 0.0001
	1.5688 g DW/m <sup>2</sup>

*Clevelandia ios*, determined by total area coverage, was 0.013 g/m<sup>2</sup> (about 0.003 g DW/m<sup>2</sup>). The value based on best estimate (using square enclosures and small seine estimates) was about 10 times higher at 0.03 g DW/m<sup>2</sup>. This large discrepancy is due to the low efficiency of the bag seine for capturing this species. Since the bag seine covered the largest area of any of the sampling gears (220 m<sup>2</sup>), its addition to the density determination for *C. ios* led to the large underestimate. The total biomass density of all species by total area was 4.13 g/m<sup>2</sup> (or about 1.02 g DW/m<sup>2</sup>) which again was lower than the best estimate grand mean density of 1.57 g DW/m<sup>2</sup>.

Average standing stock for the upper bay species during 1978 was 784 kg DW, based on an estimate of 50 ha of habitable littoral zone in upper Newport Bay. This is equivalent to 3,136 kg (wet weight) or 6,899 lb of fish. By the same procedure, the average standing stock of *A. affinis* was 631.6 kg DW and that of *C. ios*, 13.1 kg DW.

The annual production of 9.35 g DW/m<sup>2</sup> for the upper Newport Bay littoral zone in 1978 ranked among the highest values recorded for studies with comparable production determinations of production models (Table 7).

The Newport Bay production estimate in 1978 was surpassed only by the estimate for *Fundulus heteroclitus* (Meredith and Lotrich 1979), an estuarine species of the east coast of the United States. *Fundulus heteroclitus* represented a very efficient energy link between the marsh and the littoral zone in their study. However, as Meredith and Lotrich pointed out, the production value may be an overestimation due to the under-

estimation of the area of marsh utilized by the fish. The value 4.6 g DW/m<sup>2</sup> obtained by Adams (1976b) for fishes inhabiting east coast eelgrass beds, which are acknowledged as highly productive areas, is half the estimate for the littoral zone of upper Newport Bay.

Short food chains have been implicated as the primary reason for high production in estuarine fish communities (Adams 1976b), a contention which is supported by the findings of this study. Young-of-the-year *Atherinops affinis* accounted for 85% of the annual production and formed a direct link through their herbivorous/detritivorous diet to the high primary productivity of this estuarine system. The remaining, numerically important species of the littoral zone were low-level carnivores. There is little doubt that this assemblage represents an example of "food chain telescoping" as described by Odum (1970).

Even though the fish production in the littoral zone of upper Newport Bay was high compared with most comparable studies, the value presented here is undoubtedly an underestimate. The largest species of the system, adult *Mugil cephalus*, was not represented in the production estimates due to inadequate sampling. Inclusion of this species would have substantially increased the production value. It is unlikely, however, that productivity of adult *M. cephalus* could approach that of juvenile *Atherinops affinis* which were responsible for 85% of the annual fish production.

### Influence of Abiotic Factors

The positive correlations between temperature and total abundance, biomass and number of species, and between salinity and total abundance and biomass indicate the general impor-

TABLE 7.—Comparison of annual fish production (P) for marine or estuarine studies with comparable production determinations. Wet weights were converted by multiplying by 0.25. Values are for all species except where noted.

Locate and habitat	Study	Estimated annual P (g DW/m <sup>2</sup> )
Delaware salt marsh creek ( <i>Fundulus heteroclitus</i> )	Meredith and Lotrich (1979)	10.2
Newport Bay littoral zone	present study	9.4
Mexican coastal lagoon	Warburton (1979)	8.6
Cuban freshwater lagoons	Holcik (1970)	6.2
No. Carolina eelgrass beds	Adams (1976b)	4.6
Bermuda Coral Reel	Bardach (1959)	4.3
Texas lagoon (Laguna Madre)	Hellier (1962)	3.8
English Channel pelagic and demersal fishes	Harvey (1951)	1.0
Georges Bank commercial fishes	Clarke (1946)	0.4

tance of these individual correlations. Species abundance and temperature of the upper Newport Bay are related to the temperature of the upper Newport Bay.

Intercorrelations of the interpretability of the relationship between temperature and biomass during the summer months in the Mediterranean was responsible for the temperature of the upper Newport Bay. This relationship, as evidenced during 1978 when temperature and salinity were correlated.

The results of the analysis indicate that the correlation between temperature and salinity in species abundance probably inflated and not negate the overall species temperature and salinity of these factors. Furthermore, the salinity of *A. affinis* at station decrease at station (low salinity) also illustrate the action.

I propose that the temperature-salinity present study is therefore, energy adjacent channel areas via migration for energy transport apparent emigration class *A. affinis* September to December included the biomass of the periodic reached a similar

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	Estimated annual P (g DW/m <sup>2</sup> )
Littorich	10.2
	9.4
979)	8.6
	6.2
b)	4.6
9)	4.3
	3.8
	1.0
	0.4

tance of these factors to this assemblage. Individual correlations between abiotic factors and species abundances likewise emphasized the importance of temperature and salinity. The correlations between individual species abundances and dissolved oxygen as well as distance into the upper Newport Bay could be due to the intercorrelations of both dissolved oxygen and distance with temperature.

Intercorrelations among factors can confound the interpretation of relationships and introduce redundancy in multivariate analyses. The relationship between dissolved oxygen and distance into the upper Newport Bay is intuitive considering its shallow depths. The positive relationship between temperature and dissolved oxygen was probably due to photosynthesis by green algae during the summer. Winter rainfall in the basically Mediterranean climate of southern California was responsible for the positive correlation between temperature and salinity found in Newport Bay. This relationship is by no means absolute, as evidenced by the low salinities encountered during the tropical rains of September 1978 when temperatures were high.

The results of the second canonical correlation analysis indicate that interaction between temperature and salinity explained most of the variability in species abundance in this system. The correlation between these two abiotic factors probably inflated the  $R^2$  value slightly, but does not negate the overall findings. Ordination of individual species by correlation coefficients with temperature and salinity underscores the influences of these factors on individual species. Furthermore, the substantial decrease in numbers of *A. affinis* at station 1 and the somewhat smaller decrease at station 3 during September rains (low salinity) and relatively high temperatures also illustrate this temperature-salinity interaction.

I propose that an important consequence of temperature-salinity influence found in the present study is the transfer of biomass and, therefore, energy from the littoral zone to the adjacent channel and ultimately to local offshore areas via migration of fishes. This mechanism for energy transfer was best illustrated by the apparent emigration of a large portion of the 0-age class *A. affinis* from the littoral zone from September to December 1978. The transfer also included the biomass produced by essentially all of the periodic species. Weinstein et al. (1980) reached a similar conclusion in their study of the

fishes in shallow marsh habitat of a North Carolina estuary. An extensive mark and recapture study should be planned to test this hypothesis in the future.

Seasonal fluctuations of temperate bay-estuarine fish populations may have several causes, but temperature and salinity seem frequently to be the underlying factors. The pattern of increased number of species and individuals with increased temperature in temperate bays and estuaries has been reviewed by Allen and Horn (1975). Recently the large-scale influence of salinity on bay-estuarine fish populations has been demonstrated by Weinstein et al. (1980) for Cape Fear River Estuary, N.C. Unfortunately, any salinity interaction with temperature was not investigated or discussed in the above study.

Studies of subtropical estuaries (Amezcu-Linares 1977; Warburton 1978; Quinn 1980) indicate that salinity may have greater influence on fish populations, since annual temperature ranges are narrower than in temperate bays and estuaries. In each of the above studies on subtropical estuaries, increased abundances corresponded to the season of low rainfall and therefore high salinity. Blaber and Blaber (1981) concluded that turbidity and not temperature and salinity was the single most important factor to the distribution of juvenile fishes in subtropical Moreton Bay, Queensland. However, Blaber and Blaber (1981) did not present statistical evidence to support this contention. The most important environmental factors influencing tropical estuarine (eelgrass) ichthyofaunas are more difficult to identify (Weinstein and Heck 1979; Robertson 1980) and probably include biotic factors such as prey availability, competitors, predators, as well as abiotic factors. Biotic interactions are undoubtedly important in temperate estuarine systems including upper Newport Bay. However, their overall influence on the system is probably swamped by large fluctuations in the physical environment.

Fluctuations in rainfall and temperature regimes during a year and from year to year can have marked effects on the ichthyofauna of estuaries. Moore (1978) has identified long-term (1966-73) fluctuations in summer fish populations in Aransas Bay, Tex. He found that diversity values ( $H'$  range of 1.38-2.13) were quite variable from year to year probably as a result of major climatological changes (an unusually wet year; a drought and two hurricanes). These changes in diversity values were probably caused

by changes in abundance within a set of resident estuarine species and of periodic species.

In 1978 the ichthyofauna of upper Newport Bay was subjected to rainfall twice that of a "normal" year (70.9 cm for 1978; mean 28.1 cm). The specific effects of this increased precipitation are difficult to assess due to a lack of data from previous years but some guarded comparisons can be made. Population densities of *Atherinops affinis* were lower in 1974-75 than those encountered during 1978 (Allen 1976). Also *Cymatogaster aggregata*, *Clevelandia ios*, and *Leptocottus armatus* occurred in lower numbers in 1978 than in previous years (Horn and Allen 1981). These discrepancies point out the strong year-to-year fluctuations that occur in the fish populations of upper Newport Bay. This conclusion is in complete agreement with the findings of Moore (1978) and sheds doubt on the possibility of completely characterizing a "normal" year in many estuaries because of unpredictable annual variations in climate.

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Regular pattern underlying mechanism, basis for broad distribution, and consequences for fishery. Cyclic fluctuations in California Dungeness crab research for the cyclic fluctuation in salmon catch (F. different phase). Coastwide fluctuations in catch were originally caused (Anon demonstrated a coastal upwelling). Wickham (1975) appropriate correlations that, while upwelling was correlated with a lag of 1 or 2 yr, hence was not the cause and Wickham (1975) density-dependent mortality of the observed results that indicate decrease in population.

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Poseidon's Responses to April 4, 2008 Technical Report  
Submitted by Regional Board's Central Watershed Unit to Executive Officer John H. Robertus

Central Watershed Unit Concerns	Responses
1. The proposed plan does not describe a process for agency approval of the calculations and variables used to assess impacts from impingement and entrainment.	By approving the MLMP, the Coastal Commission has already approved the calculations and variables used to assess impacts from impingement and entrainment. Now that the MLMP is before the Regional Board, the Board has the same opportunity to approve the Plan's entrainment and impingement assessment.
2. The proposed mitigation process does not clearly identify the method for the final selection and agency concurrence of the preferred mitigation alternative.	The MLMP clearly identifies the methods by which the mitigation site(s) will be selected, subject to agency approval. Poseidon must choose up to two sites from among eleven designated sites in the southern California Bight. Poseidon's selection(s) must meet the minimum standards (set forth in § 3.1) and best meet the objectives (set forth in § 3.2). The MLMP also retains agency authority to approve the proposed restoration plan for the mitigation sites.
3. There is insufficient sampling data to accurately determine the impacts of impingement and entrainment.	<p>Section IV of the Comment Letter explains that Poseidon's impingement and entrainment sampling data are technically sound for the following reasons:</p> <ul style="list-style-type: none"> <li>a. The sampling data come from a study that was conducted by Tenera Consultants ("Tenera") for the Encina Power Station (EPS) pursuant to EPA's 316(b) regulations. Tenera's collected samples for EPS's "Impingement Mortality and Entrainment Characterization" ("IM&amp;E") Study in conformity with criteria that were set forth in the "Study Plan" that the Regional Board reviewed and approved in 2004 (see Comment § IV.2). All of the data generated pursuant to this Board-approved Study and which form the basis for the impingement and entrainment analyses are in the Regional Board's possession. <i>See, e.g.,</i> "Minimization Plan" Attachments 2-5 and "Clean Water Act Section 316(b) Impingement Mortality and Entrainment Characterization Study- Effects on the Biological Resources of Agua Hedionda Lagoon and the Nearshore Ocean Environment (January 2008)"</li> <li>b. Pursuant to Condition 8 of Poseidon's Coastal Development Permit, Poseidon submitted the Encina data to the Coastal Commission where it was again reviewed and endorsed through a peer review processed by Dr. Pete Raimondi, recognized by the Commission as California's leading expert on entrainment analysis.</li> <li>c. All of the data upon which Dr. Raimondi relied to conclude that Tenera conducted the study "very well" is before the Regional Board as part of this administrative record.</li> <li>d. The relatively heavy rains of 2004-2005 did not skew the sampling data. <ul style="list-style-type: none"> <li>➤ As Dr. Scott Jenkins explained at the Regional Board's April 9, 2008 meeting on Poseidon's Minimization Plan, the heaviest rains in 2005 only slightly depressed salinity levels from 33.52 ppt under dry conditions to at most 30.75 ppt during peak storm runoff (lasting for a period of 2.6 days) (<i>see</i> Dr. Jenkins' Declaration).</li> <li>➤ Such a slight depression in the lagoon's salinity levels during peak storm runoff</li> </ul> </li> </ul>

Central Watershed Unit Concerns	Responses
	<p>would not materially affect the marine species mix over the period of the data collection effort. Therefore, the E&amp;I study did not under-represent the number or density of marine organisms in the lagoon, nor did it underestimate the extent of CDP's potential impacts (<i>see</i> Dr. Mayer Declaration § V.F.1).</p> <p>e. The calculational methodologies and conclusions used to estimate proportional mortality (Pm) and Area of Production Foregone (APF) are insensitive to annual variations in larval fish populations.</p>
<p>4. The proposed process seems to favor a pre-determined outcome (i.e. mitigation in San Dieguito Lagoon). Other mitigation alternatives (e.g. kelp bed enhancement and artificial reef construction) should be considered and evaluated equally as viable mitigation possibilities.</p>	<p>As part of the interagency process, many potential mitigation alternatives and sites were examined, resulting in the identification of 11 pre-approved sites in the MLMP. Regional Board staff urged Poseidon to consider multiple sites and Poseidon has acted upon this recommendation (<i>see</i> Comment § VII.5). The MLMP does not identify any single pre-determined mitigation site, but rather a slate of sites, selection from among which requires agency approval.</p>

Responses to Regional Board's February 19, 2008 Letter Regarding  
Poseidon's Flow, Entrainment & Impingement Minimization Plan Draft #2 (submitted June 29, 2007)

Board's 02/19/08 Criticisms of Plan Draft #2	Response
<p>1. The Plan does not yet integrate all the elements of the statutory requirements of California Water Code (CWC) Section 13142. The proposed project only includes "mitigation", while the statute CWC Section 13142.5(b) also requires that dischargers implement best available technology and mitigation measures. The Plan does not appear to include technology measures for the intake structure to reduce impingement and entrainment (I&amp;E).</p>	<p>Water Code Section 13142.5(b) requires industrial facilities using seawater for processing to use the best available site, design, technology, and mitigation feasible to minimize impacts to marine life. The Minimization Plan was revised and resubmitted March 7, 2008. The revisions include individual chapters, addressing each component – site (Chp 2), design (Chp 3), technology (Chp 4), and mitigation individually (Chp 6). The Minimization Plan was approved in this form April 9, 2008, conditioned upon Poseidon's submittal of a mitigation plan, which takes the form of the MLMP. Therefore, all of these items have been addressed.</p>
<p>2. The Plan provides an evaluation of impacts based upon one year of data, 2004-05 with record rainfall, but does not explicitly evaluate the on-going impacts from Poseidon's operations.</p>	<p>The heaviest rains in 2005 only slightly depressed salinity levels from 33.52 ppt under dry conditions to at most 30.75 ppt during peak storm runoff (lasting for a period of 2.6 days) (<i>see</i> Jenkins's Declaration). Such a slight depression in the lagoon's salinity levels during peak storm runoff would not materially affect the marine species mix over the period of the data collection effort (<i>see</i> Dr. Mayer's Declaration). Therefore, the E&amp;I study did not under-represent the number or density of marine organisms in the lagoon, nor did it underestimate the extent of CDP's potential impacts.</p>
<p>3. The Carlsbad desalination project's (CDP) listing of impacts appears to omit specific impacts to target invertebrates.</p>	<p>In "EPS's Proposal for Information Gathering" (Attachment 2 to the revised Minimization Plan), Tenera Environmental ("Tenera") notes that Rock crab megalopal larvae (Cancer spp) and California spiny lobster phyllosoma larvae (Panulirus interruptus) are "target invertebrates."</p> <p>The requested information has been included in Attachments 2 and 5 of the revised Plan. Impingement results with respect to these and other invertebrates are included in Attachment 2 to the revised Minimization Plan (submitted to the Regional Board March 7, 2008 and conditionally approved April 9, 2008). Entrainment results are included in Attachment 5.</p>
<p>4. The proposed mitigation project does not appear to account for all pertinent impacts resulting from impingement of invertebrates, entrainment of invertebrates, discharges of brine, etc.</p>	<p>By requiring the mitigation of up to 55.4 acres, the MLMP actually over-accounts for all pertinent impingement and entrainment impacts.</p> <ul style="list-style-type: none"> <li>➤ As described in Poseidon's Comment § V, the Project's impingement impacts will be de minimis and even further reduced by technology (e.g., variable frequency drives).</li> <li>➤ As described in Comment § VI, the Empirical Transport Model (ETM results in the MLMP are based on a number of conservative assumptions.</li> </ul>

<p>5. The CHREP did not identify and evaluate the possible mitigation projects located within the same watershed, prior to proposing the out of watershed mitigation in San Dieguito Lagoon. The best mitigation for impacting the lagoon would be to replace lost functions by restoring current upland acreage to the historic wetland condition, or by creating new wetlands where there were none historically.</p>	<p>During the interagency process, the Executive Officer indicated that Agua Hedionda Lagoon is not a preferred mitigation site. The MLMP, however, includes Agua Hedionda Lagoon among the list of 11 pre-approved sites.</p>
<p>6. The proposed <u>mitigation ratio</u> of 1.1:1.0 isn't fully supported. The Plan should be revised to include an evaluation of other mitigation options that may be available within the watershed. The proposed mitigation ratio appears inadequate in light of several factors generally considered by the Regional Board:</p>	<p>Experts in the field of entrainment analysis customarily apply a 50% confidence level APF and then apply no mitigation ratio (Dr. Mayer's Declaration, § 5.E). However, when he reviewed Tenera's ETM Calculations for the California Coastal Commission, Dr. Raimondi applied an 80% confidence level APF as the basis for mitigation. This approach represents a significant departure from the way that entrainment studies have been conducted in the past and is much more conservative than the customary/traditional method. Since the MLMP is based on Dr. Raimondi's conservative entrainment analysis, it imposes a mitigation requirement of up to 55.4 acres, which will that impingement and entrainment have been fully offset. Mitigation success is further assured by the MLMP's stringent performance criteria.</p>
<p>a. The proposed mitigation project is located within a different watershed (the San Dieguito Lagoon) instead of the Agua Hedionda Lagoon. A higher ratio may be appropriate for this project because the referenced mitigation project is out-of-kind (i.e., discharger is not actually replacing the lost resources and functions).</p>	<p>The mitigation site(s) have not yet been selected. The basis for selection of the mitigation site(s) is prescribed in the MLMP in detail (Section 3). Among the minimum standards set forth in Section 3.1, the MLMP provides that the mitigation project must restore habitat "similar to the affected habitats in Agua Hedionda Lagoon." This means that Poseidon will restore tidally-influenced salt marsh or shallow water areas—areas that produce or support the affected entrained organisms.</p> <p>Therefore, whether or not the project is ultimately located within the same watershed (which, indeed, it may be given that Agua Hedionda Lagoon is one of eleven sites identified in MLMP § 2), Poseidon's mitigation efforts will actually replace the same types of organisms impacted by CDP's operations.</p>
<p>b. It is not clear that the proposed one-time mitigation is adequate to compensate for the long-term ongoing impacts to beneficial uses, resources, and functions present in Agua Hedionda Lagoon.</p>	<p>One-time mitigation is no longer being proposed. Poseidon is committed to implementing the terms of the MLMP. As set forth in the MLMP § 5.0, Poseidon's restoration plan will be a long-term project in which Poseidon will conduct "[m]onitoring, management (including maintenance), and remediation...over the 'full operating life' of Poseidon's desalination facility...[for] 30 years from the date 'as built' plans are submitted...." Poseidon's efforts will be enforced by agency review.</p>
<p>c. The mitigation project is for restoration of coastal wetland habitat, rather than the lagoon habitat impacted by the</p>	<p>As noted in response to Question 6(a) above, Poseidon's mitigation project will restore habitat "similar to the affected habitats in Agua Hedionda</p>

<p>operation of the CDP.</p>	<p>Lagoon.” (MLMP § 3.1) In so doing, the project will provide measurable long term environmental benefits adequate to fully mitigate unavoidable impingement and entrainment impacts associated with CDP operations.</p> <p>Regardless of whether the project is ultimately located within the same watershed (which, indeed, it may be given that Agua Hedionda Lagoon is one of eleven sites identified in MLMP § 2), Poseidon’s mitigation efforts will replace the same organisms impacted by CDP’s operations.</p>
<p>7. Poseidon might benefit from convening a joint meeting with the resources agencies (including California Dept Fish and Game, US Fish and Wildlife Service, Army Corps of Engineers, National Marine Fisheries) to discuss the impacts to beneficial uses, resources, and functions by the proposed project, and on the preferred mitigation project so they can discuss agency concerns/comments.</p>	<p>As described in Comment § II.E, in developing the MLMP, Poseidon acted upon the recommendations of Regional Board staff and convened a joint meeting with a number of resource agencies. Of the thirteen state and federal agencies that Poseidon invited to attend its interagency working group meeting on May 1, 2008, a number of agencies ended up participating, including the Regional Board, California Department of Fish and Game, California Department of Transportation, California State Lands Commission, City of Carlsbad, City of Vista, and U.S. Fish and Wildlife Service. In addition, agency comments and concerns were specifically requested on the draft MLMP. As a result, the MLMP represents a consensus effort among several agencies.</p>
<p>8. The assessment should address the seasonal and/or daily variations in <u>impingement</u> impacts.</p>	<p>CDP’s impingement impacts will be <i>de minimis</i> and even further reduced by technology (see Comment § V). Nevertheless, to the extent that the Board staff wants to assess seasonal variations in these <i>de minimis</i> impacts, Poseidon has made these data available. When Poseidon submitted its revised Minimization Plan to the Regional Board in March 2008 for the Board’s April 9th approval, Poseidon included Attachment 2—a report that lists weekly impingement totals from the 2004-2005 Tenera study.</p>
<p>9. The assessment needs to include results of an <u>impingement</u> study for <u>target invertebrates</u>. Table 3.2 includes only results for fish during 2004-05.</p>	<p>In “EPS’s Proposal for Information Gathering,” Tenera notes that Rock crab megalopal larvae (Cancer spp) and California spiny lobster phyllosoma larvae (Panulirus interruptus) are “target invertebrates.” Impingement results with respect to these and other invertebrates are included in Attachment 2 to the revised Minimization Plan (submitted to the Regional Board March 7, 2008 and conditionally approved April 9, 2008).</p>
<p>10. The assessment states that: “The total amount of <u>impinged organisms</u> for the individual sampling events is presented in Table 3-2” (p.19). The Plan, however, does not clearly identify individual sampling events. The interpretation of the results is hampered by the absence of a presentation of results for impinged organisms (including invertebrates) with dates, times, and flow rates of sampling events.</p>	<p>Attachment 2 to the revised Minimization Plan includes the requested information. This Plan was submitted to the Regional Board March 7, 2008 and conditionally approved April 9, 2008.</p>
<p>11. The assessment states that, “The daily biomass of <u>impinged</u></p>	<p>In response to Staff’s request, Poseidon has revised the estimate of its daily</p>

<p>fish during normal operations is 0.96 kgs/day (1.92 lbs/day) for an intake flow of 304 MGD" (p.19). The text discussion should clarify how this figure is determined and how the total impingement results were adjusted to an intake flow of 304 MGD. Also, there is a conversion discrepancy since 0.96 kgs converts to 2.12 lbs, not 1.92 lbs as indicated in the Plan.</p>	<p>impingement impacts. Poseidon's revised impingement assessment is based on the analysis of the most recent data that Tenera Consultants collected at the Encina intake facilities during the period June 1, 2004 to May 31, 2005. Although Tenera initially collected the data for Encina, Tenera has been able to use these data to project the impingement impacts that will be associated with the Project's standalone operations.</p> <p>To isolate the impingement impacts associated with the Project's stand-alone intake operations, Tenera conducted a regression analysis that factored in Encina's historical flow rates and impingement effects (see Comment § V). Whereas Encina's average intake flow during the 2004/2005 sampling period was 632.6 MGD, the Project's maximum intake flow will be only 304 MGD. Because the Project's flow volumes will be less than Encina's, its impingement impacts are also proportionally less than the Project's projected impacts.</p> <p>Using the statistically significant relationship between the impingement effects and flows measured under normal power plant operations that occurred during the June 2004 to June 2005 impingement survey, Tenera concluded that the Project's stand-alone operations will result in an average daily impingement effect of 1.56 kg (3.45 lbs), not 0.96 kg as previously estimated. This amount is nevertheless <i>de minimis</i>, and will be further reduced by technological measures.</p>
<p>12. The assessment of impacts from entrainment assessment appears to include larval fish but does not clearly include impacts to fish eggs and invertebrates.</p> <p>It is the understanding of the Regional Board that the 2004-05 study was to include monitoring of (at least) entrained Cancer crab megalops and lobster larvae, but the assessment does not appear to include these data.</p> <p>Also, it is unclear that <u>sampling</u> followed a protocol approved by the Regional Board as stated (p.22).</p>	<p>The study was conducted according to sampling protocol reviewed and approved by the Regional Board. Prior to approving the study plan, the Board engaged an outside, independent consultant Tetra Tech under contract and funded by the EPA, to review and Comment on the plan. The Board's consultant suggested a number of changes that were accepted and incorporated in the final Board-approved study plan and protocol. The approved protocol, including sampling and sample processing methods and techniques of data analysis and modeling to assess intake effects were followed as described in the final protocol. A copy of the final protocol has been included as Attachment 3 of the revised Minimization Plan. The final results of EPS's 316(b) study were published in January 2008.</p>
<p>13. The Plan does not clearly identify the supporting data or an explanation of underlying assumptions and calculations that were used to estimate proportional mortality values for larval fish as presented (p.23) in the Plan. Therefore, the Regional Board could not objectively evaluate the validity of the estimated proportional entrainment mortality (12.2%)</p>	<p>Section 5.3 of the revised Minimization Plan ("Methodology for Assessment of Entrainment Impact") clearly identifies the supporting data. These data are provided in Attachments 3-5 of the Minimization Plan, and explain the underlying assumptions and calculations that were used to estimate proportional mortality values for larval fish. The mitigation requirements set forth in the MLMP are based on these data.</p>

presented in the Plan.	
<p>14. Impacts are based upon the few most commonly entrained (most abundant) species. It is unclear how much more severe impacts may be when populations are small.</p>	<p>The entrainment model can be applied to any species that is collected in entrainment samples—whether it is abundant or rarely collected. However, since the level of confidence and ability to reach any meaningful conclusion about entrainment effects on the species' population diminishes with the number of specimens in a sample, Poseidon's decision to use abundant species is based on statistical principles.</p> <p>The abundances (densities) of all of the larval fish species collected in Tenera's entrainment surveys are included in the entrainment study reports. Nevertheless, Tenera only analyzes entrainment effects on species that yield meaningful results (i.e., the most commonly entrained species). As an expert in this field, Dr. Mayer has used this approach in entrainment study analyses with ETM modeling, as well as in fecundity hindcast (FH) and adult equivalent loss model analyses (see Comment § VI.2).</p>
<p>15. The Regional Board has the following comments regarding the estimated number of lagoon acres impacted, as presented in the plan since:</p>	
<p>a. The estimate of the number of lagoon acres used by the three most commonly entrained species is based on a 2000 Coastal Conservancy Inventory (Table 4-2, p.23). It is unclear if this document is accurate or appropriate for the purpose of determining such an important component of the area of habitat production forgone (APF). The reference document (Attachment 4, Table 2), includes the footnote caveat "... This information is not suitable for any regulatory purpose and should not be the basis for any determination relating to impact assessment or mitigation." An accurate delineation of lagoon habitats should be used for this critical component of the APF.</p>	<p>The APF was calculated using standard protocol and was independently verified by Dr. Raimondi and the Coastal Commission's Scientific Advisory Panel.</p>
<p>b. The estimate of the number of lagoon acres used by the three most commonly entrained species appears to exclude salt marsh and brackish/freshwater acreage (p.23). Excluding these intertidal habitats may result in the analysis underestimating this component of the APF.</p>	<p>The areas of Agua Hedionda Lagoon that have the potential to be impacted by the CDP operations are those habitats occupied by the three most commonly entrained lagoon fish larvae (98% of the fish larvae that would be entrained by the CDP stand-alone operations are globies, blennies and hypsopops). These habitats include 49 acres of mudflat/tidal channel and 253 acres of open water.</p> <p>Experts in the field of entrainment analysis agree that it is not appropriate to include other lagoon habitats in the APF calculation (e.g., brackish/freshwater, riparian, salt marsh or upland habitats) that are not</p>

	<p>occupied by the impacted species (see Dr. Mayer's Declaration, § VI.3). Note that Dr. Raimondi and the Coastal Commission independently endorsed the decision to limit the source water body value to the 302 areas consisting of the most commonly entrained species.</p>
<p>c. The calculation of the APF (p.23) appears to use values for mortality and lagoon acreage that are not fully supported.</p>	<p>In Section 5.3 of the revised Minimization Plan, Poseidon provided a detailed analysis of APF and mortality values. The data that were used in calculating these values were made available in Attachments 3-5 to the Plan.</p> <p>Upon reviewing Tenera's entrainment analysis for the California Coastal Commission, Dr. Raimondi proposed two significant modifications (i.e., accounting for ocean species, using an 80% confidence level) that, when layered upon the many conservative assumptions already underlying the analysis, ensure that the Project's entrainment impacts will be fully mitigated.</p>
<p>d. The text should be revised to include a clear explanation of how the estimated lagoon acreage for commonly entrained species was adjusted to include only impacts associated with operations of CDP, rather than impacts from operation of the Encina Power Station.</p>	<p>The process of translating the entrainment data also was relatively simple because entrainment impacts are directly proportional to flow through the intake. Tenera simply divided CDP's projected flow rate (i.e., 304 MGD) by CDP's average flow rate over the sampling period to calculate a proportional flow rate.</p> <p>For instance, if EPS's average flow rate over a given time period was 608 MGD, then CDP's proportional flow rate for that period would have been 50% (304/608). Tenera would then multiply CDP's proportional flow rate (50% in this example) by EPS's entrainment impact over that time period. So, for example, if Tenera had estimated that EPS had entrained 1000 organisms during the time period, then Tenera would have applied the 50% value to determine that CDP's operations would have entrained 500 organisms (see Dr. Mayer's Declaration, § V.C.2).</p>
<p>16. The evaluation concludes that the small fraction of marine organisms lost to entrainment would have "no effect on the species' ability to sustain their population" and goes on to describe the natural rates of high mortality (p. 24). But the argument that there are "excess" larvae appears to omit an important consideration. Besides contributing to marine food webs, the naturally high production of larvae serves as a buffer against catastrophic and cumulative impacts to populations. These are important 'ecological services' that must not be taken lightly or given away without adequate mitigation.</p>	<p>Comment noted. This language was removed from the revised Minimization Plan and not included in the MLMP. The MLMP provides for the mitigation of all entrainment effects.</p>
<p>17. The Regional Board prefers that the evaluation of the impact be presented as a rate (loss of x-amount of organisms per year,</p>	<p>Whereas an early version (#2) of the Minimization Plan established a scenario by which Poseidon would make certain fixed annual monetary</p>

<p>or impact/year). The proposed mitigation is a fixed amount (\$3 to \$4 million). It seems unlikely that a fixed amount would adequately compensate for a loss that is a rate over multiple, future years. It appears more likely that a proposed fixed amount really only accounts for mitigation for just one year of operation. The Regional Board may find a fixed amount to be acceptable, provided that:</p>	<p>contributions to fund restoration projects in the Project's vicinity, the revised Minimization Plan and the MLMP have abandoned this concept. Therefore, the following two questions are now moot.</p>
<p>a. The average annual impact could be reasonably determined and reasonably translated into a dollar amount, and that amount (or correct share) is paid every year of operation - but that is not what is proposed in the Plan or the CHREP.</p>	<p>This issue is moot now that Poseidon has abandoned its contribution plan.</p>
<p>b. A fixed amount might also be reasonable if the CDP mitigates its share by increasing lagoon acreage via restoration or creation. Such in-kind mitigation would (if functional) replace the productivity lost to the operation of the COP, and the impact would be fully mitigated.</p>	<p>This issue is moot now that Poseidon has abandoned its contribution plan.</p>

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### VIA MESSENGER AND ELECTRONIC MAIL

February 2, 2009

California Regional Water Quality Control Board,  
San Diego Region  
Attn: John H. Robertus  
Executive Officer  
9174 Sky Park Court  
San Diego, California

Re: Offer of Proof in Support of Request for Alternate Procedures at February 11, 2009 Regional Water Quality Control Board Hearing – Agenda Item No. 6

#### I. OPENING STATEMENT

Poseidon Resources Corporation (“Poseidon”) respectfully requests that the Regional Water Quality Control Board, San Diego Region, (“Regional Board”) restructure the proposed procedures for the February 11, 2009 hearing, as set forth in Board Meeting Agenda Notice, Note C and Catherine Hagan’s letter to Poseidon dated January 29, 2009, to ensure the protection of Poseidon’s due process rights, and to enable the Board members to make a fully informed, and impartial decision on the merits. The decision before the Regional Board affects the substantive rights of Poseidon and subjects Poseidon to material risk regarding the agency’s proposed findings of fact and conclusions of law. In the balance is the financing and timely construction of a \$300 million ocean water desalination plant that, once operational in late 2011 or early 2012, will produce enough potable water to serve the needs of approximately 300,000 San Diego residents. Staff’s adverse staff report and unwarranted reluctance to accept the same science and technical approaches that other California permitting authorities already have approved threaten to undermine this important project.

Poseidon is entitled to a full and fair opportunity to prepare and present its case, exercising the rights to offer its own witnesses and cross-examine Regional Board staff personnel who have been involved with Poseidon’s Flow, Entrainment and Impingement Minimization Plan (the “Minimization Plan”) and the proposed amendment to it called the Marine Life Mitigation Plan (the “Mitigation Plan”). Staff has been provided with all information needed to recommend that the Board approve these plans. But, the truncated, informal approach for the hearing recommended by staff is woefully inadequate for the Board to

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be apprised of the robust nature of the record before it, and the fact that all legitimate issues raised by staff have been answered fully. It will violate Poseidon's due process rights to conduct the hearing as staff propose; the Regional Board must modify the proceedings pursuant to this request.

## II. DISCUSSION

### A. The Time Allocated is Not Adequate

Ms. Hagan's January 29, 2009 letter states: "I anticipate recommending to the Chair that San Diego Water Board staff and Poseidon each be allotted 30 minutes for their respective presentations." She goes on to state that "given the limited and preliminary nature of the issue that will be before the San Diego Water Board on February 11, I believe that this more streamlined hearing approach comports with due process." Accordingly, under this recommendation, Poseidon might be limited to only 30 minutes to present its entire case at the hearing. For the following reasons, Poseidon objects to Ms. Hagan's recommendation and requests the Regional Board provide Poseidon with sufficient time to present its case:

#### 1. It Will Take Time to Resolve the Fundamental Dispute between Poseidon and the Regional Board Staff Regarding the Adequacy of the MLMP

The issues before the Regional Board are complex and lengthy, and there is strong disagreement between Poseidon and the Regional Board staff as to the adequacy of Poseidon's plans. The Regional Board's decision has the potential to substantially and adversely impact Poseidon's substantive and legal rights. In order for the Regional Board to adequately perform its adjudicatory role, it must provide Poseidon sufficient time to present its case and develop a sufficient record for the Regional Board to make an unbiased and informed decision. Given the extensive record in support of Poseidon's plans, this simply cannot be done in 30 minutes.

Presently, Poseidon and Regional Board staff dispute whether the plans meet the conditions of the Regional Board's April 9, 2008 Resolution conditionally approving the Minimization Plan ("April Resolution"). Attached is a list of issues staff have identified. The staff report incorrectly characterizes Poseidon's Mitigation Plan as "fundamentally flawed." In contrast, Poseidon is confident that the plan fully satisfies the mitigation requirement of California Water Code Section 13142.5 and the conditions set forth in the April Resolution. This represents a fundamental disagreement. It will require significant time at the hearing to build a proper record as to the basis of this disagreement, while offering each party a full and fair opportunity to be heard.

#### 2. Sufficient Time is Required to Adjudicate the Multiplicity of Facts in Dispute

Poseidon will need time to develop a record on the many issues at hand, including, without limitation, whether: (1) the interagency process required by the Regional Board has produced a result that is acceptable to the agency (as it was for the California Coastal Commission and the State Lands Commission, among other agencies); (2) a "specific proposal

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for mitigation,” See April Resolution, required Poseidon to select a single site by now; (3) the proposed wetlands mitigation is adequate; (4) the data used to evaluate potential impingement at the future plant are sound and sufficient for this purpose; (5) staff’s concerns set forth in its February 19, 2008 letter have been addressed. Thirty minutes will not be sufficient time for Poseidon to have a meaningful opportunity to present a record on the issues before the Board.

3. The Regional Board Must Provide Poseidon Sufficient Time to Elucidate the Record

Presently, there is a lack of clarity and transparency in the record. It will take a considerable amount of time for the Regional Board to sort through the issues and hone in on the key, relevant information. Throughout this process, Regional Board staff have been unwilling to communicate with Poseidon regarding staff’s specific concerns with Poseidon’s plans. Poseidon has attempted repeatedly to engage staff in a dialogue to narrow and focus the issues in order to address them without the need for a formal hearing. Staff were not willing to engage in such a process, leaving more issues for resolution on February 11, 2009 than otherwise would need be the case.

It will take time to sort through these issues and establish a meaningful record of all relevant information, yet the Regional Board’s ability to perform its adjudicatory function in a manner consistent with due process will require that each party be given sufficient time to present its case so that such a record is established.

4. The MLMP is Ripe for Regional Board Approval

In contrast to Ms. Hagan’s point of view that the February 11 hearing is “limited” and “preliminary” and therefore does not require formal procedural safeguards, Poseidon confidently believes that final approval of the MLMP is appropriate. The decision before the Regional Board is not preliminary, but the culmination of two years of back-and-forth negotiations and planning between the Regional Board and Poseidon to develop plans that meet the requirements of Water Code Section 13142.5(b). The sufficiency of these plans has been developed fully for Board disposition and approval. Because the February 11 hearing is anything but preliminary, the Regional Board should provide Poseidon with formal procedural safeguards, including, but not limited to, a meaningful opportunity to be heard on the merits.

Poseidon has significant legal and substantive rights at stake warranting the procedural safeguards guaranteed by due process. Until these approvals are secured, Poseidon will not be able to proceed with construction of the mitigation site(s). Also, without these approvals, Poseidon’s plans to build a \$300 million desalination plan likely will be impeded. Accordingly, Poseidon is entitled to a full and fair opportunity to present its case, exercising the rights to offer its own witnesses and to cross-examine those agency personnel involved in this action, in particular those who participated without objection in the interagency process during which the MLMP was developed at the direction of the Regional Board. To suggest that this could be done in 30 minutes is not realistic.

5. The Regional Board Must Provide Poseidon Adequate Time to Be Heard to Preserve the Impartiality of the Proceeding

Due process requires that each party be given a full and fair opportunity to be heard. Due process also requires that the adjudication be presided over by an informed and neutral decision maker. If the very limited procedures proposed by staff are used, Poseidon will be deprived of both of these fundamental due process rights because it will have insufficient time to inform the Board and insufficient time relative to the amount staff have been given to speak with the Board.

The Regional Board has already provided Regional Board staff with an unequal amount of time to present its case. In addition to normal contact with the Regional Board, staff have held two closed door meetings with the Regional Board regarding the April Resolution, one on December 10, 2008 and one on January 21, 2008. Regional Board staff claimed that the meeting would only discuss pending litigation filed by Surfrider and San Diego Coastkeeper against the Regional Board and not the adequacy of the MLMP in meeting the conditions of the April Resolution. The subject matter of the pending litigation, however, is inextricably intertwined with the issue before the Regional Board on February 11. It is impossible, therefore, to discuss one without the other. During these meetings, Regional Board staff had the opportunity to present its findings and express its opinions regarding the MLMP to the Board. In contrast, Poseidon has been given no such exposure to the Regional Board. Accordingly, Poseidon has not been provided a full and fair opportunity to present its case. This is a violation of due process that can only be remedied by providing Poseidon sufficient time at the February 11 hearing to present its case.

Furthermore, the Regional Board staff's extensive involvement with the Regional Board casts doubt on the impartiality of the decision maker. In general, the Regional Board is likely to show a tendency in favor of Regional Board staff opinions. When the Regional Board gives Regional Board staff exclusive and unfettered attention behind closed doors, as is the case here, the Regional Board's inherent bias is substantially magnified. To counterbalance this substantial risk of impartiality will require nothing less than providing Poseidon with a full, fair and equal opportunity to be heard at the hearing. Due process requires that, at a minimum, Poseidon be given sufficient time to present its case.

Poseidon accordingly requests that the Board set aside four hours for presentation of our witnesses and to cross-examine Regional Board staff. This time would be in addition to 30 minutes for opening and closing arguments and does not include the time provided the Regional Board staff, or time permitted interested persons to comment on the matter, nor does this include the time for Regional Board members to ask any questions they may have of witnesses.

**B.** Additional Time Is Required for Poseidon to Present Evidence in Support of its Plans

Poseidon intends to use the additional time to present evidence in support of its plans. The kind of evidence involved with this matter requires oral development and articulation. While Poseidon has appreciated the opportunity to submit public written comment on these issues, written comment is not a sufficient vehicle to afford due process. Poseidon intends to call

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witnesses, and also to cross-examine the Regional Board staff that have been involved with the review and development of Poseidon's plans. These witnesses include scientific experts who will testify about the entrainment and impingement issues and the methodologies used to determine the appropriate mitigation acreages.

Witnesses Poseidon may call to testify include without limitation:

1. Dr. David Mayer, Ph.D. – Dr. Mayer and his team applied scientific methods to calculate mitigation requirements. His work was peer reviewed by Dr. Pete Raimondi at the direction of the Coastal Commission, and also by the Commission's Science Advisory Panel. This review occurred after the April Regional Board meeting. Dr. Mayer will bring the Board up to date on the evolution of the Mitigation Plan, and also will address its conservative nature and assumptions. He also will address how impingement largely was addressed as part of the Minimization Plan, while the Mitigation Plan has focused on entrainment.
2. Chris Nordby – Mr. Nordby is very familiar with mitigation opportunities throughout the region and will report on those opportunities. He also will address the introduction of performance measures into the Mitigation Plan, measures of success imposed by the Coastal Commission, and discussed during the interagency proceedings in which Regional Board staff participated. These performance measures are based on Southern California Edison's successful San Dieguito Lagoon mitigation project, and provide plan location flexibility that was not included in the proposal when last before the Regional Board in April 2008. Mr. Nordby also will testify as to the fish that will be produced under the mitigation project, offsetting any impingement loss from stand-alone desalination operations.
3. Dr. Scott A. Jenkins, Ph.D. – Dr. Jenkins has studied the Agua Hedionda watershed and the potential impacts of freshwater runoff on the marine character of the Lagoon during the period in which the biological data used for the impingement and entrainment study were collected. Dr. Jenkins can address staff's concern that these data may have been "skewed" by atypical amounts of rainfall.
4. Expert on the Adequacy of Mitigation – Given the importance of this issue, we may call an expert who has not been involved to date with this project, but who can offer peer review comment. While we believe the record is robust without such additional peer review, the Board may appreciate this extra level of comfort.

5. Peter MacLaggan – Mr. MacLaggan, Project Manager for Poseidon, has been very involved with the process of working with the technical team and responding to staff's questions and comments. He would provide testimony on this process and his and the team's efforts to respond to staff each and every step of the way. He also can explain the submittal of the Mitigation Plan on November 14, 2008, after final wording from the Coastal Commission became available.
6. Chris Garrett, Esq., Latham & Watkins – As outside counsel for Poseidon, Mr. Garrett has participated in the interagency process, including the important meeting at Agua Hedionda Lagoon on May 1, 2008, where Regional Board staff pointed the mitigation planning towards sites other than Agua Hedionda. Mr. Garrett would provide testimony on the interagency proceedings.
7. Outside Counsel for Poseidon regarding the Coastal Commission Proceedings – It also may be useful for the Board to hear directly from counsel to Poseidon for the Coastal Commission proceedings, since the Mitigation Plan changed materially during the Commission's review of it over the summer of 2008.

C. Poseidon Must Be Able to Cross-Examine Witnesses and Question Regional Board staff in Order to Receive a Full and Fair Opportunity to Be Heard

Poseidon requests the opportunity to engage in uninterrupted, reasonable discourse with and questioning of the Regional Board staff and other persons who present evidence at the February 11 hearing because the Board's decision will affect the substantive and legal rights of Poseidon. Given the multiplicity of issues in dispute, the lack of transparency in the record and the undue influence Regional Board staff has had on the Regional Board, due process requires that Poseidon be allowed to cross-examine witnesses presenting evidence and question relevant Regional Board staff. This is a fundamental procedural safeguard and is necessary to ensure that Poseidon receives a full and fair opportunity to be heard by a neutral and detached decision maker.

As discussed in Poseidon's January 26, 2009 letter regarding Poseidon's Statement of Procedural Objections and Request for Alternate Procedures, the relevant regulations for Regional Board adjudicatory proceedings include cross-examination of witnesses and redirect and recross-examination. Cal. Code of Regs. Tit. 23 § 648.5(b). Although these procedures are generally permissive, they are necessary in this case to ensure Poseidon's due process rights. The right of cross-examination is a fundamental aspect of any adjudication. If the Regional Board staff or other designated parties (or any other person) puts forth evidence at the hearing, Poseidon must be permitted the opportunity to cross-examine its witnesses and experts, both to test its credibility and to determine the bases for witnesses' positions.

Poseidon intends to question Regional Board staff in order to establish each staff person's respective involvement in Poseidon's plans. The lack of transparency that has occurred to date

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places Poseidon in the position of having to ask various agency personnel that Poseidon, on information and belief, assert may have had a material role in the development of the MLMP. Such personnel include, without limitation, Chiara Clemente, John Robertus, Mike Porter and Eric Becker.

Poseidon will question these (or other) staff members on various aspects of the Minimization Plan and the MLMP, including the findings, the Staff Report and the internal agency activities related to the Minimization Plan and MLMP. Poseidon intends to investigate various assertions made by the Regional Board staff, to clarify their bases and avoid ambiguities. Poseidon also intends to probe Regional Board staff on communications received from third parties, including Surfrider Foundation and San Diego Coastkeeper.

**D. The Regional Board Must Designate Poseidon and Regional Board Staff as Parties**

Ms. Hagan's letter states that the Regional Board will not be naming parties at the February 11 hearing because it will be of a "limited" and "preliminary nature." As discussed previously, Poseidon believes that the February 11 hearing is anything but limited and preliminary. It is because Poseidon has so much at stake on February 11 that the Regional Board must designate parties. As discussed in Poseidon's letter regarding its statement of procedural objections and request for alternate procedures, the Regional Board's designation of parties is essential to preserving an orderly and efficient proceeding and to securing the relevant information necessary to make the correct determination.

Failure to designate parties, or the designation of more than the Regional Board staff and Poseidon as parties, will result in a disorderly proceeding and unnecessary delay and will convolute the material issues. If the Regional Board does not designate parties, it will substantially prejudice Poseidon's case and jeopardize Poseidon's due process right to be heard.

**E. The Regional Board Should Hold a Pre-hearing Conference to Bring Structure and Efficiency to the February 11 Hearing**

A pre-hearing conference is necessary to produce an orderly and efficient adjudicatory proceeding. Poseidon requests a pre-hearing conference to discuss the necessary length of the hearing, as well as hearing procedures, including timing of examination, cross-examination, and closing, etc. If the Regional Board chooses not to hold a pre-hearing conference, significant amounts of time will be wasted deliberating over and explaining the ground rules for the proceeding. The ensuing proceeding will be unnecessarily unwieldy and awkward. This will waste Regional Board's time and impair the Regional Board's ability to ascertain relevant facts, which, in turn, will prejudice Poseidon's case. To prevent a disorderly proceeding, Poseidon requests that the Regional Board hold a pre-hearing conference.

### III. THE PROCEEDINGS MUST BE MODIFIED IN ORDER TO PROTECT POSEIDON'S CONSTITUTIONAL RIGHT TO DUE PROCESS

Constitutional due process fundamentally consists of two aspects: notice and a right to be heard. The "fundamental requisite of due process of law is the opportunity to be heard."<sup>1</sup> "An elementary and fundamental requirement of due process in any proceeding which is to be accorded finality is notice reasonably calculated, under all the circumstances, to apprise interested parties of the pendency of the action and afford them an opportunity to present their objections."<sup>2</sup>

Without additional time to be heard and the right to cross-examine, Poseidon will not have a substantive "opportunity" to present its case. A sham hearing, or even a hearing that does not give adequate opportunity for Poseidon to present its case is the same as no hearing at all. The U.S. Constitution guarantees that the opportunity to be heard be meaningful.<sup>3</sup>

The Regional Board's decision on February 11 could substantially impair Poseidon's legal rights. Consequently, Poseidon has a heightened due process right that requires a higher degree of care and consideration by the Regional Board.<sup>4</sup> In Goldberg v. Kelly,<sup>5</sup> a case where the government tried to strip an individual of valuable property rights, the U.S. Supreme Court imposed the following requirements on governmental entities regarding the nature of the required hearing:

1. Timely and adequate notice detailing the reasons for proposing action;
2. An effective opportunity to defend by confronting any adverse witnesses;
3. An opportunity to present arguments and evidence orally;
4. Allowing the recipient to retain an attorney if desired;
5. Basing a conclusion as to the decision solely on the legal rules and evidence adduced at the hearing;

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<sup>1</sup> Grannis v. Ordean, 234 U.S. 385, 394 (1914). See also Green v. Lindsey, 456 U.S. 444, 449-50 (1982).

<sup>2</sup> Mullane v. Central Hanover Bank & Trust Co., 339 U.S. 306, 314 (1950).

<sup>3</sup> See Matthews v. Eldridge, 424 U.S. 319, 333 (1972) ("The fundamental requirement of due process is the opportunity to be heard at a meaningful time and in a meaningful manner.") (citations omitted).

<sup>4</sup> See Cafeteria Workers v. McElroy, 367 U.S. 886, 895 (1961) ("What procedures due process may require under any given set of circumstances must begin with a determination of the precise nature of the government function involved as well as of the private interest that has been effected by governmental action.").

<sup>5</sup> Goldberg v. Kelly, 397 U.S. 254 (1970).

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6. A statement of reasons for the determination indicating the evidence relied on;  
and
7. An impartial decision maker.

As stated previously, Poseidon has real and substantial rights at stake at the February 11 Regional Board hearing, including property rights. It will not prejudice the Regional Board to allow Poseidon to put on witnesses, present evidence, and to cross-examine the staff regarding the provisions development of the MLMP. With a substantial property interest at stake for Poseidon and a minimal burden on the Regional Board, constitutional principles mandate that Poseidon's due process rights be fully protected, not merely swept aside by inadequate procedures.

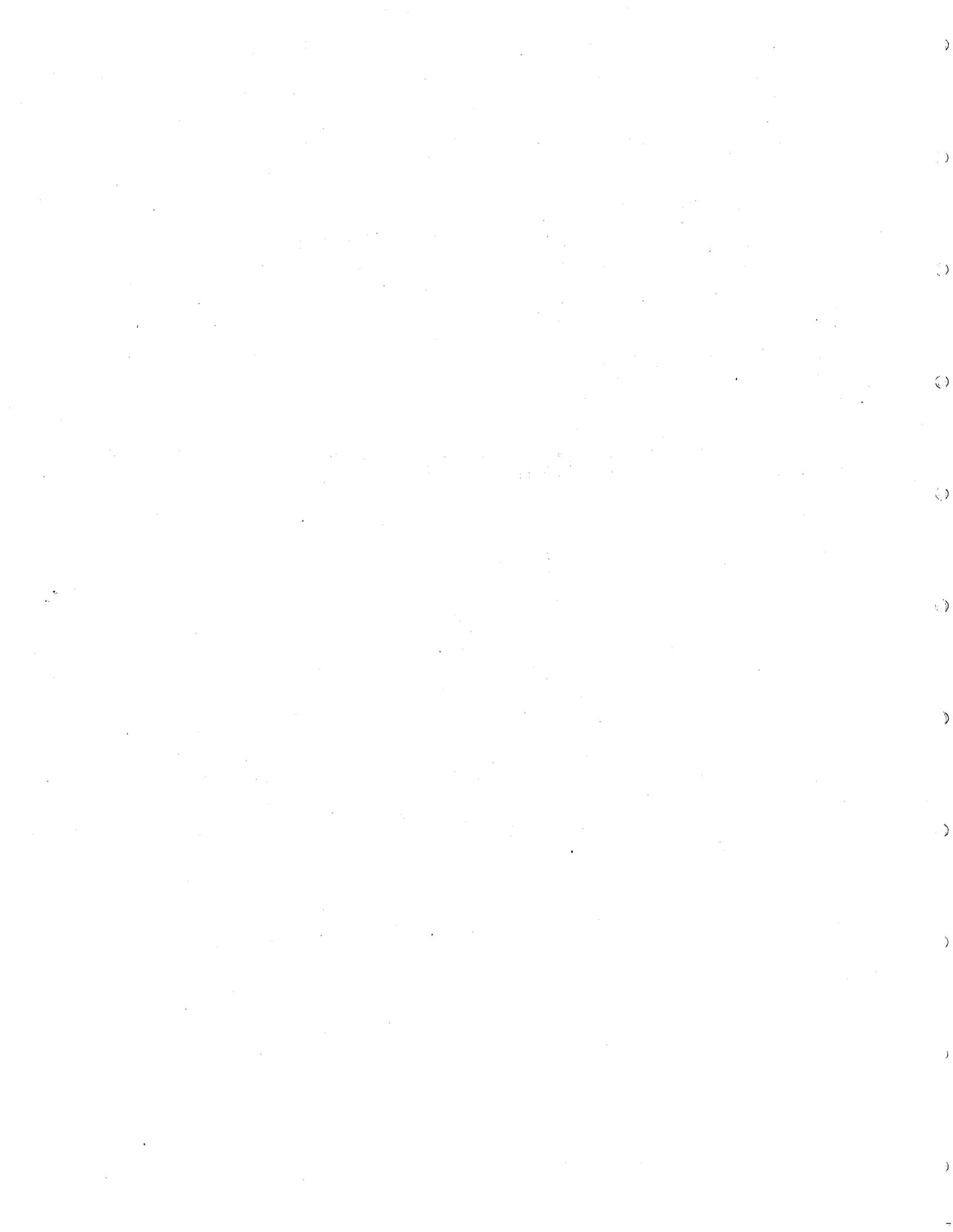
#### IV. CONCLUSION

For the foregoing reasons, Poseidon respectfully request that the Board modify the February 11 hearing procedures in accordance herewith.

Dated: February 2, 2009

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By   
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RESOURCES CORPORATION



List of Issues Raised by Regional Board

**02/19/08 Letter**

From: John Robertus, Executive Officer, San Diego Regional Water Quality Control Board

To: Peter MacLaggan, Senior VP Poseidon Resources Corporation

1. The Plan does not yet integrate all the elements of the statutory requirements of California Water Code (CWC) Section 13142. The proposed project only includes "mitigation", while the statute CWC Section 13142.5(b) also requires that dischargers implement best available technology and mitigation measures. The Plan does not appear to include technology measures for the intake structure to reduce impingement and entrainment (I&E).
2. The Plan provides an evaluation of impacts based upon one year of data, 2004-05 with record rainfall, but does not explicitly evaluate the on-going impacts from Poseidon's operations.
3. The Carlsbad desalination project's (CDP) listing of impacts appears to omit specific impacts to target invertebrates.
4. The proposed mitigation project does not appear to account for all pertinent impacts resulting from impingement of invertebrates, entrainment of invertebrates, discharges of brine, etc.
5. The CHREP did not identify and evaluate the possible mitigation projects located within the same watershed, prior to proposing the out of watershed mitigation in San Dieguito Lagoon. The best mitigation for impacting the lagoon would be to replace lost functions by restoring current upland acreage to the historic wetland condition, or by creating new wetlands where there were none historically.
6. The proposed <u>mitigation ratio</u> of 1.1:1.0 isn't fully supported. The Plan should be revised to include an evaluation of other mitigation options that may be available within the watershed. The proposed mitigation ratio appears inadequate in light of several factors generally considered by the Regional Board:
a. The proposed mitigation project is located within a different watershed (the San Dieguito Lagoon) instead of the Agua Hedionda Lagoon. A higher ratio may be appropriate for this project because the referenced mitigation project is out-of-kind (i.e., discharger is not actually replacing the lost resources and functions).
b. It is not clear that the proposed one-time mitigation is adequate to compensate for the long-term ongoing impacts to beneficial uses, resources, and functions present in Agua Hedionda Lagoon.
c. The mitigation project is for restoration of coastal wetland habitat, rather than the lagoon habitat impacted by the operation of the CDP.
7. Poseidon might benefit from convening a joint meeting with the resources agencies (including California Dept Fish and Game, US Fish and Wildlife Service, Army Corps of Engineers, National Marine Fisheries) to discuss the impacts to beneficial uses, resources, and functions by the proposed project, and on the preferred mitigation project so they can discuss agency concerns/comments.
8. The assessment should address the seasonal and/or daily variations in <u>impingement</u> impacts.
9. The assessment needs to include results of an <u>impingement</u> study for <u>target invertebrates</u> . Table 3.2 includes only results for fish during 2004-05.
10. The assessment states that: "The total amount of <u>impinged organisms</u> for the individual sampling events is presented in Table 3-2" (p.19). The Plan, however, does not clearly identify individual sampling events. The interpretation of the results is hampered by the absence of a presentation of results for impinged organisms (including invertebrates) with dates, times, and flow rates of sampling events.
11. The assessment states that, "The daily biomass of <u>impinged</u> fish during normal operations is 0.96 kgs/day (1.92 lbs/day) for an intake flow of 304 MGD" (p.19). The text discussion should clarify how this figure is determined and how the total impingement results were adjusted to an intake flow of 304 MGD. Also, there is a conversion discrepancy since 0.96 kgs converts to 2.12 lbs, not 1.92 lbs as indicated in the Plan.
The assessment of impacts from entrainment assessment appears to include larval fish but does not clearly include impacts to fish eggs and invertebrates. It is the understanding of the Regional Board that the 2004-05 study was to include monitoring of (at least) entrained Cancer crab megalops and lobster larvae, but the assessment does not appear to include these data. Also, it is unclear that

List of Issues Raised by Regional Board

<p>sampling followed a protocol approved by the Regional Board as stated (p.22).</p>
<p>12. The Plan does not clearly identify the supporting data or an explanation of underlying assumptions and calculations that were used to estimate proportional mortality values for larval fish as presented (p.23) in the Plan. Therefore, the Regional Board could not objectively evaluate the validity of the estimated proportional entrainment mortality (12.2%) presented in the Plan.</p>
<p>13. Impacts are based upon the few most commonly entrained (most abundant) species. It is unclear how much more severe impacts may be when populations are small.</p>
<p>14. The Regional Board has the following comments regarding the estimated number of lagoon acres impacted, as presented in the plan since:</p>
<p>a. The estimate of the number of lagoon acres used by the three most commonly entrained species is based on a 2000 Coastal Conservancy Inventory (Table 4-2, p.23). It is unclear if this document is accurate or appropriate for the purpose of determining such an important component of the area of habitat production forgone (APF). The reference document (Attachment 4, Table 2), includes the footnote caveat "... This information is not suitable for any regulatory purpose and should not be the basis for any determination relating to impact assessment or mitigation." An accurate delineation of lagoon habitats should be used for this critical component of the APF.</p>
<p>b. The estimate of the number of lagoon acres used by the three most commonly entrained species appears to exclude salt marsh and brackish/freshwater acreage (p.23). Excluding these intertidal habitats may result in the analysis underestimating this component of the APF.</p>
<p>c. The calculation of the APF (p.23) appears to use values for mortality and lagoon acreage that are not fully supported.</p>
<p>d. The text should be revised to include a clear explanation of how the estimated lagoon acreage for commonly entrained species was adjusted to include only impacts associated with operations of CDP, rather than impacts from operation of the Encina Power Station.</p>
<p>15. The evaluation concludes that the small fraction of marine organisms lost to entrainment would have "no effect on the species' ability to sustain their population" and goes on to describe the natural rates of high mortality (p. 24). But the argument that that there are "excess" larvae appears to omit an important consideration. Besides contributing to marine food webs, the naturally high production of larvae serves as a buffer against catastrophic and cumulative impacts to populations. These are important 'ecological services' that must not be taken lightly or given away without adequate mitigation.</p>
<p>16. The Regional Board prefers that the evaluation of the impact be presented as a rate (loss of x-amount of organisms per year, or impact/year). The proposed mitigation is a fixed amount (\$3 to \$4 million). It seems unlikely that a fixed amount would adequately compensate for a loss that is a rate over multiple, future years. It appears more likely that a proposed fixed amount really only accounts for mitigation for just one year of operation. The Regional Board may find a fixed amount to be acceptable, provided that:</p>
<p>a. The average annual impact could be reasonably determined and reasonably translated into a dollar amount, and that amount (or correct share) is paid every year of operation - but that is not what is proposed in the Plan or the CHREP.</p>
<p>b. A fixed amount might also be reasonable if the CDP mitigates its share by increasing lagoon acreage via restoration or creation. Such in-kind mitigation would (if functional) replace the productivity lost to the operation of the COP, and the impact would be fully mitigated.</p>

List of Issues Raised by Regional Board

**April 4, 2008 Technical Memo**

From: Chiara Clemente, Senior Environmental Scientists, Central Watershed Unit  
To: John Robertus, Executive Officer, San Diego Regional Water Quality Control Board

1. The proposed plan does not describe a process for agency approval of the calculations and variables used to assess impacts from impingement and entrainment.
2. The proposed mitigation process does not clearly identify the method for the final selection and agency concurrence of the preferred mitigation alternative.
3. There is insufficient sampling data to accurately determine the impacts of impingement and entrainment.
4. The proposed process seems to favor a pre-determined outcome (i.e. mitigation in San Dieguito Lagoon). Other mitigation alternatives (e.g. kelp bed enhancement and artificial reef construction) should be considered and evaluated equally as viable mitigation possibilities.

List of Issues Raised by Regional Board

<b>April 9, 2008 Resolution</b> <b>Poseidon shall...</b>	
1.	Submit to the Regional Board Executive Officer, for approval by the Regional Board, an amendment to the Plan that includes a specific proposal for mitigation of the impacts, by impingement and entrainment upon marine organisms resulting from the Intake of seawater from Agua Hedionda lagoon, as required by Section VI.C.2(e) of Order No. R9-2006-0065;
2.	Resolve the concerns identified in the Regional Board's February 19, 2008 letter to Poseidon Resources
3.	Resolve the following additional concerns;
a.	Identification of impacts from impingement and entrainment;
b.	Adequate monitoring data to determine the impacts from impingement and entrainment
c.	Coordination among participating agencies for the amendment of the Plan as required by Section 13225 of the California Water Code
d.	Adequacy of mitigation; and
e.	Commitment to fully implement the amendment to the Plan

List of Issues Raised by Regional Board

**April 30, 2008 Email**

From: Chiara Clemente, Senior Environmental Scientists, Central Watershed Unit

To: Peter MacLaggan, Senior VP Poseidon Resources Corporation

1. Based on our review of the entrainment assessment in the Plan, it appears that the assessment...
  - a. characterizes larval concentration in entrained water using in-plant samples, i.e., two, 24-hour samples collected near the CDP intake in the EPS discharge stream on June 10, 2004 and May 19, 2005;
  - b. characterizes larval concentration in source water using source water samples, i.e., thirteen, 24-hour sample events per station collected at four lagoon (L1-4) and five nearshore (N1-5) stations, monthly from June 10, 2004 through May 19, 2005;
  - c. does not draw upon the monthly samples taken in the lagoon near the entrance to the EPS intake structure (station E1); and,
  - d. therefore, is for CDP/EPS co-operation rather than CDP stand-alone operation.

Is this understanding correct? Do you concur that the entrainment assessment provided in the Plan is for co-operation rather than stand-alone operation?

2. Based on our review of the impingement assessment in the Plan, it appears that the daily biomass of impinged fish (0.96 kgs/day) may have been incorrectly calculated.
  - a. Attachment 2 appears to present counts and weights of impinged organisms found during each of the 24-hour sample events conducted weekly from June 24, 2004 through June 15, 2005, i.e., 52 sample events, each representing 24-hour impingement;
  - b. Table 5-1 appears to present - not annual count and weight totals prorated to 304 MGD as indicated by the caption - but rather line totals (by taxa) of the counts and weights from Attachment 2, i.e., Table 5-1 appears to present 52-day totals with no adjustment for flow on the day of sampling, no interpolation for the days between sample events, and no prorating to 304 MD; and,
  - c. therefore, calculation of the daily biomass of impinged fish by dividing the un-interpolated, un-prorated Table 5-1 total weight (351,672 grams) by 365 days appears to be in error.

Is the above staff interpretation correct? If not, then could you please let me know which of the above statements regarding Attachment 2 and/or Table 5-1 is wrong, and why?

List of Issues Raised by Regional Board

**02/19/09 Hearing: Executive Officer Summary Report**

1. Staff remains concerned that the MLMP fails to satisfy a number of conditions in the Resolution, such as the requirement
  - a. to submit adequate data on impingement of organisms and
  - b. to propose adequate mitigation
2. Staff's overarching concern, which remains unsatisfied, is that the MLMP fails to include a specific mitigation alternative as the Board required. Instead, it sets forth a process and criteria for evaluating 11 independent mitigation site options. The Resolution conditions approval of the Plan on the timely submittal of a specific mitigation alternative for Regional Board approval. Staff continues to believe that a specific mitigation alternative is a critical element in order to properly evaluate whether the functions of the proposed mitigation will match those lost from impingement and entrainment. Poseidon's MLMP is fundamentally flawed in that it fails to fulfill this condition.

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## CALIFORNIA COASTAL COMMISSION

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# W16a

## RECOMMENDED REVISED CONDITION COMPLIANCE FINDINGS

November 21, 2008

**To:** To Commissioners and Interested Parties

**From:** Peter Douglas, Executive Director  
Alison Dettmer, Deputy Director  
Tom Luster, Staff Environmental Scientist

**Regarding:** **Condition Compliance for CDP No. E-06-013** – Poseidon Resources (Channelside), LLC; **Special Condition 8:** Submittal of a Marine Life Mitigation Plan

**Commissioners on Prevailing Side:** Commissioners Achadjian, Blank, Burke, Hueso, Kram, Lowenthal, Neely, Potter, Reilly, Shallenberger, and Chair Kruer

**Exhibit 1:** Approved Marine Life Mitigation Plan (MLMP)

**Exhibit 2:** Staff's Proposed Draft MLMP Conditions (June 2008)

**Exhibit 3:** Poseidon's August 2, 2008 Proposed MLMP and attachments

**Exhibit 4:** Transcript of August 6, 2008 hearing (Commission deliberations only)

### STAFF NOTE

Staff prepared these recommended Revised Findings to reflect the Commission's August 6, 2008 decision approving a Marine Life Mitigation Plan for the Poseidon desalination facility in Carlsbad, San Diego County. The Plan is required pursuant to **Special Condition 8** of Coastal Development Permit #E-06-013. The Commission's approval at the August hearing included modifications to the Plan proposed by both staff and Poseidon. Because the Commission's action differed from staff's recommendation, revised findings are necessary. The recommended Revised Findings herein support the Plan as approved by the Commission and are based on staff's review of the August 6, 2008 hearing transcript and the record before the Commission. Recommended changes from the August 6<sup>th</sup> document are shown in ~~strikethrough~~ and **underline** text.

Please note that the Commission required Poseidon to submit within 60 days of Commission approval a revised Plan for Executive Director review and approval that incorporates the Commission's approved modifications. Poseidon submitted a plan in early October 2008, which has been reviewed and approved by the Executive Director, and is attached as Exhibit 1.

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## SUMMARY

On November 15, 2007, the Commission conditionally approved CDP E-06-013 for Poseidon Resources (Channelside), LLC (Poseidon) for construction and operation of a desalination facility to be located adjacent to the Encina Power Plant in Carlsbad, San Diego County. As part of the Adopted Findings for its approval, the Commission imposed **Special Condition 8**, which required Poseidon to submit for further Commission review and approval, a Marine Life Mitigation Plan (**MLMP, or the Plan**).<sup>1</sup>

**In June 2008, Commission staff provided to Poseidon recommended conditions to include in its Plan (see Exhibit 2).** On July 7, 2008, Poseidon submitted to Commission staff its a proposed Marine Life Mitigation Plan (the Plan). **On August 2, Poseidon submitted a revised version of that Plan (see Exhibit 3).** ~~This report provides staff's analysis of the Plan, staff's evaluation of whether the Plan conforms to the Adopted Findings and **Special Condition 8**, and staff's recommendation as to whether the Commission should approve the Plan.~~

~~In brief, staff's analysis shows that the Plan as submitted does not conform to the Adopted Findings and **Special Condition 8**. However, if modified as described herein, staff believes the modified Plan would conform to the applicable Findings and **Special Condition 8**. Staff therefore recommends the Commission **approve** the Plan, as modified herein. The modifications staff has identified as being necessary for Plan approval are summarized below and are further detailed in Sections 1.1 and 4.0 of this memorandum. At its August 6, 2008 hearing, the Commission approved a modified Plan. Because the Commission's action differed from staff's recommendation, revised findings are necessary.~~

~~Staff recommends the Plan be modified to include the following~~**The Commission modified the Plan as follows:**

- 1) Poseidon ~~shall~~**is to** create or restore ~~between~~**up to** 55.4 and 68 acres of coastal estuarine wetland habitat within the Southern California Bight. **For Phase I, within 10 months of issuance of the desalination facility's coastal development permit (CDP), Poseidon must submit proposed site(s) and a Preliminary Restoration Plan for Commission review and approval. Within two years of issuance of the CDP for the desalination facility, Poseidon must submit a complete CDP application to restore at least 37**

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<sup>1</sup> The Commission's approval of this CDP also included **Special Condition 10**, which required Poseidon to submit for Commission review and approval an Energy Minimization and Greenhouse Gas Reduction Plan. ~~That Special Condition and Poseidon's submitted plan are evaluated in a separate staff report under Item W5a of the August 6, 2008 Commission hearing.~~ **The Commission approved the Energy Minimization and Greenhouse Gas Emission Reduction Plan at its August 6, 2008 hearing. The recommended Revised Findings for that Plan are on the Commission's December 2008 hearing agenda as Item W16b.**

**acres of estuarine wetlands. For Phase II, Poseidon must within five years of issuance of the Phase I CDP submit a complete CDP application either to restore an additional 18.4 acres of estuarine wetlands or to propose reducing or eliminating this Phase II restoration requirement by instead implementing technologies not currently available or feasible that would reduce entrainment levels below currently anticipated levels or by undertaking dredging in Agua Hedionda Lagoon in a manner that warrants mitigation credit. Poseidon may apply to do all 55.4 acres of restoration during Phase I.**

- 2) Poseidon shall implement its Marine Life Mitigation Plan in conformity to the conditions provided in Exhibit 2 of ~~this memorandum~~ **these Findings**.
- 3) Within 60 days of the Commission's approval of ~~this modified~~ **the Plan (i.e., as approved at the August 6, 2008 hearing)**, Poseidon shall submit for the Executive Director's review and approval a revised Plan that includes these modifications.

The first ~~recommendation~~ **modification** is based on a review of Poseidon's proposed Plan by staff and the Commission's independent scientific experts.<sup>2</sup> Poseidon's entrainment study identified impacts that these reviewers believe require more mitigation than Poseidon ~~has had~~ proposed. ~~Staff further believes that~~ **This amount of mitigation is necessary to ensure the project conforms to Special Condition 8 and Sections 30230, 30231, and 30260 of the Coastal Act. Based on results from Poseidon's entrainment study, this range in acreage— from 55 to 68 acres— represents the range in statistical confidence that would 55.4 acres of wetland restoration will provide the Commission with 80% (i.e., 55 acres) to 95% confidence (i.e., 68 acres) that the mitigation would will fully mitigate the impacts identified in the study. Section 4.2 of this memorandum—these Findings provides a more detailed discussion.**<sup>3</sup>

The second ~~recommendation is meant to~~ **modification** ensures that mitigation is timely and successful. It ~~would require~~ Poseidon to implement its mitigation subject to the conditions similar to those the Commission required of Southern California Edison at its San Dieguito Restoration Project (see, for example CDPs #183-73 and #6-04-88). Although Poseidon's current Plan does not commit to provide mitigation at a particular site, Poseidon had previously identified a mitigation site in San Dieguito Lagoon adjacent to Edison's as ~~the best~~ **its preferred** location to mitigate for its entrainment impacts. ~~Staff recommends the two projects be held to similar standards.~~ The Commission's scientific experts ~~concur with this recommendation~~ **recommend that the two restoration projects be subject to similar standards (see Exhibit 1 – Approved Conditions for Marine Life Mitigation Plan).** Section 4.2 provides a more detailed discussion of this ~~recommendation~~ **modification**.

<sup>2</sup> Staff consulted with members of the Commission's ~~Marine Review Committee~~ **Scientific Advisory Panel (SAP)**. Committee members are identified in Section 3.0 of this memorandum.

<sup>3</sup> As an alternative to staff's recommendation, the Commission may wish to require mitigation in a manner similar to past decisions in which it applied a mitigation ratio to the identified level of impact. If the Commission selects this alternative approach, staff recommend mitigation be provided at between a 2:1 to 3:1 ratio, which would result in from 85 to 127.5 acres of coastal estuarine wetland habitat as mitigation.

The third ~~recommendation~~ **modification** is meant to help **ensure** Poseidon and the Commission implements the approved mitigation plan **as approved**. Additionally, the 60-day deadline in the recommendation ~~would be~~ **is** consistent with the requirement imposed by the San Diego Regional Water Quality Control Board that Poseidon provide a mitigation plan for Board approval by October 9, 2008.<sup>4</sup>

With these recommended modifications, staff believes Poseidon's Plan would conform to applicable provisions of **Special Condition 8**.

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## 1.0 MOTION & RESOLUTION

### Motion:

**"I move that the Commission approve the Marine Life Mitigation Plan attached to the staff recommendation as Exhibit 1 if modified as shown in Section 1.1 below and Exhibit 2 of this memorandum, as compliant with Special Condition 8 of CDP E-06-013. I move that the Commission adopt the revised findings in support of the Commission's action on August 6, 2008 to approve the Marine Life Mitigation Plan as compliant with Special Condition 8 of CDP E-06-013."**

<sup>4</sup> The Regional Board's Order, adopted on April 9, 2008 requires, in part: "Within six months of adoption of this resolution, Poseidon shall submit to the Regional Board Executive Officer, for approval by the Regional Board an amendment to the Plan that includes a specific proposal for mitigation of the impacts, by impingement and entrainment upon marine organisms resulting from the intake of seawater from Agua Hedionda Lagoon, as required by Section VI.C.2(e) of Order No. R9-2006-0065; and shall resolve the concerns identified in the Regional Board's February 19, 2008 letter to Poseidon Resources, and the following additional concerns:

- a) Identification of impacts from impingement and entrainment;
- b) Adequate monitoring data to determine the impacts from impingement and entrainment;
- c) Coordination among participating agencies for the amendment of the Plan as required by Section 13225 of the California Water Code;
- d) Adequacy of mitigation; and
- e) Commitment to fully implement the amendment to the Plan.

**Resolution to Approve:**

*The Commission hereby finds that the compliance plan titled “Marine Life Mitigation Plan” prepared and submitted by the permittee, Poseidon Resources (Channelside) LLC, dated July 3, 2008, if modified as shown in Section 1.1 and Exhibit 2 of the July 24, 2008 Commission staff report, is adequate, if fully implemented to comply with **Special Condition 8** of CDP E-06-013. The Commission hereby adopts the findings set forth below for the Commission’s approval of the Marine Life Mitigation Plan as compliant with Special Condition 8 of CDP E-06-013 on the ground that the findings support the Commission’s decision made on August 6, 2008 and accurately reflect the reasons for it.*

**Staff Recommendation:**

Staff recommends a “**YES**” vote, which will result in the **approval** of the modified plan as compliant with the Adopted Findings and **Special Condition 8** and adoption of the motion, resolution, and findings herein. The motion passes only by an affirmative vote of a majority of the Commissioners present. Staff’s recommended modifications are provided in Section 1.1 below, and further detailed in Section 4.0 of this memorandum. If these recommended modifications are not incorporated into the Plan, staff recommends the Commission find the Plan, as submitted, does not conform to **Special Condition 8** and staff would therefore recommend the Plan be denied. Staff recommends a “YES” vote on the motion. Passage of the motion will result in the adoption of revised findings as set forth in this staff report. The motion requires a majority vote of the members from the prevailing side present at the revised findings hearing, with at least three of the prevailing members voting. Only those Commissioners on the prevailing side of the Commission’s action are eligible to vote on the revised findings.

**1.1 RECOMMENDED MODIFICATIONS**

- 1) Poseidon shall create or restore between up to 55.4 and 68 acres of coastal estuarine wetland habitat within the Southern California Bight. For Phase I, within 10 months of issuance of the desalination facility’s coastal development permit (CDP), Poseidon must submit proposed site(s) and a Preliminary Restoration Plan for Commission review and approval. Within two years of issuance of the CDP for the desalination facility, Poseidon must submit a complete CDP application to restore at least 37 acres of estuarine wetlands. For Phase II, Poseidon must within five years of issuance of the Phase I CDP submit a complete CDP application either to restore an additional 18.4 acres of estuarine wetlands or to propose reducing or eliminating this Phase II restoration requirement by instead implementing technologies not currently available or feasible that would reduce entrainment levels below currently anticipated levels or by undertaking dredging in Agua Hedionda Lagoon in a manner that warrants mitigation credit. Poseidon may apply to do all 55.4 acres of restoration during Phase I.

- 2) Poseidon shall implement its Marine Life Mitigation Plan in conformity to the conditions provided in Exhibit 2 of ~~this memorandum~~ **these Findings**.
- 3) Within 60 days of the Commission's approval of ~~this modified~~ the Plan (**i.e., as approved at the August 6, 2008 hearing**), Poseidon shall submit for the Executive Director's review and approval a revised Plan that includes these modifications.

## 2.0 STANDARD OF REVIEW

The Commission ~~must determine whether the subject plan~~ **must** conforms to **Special Condition 8 of CDP E-06-013**, which states:

*“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.”*

The Commission's **Permit Findings** supporting **Special Condition 8** state that the Plan is **to** ensure that all project-related entrainment impacts will be fully mitigated and that marine resources and the biological productivity of coastal waters, wetlands, and estuaries, will be enhanced and restored in compliance with Coastal Act Sections 30230 and 30231. The **Permit Findings** further state that the Plan must provide mitigation to the maximum extent feasible through creating, enhancing, or restoring aquatic and wetland habitat and must include acceptable performance standards, monitoring, contingency measures, and legal mechanisms to ensure permanent protection of the proposed mitigation sites.

### 3.0 PLAN DEVELOPMENT AND REVIEW

On November 15, 2007, the Commission approved CDP No. E-06-013 for Poseidon's proposal to construct and operate a desalination facility in Carlsbad, San Diego County. As part of that approval, the Commission required Poseidon, through **Special Condition 8**, to submit for additional Commission review and approval a Marine Life Mitigation Plan addressing the impacts that will be caused by the facility's use of estuarine water and entrainment of marine organisms.

~~Since~~ After the Commission's project approval in November 2007, staff and Poseidon ~~have~~ worked to develop a Plan that would meet the requirements of **Special Condition 8** and would be consistent with the Commission's Permit Findings. In March 2008, and as required by **Special Condition 8**, Poseidon provided a copy of its entrainment study for Commission staff review. Staff provided the study to Dr. Pete Raimondi, an independent scientist with expertise in evaluating entrainment studies, for his review and recommendations (described in more detail in Section 4.0 below).<sup>5</sup> Dr. Raimondi provided the initial results of his review and recommendations to Poseidon in April 2008. In May 2008, staff conducted with Poseidon an interagency meeting with representatives from state and local agencies to determine what mitigation options might be available and feasible for Poseidon to include as part of its Plan.

Attendees included representatives from:

California Department of Fish and Game	City of Carlsbad
California Department of Transportation	City of Vista
California State Lands Commission	U.S. Fish and Wildlife Service
San Diego Regional Water Quality Control Board	

In June 2008, based in part on concerns Poseidon expressed about Dr. Raimondi's review and recommendations, staff asked the Commission's ~~Marine Review Committee (MRC)~~ **Scientific Advisory Panel (SAP)**<sup>6</sup> to review Dr. Raimondi's conclusions and make further

<sup>5</sup> Dr. Raimondi is Professor and Chair of Ecology and Evolutionary Biology at the University of California, Santa Cruz Center for Ocean Health, Long Marine Lab. Dr. Raimondi is considered by many to be California's leading expert on entrainment analysis. He has been a key participant and reviewer of most of the entrainment studies done along the California coast during the past decade, including those done for the Diablo Canyon Nuclear Power Plant, the Huntington Beach Generating Station, Morro Bay Power Plant, and Moss Landing Power Plant. He is also a member of the Coastal Commission's ~~Marine Review Committee~~ **Scientific Advisory Panel (SAP)** responsible for determining mitigation needed for the San Onofre Nuclear Generating Station (SONGS) and providing review and oversight for the SONGS mitigation work at San Dieguito Lagoon.

<sup>6</sup> The ~~Marine Review Committee~~ **SAP** is a team of independent scientists that provides guidance and oversight to the Commission on ecological issues associated with the San Dieguito Restoration Project. That Project is being implemented by Southern California Edison pursuant to requirements of coastal development permits issued by the Commission and is meant to mitigate for marine resources losses caused by the San Onofre Nuclear Generating Station (SONGS). The ~~Marine Review Committee~~ **SAP currently** consists of **Dr. Richard Ambrose**, Professor and Director of Environmental Science & Engineering Program, Department of Environmental Health Sciences, University of California Los Angeles; **Dr. John Dixon**, Senior Ecologist, California Coastal Commission; **Dr. Mark Page**, Marine Science Institute, University of California at Santa Barbara; **Dr. Pete Raimondi**, Professor and Chair of Ecology and Evolutionary Biology, University of California at Santa Cruz; **Dr. Dan Reed**, Marine Science Institute, University of California at Santa Barbara; **Dr. Steve Schroeter**, Marine Science Institute, University of

recommendations for Poseidon to include in its proposed Plan. The MRC-SAP review is described in more detail in Section 4.0.

Also in June 2008, staff provided Poseidon a copy of the conditions the Commission had required of Southern California Edison (Edison) for its wetland restoration project at San Dieguito Lagoon (see Exhibit 2). Until June, Poseidon had been proposing a site adjacent to Edison's as the ~~best~~ its preferred site for its mitigation. Based on the Commission's Permit Findings and discussion at the November 2007 hearing, staff recommended to Poseidon that it incorporate modified versions of the Edison conditions into its proposed Plan to ensure the two adjacent mitigation sites would be subject to compatible and consistent mitigation requirements. These conditions are in Exhibit 21.

On July 7, 2008, staff received Poseidon's ~~currently~~ proposed Plan for review by the Commission (~~see Exhibit 1~~). On July 14, 2008, staff again consulted with the MRC-SAP to evaluate changes Poseidon had proposed in this most recent submittal. On August 2, 2008, Poseidon submitted a revised Poseidon's ~~current~~ proposed Plan, (see Exhibit 3), and ~~the~~ results of reviews by staff, Dr. Raimondi, and the MRC-SAP are described in Section 4.0 below.

#### 4.0 ANALYSIS FOR CONFORMITY TO SPECIAL CONDITION 8

~~Staff's evaluation of the proposed Plan shows that the~~ Poseidon's proposed Plan, as submitted, ~~does~~ did not ensure conformity to *Special Condition 8*. ~~Staff recommends the Plan be modified~~ The Commission therefore required modifications to the Plan to address two main areas in which the Plan ~~does not yet~~ did not conform to the condition: 1) the adequacy of mitigation proposed in the Plan; and, 2) assurances that the Plan will result in successful mitigation being implemented in a timely manner.

Section 4.1 below describes the submitted Plan's key elements and the Commission's adopted modifications (shown in Exhibit 1). Sections 4.2 and 4.3 evaluate elements of the Plan that ~~staff believes~~ require modification. ~~Staff's recommendations~~ The modifications are based on review by staff and by members of the Commission's ~~Marine Review Committee (MRC)~~ Scientific Advisory Panel (SAP), as described in Section 3.0. They also reflect comments received from other agencies, including the U.S. Fish and Wildlife Service and the California State Lands Commission. ~~The discussions below also identify concerns Poseidon expressed about staff's recommendations and staff's response to those concerns. Staff believes its third recommendation~~ The third modification, which would ~~requires~~ require Poseidon to submit a revised Plan that incorporates these modifications, ~~would help~~ ensure the Commission and Poseidon ~~in implementing~~ implements the modified Plan.

#### 4.1 PLAN DESCRIPTION

Poseidon's proposed Plan includes<sup>d</sup> the following main elements:

- **Phased Mitigation Approach:** Poseidon proposes<sup>d</sup> that it implement necessary mitigation in two phases. Phase I would result in 37 acres of wetland restoration or creation within the Southern California Bight. During this phase, Poseidon would also conduct technology review to determine whether new or developing technologies would be reasonably feasible to reduce entrainment. It would also conduct a new entrainment study ten years after beginning operations to determine whether additional mitigation is needed for the facility's entrainment impacts. Phase I would apply during the time Poseidon's desalination facility operations are concurrent with operations of the power plant's cooling water system.

Phase II would occur if the power plant stops operating or, for three consecutive years, operates at a level that provides less than 15% of the water Poseidon needs to operate the desalination facility (i.e., about 16.6 billion gallons per year)<sup>7</sup>. This amount would be based on the power plant's average water use over any three-year period. Under Phase II, Poseidon would conduct a new entrainment analysis and evaluate potential new technologies, similar to the review described in Phase I. Poseidon would then provide the results of those analyses to the Commission for review. If the Commission determines the analyses show a need for additional mitigation or the evaluations show certain technologies might reduce entrainment impacts, Poseidon would request its Plan be amended to require those changes. If additional mitigation is needed, Poseidon would propose one of the following:

- Assume dredging obligations for Agua Hedionda Lagoon from the power plant and obtain mitigation credit of up to 81 acres of restoration credit for conducting dredging; or,
  - Provide additional wetland mitigation of up to 5.5 acres.
- **Suggested Conditions:** The Poseidon's proposed Plan includes<sup>d</sup> suggested conditions that Poseidon would use to implement further studies, evaluate new technologies, select its mitigation site(s), and implement mitigation options. Many of these are modified versions of conditions the Commission required Edison use to implement its mitigation measures for the impacts to marine life from the San Onofre Nuclear Generating Station. These are discussed in Section 4.3 below.

**In adopting the final MLMP, the Commission incorporated several concepts from Poseidon's proposed Plan with a number of modifications, including:**

- **Entrainment impacts: The Commission determined that Poseidon's entrainment impacts resulted in a loss of marine organisms equivalent to that produced in a 55.4-acre area of estuarine and nearshore habitat (see Sections 4.2.1 & 4.2.2 below for details).**

<sup>7</sup> Poseidon's average withdrawal of 304 million gallons per day would equal almost 111 billion gallons per year. 15% of that amount is about 16.6 billion gallons, or about 45 million gallons per day.

- **Phased mitigation: The Commission required mitigation in up to two phases:**
  - **During Phase I, Poseidon is to create or restore at least 37 acres of coastal estuarine wetland habitat in one or two sites within the Southern California Bight. Within 10 months of issuance of the CDP for the desalination facility, Poseidon is to submit a preliminary site selection and restoration plan for Commission approval, and with 24 months of issuance of that CDP, Poseidon is to submit a complete CDP application for restoration of at least 37 acres of estuarine wetlands. Poseidon may choose to restore the full 55.4 acres of wetlands during Phase I.**
  - **For Phase II, Poseidon must within five years of issuance of the Phase I CDP submit a complete CDP application to restore an additional 18.4 acres of estuarine wetlands, or as part of that application may request to reduce or eliminate this Phase II restoration requirement by instead implementing technologies that are not currently available or feasible to reduce entrainment impacts below currently anticipated levels or undertaking dredging in Agua Hedionda lagoon in a manner that warrants mitigation credit.**
- **Required conditions: Poseidon is to implement its Marine Life Mitigation Plan as modified by the Commission and in conformity to the conditions provided in Exhibit 1 of these Findings. Those modifications require Poseidon to submit within sixty days of the Commission's August 6, 2008 approval a revised Plan that includes all required conditions and modifications for the Executive Director's review and approval.**

#### 4.2 ANALYSIS – ADEQUACY OF MITIGATION

This section evaluates the following elements of Poseidon's proposed Plan:

Section 4.2.1: Analysis of Poseidon's entrainment study

Section 4.2.2: Determining the mitigation needed to address identified impacts

Section 4.2.3: Analysis of Poseidon's phased approach

Section 4.2.4: Analysis of dredging as proposed mitigation

##### ***4.2.1 Analysis of Poseidon's Entrainment Study***

**Special Condition 8** required Poseidon to submit its entrainment study for Commission staff review. In March 2008, Poseidon submitted data and modeling results from its study. The study was conducted using the Empirical Transport Model (ETM), which is used to identify the level of adverse effect caused by entrainment. The model compares the portion of a population at risk of entrainment to the portion of that population actually entrained. It calculates this proportional mortality for each of the main species subject to entrainment, and uses the source water area of each species – that is, the total volume or area of water in which species are at risk of being entrained – to calculate the Area of Production Foregone (APF), which provides an estimate of the average area of habitat that would be needed to produce the organisms lost to entrainment. As shown below, this APF provides the basis for determining the amount of mitigation needed to address entrainment impacts.

As described in Section 3 above, staff provided Poseidon's data and study results to Dr. Raimondi for review. In reviewing the study, Dr. Raimondi concluded the following:

- **Adequacy of Study:** Dr. Raimondi found that, as submitted, Poseidon's study could not be evaluated for its technical merits or its estimates of impacts. However, by reviewing additional relevant Poseidon documents and documents from the associated power plant's entrainment study, and by working with the consultants that had conducted Poseidon's study (Tenera Consultants), Dr. Raimondi was able to determine that the study's sampling and data collection methods were consistent with those used in other recent studies conducted in California pursuant to the protocols and guidelines used by the U.S. EPA, Regional Water Quality Control Boards, California Energy Commission, and Coastal Commission.

Dr. Raimondi also found that the study provided adequate data to determine the types and numbers of organisms that would be subject to entrainment and to determine the area of the source water bodies – that is, the area of Agua Hedionda and nearshore ocean waters where entrainable organisms would be subject to entrainment. The study identified a source water area within Agua Hedionda of 302 acres and a nearshore source water area of about 22,000 acres. Poseidon's calculations were generally consistent with those used in other recent studies, although the calculations Poseidon used to determine its source water areas differed from those used in other recent studies to reflect the tidal exchange between Agua Hedionda Lagoon and the nearshore ocean environment.

- **Determining the Effects of Poseidon's Entrainment:** Poseidon concluded that the entrainment caused by 302 MGD of water withdrawal by the desalination facility would result in an APF of 37 acres in Agua Hedionda Lagoon. Dr. Raimondi's review revealed that Poseidon's APF calculation was accurate, albeit at the 50% confidence level – that is, the 37-acre APF represented the area for which the study could assure with at least 50% confidence that the area reflected the full extent of Poseidon's entrainment impacts in the Lagoon. This calculation is based on applying standard statistical techniques to the error rates Poseidon generated in its study. Dr. Raimondi also used those error rates to calculate APFs at the 80% and 95% confidence levels – that is, the number of acres for which the area of full entrainment impacts could be described with at least 80% or 95% confidence. This resulted in APFs of 49 and 61 acres, respectively.

Poseidon's study did not include an APF for the area of nearshore ocean waters that would be affected by entrainment; therefore, using Poseidon's data, Dr. Raimondi calculated an APF for the entrainment effects Poseidon would cause in these nearshore waters. At the same 50%, 80%, and 95% confidence levels, the APFs would be 55, 64, and 72 acres, respectively. The APFs for both source water areas and each confidence level are shown in Table 1 below.

**Table 1: APF Totals**

Source water areas:	APF (in acres) at three levels of confidence:		
	50%	80%	95%
Estuarine: 302 acres of source water	37	49	61
Nearshore: 22,000 acres of source water	55	64	72
<b>Total APF</b>	<b>92 acres</b>	<b>113 acres</b>	<b>133 acres</b>

In its July 3, 2008 proposed MLMP submittal, Poseidon raised a number of concerns with staff's and Dr. Raimondi's review (see also Exhibit B of Poseidon's August 2, 2008 submittal in Exhibit 3 of the MLMP). In response, and to supplement Dr. Raimondi's review, Commission staff requested that the MRC-SAP assess the review and respond to Poseidon's concerns.

Poseidon stated its study made a number of conservative assumptions that result in an overestimate of the mitigation needed, and that those conservative assumptions, and the SAP's response, include:

- *The study overestimated the number of larvae in the lagoon and assumed a greater amount of entrainable larvae than are actually present.* In response, Dr. Raimondi and the MRC-SAP noted that this type of study is based on actual sampling data, not estimates. The data reviewed were those Poseidon provided from its sampling efforts, so there should be no overestimate or assumption of a greater number of larvae than were actually sampled. If Poseidon believes the data are incorrect, that would suggest either that the raw data should be re-evaluated or the study should be run again. Further, if Poseidon's contention were true – that is, if the study overstated the number of larvae in the Lagoon – this would result in a higher APF and would therefore result in a need for *more* mitigation.<sup>8</sup>
- *The study assumes the project will render all affected acreage (i.e., the APF) non-functional, even though that acreage would only be partially affected and would continue to allow numerous other species to function.* In response, the MRC-SAP reiterated that these entrainment studies do not assume the complete loss of ecosystem function within an area of APF; instead, they identify only the area that would be needed to replace the numbers and types of species identified in the study as subject to entrainment. The APF is used to determine impacts to only those species most affected by entrainment, and the mitigation resulting from the APF is meant to account only for those effects.

<sup>8</sup> To provide a simple example, the APF is based in part on proportional mortality, which is the ratio of the number of organisms entrained compared to those at risk of being entrained. Assuming the number of entrained organisms remains the same, the fewer organisms in the Lagoon, the higher the proportion of those organisms entrained – therefore, Poseidon's contention results in a higher proportional impact area.

- *The study protocols assume 100% mortality for entrained organisms; however, Poseidon believes actual mortality will be significantly lower. Poseidon also contends that it should be required to provide less mitigation based on its contention of a lower mortality rate. In response, the MRC-SAP noted that the protocols used in these entrainment studies include an assumption of 100% mortality based on guidance from the U.S. EPA and reflecting the practice of California's State and Regional Water Boards, the California Energy Commission, and the Coastal Commission in conducting and evaluating these studies. This assumption applies to these studies regardless of the type of intake and discharge system being evaluated. For example, although each power plant or desalination facility may use different water volumes, have different and variable water velocities and levels of turbulence, use different types of screens, pumps, and other equipment, and draw in a different mix of organisms, all entrainment studies similar to Poseidon's have used this same 100% mortality rate. Further, there are no peer-reviewed scientific studies that support using a lower mortality rate for different types of power plant or desalination systems that cause entrainment. In the case of Poseidon's desalination facility, entrained organisms will be subject to a number of stressors – including high pressures, significant changes in salinity, possible high temperature differences if the power plant is operating, etc. – and they will then be discharged to a different environment than is found in Agua Hedionda. Any one or a combination of these stressors could result in mortality.*

Poseidon's proposed phased mitigation approach, which is based in part on its contention of lower mortality rates, is evaluated in more detail below. One element of this approach, however, is that Poseidon states it might use alternative screening systems to reduce entrainment or entrainment mortality. ~~However, staff considers this only speculative at this time, and notes that screening systems that have been tested for reducing entrainment have not been found effective in the marine environment. The current scientific understanding is that entrainment impacts are based on an assumption of 100% mortality of organisms present in the full volume of water drawn into an intake system, and that is the basis of the analysis herein.~~ **Pursuant to the Commission's action, if Poseidon proposes to adopt alternative technologies that are not currently available or feasible to reduce entrainment, it may apply for reduced mitigation requirements as part of its Phase II CDP application.**

**Based on the above, and on the reviews conducted by Dr. Raimondi and the SAP, the Commission concurs with the conclusions of the scientific reviews showing that the facility's expected entrainment impacts result in the above-referenced APFs and incorporates those conclusions into its approval of the Plan.**

#### ***4.2.2 Determining the mitigation needed to address identified impacts***

The APFs generated from the study and shown in Table 1 identify the extent of expected entrainment impacts, and also serve as the basis for identifying the type and amount of mitigation needed to address those impacts. Past entrainment studies have generally used the 50% confidence level APF as the basis for mitigation and applied a mitigation ratio (e.g., 1:1, 2:1, 3:1, etc.) to compensate for mitigation occurring at a distance from the affected area, to reflect a temporal loss of habitat functions caused by the impact, to reflect mitigation that provides a different type of habitat than the affected area, or other concerns. This option is described briefly later in this Section.

For this review, however, Dr. Raimondi provided an alternative approach to determine the amount of mitigation needed, based on two main assumptions:

- First, that any mitigation provided would be in the form of restored habitat similar to the types of habitat that produced or supported the affected entrained organisms – that is, that mitigation would consist of tidally-influence salt marsh or shallow water areas similar to those found in Agua Hedionda Lagoon.
- Second, that the mitigation provided would be fully successful – that is, the mitigation site would provide fully functioning habitat that would meet required performance standards, contingency plans, etc., required for such projects to ensure success. This was based on an additional assumption – that Poseidon would be providing mitigation at a site in San Dieguito Lagoon adjacent to Edison’s restoration site and would be subject to the same conditions the Commission required of Edison. Dr. Raimondi and the MRC-SAP believe the conditions required of Edison provide a high level of certainty that Edison’s restoration efforts will be successful and that they would provide a similar level of certainty for Poseidon’s mitigation at this location.

Using the above assumptions, and using the APF figures noted above, Dr. Raimondi concluded with at least 50% confidence that creating or restoring 37 acres of suitable and fully functioning estuarine habitat would fully replace the lost productivity of Agua Hedionda Lagoon, that 49 acres would be needed to provide an 80% level of certainty, and that 61 acres would be needed to reach a 95% level of certainty. By applying the same approach to the nearshore APFs, Dr. Raimondi concluded that creating or restoring 55 acres of open water habitat would be needed to provide at least 50% certainty that that entrainment effects in that source water area would be fully mitigated, that 64 acres were needed to provide 80% certainty, and 72 acres would provide 95% certainty. However, in recognition of the impracticality of creating 55 to 72 acres of offshore open water habitat and recognizing the relatively greater productivity rates per acre of estuarine wetland habitats, Dr. Raimondi suggested that these offshore impacts be “converted” to estuarine mitigation areas. That is, by assuming that successfully restored wetland habitat would be ten times more productive than a similar area of nearshore ocean waters, every ten acres of nearshore impacts could be mitigated by creating or restoring one acre of estuarine habitat.<sup>9</sup> Applying this 10:1 ratio to the nearshore APFs results in 5.5, 6.4, and 7.2 acres, respectively. Although this approach would result in “out of kind” mitigation, it is also expected to produce overall better mitigation – not only is it not practicable to create nearshore, open water habitat, that habitat type is already well-represented along the shoreline, whereas creating or restoring coastal estuarine habitat types would support a long-recognized need to increase the amount of those habitat types in Southern California.<sup>10</sup> These totals are shown Table 2 below.

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<sup>9</sup> This approach – converting offshore entrainment impacts to areas of wetland mitigation – has been used to help determine mitigation in several recent California power plant siting cases, including Huntington Beach (00-AFC-13), Morro Bay (00-AFC-12), and others.

<sup>10</sup> See, for example, the Southern California Wetlands Recovery Project at <http://www.scwrp.org/index.htm>

**Table 2: Adjusted APF Totals**

Habitat Type	APF (in acres) at three levels of confidence			Conversion ratio	Resulting APF (in acres) at three levels of confidence		
	50%	80%	95%		50%	80%	95%
Estuarine	37	49	61	1:1	37	49	61
Nearshore	55	64	72	10:1	5.5	6.4	7.2
<b>Total Mitigation</b>					<b>42.5</b>	<b>55.4</b>	<b>68.2</b>

In sum, Dr. Raimondi concluded that creating 55.4 to 68.2 acres of fully functioning estuarine habitat similar to habitat in Agua Hedionda Lagoon would provide between 80 to 95% confidence that Poseidon’s entrainment impacts would be fully mitigated. This conclusion is also based on Poseidon’s mitigation being subject to conditions similar to Edison’s, which is discussed in more detail in Section 4.2.3 below.

Poseidon contends that ~~Dr. Raimondi’s staff’s~~ recommendation to apply an 80-95% level of certainty for mitigation is “extraordinary and unprecedented” and would result in excess mitigation for the project’s expected impacts. In response, Dr. Raimondi and the ~~MRC-SAP~~ state that the confidence levels used are based on the error rates Poseidon calculated as part of its study, and generating these calculations is a standard practice for this type of entrainment study considering uncertainty is a standard practice in data analysis and that such consideration provides a context for understanding the likelihood that a particular amount of mitigation will provide full compensation for identified impacts. Staff notes that Poseidon’s entrainment study included error rates that Dr. Raimondi used initially to calculate a higher estuarine APF of 87 acres at the 80% confidence level. Dr. Raimondi then used a different error rate, which he considered more appropriate for this study, to calculate an APF of 49 acres at the 80% confidence level.<sup>11</sup>

Dr. Raimondi’s recommendation of using the 80-95% confidence level is “unprecedented” only in that past studies have used the 50% confidence level **to describe the expected impact** and then applied a mitigation ratio, such as 2:1 or 3:1, to reflect the lower confidence level, and to include consideration of mitigation that may be “out of kind”, ~~or~~ provided at some distance from the affected area, **or may not be fully successful**. Dr. Raimondi’s proposal, as supported by the ~~MRC-SAP~~ and Commission staff, would actually result in less mitigation acreage than that standard mitigation approach, but it would have higher certainty of success.

~~Staff recognizes that the Commission could apply a mitigation ratio to the identified level of impact, consistent with past mitigation determinations for wetland impacts. For example, applying a 2:1 ratio to the 50% 42.5 acre total APF would yield 85 acres of restored coastal wetland habitat, and applying a 3:1 ratio would yield 127.5 acres of habitat. If the Commission selects this approach, staff believes these ratios would be appropriate minimums to apply to reflect that the Plan does not identify specific mitigation sites and the site(s) selected could be more than a hundred miles from the impact site at and near Agua Hedionda.~~

<sup>11</sup> Poseidon’s study included error rates based on source water sampling, which Dr. Raimondi believed were unreasonably high. He instead calculated an error rate based on the proportional mortality of each species being an independent replicate, which he believes better meshes with the logic behind the use of the APF to determine impacts.

However, as described previously, Commission staff believes that Dr. Raimondi's proposed approach of creating 55.4 to 68.2 acres would be an adequate and preferable approach ~~if Poseidon's proposed Plan is also modified to include staff's other recommended modifications, including the one described in the next section of this memorandum.~~

**Based on the discussion above and on the record, the Commission finds that requiring 55.4 acres of estuarine wetland restoration in the Southern California Bight subject to the conditions shown in Exhibit 1 provides a sufficient degree of certainty that the facility's entrainment impacts will be fully mitigated and brings the Plan into conformity to Special Condition 8 and the Coastal Act's marine life protection policies.**

#### *4.2.3 Analysis of Proposed Mitigation Phasing*

As noted above, Poseidon's Plan includes a proposed phased approach to mitigation, which would be based on changes in power plant operations or possible changes in technology. **Because of the possibility that Poseidon might in the future adopt technologies that are not currently available or feasible to reduce entrainment and because of uncertainty regarding future power plant operations, the Commission finds that it is appropriate to allow phasing of the mitigation. For the first phase, Poseidon must submit within two years of the issuance of the CDP for the desalination facility a complete CDP application for wetland restoration of at least 37 acres. Poseidon may apply during Phase I to implement the entire 55.4 acres of wetland restoration. For the second phase, Poseidon must within five years of issuance of the Phase I CDP submit a complete CDP application to restore the additional 18.4 acres of restoration, or as part of that application request the Commission reduce or eliminate the amount of required restoration if Poseidon implements the above-referenced technologies that result in reduced entrainment or if, as explained below, Poseidon performs dredging in Agua Hedionda Lagoon in a manner that warrants mitigation credit.** For several reasons, staff recommends the Commission not accept this aspect of the Plan and instead require a specific type and amount of mitigation as described above. The entrainment impacts described in the Commission's Findings were based on Poseidon application to withdraw 304 million gallons per day of estuarine water to operate its desalination facility, and staff recommends the Commission use this as the basis for its decision on the amount of mitigation needed to address this impact.

Staff believes this phasing approach is speculative in that it is tied to unknown future operations of the power plant. Additionally, information in the record shows that the power plant owner expects to replace the existing power plant within the next few years and to operate the existing plant only at very low levels or on a back-up basis until it is no longer needed to support the regional electrical power grid. More recently, the power plant owner announced that it would consider constructing its own desalination facility to provide water for its proposed new power plant. If built, this facility would use only about one percent of the water Poseidon proposes to use, and so would likely have a relatively minor affect on the overall mitigation needed to adequately address the impacts of both facilities.

Staff also believes that tying Poseidon's mitigation to power plant operations would be inappropriate for purposes of the coastal development permit and the Commission's Findings. Poseidon's coastal development permit application did not include the power plant owner as a co-applicant, and the Commission has made no determinations about how the power plant should or may operate.

#### 4.2.4 Analysis of dredging as project mitigation

Similarly, staff recommends the Commission not approve Poseidon's proposal to allow it to use as mitigation during Phase II the dredging activities now being conducted by the power plant owner. Poseidon proposes a formula by which it could obtain up to 81 acres of credit for conducting dredging in Agua Hedionda Lagoon. **The Commission does not accept this formula because it does not currently have sufficient information to evaluate the purpose, nature, or extent of potential dredging, or whether Poseidon would be able to conduct the proposed dredging. It is possible, however, that Poseidon might carry out future dredging in a manner that warrants mitigation credit. Poseidon may therefore apply as part of its Phase II mitigation CDP application for a reduction in restoration requirements in exchange for mitigation credits that the Commission may consider for Poseidon's dredging activities.** However, the Commission has not considered dredging in and of itself to be mitigation. Dredging that the power plant has conducted in the past has been done to maintain its intake channel, and similarly, Poseidon's main purpose for dredging would be to maintain that channel. The Commission has considered habitat benefits resulting from dredging for that primary purpose as merely incidental to the primary purpose of the dredging activities rather than mitigation. Had those dredging activities instead been considered mitigation, the power plant owner may have been required to continue dredging to maintain the area of mitigation, regardless of the need for an intake structure.

Further, as noted in the Findings, the power plant owner also owns the Lagoon and has expressed its intentions to maintain the Lagoon for the foreseeable future. Additionally, the power plant owner is not a permit co-applicant with Poseidon, and the permit record includes no agreement between Poseidon and the owner regarding dredging, so staff believes it would not be appropriate for the Commission to approve a plan that may create an expectation that Poseidon would take on these activities on the owner's property without landowner approval.

As Poseidon notes in its Plan, the Commission accepted as part of Edison's San Dieguito restoration project a commitment by Edison to maintain the San Dieguito tidal inlet in an open condition in perpetuity. However, in that instance, dredging was necessary for that project to support the more than 100 acres of restored tidal wetlands Edison had created as a substantial portion of the mitigation required pursuant to its SONGS coastal development permit. The Commission's acceptance of that mitigation element was also based on multiple years of study by the MRC, whose recommendation the Commission used in its decision. The MRC has not made a similar recommendation for Poseidon's proposal. Further, Poseidon has not proposed mitigation within Agua Hedionda that would require dredging.

Finally, Poseidon's proposal would not meet the provision of **Special Condition 8** requiring mitigation to be in the form of creation, enhancement, or restoration of aquatic and wetland habitat, to the maximum extent feasible. As noted above, there are wetland mitigation opportunities within the Southern California Bight well in excess of the amount needed to mitigate for this project's impacts, and Poseidon has not shown that it would be infeasible to provide the required type of mitigation.

#### 4.3 ANALYSIS – ASSURANCE THAT MITIGATION WILL SUCCEED

Until recently, Poseidon had proposed that it provide wetland restoration at a site in San Dieguito Lagoon, adjacent to Edison's restoration project. Review by staff, Dr. Raimondi, and the **MRC SAP** had been based on determining whether that site would provide suitable mitigation. In April 2008, Dr. Raimondi concluded that Poseidon's proposed San Dieguito site would likely provide suitable habitat for the losses of estuarine larvae at Agua Hedionda if the restored habitat was similar to the habitat affected at Agua Hedionda. In June 2008, Dr. Raimondi and the **MRC SAP** also concluded that the San Dieguito site would also provide at least partial mitigation for some species affected in Poseidon's nearshore impact area. Also in June, staff provided Poseidon with a modified version of the conditions the Commission required Edison to meet for conducting its site selection, construction, monitoring, and other aspects of its restoration plan, and recommended that Poseidon include these conditions as part of its proposed Plan. These are provided in Exhibit 2.

Since then, Several weeks before the August 2008 hearing, Poseidon altered its Plan so that San Dieguito ~~is~~ was no longer necessarily Poseidon's preferred site. The Plan instead proposes that Poseidon select a site or sites somewhere within the Southern California Bight that meet conditions shown in Sections 3.1 and 3.2 of the Plan. Those conditions included further modifications to the conditions staff provided in June.

Staff asked the **MRC SAP** to review Poseidon's two proposed changes – that is, its proposal to consider sites other than San Dieguito and the modifications in its Plan to staff's previously recommended conditions. Regarding staff's proposed conditions, the **MRC SAP** believes those conditions – i.e., Exhibit 2 – would generally provide adequate assurance of success for a restoration project to be implemented in most coastal estuarine areas of Southern California, although a higher degree of assurance would result if specific sites were identified. The **MRC SAP** also determined that the changes Poseidon proposed to staff's conditions and included in its Plan would result in lesser mitigation standards than those required of Edison and would not provide equal assurance of mitigation success. The changes Poseidon proposed include the following:<sup>12</sup>

- Staff recommended that Poseidon submit a complete coastal development permit application for its Final Restoration Plan within 24 months of Commission approval of its Preliminary Plan (i.e., the Plan being reviewed herein). Poseidon **proposed** modified **and** revised that recommendation in Section 4 of its Plan to allow submittal of that application either 24 months after issuance of the project coastal development permit or commencement of

<sup>12</sup> For a full comparison, see Exhibit 3, Section 3 of Poseidon's **proposed** Plan, and Exhibit 2 showing staff's originally recommended conditions.

commercial operations of the desalination facility, whichever is later. This could substantially delay the implementation of mitigation and could result in several years of impacts occurring without mitigation.

- A proposed change to Poseidon's Plan at Section 3.1(d) and at Section 3.2(c) would **allow the Executive Director or Commission to** reduce the required buffer zone at its mitigation sites from ~~no less than~~ **at least** 100 feet wide to an average that could be ~~much less than~~ 100 feet **wide**.
- ~~A proposed change at Section 3.1(i) would allow the Plan to affect endangered species in a way not allowed under the Edison requirements.~~
- Poseidon proposes to change Section 3.3(c) to allow mitigation to occur in up to four sites, rather than up to two sites, as required of Edison, which could fragment the mitigation and reduce its overall value.
- ~~Poseidon also proposed deleting a requirement at Section 5.4 that would require a designed tidal prism be maintained to ensure the wetland mitigation site has adequate tidal action.~~
- ~~Poseidon proposes that any fees it pays for coastal development permits or amendments be credited against the budget needed to implement the mitigation plan.~~

Staff and the ~~MRC~~ **SAP** reviewed these proposed changes and believe they would result in inadequate assurance that successful mitigation would be conducted in a timely manner, **and the Commission did not include those proposed revisions in its Plan approval**. Staff's recommendation, therefore, is **The Commission finds** that the Plan be modified to include the conditions in Exhibit 2.

## **CONCLUSION**

**The Commission finds that, as modified as described above and with the conditions in Exhibit 1, the Marine Life Mitigation Plan complies with *Special Condition 8* and the marine life protection policies of the Coastal Act. The Commission further finds that implementation of the Plan will ensure the project's entrainment-related impacts will be fully mitigated and will enhance and restore the marine resources and biological productivity of coastal waters in conformity to Coastal Acts Sections 30230 and 30231.**

**Item W16a**  
**Exhibit 1**

**Approved Marine Life**  
**Mitigation Plan (MLMP)**

**Item W16a – Exhibit 1**  
**Special Condition 8 of E-06-013 – Poseidon Resources**  
**November 21, 2008**

**APPROVED MARINE LIFE MITIGATION PLAN**

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**INTRODUCTION**

Poseidon's Carlsbad desalination facility will be co-located with the Encina Power Station and will use the power plant's once-through cooling intake and outfall structures. The desalination facility is expected to use about 304 million gallons per day (mgd) of estuarine water drawn through the structure. The facility will operate both when the power plant is using its once-through cooling system and when it is not.

This Marine Life Mitigation Plan (the Plan) will result in mitigation necessary to address the entrainment impacts caused by the facility's use of estuarine water. The Plan includes two phases of mitigation – Poseidon is required during Phase I to provide at least 37 acres of estuarine wetland restoration, as described below. In Phase II, Poseidon is required to provide an additional 18.4 acres of estuarine wetland restoration. However, as described below, Poseidon may choose to provide all 55.4 acres of restoration during Phase I. Poseidon may also choose during Phase II to apply for a CDP to reduce or eliminate the required 18.4 acres of mitigation and instead conduct alternative mitigation by implementing new entrainment reduction technology or obtaining mitigation credit for conducting dredging.

**CONDITION A: WETLAND RESTORATION MITIGATION**

The permittee shall develop, implement and fund a wetland restoration project that compensates for marine life impacts from Poseidon's Carlsbad desalination facility.

**1.0 PHASED IMPLEMENTATION**

**Phase I:** Poseidon is to provide at least 37 acres of estuarine wetland restoration. Within two years of issuance of the desalination facility's coastal development permit (CDP), Poseidon is to submit a complete CDP application for a proposed restoration project, as described below.

**Phase II:** Within five years of issuance of the Phase I CDP, Poseidon is to submit a complete CDP application proposing up to 18.4 acres of additional estuarine wetland restoration, subject to reduction as described in Section 6.0 below.

## **2.0 SITE SELECTION**

In consultation with Commission staff, the permittee shall select a wetland restoration site or sites for mitigation in accordance with the following process and terms.

Within 10 months of the effective date of this permit, the permittee shall submit the proposed site(s) and preliminary wetland restoration plan to the Commission for its review and approval or disapproval.

The location of the wetland restoration project(s) shall be within the Southern California Bight. The permittee shall select from sites including, but not limited to, the following eleven sites: Tijuana Estuary in San Diego County; San Dieguito River Valley in San Diego County; Agua Hedionda Lagoon in San Diego County; San Elijo Lagoon in San Diego County; Buena Vista Lagoon in San Diego County; Huntington Beach Wetland in Orange County, Anaheim Bay in Orange County, Santa Ana River in Orange County, Los Cerritos Wetland in Los Angeles County, Ballona Wetland in Los Angeles County, and Ormond Beach in Ventura County. The permittee may also consider any sites that may be recommended by the California Department of Fish & Game as high priority wetlands restoration projects. Other sites proposed by the permittee may be added to this list with the Executive Director's approval.

The basis for the selection shall be an evaluation of the site(s) against the minimum standards and objectives set forth in subsections 3.1 and 3.2 below. The permittee shall take into account and give serious consideration to the advice and recommendations of the Scientific Advisory Panel (SAP) established and convened by the Executive Director pursuant to Condition B.1.0. The permittee shall select the site(s) that meet the minimum standards and best meet the objectives.

## **3.0 PLAN REQUIREMENTS**

In consultation with Commission staff, the permittee shall develop a wetland restoration plan for the wetland site(s) identified through the site selection process. The wetland restoration plan shall meet the minimum standards and incorporate as many as feasible of the objectives in subsections 3.1 and 3.2, respectively.

### **3.1 Minimum Standards**

The wetland restoration project site(s) and preliminary plan(s) must meet the following minimum standards:

- a. Location within Southern California Bight;
- b. Potential for restoration as tidal wetland, with extensive intertidal and subtidal areas;
- c. Creates or substantially restores a minimum of 37 acres and up to at least 55.4 acres of habitat similar to the affected habitats in Agua Hedionda Lagoon, excluding buffer zone and upland transition area;

- d. Provides a buffer zone of a size adequate to ensure protection of wetland values, and at least 100 feet wide, as measured from the upland edge of the transition area.
- e. Any existing site contamination problems would be controlled or remediated and would not hinder restoration;
- f. Site preservation is guaranteed in perpetuity (through appropriate public agency or nonprofit ownership, or other means approved by the Executive Director), to protect against future degradation or incompatible land use;
- g. Feasible methods are available to protect the long-term wetland values on the site(s), in perpetuity;
- h. Does not result in a net loss of existing wetlands; and
- i. Does not result in an adverse impact on endangered animal species or an adverse unmitigated impact on endangered plant species.

### **3.2 Objectives**

The following objectives represent the factors that will contribute to the overall value of the wetland. The selected site(s) shall be determined to achieve these objectives. These objectives shall also guide preparation of the restoration plan.

- a. Provides maximum overall ecosystem benefits, e.g. maximum upland buffer, enhancement of downstream fish values, provides regionally scarce habitat, potential for local ecosystem diversity;
- b. Provides substantial fish habitat compatible with other wetland values at the site(s);
- c. Provides a buffer zone of an average of at least 300 feet wide, and not less than 100 feet wide, as measured from the upland edge of the transition area.
- d. Provides maximum upland transition areas (in addition to buffer zones);
- e. Restoration involves minimum adverse impacts on existing functioning wetlands and other sensitive habitats;
- f. Site selection and restoration plan reflect a consideration of site specific and regional wetland restoration goals;
- g. Restoration design is that most likely to produce and support wetland-dependent resources;
- h. Provides rare or endangered species habitat;

- i. Provides for restoration of reproductively isolated populations of native California species;
- j. Results in an increase in the aggregate acreage of wetland in the Southern California Bight;
- k. Requires minimum maintenance;
- l. Restoration project can be accomplished in a reasonably timely fashion; and,
- m. Site(s) in proximity to the Carlsbad desalination facility.

### **3.3 Restrictions**

- a. The permittee may propose a wetland restoration project larger than the minimum necessary size specified in subsection 3.1(c) above, if biologically appropriate for the site(s), but the additional acreage must (1) be clearly identified, and (2) must not be the portion of the project best satisfying the standards and objectives listed above.
- b. If the permittee jointly enters into a restoration project with another party: (1) the permittee's portion of the project must be clearly specified, (2) any other party involved cannot gain mitigation credit for the permittee's portion of the project, and (3) the permittee may not receive mitigation credit for the other party's portion of the project.
- c. The permittee may propose to divide the mitigation requirement between a maximum of two wetland restoration sites, unless there is a compelling argument, approved by the Executive Director, that the standards and objectives of subsections 3.1 and 3.2 will be better met at more than two sites.

## **4.0 PLAN IMPLEMENTATION**

### **4.1 Coastal Development Permit Applications**

The permittee shall submit complete Coastal Development Permit applications for the Phase I and Phase II restoration plan(s) that include CEQA documentation and local or other state agency approvals. The CDP application for Phase I shall be submitted within 24 months following the issuance of the Coastal Development Permit for the Carlsbad desalination facility. The CDP application for Phase II shall be submitted within 5 years of issuance of the CDP for Phase I. The Executive Director may grant an extension to these time periods at the request of and upon a demonstration of good cause by the permittee. The restoration plans shall substantially conform to Section 3.0 above and shall include, but not be limited to the following elements:

- a. Detailed review of existing physical, biological, and hydrological conditions; ownership, land use and regulation;

- b. Evaluation of site-specific and regional restoration goals and compatibility with the goal of mitigating for Poseidon's marine life impacts;
- c. Identification of site opportunities and constraints;
- d. Schematic restoration design, including:
  - 1. Proposed cut and fill, water control structures, control measures for stormwater, buffers and transition areas, management and maintenance requirements;
  - 2. Planting program, including removal of exotic species, sources of plants and or seeds (local, if possible), protection of existing salt marsh plants, methods for preserving top soil and augmenting soils with nitrogen and other necessary soil amendments before planting, timing of planting, plans for irrigation until established, and location of planting and elevations on the topographic drawings;
  - 3. Proposed habitat types (including approximate size and location);
  - 4. Assessment of significant impacts of design (especially on existing habitat values) and net habitat benefits;
  - 5. Location, alignment and specifications for public access facilities, if feasible;
  - 6. Evaluation of steps for implementation e.g. permits and approvals, development agreements, acquisition of property rights;
  - 7. Cost estimates;
  - 8. Topographic drawings for final restoration plan at 1" = 100 foot scale, one foot contour interval; and
  - 9. Drawings shall be directly translatable into final working drawings.
- e. Detailed information about how monitoring and maintenance will be implemented;
- f. Detailed information about construction methods to be used;
- g. Defined final success criteria for each habitat type and methods to be used to determine success;
- h. Detailed information about how Poseidon will coordinate with the Scientific Advisory Panel including its role in independent monitoring, contingency planning review, cost recovery, etc.;
- i. Detailed information about contingency measures that will be implemented if mitigation does not meet the approved goals, objectives, performance standards, or other criteria; and,
- j. Submittal of "as-built" plans showing final grading, planting, hydrological features, etc. within 60 days of completing initial mitigation site construction.

#### **4.2 Wetland Construction Phase**

Within 6 months of approval of the Phase I restoration plan, subject to the permittee's obtaining the necessary permits, the permittee shall commence the construction phase of the wetland restoration project. The permittee shall be responsible for ensuring that construction is carried out in accordance with the specifications and within the timeframes specified in the approved final restoration plan and shall be responsible for any remedial work or other intervention necessary to comply with final plan requirements.

#### **4.3 Timeframe for Resubmittal of Project Elements**

If the Commission does not approve any element of the project (i.e. site selection, restoration plan), the Commission will specify the time limits for compliance relative to selection of another site or revisions to the restoration plan.

### **5.0 WETLAND MONITORING, MANAGEMENT AND REMEDIATION**

Monitoring, management (including maintenance), and remediation shall be conducted over the "full operating life" of Poseidon's desalination facility, which shall be 30 years from the date "as-built" plans are submitted pursuant to subsection 4.1(1).

The following section describes the basic tasks required for monitoring, management and remediation. Condition B specifies the administrative structure for carrying out these tasks, including the roles of the permittee and Commission staff.

#### **5.1 Monitoring and Management Plan**

A monitoring and management plan will be developed in consultation with the permittee and appropriate wildlife agencies, concurrently with the preparation of the restoration plan to provide an overall framework to guide the monitoring work. It will include an overall description of the studies to be conducted over the course of the monitoring program and a description of management tasks that are anticipated, such as trash removal. Details of the monitoring studies and management tasks will be set forth in a work program (see Condition B).

#### **5.2 Pre-restoration site monitoring**

Pre-restoration site monitoring shall be conducted to collect baseline data on the wetland attributes to be monitored. This information will be incorporated into and may result in modification to the overall monitoring plan.

#### **5.3 Construction Monitoring**

Monitoring shall be conducted during and immediately after each stage of construction of the wetland restoration project to ensure that the work is conducted according to plans.

#### 5.4 Post-Restoration Monitoring and Remediation

Upon completion of construction of the wetland(s), monitoring shall be conducted to measure the success of the wetland(s) in achieving stated restoration goals (as specified in the restoration plan(s)) and in achieving performance standards, specified below. The permittee shall be fully responsible for any failure to meet these goals and standards during the facility's full operational years. Upon determining that the goals or standards are not achieved, the Executive Director shall prescribe remedial measures, after consultation with the permittee, which shall be immediately implemented by the permittee with Commission staff direction. If the permittee does not agree that remediation is necessary, the matter may be set for hearing and disposition by the Commission.

Successful achievement of the performance standards shall (in some cases) be measured relative to approximately four reference sites, which shall be relatively undisturbed, natural tidal wetlands within the Southern California Bight. The Executive Director shall select the reference sites. The standard of comparison, i.e., the measure of similarity to be used (e.g., within the range, or within the 95% confidence interval) shall be specified in the work program.

In measuring the performance of the wetland project, the following physical and biological performance standards will be used:

- a. **Longterm Physical Standards.** The following long-term standards shall be maintained over the full operative life of the desalination facility:
  1. **Topography.** The wetland(s) shall not undergo major topographic degradation (such as excessive erosion or sedimentation);
  2. **Water Quality.** Water quality variables [to be specified] shall be similar to reference wetlands;
  3. **Tidal prism.** If the mitigation site(s) require dredging, the tidal prism shall be maintained and tidal flushing shall not be interrupted; and,
  4. **Habitat Areas.** The area of different habitats shall not vary by more than 10% from the areas indicated in the restoration plan(s).
  
- b. **Biological Performance Standards.** The following biological performance standards shall be used to determine whether the restoration project is successful. Table 1, below, indicates suggested sampling locations for each of the following biological attributes; actual locations will be specified in the work program:
  1. **Biological Communities.** Within 4 years of construction, the total densities and number of species of fish, macroinvertebrates and birds (see Table 1) shall be similar to the densities and number of species in similar habitats in the reference wetlands;
  2. **Vegetation.** The proportion of total vegetation cover and open space in the marsh shall be similar to those proportions found in the reference sites. The percent cover of algae shall be similar to the percent cover found in the reference sites;
  3. **Spartina Canopy Architecture.** The restored wetland shall have a canopy architecture that is similar in distribution to the reference sites, with an equivalent proportion of stems over 3 feet tall;

4. **Reproductive Success.** Certain plant species, as specified by in the work program, shall have demonstrated reproduction (i.e. seed set) at least once in three years;
5. **Food Chain Support.** The food chain support provided to birds shall be similar to that provided by the reference sites, as determined by feeding activity of the birds; and,
6. **Exotics.** The important functions of the wetland shall not be impaired by exotic species.

**Table 1: Suggested Sampling Locations**

	Salt Marsh			Open Water		Mudflat	Tidal Creeks
	Spartina	Salicornia	Upper	Lagoon	Eelgrass		
1) Density/spp:							
– Fish				X	X	X	X
– Macroinvertebrates				X	X	X	X
– Birds	X	X	X	X		X	X
2) % Cover							
Vegetation	X	X	X		X		
algae	X	X				X	
3) Spartina architecture	X						
4) Reproductive success	X	X	X				
5) Bird feeding				X		X	X
6) Exotics	X	X	X	X	X	X	X

## 6.0 ALTERNATIVE MITIGATION

As part of Phase II, Poseidon may propose in its CDP application alternatives to reduce or eliminate the required 18.4 acres of mitigation. The alternative mitigation proposed may be in the form of implementing new entrainment reduction technology or may be mitigation credits for conducting dredging, either of which could reduce or eliminate the 18.4 acres of mitigation.

## **CONDITION B: ADMINISTRATIVE STRUCTURE**

### **1.0 ADMINISTRATION**

Personnel with appropriate scientific or technical training and skills will, under the direction of the Executive Director, oversee the mitigation and monitoring functions identified and required by Condition A. The Executive Director will retain scientific and administrative support staff needed to perform this function, as specified in the work program.

This technical staff will oversee the preconstruction and post-construction site assessments, mitigation project design and implementation (conducted by permittee), and monitoring activities (including plan preparation); the field work will be done by contractors under the Executive Director's direction. The contractors will be responsible for collecting the data, analyzing and interpreting it, and reporting to the Executive Director.

The Executive Director shall convene a Scientific Advisory Panel to provide the Executive Director with scientific advice on the design, implementation and monitoring of the wetland restoration. The panel shall consist of recognized scientists, including a marine biologist, an ecologist, a statistician and a physical scientist.

### **2.0 BUDGET AND WORK PROGRAM**

The funding necessary for the Commission and the Executive Director to perform their responsibilities pursuant to these conditions will be provided by the permittee in a form and manner reasonably determined by the Executive Director to be consistent with requirements of State law, and which will ensure efficiency and minimize total costs to the permittee. The amount of funding will be determined by the Commission on a biennial basis and will be based on a proposed budget and work program, which will be prepared by the Executive Director in consultation with the permittee, and reviewed and approved by the Commission in conjunction with its review of the restoration plan. If the permittee and the Executive Director cannot agree on the budget or work program, the disagreement will be submitted to the Commission for resolution.

The budget to be funded by the permittee will be for the purpose of reasonable and necessary costs to retain personnel with appropriate scientific or technical training and skills needed to assist the Commission and the Executive Director in carrying out the mitigation and lost resource compensation conditions. In addition, reasonable funding will be included in this budget for necessary support personnel, equipment, overhead, consultants, the retention of contractors needed to conduct identified studies, and to defray the costs of members of any scientific advisory panel(s) convened by the Executive Director for the purpose of implementing these conditions.

Costs for participation on any advisory panel shall be limited to travel, per diem, meeting time and reasonable preparation time and shall only be paid to the extent the participant is not otherwise entitled to reimbursement for such participation and preparation. The amount of funding will be determined by the Commission on a biennial basis and will be based on a proposed budget and work program, which will be prepared by the Executive Director in consultation with the permittee, and reviewed and approved by the Commission in conjunction

with its review of the restoration plan. If the permittee and the Executive Director cannot agree on the budget or work program, the disagreement will be submitted to the Commission for resolution. Total costs for such advisory panel shall not exceed \$100,000 per year adjusted annually by any increase in the consumer price index applicable to California.

The work program will include:

- a. A description of the studies to be conducted over the subsequent two year period, including the number and distribution of sampling stations and samples per station, methodology and statistical analysis (including the standard of comparison to be used in comparing the mitigation project to the reference sites);
- b. A description of the status of the mitigation projects, and a summary of the results of the monitoring studies to that point;
- c. A description of four reference sites;
- d. A description of the performance standards that have been met, and those that have yet to be achieved;
- e. A description of remedial measures or other necessary site interventions;
- f. A description of staffing and contracting requirements; and,
- g. A description of the Scientific Advisory Panel's role and time requirements in the two year period.

The Executive Director may amend the work program at any time, subject to appeal to the Commission.

### **3.0 ANNUAL REVIEW AND PUBLIC WORKSHOP REVIEW**

The permittee shall submit a written review of the status of the mitigation project to the Executive Director no later than April 30 each year for the prior calendar year. The written review will discuss the previous year's activities and overall status of the mitigation project, identify problems and make recommendations for solving them, and review the next year's program.

To review the status of the mitigation project, the Executive Director will convene and conduct a duly noticed public workshop during the first year of the project and every other year thereafter unless the Executive Director deems it unnecessary. The meeting will be attended by the contractors who are conducting the monitoring, appropriate members of the Scientific Advisory Panel, the permittee, Commission staff, representatives of the resource agencies (CDFG, NMFS, USFWS), and the public. Commission staff and the contractors will give presentations on the previous biennial work program's activities, overall status of the mitigation project, identify problems and make recommendations for solving them, and review the next upcoming period's biennial work program.

The public review will include discussions on whether the wetland mitigation project has met the performance standards, identified problems, and recommendations relative to corrective measures necessary to meet the performance standards. The Executive Director will use information presented at the public review, as well as any other relevant information, to determine whether any or all of the performance standards have been met, whether revisions to the standards are necessary, and whether remediation is required. Major revisions shall be subject to the Commission's review and approval.

The mitigation project will be successful when all performance standards have been met each year for a three-year period. The Executive Director shall report to the Commission upon determining that all of the performance standards have been met for three years and that the project is deemed successful. If the Commission determines that the performance standards have been met and the project is successful, the monitoring program will be scaled down, as recommended by the Executive Director and approved by the Commission. A public review shall thereafter occur every five years, or sooner if called for by the Executive Director. The work program shall reflect the lower level of monitoring required. If subsequent monitoring shows that a standard is no longer being met, monitoring may be increased to previous levels, as determined necessary by the Executive Director.

The Executive Director may make a determination on the success or failure to meet the performance standards or necessary remediation and related monitoring at any time, not just at the time of the workshop review.

#### **4.0 ADDITIONAL PROCEDURES**

##### **4.1 Dispute Resolution**

In the event that the permittee and the Executive Director cannot reach agreement regarding the terms contained in or the implementation of any part of this Plan, the matter may be set for hearing and disposition by the Commission.

##### **4.2 Extensions**

Any of the time limits established under this Plan may be extended by the Executive Director at the request of the permittee and upon a showing of good cause.

#### **CONDITION C: SAP DATA MAINTENANCE**

The permittee shall make available on a publicly-accessible website all scientific data collected as part of the project. The website and the presentation of data shall be subject to Executive Director review and approval.

**Item W16a**  
**Exhibit 2**

**Staff's Proposed Draft**  
**MLMP Conditions**  
**(June 2008)**

**CDP E-06-013  
Condition Compliance  
Special Condition 8**

**Exhibit 2**

**July 24, 2008**

EXHIBIT NO. 2
APPLICATION NO. E-06-013
Condition Compliance
Special Condition 8

**Staff's Proposed Draft MLMP Conditions**

This is a modified version of conditions the Commission required of Southern California Edison in implementing its wetland restoration project at San Dieguito Lagoon pursuant to Coastal Development Permit xx

Staff provided these conditions to Poseidon on June 20, 2008 and recommended Poseidon include them in its Marine Life Mitigation Plan to present to the Commission. The modifications shown in ~~strike through~~ and underline reflect differences between Poseidon's proposal and Edison's and provide updated wetland mitigation standards since the Commission's approval of Edison's project. Staff's notes to Poseidon are shown in [*brackets and bold italics*].

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**CONDITION A: WETLAND RESTORATION MITIGATION**

The permittee shall develop, implement and fund a wetland restoration project that compensates for ~~past, present and future fish~~ marine life impacts from ~~SONGS Units 2 and 3, as identified by the Marine Review Committee~~ Poseidon's Carlsbad desalination facility.

**1.0 SITE SELECTION AND PRELIMINARY PLAN**

In consultation with Commission staff, the permittee shall select a wetland restoration site and develop a preliminary plan in accordance with the following process and terms.

Within 9 months of the effective date of this permit, the permittee shall submit the proposed site and preliminary wetland restoration plan to the Commission for its review and approval or disapproval.

## **1.1 Site Selection**

The location of the wetland restoration project shall be within the Southern California Bight. The permittee shall evaluate and select from sites including, but not limited to, the following eight sites: Tijuana Estuary in San Diego County, San Dieguito River Valley in San Diego County, Huntington Beach Wetland in Orange County, Anaheim Bay in Orange County, Santa Ana River in Orange County, Los Cerritos Wetland in Los Angeles County, Ballona Wetland in Los Angeles County, and Ormond Beach in Ventura County. Other sites proposed by the permittee may be added to this list with the Executive Director's approval.

The basis for the selection shall be an evaluation of the sites against the minimum standards and objectives set forth in subsections 1.3 and 1.4 below. The permittee shall take into account and give serious consideration to the advice and recommendations of an Interagency Wetland Advisory Panel, established and convened by the Executive Director. The permittee shall select the site that meets the minimum standards and best meets the objectives.

## **1.2 Preliminary Restoration Plan**

*[Note: This is the type of Preliminary Plan we anticipate you'll provide for the August hearing. The Plan should include the elements in Sections 1.2 – 1.4 below.]*

In consultation with Commission staff, the permittee shall develop a preliminary wetland restoration plan for the wetland site identified through the site selection process. The preliminary wetland restoration plan shall meet the minimum standards and incorporate as many as possible of the objectives in subsections 1.3 and 1.4, respectively.

The preliminary wetland restoration plan shall include the following elements:

- a. Review of existing physical, biological, and hydrological conditions; ownership, land use and regulation.
- b. Site-specific and regional restoration goals and compatibility with the goal of mitigating for ~~SONGS impact to fish~~ Poseidon's marine life impacts.
- c. Identification of site opportunities and constraints.
- d. Conceptual restoration design, including:
  1. Proposed grading and excavation; water control structures; planting; integration of public access, if feasible; buffers and transition areas; management and maintenance requirements.
  2. Proposed habitat types (including approximate size and location).

3. Preliminary assessment of significant impacts of design (especially on existing habitat values) and net habitat benefits.
4. Evaluation of steps for implementation e.g. permits and approvals, development agreements, acquisition of property interests.
5. A graphic depiction of proposed plan.

***[Note: As part of the elements above, the Preliminary Plan should describe the current and anticipated relationship between Poseidon's proposed mitigation and Edison's, including applicable conditions of the MOA and any written agreements between Poseidon, Edison, and/or the JPA, measures included that will ensure Poseidon's mitigation will not adversely affect Edison's mitigation, coordination with Edison's Scientific Advisory Panel, etc.]***

### **1.3 Minimum Standards**

The wetland restoration project site and preliminary plan must meet the following minimum standards:

- a. Location within Southern California Bight.
- b. Potential for restoration as tidal wetland, with extensive intertidal and subtidal areas;
- c. Creates or substantially restores a minimum of ~~150 acres (60 hectares)~~ 55.4 to 68.2 acres of wetlands habitat similar to the affected habitats in Agua Hedionda Lagoon, excluding buffer zone and upland transition area; ***[Note: the acreage figures are from Pete Raimondi's evaluation at the 80% and 95% confidence levels.]***
- d. Provides a buffer zone of a size adequate to ensure protection of wetland values, and not less than at least 100 feet wide, as measured from the upland edge of the transition area.
- e. Any existing site contamination problems would be controlled or remediated and would not hinder restoration.
- f. Site preservation is guaranteed in perpetuity (through appropriate public agency or nonprofit ownership, or other means approved by the Executive Director), to protect against future degradation or incompatible land use.
- g. Feasible methods are available to protect the longterm wetland values on the site, in perpetuity.
- h. Does not result in loss of existing wetlands.
- i. Does not result in impact on endangered species.

#### **1.4 Objectives**

The following objectives represent the factors that will contribute to the overall value of the wetland. The selected site shall be that with the best potential to achieve these objectives. These objectives shall also guide preparation of the restoration plan.

- a. Provides maximum overall ecosystem benefits e.g. maximum upland buffer, enhancement of downstream fish values, provides regionally scarce habitat, potential for local ecosystem diversity.
- b. Provides substantial fish habitat compatible with other wetland values at the site.
- c. Provides a buffer zone of an average of at least 300 feet wide, and not less than 100 feet wide, as measured from the upland edge of the transition area.
- d. Provides maximum upland transition areas (in addition to buffer zones);
- e. Restoration involves minimum adverse impacts on existing functioning wetlands and other sensitive habitats.
- f. Site selection and restoration plan reflect a consideration of site specific and regional wetland restoration goals.
- g. Restoration design is that most likely to produce and support wetland-dependent resources.
- h. Provides rare or endangered species habitat.
- i. Provides for restoration of reproductively isolated populations of native California species.
- j. Results in an increase in the aggregate acreage of wetland in the Southern California Bight.
- k. Requires minimum maintenance.
- l. Restoration project can be accomplished in a timely fashion.
- m. Site is in proximity to ~~SONGS~~ the Carlsbad desalination facility.

#### **1.6 Restrictions**

(a) The permittee may propose a wetland restoration project larger than the minimum necessary size specified in subsection 1.3(c) above, if biologically appropriate for the site, but the additional acreage must (1) be clearly identified, and (2) must not be the portion of the project best satisfying the standards and objectives listed above.

(b) If the permittee jointly enters into a restoration project with another party: (1) the permittee's portion of the project must be clearly specified, (2) any other party involved cannot gain mitigation credit for the permittee's portion of the project, and (3) the permittee may not receive mitigation credit for the other party's portion of the project.

(c) The permittee may propose to divide the mitigation requirement between a maximum of two wetland restoration sites, unless there is a compelling argument, approved by the Executive Director, that the standards and objectives of subsections 1.3 and 1.4 will be better met at more than two sites.

*[Note: We'll probably recommend the text below, or similar, as conditions for the Commission to adopt in August to determine what will be required as follow-up to the Preliminary Plan to ensure it results in an adequate Final Plan – that is, while you may include them in your Plan for August, we'll probably handle them as conditions for approval.]*

## 2.0 FINAL PLAN AND PLAN IMPLEMENTATION

### 2.1 Final Restoration Plan

Within ~~12-24~~ months *[Note: based on anticipated 18-month CEQA process]* following the Commission's approval of a site selection and preliminary restoration plan, the permittee shall submit a complete Coastal Development Permit application for a final restoration plan along with CEQA documentation ~~generated in connection with~~ and local or other state agency approvals, ~~to the Executive Director of the Coastal Commission for review and approval.~~ *[Note: the changes above reflect a difference between SONGS and Poseidon's processes. With SONGS, Edison applied for a CDP for its Preliminary Plan after Marine Resource Committee review and Commission approval of the selected site and applied for a CDP for its Final Plan. With Poseidon, your CDP application for the mitigation site work will come after CEQA is done and after other approvals are obtained.]* The final restoration plan shall substantially conform to the approved preliminary restoration plan as originally submitted or as amended by the Commission pursuant to a request by the permittee. The final restoration plan shall include, but not be limited to the following elements:

- a. Detailed review of existing physical, biological, and hydrological conditions; ownership, land use and regulation.
- b. Evaluation of site-specific and regional restoration goals and compatibility with the goal of mitigating for ~~SONGS impacts to fish~~ Poseidon's marine life impacts.
- c. Identification of site opportunities and constraints.

*[Note: the above three elements should include a complete description of the relationship between Poseidon's mitigation and Edison's, and any legal/contractual relationships between*

**Poseidon, Edison, the JPA, and other involved entities. This should also describe how Poseidon's ongoing sampling, monitoring, maintenance, contingency planning, etc. may be associated with Edison's.]**

d. Schematic restoration design, including:

1. Proposed cut and fill, water control structures, control measures for stormwater, buffers and transition areas, management and maintenance requirements.
2. Planting Program, including removal of exotic species, sources of plants and or seeds (local, if possible), protection of existing salt marsh plants, methods for preserving top soil and augmenting soils with nitrogen and other necessary soil amendments before planting, timing of planting, plans for irrigation until established, and location of planting and elevations on the topographic drawings.
3. Proposed habitat types (including approximate size and location).
4. Assessment of significant impacts of design (especially on existing habitat values) and net habitat benefits. [*Note: this should include a description of any effects on existing habitat values within Poseidon's mitigation site (e.g., are there existing wetlands within your site that would be altered by your project?) and Edison's site, along with proposed measures to mitigate those impacts – e.g., methods, locations, etc.*]
5. Location, alignment and specifications for public access facilities, if feasible.
6. Evaluation of steps for implementation e.g. permits and approvals, development agreements, acquisition of property rights.
7. Cost estimates.
8. Topographic drawings for final restoration plan at 1" = 100 foot scale, one foot contour interval.
9. Drawings shall be directly translatable into final working drawings.

g. Detailed information about how monitoring and maintenance will be implemented.

h. Detailed information about construction methods to be used.

i. Defined final success criteria for each habitat type and methods to be used to determine success.

j. Detailed information about how Poseidon will coordinate with the SONGS Scientific Advisory Panel, including its role in independent monitoring, contingency planning review, cost recovery, etc.

- k. Detailed information about contingency measures that will be implemented if mitigation does not meet the approved goals, objectives, performance standards, or other criteria.
- l. Submittal of "as-built" plans showing final grading, planting, hydrological features, etc. within 60 days of completing initial mitigation site construction.

*[Note: the additions above reflect conditions generally included in more recent mitigation plans or needed to coordinate with Edison's efforts.]*

## **2.2 Wetland Construction Phase**

Within 6 months of approval of the final restoration plan, subject to the permittee's obtaining the necessary permits, the permittee shall commence the construction phase of the wetland restoration project. The permittee shall be responsible for ensuring that construction is carried out in accordance with the specifications and within the timeframes specified in the approved final restoration plan and shall be responsible for any remedial work or other intervention necessary to comply with final plan requirements.

## **2.3 Timeframe for Resubmittal of Project Elements**

If the Commission does not approve any element of the project (i.e. site selection, restoration plan), the Commission will specify the time limits for compliance relative to selection of another site or revisions to the restoration plan.

## **3.0 WETLAND MONITORING, MANAGEMENT AND REMEDIATION**

Monitoring, management (including maintenance), and remediation shall be conducted over the "full operating life" of SONGS Units 2 and 3 Poseidon's desalination facility. ~~"Full operating life" as defined in this permit includes past and future years of operation of SONGS units 2 and 3 including the decommissioning period to the extent there are continuing discharges. The number of past operating years at the time the wetland is ultimately constructed, shall be added to the number of future operating years and decommission period, to determine the length of the monitoring, management and remediation requirement.~~

The following section describes the basic tasks required for monitoring, management and remediation. Condition II-D specifies the administrative structure for carrying out these tasks, including the roles of the permittee and Commission staff.

### **3.1 Monitoring and Management Plan**

A monitoring and management plan will be developed in consultation with the permittee and appropriate wildlife agencies, concurrently with the preparation of the restoration plan, to

provide an overall framework to guide the monitoring work. It will include an overall description of the studies to be conducted over the course of the monitoring program and a description of management tasks that are anticipated, such as trash removal. Details of the monitoring studies and management tasks will be set forth in a work program (see Section II-D).

### **3.2 Pre-restoration site monitoring**

Pre-restoration site monitoring shall be conducted to collect baseline data on the wetland attributes to be monitored. This information will be incorporated into and may result in modification to the overall monitoring plan.

### **3.3 Construction Monitoring**

Monitoring shall be conducted during and immediately after each stage of construction of the wetland restoration project to ensure that the work is conducted according to plans.

### **3.4 Post-Restoration Monitoring and Remediation**

Upon completion of construction of the wetland, monitoring shall be conducted to measure the success of the wetland in achieving stated restoration goals (as specified in restoration plan) and in achieving performance standards, specified below. The permittee shall be fully responsible for any failure to meet these goals and standards during the facility's full operational years of SONGS Units 2 and 3. Upon determining that the goals or standards are not achieved, the Executive Director shall prescribe remedial measures, after consultation with the permittee, which shall be immediately implemented by the permittee with Commission staff direction. If the permittee does not agree that remediation is necessary, the matter may be set for hearing and disposition by the Commission.

Successful achievement of the performance standards shall (in some cases) be measured relative to approximately four reference sites, which shall be relatively undisturbed, natural tidal wetlands within the Southern California Bight. The Executive Director shall select the reference sites. The standard of comparison i.e. the measure of similarity to be used (e.g. within the range, or within the 95% confidence interval) shall be specified in the work program.

In measuring the performance of the wetland project, the following physical and biological performance standards will be utilized:

- a. Longterm Physical Standards. The following longterm standards shall be maintained over the full operative life of SONGS Units 2 and 3 the desalination facility.
  - 1) Topography. The wetland shall not undergo major topographic degradation (such as excessive erosion or sedimentation).

- 2) **Water Quality.** Water quality variables (to be specified) shall be similar to reference wetlands.
  - 3) ~~Tidal prism. The designed tidal prism shall be maintained, and tidal flushing shall not be interrupted.~~ ***[Note: this is Edison's requirement, but could be part of Poseidon's obligation based on the agreement you develop with Edison.]***
  - 4) **Habitat Areas.** The area of different habitats shall not vary by more than 10% from the areas indicated in the final restoration plan.
- b. **Biological Performance Standards.** The following biological performance standards shall be used to determine whether the restoration project is successful. Table 1, below, indicates suggested sampling locations for each of the following biological attributes; actual locations will be specified in the work program.
- 1) **Biological Communities.** Within 4 years of construction, the total densities and number of species of fish, macroinvertebrates and birds (see table 1) shall be similar to the densities and number of species in similar habitats in the reference wetlands.
  - 2) **Vegetation.** The proportion of total vegetation cover and open space in the marsh shall be similar to those proportions found in the reference sites. The percent cover of algae shall be similar to the percent cover found in the reference sites.
  - 3) **Spartina Canopy Architecture.** The restored wetland shall have a canopy architecture that is similar in distribution to the reference sites, with an equivalent proportion of stems over 3 feet tall.
  - 4) **Reproductive Success.** Certain plant species, as specified by in the work program, shall have demonstrated reproduction (i.e. seed set) at least once in three years.
  - 5) **Food Chain Support.** The food chain support provided to birds shall be similar to that provided by the reference sites, as determined by feeding activity of the birds.
  - 6) **Exotics.** The important functions of the wetland shall not be impaired by exotic species.

**Table 1: Suggested Sampling Locations**

	Salt Marsh			Open Water		Mudflat	Tidal Creeks
	Spartina	Salicornia	Upper	Lagoon	Eelgrass		
1) Density/spp:							
Fish				X	X	X	X
Macroinvertebrates				X	X	X	X
Birds	X	X	X	X		X	X
2) % Cover							
Vegetation	X	X	X		X		
algae	X	X				X	
3) Spar. arch.	X						
4) Repro. suc.	X	X	X				
5) Bird feeding				X		X	X
6) Exotics	X	X	X	X	X	X	X

...

**CONDITION D: ADMINISTRATIVE STRUCTURE**

*[Note: The conditions below will likely vary based on the relationship you develop with Edison and the JPA regarding monitoring, review, administration, etc.]*

**1.0 ADMINISTRATION**

Personnel with appropriate scientific or technical training and skills will, under the direction of the Executive Director, oversee the mitigation and monitoring functions identified and required by conditions II-A through C. The Executive Director will retain approximately two scientists and one administrative support staff to perform this function.

This technical staff will oversee the preconstruction and post-construction site assessments, mitigation project design and implementation (conducted by permittee), and monitoring activities (including plan preparation); the field work will be done by contractors under the

Executive Director's direction. The contractors will be responsible for collecting the data, analyzing and interpreting it, and reporting to the Executive Director.

The Executive Director shall convene a scientific advisory panel to provide the Executive Director with scientific advice on the design, implementation and monitoring of the wetland restoration and artificial reef. The panel shall consist of recognized scientists, including a marine biologist, an ecologist, a statistician and a physical scientist.

## **2.0 BUDGET AND WORK PROGRAM**

The funding necessary for the Commission and the Executive Director to perform their responsibilities pursuant to these conditions will be provided by the permittee in a form and manner determined by the Executive Director to be consistent with requirements of State law, and which will ensure efficiency and minimize total costs to the permittee. The amount of funding will be determined by the Commission on a biennial basis and will be based on a proposed budget and work program, which will be prepared by the Executive Director in consultation with the permittee, and reviewed and approved by the Commission. If the permittee and the Executive Director cannot agree on the budget or work program, the disagreement will be submitted to the Commission for resolution.

The budget to be funded by the permittee will be for the purpose of reasonable and necessary costs to retain personnel with appropriate scientific or technical training and skills needed to assist the Commission and the Executive Director in carrying out the mitigation and lost resource compensation conditions (II-A through C) approved as part of this permit action. In addition, reasonable funding will be included in this budget for necessary support personnel, equipment, overhead, consultants, the retention of contractors needed to conduct identified studies, and to defray the costs of members of any scientific advisory panel(s) convened by the Executive Director for the purpose of implementing these conditions.

Costs for participation on any advisory panel shall be limited to travel, per diem, meeting time and reasonable preparation time and shall only be paid to the extent the participant is not otherwise entitled to reimbursement for such participation and preparation. Total costs for such advisory panel shall not exceed \$100,000 per year adjusted annually by any increase in the consumer price index applicable to California.

The work program will include:

- a. A description of the studies to be conducted over the subsequent two year period, including the number and distribution of sampling stations and samples per station, methodology and statistical analysis (including the standard of comparison to be used in comparing the mitigation projects to the reference sites.)

- b. A description of the status of the mitigation projects, and a summary of the results of the monitoring studies to that point.
- c. A description of the performance standards that have been met, and those that have yet to be achieved.
- d. A description of remedial measures or other necessary site interventions.
- e. A description of staffing and contracting requirements.
- f. A description of the Scientific Advisory Panel's role and time requirements in the two year period.

The Executive Director may amend the work program at any time, subject to appeal to the Commission.

### **3.0 ANNUAL REVIEW**

A duly noticed public workshop will be convened and conducted by the Executive Director or the Commission each year to review the status of the mitigation projects. The meeting will be attended by the contractors who are conducting the monitoring, appropriate members of the Scientific Advisory Panel, the permittee, Commission staff, representatives of the resource agencies (CDFG, NMFS, USFWS), and the public. Commission staff and the contractors will give presentations on the previous year's activities, overall status of the mitigation projects, identify problems and make recommendations for solving them, and review the next year's program. The permittee shall report on the status of the behavioral barrier devices.

The public review will include discussions on whether the artificial reef and wetland mitigation projects have met the performance standards, identified problems, and recommendations relative to corrective measures necessary to meet the performance standards. The Executive Director will utilize information presented at the annual public review, as well as any other relevant information, to determine whether any or all of the performance standards have been met, whether revisions to the standards are necessary, and whether remediation is required. Major revisions shall be subject to the Commission's review and approval.

The mitigation projects will be successful when all performance standards have been met each year for a three-year period. The Executive Director shall report to the Commission upon determining that all of the performance standards have been met for three years and that the project is deemed successful. If the Commission determines that the performance standards have been met and the project is successful, the monitoring program will be scaled down, as recommended by the Executive Director and approved by the Commission. A public review shall thereafter occur every five years, or sooner if called for by the Executive Director. The work program shall reflect the lower level of monitoring required. If subsequent monitoring shows that

a standard is no longer being met, monitoring may be increased to previous levels, as determined necessary by the Executive Director.

The Executive Director may make a determination on the success or failure to meet the performance standards or necessary remediation and related monitoring at any time, not just at the time of the annual public review.

**CONDITION E: MRC DATA MAINTENANCE**

The scientific data collected by the MRC will be stored in the Commission library in San Francisco, and at the Los Angeles County Museum of Natural Science, or at an alternative location in Southern California, as determined by the Executive Director; and will be made available for public use. The permittee shall purchase the necessary computer equipment for the Commission and the Southern California location to store and retrieve the data, and shall fund appropriate staff training on data storage and retrieval at both locations.

**Item W16a**  
**Exhibit 3**

**Poseidon's August 2, 2008**  
**Proposed MLMP and**  
**attachments**



# POSEIDON RESOURCES

August 2, 2008

**Agenda Item  
W 5b**

**VIA OVERNIGHT DELIVERY**

Chairman Krueger and Honorable Commissioners  
California Coastal Commission  
North Central Coast District  
45 Fremont, Suite 2000  
San Francisco, CA 94105-2219

**RECEIVED**

AUG 04 2008

CALIFORNIA  
COASTAL COMMISSION

Re: Carlsbad Desalination Project CDP Application No. E-06-013  
Special Condition 8: Marine Life Mitigation Plan

Dear Chairman Krueger and Honorable Commissioners:

Poseidon Resources (Channelside) LLC ("Poseidon") requests that the Commission approve Poseidon's proposed Marine Life Mitigation Plan ("MLMP") attached hereto as Exhibit A, which Poseidon has prepared pursuant to Special Condition 8 of the above-referenced Coastal Development Permit (the "Permit") for the Carlsbad Seawater Desalination Facility (the "Project"). The Commission approved the Permit at its November 15, 2007 hearing, including Special Condition 8, which requires the Applicant to submit a Marine Life Mitigation Plan for Commission review and approval before the Permit will issue.

Following months of extensive collaboration with experts, Commission Staff, and state and local agencies,<sup>1</sup> Poseidon submitted its MLMP to the Commission on July 3, 2008. The MLMP contains the following elements that ensure Poseidon will implement and fund a wetland restoration project or projects that not only fully mitigate any Project impacts to marine life, but also provide additional mitigation that creates, enhances, and restores aquatic and wetland habitat consistent with Coastal Act Sections 30230 and 30231 and Special Condition 8:

- Contains **performance standards and objectives** that are consistent with those applied in Edison's San Onofre Nuclear Generating Station ("SONGS") project;

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<sup>1</sup> Poseidon has consulted with the Department of Fish and Game, the Department of Transportation, the State Lands Commission, the San Diego Regional Water Quality Control Board, the City of Carlsbad, Coastal Commission Staff, and the U.S. Fish and Wildlife Service, among others.

**These materials have been provided to Coastal Commission Staff**

Poseidon Resources Corporation

501 West Broadway, Suite 840, San Diego, CA 92101, USA  
619-595-7802 Fax: 619-595-7892

Project Office: 4600 Carlsbad Boulevard, Carlsbad, CA 92008

- Provides for up to **42.5 acres of wetland restoration**, which is consistent with California Energy Commission (“CEC”) methodology and Commission precedent;
- Implements a **phased mitigation program** to ensure that Poseidon is incentivized to incorporate emerging technologies that are not currently available into Project operations to **further reduce marine impacts**;
- Requires Poseidon to submit a new Coastal Development Permit application for Phase I of the restoration project **within 24 months** of MLMP approval;
- Ensures long-term **performance, monitoring, and protection** of the mitigation measures; and
- Allows for the Commission to **determine in the future** whether Lagoon dredging should entitle Poseidon to restoration credit applicable to all or part of its Phase II mitigation obligations.

On July 24, 2008, Commission Staff released its Staff Report recommending approval of the MLMP if it is modified and amended to include Staff’s recommendations. In response to the Staff Report, Poseidon revised the MLMP to address substantially all of Staff’s concerns (excluding the three issues discussed in the remainder of this letter), and to ensure that the MLMP substantially complies with Staff’s recommendations.<sup>2</sup> For the Commission’s convenience, we have attached as Exhibit B a document that sets forth the issues raised in the Staff Report and how Poseidon responded to those issues, including citations to the changes made to the MLMP. Poseidon’s proposed MLMP is attached hereto as Exhibit A in redline format showing all of the changes made in response to the Staff Report that are discussed in Exhibit B. These documents demonstrate that Poseidon has made significant compromises to its positions regarding the MLMP to address and resolve Staff’s concerns.

**A. Key Differences With Staff Report**

Poseidon believes there remain only three key differences between Poseidon’s MLMP and Staff’s position in the Staff Report that require the Commission’s further consideration, including:

- (1) the amount of mitigation acreage;
- (2) whether mitigation may be phased; and

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<sup>2</sup> Poseidon forwarded these revisions to Staff on July 31, 2008 and hoped to have Staff confirm, prior to finalizing this letter, that these revisions addressed their concerns, but Staff cancelled the planned conference call to discuss these changes.

- (3) whether the Commission should have the discretion to decide at a later date if Poseidon may receive restoration credit for dredging the Agua Hedionda Lagoon (the "Lagoon").

Poseidon contends that the MLMP's proposed 42.5 acres of mitigation is soundly based on CEC methodology; that the phased approach to mitigation ensures the Project's marine life impacts will be fully mitigated during all Project operating scenarios; and that the Commission should be allowed to determine whether Poseidon may receive restoration credit for evidence demonstrating the environmental benefits attributable to Lagoon dredging at the time Poseidon actually requests such credit (if ever) for its Phase II obligations. Accordingly, for those reasons and the reasons summarized below and set forth in detail in Exhibit C ("Marine Life Mitigation Rationale"), Poseidon requests that the Commission not adopt Staff's recommended modifications and instead adopt Poseidon's MLMP as revised and attached hereto as Exhibit A.

#### **B. Poseidon's Restoration Acreage is Consistent with Commission Practice**

Independent review has confirmed that Poseidon's proposed 42.5 acres is sufficient restoration to fully mitigate the Project's marine life impacts, consistent with Coastal Act Sections 30230 and 30231. Poseidon's entrainment study, which provides the basis for Poseidon's proposed 42.5 acres of wetland restoration, was reviewed by the Coastal Commission's independent expert, Dr. Pete Raimondi of UC Santa Cruz. Dr. Raimondi confirmed, among other things, that: (1) Poseidon's study design is consistent with recent entrainment studies conducted in California;<sup>3</sup> and (2) using CEC methodology, the habitat restoration required to mitigate the Project's "stand-alone" operations would be 42.5 acres. This methodology is also consistent with the peer-reviewed and approved methodology the CEC applied to the Morro Bay Power Plant and the Moss Landing Power Plant.

Notably, Commission Staff originally recommended that Poseidon use CEC methodology to determine Project mitigation acreage, but Staff is now recommending a substantial *increase* in the mitigation acreage by *applying a new standard that has never been peer-reviewed and which adjusts variables in the modeling estimates*. Specifically, Dr. Raimondi suggested that in order to provide a *greater* level of assurance that impacts to lagoon and ocean species will be mitigated, Poseidon could restore a total of 55.4 to 68.2 acres, which would provide an unprecedented level of mitigation for the Project's "stand-alone" impacts that the Commission has never applied before. This "enhanced mitigation" proposal is not consistent with CEC methodology and established, peer-reviewed methodology and precedent. Notably, Dr. Raimondi has not advocated that the Commission should apply the "enhanced mitigation" methodology, and has appropriately left to the Commission the decision of which methodology should be used.

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<sup>3</sup> As Set forth in the Staff Report, "Dr. Raimondi was able to determine that the study's sampling and data collection methods were consistent with those used in other recent entrainment studies conducted in California pursuant to the protocols and guidelines used by the U.S. EPA, Regional Water Quality Control Boards, California Energy Commission, and Coastal Commission." (*Staff Report re: Condition Compliance for CDP No. E-06-013; Special Condition 8: Submittal of Marine Life Mitigation Plan*, July 24, 2008, at p. 8.)

**C. Phased Mitigation is Appropriate for this Project**

Poseidon's phased approach to mitigation would fully compensate for the Project's impacts to marine life under either of the power plant's operating scenarios. The initial phase would provide 37 acres of wetland restoration, which would fully compensate for Project-related impacts during the period when both the Encina Power Station ("EPS") and the Project are operating ("Phase I"). The second phase would provide up to 5.5 acres of additional restoration to address any additional unmitigated impacts occurring if the Project ever operates "stand-alone"; that is, when the EPS is decommissioned or when the EPS is providing less than 15% of the water needed for the Project based on the EPS's average water use over any three-year period ("Phase II").

- **Phase I Substantially Over-mitigates Project Impacts.** The 37 acres provided under Phase I would fully mitigate the Project's impacts as long as at least 13% of the Project's seawater requirements are provided by the EPS. In the last 18 months, the EPS would have provided over 65% of the water needed for the Project. Based on that number, the 37 acres provided by Poseidon under Phase I would have been about 2.5 times the mitigation actually required. Through the phased approach to mitigation, Poseidon will substantially over-mitigate its impacts while the EPS continues to operate.
- **Phase II Mitigation Provides New Opportunities to Reduce Impacts.** Under Phase II, the MLMP ensures that Poseidon will fully mitigate its "stand-alone" impacts by requiring Poseidon to: (1) analyze the environmental effects of ongoing Project operations; (2) use that analysis to investigate and evaluate reasonably feasible technologies that are unavailable today, which may reduce any marine life impacts; (3) provide its analysis of environmental effects and its evaluation of any reasonably feasible technologies to reduce impacts to the Commission; and (4) undertake Lagoon dredging obligations, if feasible. The Commission will then be able to determine if actual Project operations have less of an impact to marine life than originally estimated, if Poseidon can further reduce the Project's impacts through reasonably feasible technologies, or if Poseidon should receive restoration credit for demonstrated environmental benefits attributable to dredging (as discussed further in Section D below). Based on these determinations, the Commission may proportionally reduce Poseidon's habitat restoration obligation for Phase II mitigation. Accordingly, phased mitigation will incentivize Poseidon to investigate new technologies that are not available today to reduce impacts so that it can potentially reduce its restoration obligation, and it will enable the Commission to make mitigation decisions based on the Project's actual operational impacts rather than estimates. If the mitigation obligation is not reduced, the MLMP requires Poseidon to restore an additional 5.5 acres of wetland habitat subject to the same performance standards and objectives required under Phase I.

**D. Lagoon Dredging Credit Should Be Evaluated in the Future**

Pursuant to Poseidon's MLMP, the Commission may decide at a later date whether Poseidon should receive any restoration credit for assuming Lagoon dredging obligations. Poseidon has not requested that dredging credit be applied to its mitigation obligations now; on the contrary, Poseidon is asking the Commission only to leave open the possibility of allowing such credit in the future if Poseidon assumes dredging obligations. The Staff Report, however, recommends that the Commission should decide *now* that Poseidon's potential dredging is not subject to restoration credit because dredging is inconsistent with Special Condition 8's requirement that mitigation be in the form of creation, enhancement or restoration of wetland habitat.

The Staff Report, however, fails to acknowledge that Lagoon dredging is necessary to preserve the Lagoon's beneficial uses, and that sand dredged from the Lagoon would be used to maintain, restore and enhance habitat for grunion spawning and enhance opportunities for public access and recreation along the shoreline. Moreover, the Commission has applied dredging credit in the past for the SONGS project. Further, approval of the MLMP would not constitute approval of a particular dredging proposal or grant of dredging credit. Rather, any dredging proposal would require a separate Coastal Development Permit pursuant to Special Condition 12, so it would be premature for the Commission to analyze dredging that Poseidon cannot perform. Accordingly, it is perfectly appropriate for the Commission to determine whether Poseidon should receive restoration credit for dredging at the time it applies for such credit in the future (if ever).

We appreciate the Commission's consideration of these important issues and respectfully request that the Commission approve Poseidon's proposed Marine Life Mitigation Plan attached hereto as Exhibit A at its August 6, 2008 meeting.

Sincerely,



Peter MacLaggan  
Poseidon Resources

Attachments

cc: Tom Luster;  
Rick Zbur, Esq.

**POSEIDON RESOURCES**

**Agenda Item  
W 5b**

**EXHIBITS TO POSEIDON'S**

**AUGUST 2, 2008**

**RESPONSE TO STAFF REPORT**

**REGARDING THE**

**MARINE LIFE MITIGATION PLAN**

Exhibit A. Marine Life Mitigation Plan

Exhibit B Responses to Issues Identified in July 24, 2008  
Staff Report

Exhibit C Marine Life Mitigation Plan Rationale

These materials have been provided to California Coastal Commission Staff

## EXHIBIT A

### MARINE LIFE MITIGATION PLAN

#### **CONDITION A: WETLAND RESTORATION MITIGATION**

The permittee shall develop, implement and fund a wetland restoration project that compensates for marine life impacts from Poseidon's Carlsbad desalination facility.

##### **1.0 PHASED IMPLEMENTATION**

Poseidon's Carlsbad desalination facility will function under two operating scenarios: (1) using the Encina Power Station's seawater intake while the Power Station continues to operate ("Phase I"); and (2) as a stand-alone facility ("Phase II"). The permittee's restoration project shall be phased to address marine life impacts from each of the applicable operating scenarios.

To mitigate marine life impacts for Phase I operations, the permittee shall develop, implement and fund a 37-acre wetland restoration project consistent with the terms and conditions set forth in this Plan. The permittee's additional obligations to mitigate marine life impacts for Phase II operations, which may include up to 5.5 acres of additional wetland restoration, are set forth in section 6.0. Combined, mitigation for Phase I and Phase II would require up to 42.5 acres of wetland restoration.

##### **1.1 Technology Review During Phase I Operations**

On or before April 30 of each year following the commencement of the Carlsbad desalination facility's commercial operations, the permittee shall provide the Executive Director with data demonstrating the Encina Power Station's cooling water intake for the prior calendar year. On or before April 30 following the first three years of the Carlsbad desalination facility's commercial operations, the permittee shall also provide the Executive Director with the calculation demonstrating the Power Station's average water use during the prior three-year period. The permittee shall thereafter provide the Executive Director with that calculation annually, on or before April 30, until either of the occurrence of either of the "Phase II Pre-Conditions," as defined in subsection 1.2 below.

Consistent with the permittee's approvals from the State Lands Commission, the permittee shall perform the following ten years after the commencement of commercial operations, unless either of the "Phase II Pre-Conditions" occur before that time (as defined in subsection 1.2 below):

- a. Conduct a new analysis of the environmental effects of ongoing desalination facility operations ten years after the commencement of commercial operations. The analysis

shall provide information about the project's actual impacts from operations, taking into account all project features and mitigation measures;

- b. Using that analysis, the permittee shall investigate and evaluate new and developing technologies that are reasonably feasible and unavailable today, which may further reduce any marine life impacts; and
- c. Within 24 months of the date that the permittee commenced its analysis of the environmental effects of ongoing desalination facility operations, the permittee shall provide that analysis and its evaluation of potential and reasonably feasible technologies to the Commission for review. The determination of feasibility shall consider costs, potential impacts, and acceptability to the Encina Power Station, among other things.

Upon receiving the analysis of environmental effects of ongoing desalination facility operations and the evaluation of new and available technologies from the permittee, the Commission may request a hearing to determine whether those technologies are reasonably feasible and whether the permittee can implement any of the technologies to reduce marine life impacts. If the Commission determines that any such technologies are reasonably feasible and may further reduce marine impacts, this Marine Life Mitigation Plan may, after a public hearing before the Commission, be amended to require implementation of reasonably feasible technologies.

## 1.2 Implementation of Phase II Mitigation

The permittee's Phase I mitigation obligations will not be affected by whether or not the permittee is ultimately required to undertake mitigation for Phase II. If either the Encina Power Station stops using its existing seawater intake for cooling water, or the Encina Power Station's use of its seawater intake provides less than 15% of Poseidon's needed water based on the Power Station's average water use over any three-year period ("Phase II Pre-Conditions"), then the permittee shall also undertake the Phase II mitigation obligations set forth in section 6.0.

## 2.0 PHASE I SITE SELECTION

In consultation with Commission staff, the permittee shall select a wetland restoration site for Phase I mitigation in accordance with the following process and terms.

**Within 10 months of the effective date of this permit, the permittee shall submit the proposed site and preliminary Phase I restoration plan to the Commission for its review and approval or disapproval.**

The location of the wetland restoration project shall be within the Southern California Bight. The permittee shall select from sites including, but not limited to, the following eleven sites:

Tijuana Estuary in San Diego County; San Dieguito River Valley in San Diego County; Agua Hedionda Lagoon in San Diego County; San Elijo Lagoon in San Diego County; Buena Vista Lagoon in San Diego County; Huntington Beach Wetland in Orange County, Anaheim Bay in Orange County, Santa Ana River in Orange County, Los Cerritos Wetland in Los Angeles County, Ballona Wetland in Los Angeles County, and Ormond Beach in Ventura County. The permittee may also consider any sites that may be recommended by the California Department of Fish & Game as high priority wetlands restoration projects.

The basis for the selected site shall be an evaluation of the site against the minimum standards and objectives set forth in subsections 3.1 and 3.2 below. The permittee shall take into account and give consideration to the advice and recommendations of the scientific advisory panel established and convened by the Executive Director pursuant to Condition B.1.0. The permittee shall select the site that meets the minimum standards and best meets the objectives.

#### 2.1 Preliminary Phase I Restoration Plan

In consultation with Commission staff, the permittee shall develop a preliminary wetland restoration plan for Phase I mitigation of the wetland site identified through the site selection process. The preliminary Phase I restoration plan shall meet the minimum standards and incorporate as many as possible of the objectives in subsections 3.1 and 3.2, respectively.

The preliminary Phase I restoration plan shall include the following elements:

- a. Review of existing physical, biological, and hydrological conditions; ownership, land use and regulation.
- b. Site-specific and regional restoration goals and compatibility with the goal of mitigating Poseidon's marine life impacts.
- c. Identification of site opportunities and constraints.
- d. Conceptual restoration design, including:
  1. Proposed grading and excavation; water control structures; planting; integration of public access, if feasible; buffers and transition areas; management and maintenance requirements.
  2. Proposed habitat types (including approximate size and location).
  3. Preliminary assessment of significant impacts of design (especially on existing habitat values) and net habitat benefits.

**4. Evaluation of steps for implementation e.g. permits and approvals, development agreements, acquisition of property interests.**

**5. A graphic depiction of proposed plan.**

**3.0 PHASE I PLAN REQUIREMENTS**

In consultation with Commission staff, the permittee shall develop a **final** wetland restoration plan for the wetland site identified through the site selection process for Phase I. The wetland restoration **based on the preliminary Phase I plan, which the permittee shall submit to the Commission as part of the Coastal Development Permit Application described in Section 4.0.** The **final** plan shall **also** meet the minimum standards and incorporate as many as feasible of the objectives in subsections 3.1 and 3.2, respectively.

**3.1 Minimum Standards**

The Phase I wetland restoration project site and preliminary plan must meet the following minimum standards:

- a. Location within Southern California Bight;
- b. Potential for restoration as tidal wetland, with extensive intertidal and subtidal areas;
- c. Creates or substantially restores a minimum of 37 acres of habitat similar to the affected habitats in Agua Hedionda Lagoon, excluding buffer zone and upland transition area;
- d. Provides a buffer zone of a size adequate to ensure protection of wetland values, and substantially-at least 100 feet wide, as measured from the upland edge of the transition area. The Executive Director or the Commission may make exceptions to the 100-foot buffer requirement in certain locations if they determine that the exceptions are de minimis, or that a lesser buffer is sited and/or designed to prevent impacts that would significantly degrade wetland areas and that they are compatible with the continuance of those areas;
- e. Any existing site contamination problems would be controlled or remediated and would not hinder restoration;
- f. Site preservation is guaranteed in perpetuity (through appropriate public agency or nonprofit ownership, or other means approved by the Executive Director), to protect against future degradation or incompatible land use;
- g. Feasible methods are available to protect the long-term wetland values on the site, in perpetuity;

- h. Does not result in a net loss of existing wetlands; and
- i. Does not result in an adverse impact on endangered animal species, or an adverse unmitigated impact on endangered plant species.

### 3.2 Objectives

The following objectives represent the factors that will contribute to the overall value of the wetland. The selected site shall be determined to achieve these objectives. These objectives shall also guide preparation of the restoration plan.

- a. Provides ~~substantial~~ maximum overall ecosystem benefits, e.g. ~~substantial~~ maximum upland buffer, enhancement of downstream fish values, provides regionally scarce habitat, potential for local ecosystem diversity;
- b. Provides substantial fish habitat compatible with other wetland values at the site;
- c. Provides a buffer zone of at least an average of at least 300 feet wide, depending on the feasibility at the selected site(s), and not less than 100 feet wide, as measured from the upland edge of the transition area, subject to the exemptions set forth in subsection 3.1(d);
- d. Provides ~~substantial~~ maximum upland transition areas (in addition to buffer zones);
- e. Restoration involves minimum adverse impacts on existing functioning wetlands and other sensitive habitats;
- f. Site selection and restoration plan reflect a consideration of site specific and regional wetland restoration goals;
- g. Restoration design is that most likely to produce and support wetland-dependent resources;
- h. Provides potential habitat for rare or endangered species;
- i. Provides for restoration of reproductively isolated populations of native California species;
- j. Results in an increase in the aggregate acreage of wetland in the Southern California Bight;
- k. Requires minimum maintenance;
- l. Restoration project can be accomplished in a reasonably timely fashion; and
- m. Site is in proximity to the Carlsbad desalination facility.

### 3.3 Restrictions

(a) The permittee may propose a wetland restoration project larger than the minimum necessary size specified in subsection 3.1(c) above, if biologically appropriate for the site, but the additional acreage must (1) be clearly identified, and (2) must not be the portion of the project best satisfying the standards and objectives listed above.

(b) If the permittee jointly enters into a restoration project with another party: (1) the permittee's portion of the project must be clearly specified, (2) any other party involved cannot gain mitigation credit for the permittee's portion of the project, and (3) the permittee may not receive mitigation credit for the other party's portion of the project.

(c) The permittee may propose to divide the mitigation requirement between a maximum of ~~four~~two wetland restoration sites, unless the Executive Director determines that the standards and objectives of subsections 3.1 and 3.2 will be better met at more than ~~four~~two sites.

## 4.0 PHASE I PLAN IMPLEMENTATION

### 4.1 Coastal Development Permit Application

The permittee shall submit a complete Coastal Development Permit application for the Phase I restoration plan along with CEQA documentation and local or other state agency approvals by either 24 months following the issuance of the Coastal Development Permit for the Carlsbad desalination facility, ~~or the commencement of commercial operations at the facility, whichever is later.~~ The Executive Director may grant an extension to this time period at the request of and upon a demonstration of good cause by the permittee. The restoration plan shall substantially conform to Section 3.0 above and shall include, but not be limited to the following elements:

- a. Detailed review of existing physical, biological, and hydrological conditions; ownership, land use and regulation;
- b. Evaluation of site-specific and regional restoration goals and compatibility with the goal of mitigating for Poseidon's marine life impacts;
- c. Identification of site opportunities and constraints;
- d. Schematic restoration design, including:
  1. Proposed cut and fill, water control structures, control measures for stormwater, buffers and transition areas, management and maintenance requirements;
  2. Planting Program, including removal of exotic species, sources of plants and or seeds (local, if possible), protection of existing salt marsh plants, methods for preserving

- top soil and augmenting soils with nitrogen and other necessary soil amendments before planting, timing of planting, plans for irrigation until established, and location of planting and elevations on the topographic drawings;
3. Proposed habitat types (including approximate size and location);
  4. Assessment of significant impacts of design (especially on existing habitat values) and net habitat benefits;
  5. Location, alignment and specifications for public access facilities, if feasible;
  6. Evaluation of steps for implementation e.g. permits and approvals, development agreements, acquisition of property rights;
  7. Cost estimates;
  8. Topographic drawings for final restoration plan at 1" = 100 foot scale, one foot contour interval; and
  9. Drawings shall be directly translatable into final working drawings.
- g. Detailed information about how monitoring and maintenance will be implemented;
  - h. Detailed information about construction methods to be used;
  - i. Defined final success criteria for each habitat type and methods to be used to determine success;
  - j. Detailed information about how Poseidon will coordinate with any other agency or panel that will have a role in implementing and monitoring the restoration plan, including the respective roles of the parties in independent monitoring, contingency planning review, cost recovery, etc.;
  - k. Detailed information about contingency measures that will be implemented if mitigation does not meet the approved goals, objectives, performance standards, or other criteria; and
  - l. Submittal of "as-built" plans showing final grading, planting, hydrological features, etc. within 60 days of completing mitigation site construction.

#### **4.2 Wetland Construction Phase**

Within 12 months of approval of the Phase I restoration plan, subject to the permittee's obtaining the necessary permits, the permittee shall commence the construction phase of the wetland restoration project. The permittee shall be responsible for ensuring that construction is carried out in accordance with the specifications and within the timeframes specified in the approved

restoration plan and shall be responsible for any remedial work or other intervention necessary to comply with plan requirements.

#### **4.3 Timeframe for Resubmittal of Project Elements**

If the Commission does not approve any element of the project (i.e. site selection, restoration plan), the Commission will specify the time limits for compliance relative to selection of another site or revisions to the restoration plan.

### **5.0 PHASE I WETLAND MONITORING, MANAGEMENT AND REMEDIATION**

Monitoring, management (including maintenance), and remediation shall be conducted over the "full operating life" of Poseidon's desalination facility, which shall be 30 years from the date "as-built" plans are submitted pursuant to subsection 4.1(l).

The following section describes the basic tasks required for monitoring, management and remediation for Phase I. Condition B specifies the administrative structure for carrying out these tasks, including the roles of the permittee and Commission staff.

#### **5.1 Monitoring and Management Plan**

A monitoring and management plan will be developed in consultation with the permittee and appropriate wildlife agencies, concurrently with the preparation of the restoration plan for Phase I, to provide an overall framework to guide the monitoring work. It will include an overall description of the studies to be conducted over the course of the monitoring program and a description of management tasks that are anticipated, such as trash removal. Details of the monitoring studies and management tasks will be set forth in a work program (see Condition B).

#### **5.2 Pre-restoration site monitoring**

Pre-restoration site monitoring shall be conducted to collect baseline data on the wetland attributes to be monitored. This information will be incorporated into and may result in modification to the overall monitoring plan.

#### **5.3 Construction Monitoring**

Monitoring shall be conducted during and immediately after each stage of construction of the wetland restoration project to ensure that the work is conducted according to plans.

#### 5.4 Post-Restoration Monitoring and Remediation

Upon completion of construction of the wetland, monitoring shall be conducted to measure the success of the wetland in achieving stated restoration goals (as specified in restoration plan) and in achieving performance standards, specified below. The permittee shall be fully responsible for any failure to meet these goals and standards during the facility's full operational years. Upon determining that the goals or standards are not achieved, the Executive Director shall prescribe remedial measures, after consultation with the permittee, which shall be implemented by the permittee as soon as practicable with Commission staff direction. If the permittee does not agree with the remedial measures prescribed by the Executive Director, or that remediation is necessary, the matter may be set for hearing and disposition by the Commission.

Successful achievement of the performance standards shall (in some cases) be measured relative to approximately four reference sites, which shall be relatively undisturbed, natural tidal wetlands within the Southern California Bight. The reference sites and the standard of comparison, i.e. the measure of similarity to be used, shall be specified in the work program.

In measuring the performance of the wetland project, the following physical and biological performance standards will be utilized:

- a. Longterm Physical Standards. The following long-term standards shall be maintained over the full operative life of the desalination facility:
  - 1) Topography. The wetland shall not undergo major topographic degradation (such as excessive erosion or sedimentation);
  - 2) Water Quality. Water quality variables [to be specified] shall be similar to reference wetlands; and
  - 3) Tidal Prism. If the plan requires dredging, the permittee shall provide such dredging for the duration of the "full operating life" of the project (as defined in Section 5.0), in exchange for a dredging credit consistent with the credit provided to Edison for the SONGS restoration project, and any designed tidal prism shall be maintained, and tidal flushing shall not be interrupted.
  - 4) ~~3)~~ Habitat Areas. The area of different habitats shall not vary by more than 10% from the areas indicated in the restoration plan.
- b. Biological Performance Standards. The following biological performance standards shall be used to determine whether the restoration project is successful. Table 1, below, indicates suggested sampling locations for each of the following biological attributes; actual locations will be specified in the work program:

- 1) Biological Communities. Within 4 years of construction, the total densities and number of species of fish, macroinvertebrates and birds (see Table 1) shall be similar to the densities and number of species in similar habitats in the reference wetlands;
- 2) Vegetation. The proportion of total vegetation cover and open space in the marsh shall be similar to those proportions found in the reference sites. The percent cover of algae shall be similar to the percent cover found in the reference sites;
- 3) Spartina Canopy Architecture. The restored wetland shall have a canopy architecture that is similar in distribution to the reference sites, with an equivalent proportion of stems over 3 feet tall;
- 4) Reproductive Success. Certain plant species, as specified by in the work program, shall have demonstrated reproduction (i.e. seed set) at least once in three years;
- 5) Food Chain Support. The food chain support provided to birds shall be similar to that provided by the reference sites, as determined by feeding activity of the birds; and
- 6) Exotics. The important functions of the wetland shall not be impaired by exotic species.

**Table 1: Suggested Sampling Locations**

	Salt Marsh			Open Water		Mudflat	Tidal Creeks
	Spartina	Salicornia	Upper	Lagoon	Eelgrass		
1) Density/spp:							
Fish				X	X	X	X
Macroinvertebrates				X	X	X	X
Birds	X	X	X	X		X	X
2) % Cover							
Vegetation	X	X	X		X		
Algae	X	X				X	
3) Spar. arch.	X						
4) Repro. suc.	X	X	X				
5) Bird feeding				X		X	X
6) Exotics	X	X	X	X	X	X	X

## **6.0 MITIGATION REQUIRED AFTER PHASE II PRECONDITION**

### **6.1 Reasonably Feasible Technologies**

Following the occurrence of either of the Phase II Pre-Conditions, as defined in subsection 1.1, the permittee shall:

- a. Conduct a new analysis of the environmental effects of ongoing desalination facility operations. The analysis shall provide information about the project's actual impacts from operations, taking into account all project features and mitigation measures;
- b. Using that analysis, the permittee shall investigate and evaluate new and developing technologies that are reasonably feasible and unavailable today, which may further reduce any marine life impacts;
- c. Within 24 months of the occurrence of the applicable Phase II pre-condition, the permittee shall provide that analysis and its evaluation of potential and reasonably feasible technologies to the Commission for review. The determination of feasibility shall consider costs, potential impacts, and acceptability to the Encina Power Station, among other things; and
- d. The analysis and evaluation provided to the Commission shall also include an evaluation of whether the 37 acres of wetland restoration implemented by the permittee has fully or only partially mitigated marine life impacts for stand-alone operations, taking into account actual operating conditions from facility operations for Phase I and potential reductions to impacts that would occur as a result of any new and reasonably feasible technologies that the permittee may implement pursuant to this subsection 6.1.

Upon receiving the evaluation of new and available technologies from the permittee, the Commission may request a hearing to determine whether those technologies are reasonably feasible and whether the permittee can implement any of the technologies to reduce marine life impacts. If the Commission determines that any such technologies are reasonably feasible and may further reduce marine impacts, this Marine Life Mitigation Plan may be amended after a public hearing before the Commission to require implementation of reasonably feasible technologies. The Commission also may determine the additional mitigation, if any, required after implementation of available technologies to reduce marine life impacts from Phase II operations.

### **6.2 Additional Mitigation**

The permittee also shall comply with the following mitigation measures after the occurrence of either Phase II Pre-Condition:

- a. If within 24 months of the occurrence of the applicable Phase II Pre-Condition, the permittee assumes dredging obligations of the Agua Hedionda Lagoon from the Encina Power Station or other applicable entity, the permittee shall provide evidence to the Executive Director in the form of a contract or other agreement that demonstrates the permittee's assumption of dredging obligations, along with an evaluation of the permittee's dredging activities and supporting documentation for the proposed mitigation credit the permittee is seeking for this activity. Pursuant to Special Condition 12 of this Permit, the permittee shall not dredge the Agua Hedionda Lagoon without obtaining a new Coastal Development Permit approval from the Commission for dredging activities. If such dredging obligations are assumed, the Commission shall evaluate and determine the mitigation credit the permittee is entitled to receive for Lagoon dredging using substantially the same methodology the Commission used for the San Onofre Nuclear Generating Station's dredging approvals. If the Commission's evaluation set forth in subsection 6.1 determines that there is any remaining mitigation obligation following the implementation of reasonably feasible technologies to reduce marine impacts, the credit for Lagoon dredging shall be applied to satisfy any remaining mitigation obligation of the permittee; or
- b. If the permittee does not assume the dredging obligations for the Agua Hedionda Lagoon (for any reason other than delays by the Commission in issuing the Coastal Development Permit for dredging) and the analysis and evaluation set forth in subsection 6.1 identifies that additional wetland restoration is necessary to mitigate Phase II impacts not fully mitigated by the 37-acre restoration project, then within 24 months of the occurrence of the applicable Phase II Pre-Condition, the permittee shall apply for a new Coastal Development Permit to perform additional wetland mitigation to mitigate marine life impacts for Phase II operations that meets the following criteria:
  - (i) the Phase II wetland mitigation shall credit the 37-acres of restoration required under this Plan for Phase I, and may require additional mitigation of up to an additional 5.5 acres. The Commission shall proportionally reduce the potential 5.5 acre restoration requirement based on: (1) any reduction to marine life impacts caused by the permittee's implementation of reasonably feasible technologies, as set forth in subsection 6.1; and (2) any demonstration that actual plant operations have caused less marine life impacts than originally anticipated during the project's initial evaluation;
  - (ii) the permittee shall apply for a new Coastal Development Permit to perform the wetland restoration, and the restoration shall be of habitat similar to the affected habitats in Agua Hedionda Lagoon, excluding buffer zone and upland transition area, and consistent with the objectives and restrictions in subsections 3.1 (excluding subsection 3.1(c)), 3.2 and 3.3 above;

- (iii) the permittee shall select a wetland restoration site for Phase II mitigation in a manner generally in accordance with section 2.0 above;
- (iv) the restoration plan for Phase II mitigation shall be generally in accordance with the requirements in section 4.0 above, and shall be monitored in a manner generally in accordance with that set forth in section 5.0 above; and
- (v) Phase II wetland restoration shall be included in and administered as part of the same administrative structure created for Phase I mitigation and set forth in Condition B of this Plan.

## **CONDITION B: ADMINISTRATIVE STRUCTURE**

### **1.0 ADMINISTRATION**

Personnel with appropriate scientific or technical training and skills will, under the direction of the Executive Director, oversee the mitigation and monitoring functions identified and required by Condition A. The Executive Director will retain scientific and administrative support staff to perform this function, as specified in the work program.

This technical staff will oversee the preconstruction and post-construction site assessments, mitigation project design and implementation (conducted by permittee), and monitoring activities (including plan preparation); the field work will be done by contractors under the Executive Director's direction. The contractors will be responsible for collecting the data, analyzing and interpreting it, and reporting to the Executive Director.

The Executive Director shall convene a scientific advisory panel to provide the Executive Director with scientific advice on the design, implementation and monitoring of the wetland restoration. The panel shall consist of recognized scientists, including a marine biologist, an ecologist, a statistician and a physical scientist.

### **2.0 BUDGET AND WORK PROGRAM**

The funding necessary for the Commission and the Executive Director to perform their responsibilities pursuant to these conditions will be provided by the permittee in a form and manner reasonably determined by the Executive Director to be consistent with requirements of State law, and which will ensure efficiency and minimize total costs to the permittee. The amount of funding will be determined by the Commission on a biennial basis and will be based on a proposed budget and work program, which will be prepared by the Executive Director in consultation with the permittee, and reviewed and approved by the Commission in conjunction with its review of the restoration plan. ~~Permit application fees paid by the permittee for Coastal~~

Development Permits (or amendments thereto) for the restoration program shall be credited against the budget to be funded by the permittee. If the permittee and the Executive Director cannot agree on the budget or work program, the disagreement will be submitted to the Commission for resolution.

The budget to be funded by the permittee will be for the purpose of reasonable and necessary costs to retain personnel with appropriate scientific or technical training and skills needed to assist the Commission and the Executive Director in carrying out the mitigation. In addition, reasonable funding will be included in this budget for necessary support personnel, equipment, overhead, consultants, the retention of contractors needed to conduct identified studies, and to defray the costs of members of any scientific advisory panel(s) convened by the Executive Director for the purpose of implementing these conditions.

Costs for participation on any advisory panel shall be limited to travel, per diem, meeting time and reasonable preparation time and shall only be paid to the extent the participant is not otherwise entitled to reimbursement for such participation and preparation. The amount of funding will be determined by the Commission on a biennial basis and will be based on a proposed budget and work program, which will be prepared by the Executive Director in consultation with the permittee, and reviewed and approved by the Commission in conjunction with its review of the restoration plan. **Total costs for such advisory panel shall not exceed \$100,000 per year adjusted annually by any increase in the consumer price index applicable to California.** If the permittee and the Executive Director cannot agree on the budget or work program, the disagreement will be submitted to the Commission for resolution.

The work program will include:

- a. A description of the studies to be conducted over the subsequent two year period, including the number and distribution of sampling stations and samples per station, methodology and statistical analysis (including the standard of comparison to be used in comparing the mitigation project to the reference sites);
- b. A description of the status of the mitigation projects, and a summary of the results of the monitoring studies to that point;
- c. A description of up to four reference sites;
- d. A description of the performance standards that have been met, and those that have yet to be achieved;
- e. A description of remedial measures or other necessary site interventions;
- f. A description of staffing and contracting requirements; and

- g. A description of the scientific advisory panel's role and time requirements in the two year period.

~~Any amendment to the work program requested by the permittee shall require an amendment to the Coastal Development Permit for the restoration plan, unless the Executive Director determines that no Coastal Development Permit amendment is necessary or required. Any amendment to the work program proposed by the Executive Director shall be made in consultation with the permittee. If the permittee and the Executive Director cannot agree on an amendment to the work program, the disagreement will be submitted to the Commission for resolution.~~

**The Executive Director may amend the work program at any time, subject to appeal to the Commission.**

### **3.0 ANNUAL REVIEW AND PUBLIC WORKSHOP REVIEW**

The permittee shall submit a written review of the status of the mitigation project to the Executive Director each year on April 30 for the prior calendar year. The written review will discuss the previous year's activities and overall status of the mitigation project, identify problems and make recommendations for solving them, and review the next year's program.

Every fifth year, the Executive Director or the Commission shall also convene and conduct a duly noticed public workshop to review the status of the mitigation project. The meeting will be attended by the contractors who are conducting the monitoring, appropriate members of the Scientific Advisory Panel, the permittee, Commission staff, representatives of the resource agencies (CDFG, NMFS, USFWS), and the public. Commission staff and the contractors will give presentations on the previous five years' activities and the overall status of the mitigation project, identify problems and make recommendations for solving them, and review the next period's program.

The workshop review will include discussions on whether the wetland mitigation project has met the performance standards, identified problems, and recommendations relative to corrective measures necessary to meet the performance standards. The Executive Director will utilize information presented at the public review, as well as any other relevant information, to determine whether any or all of the performance standards have been met, whether revisions to the standards are necessary, and whether remediation is required. Major revisions shall be subject to the Commission's review and approval.

The mitigation project will be successful when all performance standards have been met each year for a three-year period. The Executive Director shall report to the Commission upon determining that all of the performance standards have been met for three years and that the

project is deemed successful. If the Commission determines that the performance standards have been met and the project is successful, the monitoring program will be scaled down, as recommended by the Executive Director and approved by the Commission. The work program shall reflect the lower level of monitoring required. If subsequent monitoring shows that a standard is no longer being met, monitoring may be increased to previous levels, as determined necessary by the Executive Director.

The ~~Commission~~ Executive Director may make a determination on the success or failure to meet the performance standards or necessary remediation and related monitoring at any time, not just at the time of the workshop review.

#### **4.0 ADDITIONAL PROCEDURES**

##### **4.1 Dispute Resolution**

In the event that the permittee and the Executive Director cannot reach agreement regarding the terms contained in or the implementation of any part of this Plan, the matter may be set for hearing and disposition by the Commission.

##### **4.2 Extensions**

Any of the time limits established under this Plan may be extended by the Executive Director at the request of the permittee and upon a showing of good cause.

## EXHIBIT B

### RESPONSES TO ISSUES IDENTIFIED IN JULY 24, 2008 STAFF REPORT

In response to Commission Staff's specific concerns regarding Poseidon's proposed Marine Life Mitigation Plan ("MLMP"), as identified on page 15 of the July 24, 2008 Staff Report, Poseidon has modified its MLMP to address Staff's concerns. Below we have listed each of Staff's identified concerns, followed by Poseidon's response. In addition to the responses herein, Exhibit A is a redline of Poseidon's MLMP that shows the changes Poseidon has made in response to Staff's concerns. Note that this document does not address the three issues discussed in Poseidon's letter responding to the Staff Report: mitigation acreage, phased mitigation and restoration credit for lagoon dredging.

**I. Responses to Bullet Points on Page 15:** In this section, Poseidon has responded to each of the bullet points listed on page 15 of the Staff Report.

**Issue 1:** *Staff recommended that Poseidon submit a complete coastal development permit application for its Final Restoration Plan within 24 months of Commission approval of its Preliminary Plan (i.e., the Plan being reviewed herein). Poseidon modified that recommendation in Section 4 of its Plan to allow submittal of that application either 24 months after issuance of the project coastal development permit or commencement of commercial operations of the desalination facility, whichever is later. This could substantially delay the implementation of mitigation and could result in several years of impacts occurring without mitigation.*

- **Poseidon Response to Issue 1:** In Section 4.1 of Poseidon's MLMP, Poseidon has revised its Plan so that the Coastal Development Permit for the Final Restoration Plan will be submitted within 24 months of Commission approval of its Preliminary Plan.

**Issue 2:** *A proposed change to Poseidon's Plan at Section 3.1(d) and at Section 3.2(c) would reduce the required buffer zone at its mitigation sites from no less than 100 feet wide to an average that could be much less than 100 feet.*

- **Poseidon Response to Issue 2:** Poseidon has removed the word "substantially" from Section 3.1(d) so that it is evident that buffer zones will be at least 100 feet wide. (See Poseidon's MLMP, Page 4 of 16.)

**Issue 3:** *A proposed change to Section 3.1(i) would allow the Plan to affect endangered species in a way not allowed under the Edison requirements.*

- **Poseidon Response to Issue 3:** Poseidon has revised Section 3.1(i) to indicate that Poseidon's Plan will not result in an adverse impact on endangered animal species, and that it will require mitigation for Plan impacts on endangered plant species. (See Poseidon's MLMP, Page 5 of 16.) The formulation of this provision in the Edison plan does not take into account that substantially all wetlands restoration projects will have impacts on sensitive plant species, which would likely be mitigated through relocation

to upland areas. The Edison plan's formulation would not allow mitigation in any area where there is a sensitive plant. Accordingly, Poseidon modified this language to ensure there are no adverse impacts to endangered animals, but to allow for mitigation and relocation of sensitive plants.

**Issue 4:** *Poseidon proposes to change Section 3.3(c) to allow mitigation to occur in up to four sites, rather than up to two sites, as required of Edison, which could fragment the mitigation and reduce its overall value.*

- **Poseidon Response to Issue 4:** Poseidon has revised Section 3.3(c) to allow mitigation to occur only at up to two sites without Executive Director approval. (See Poseidon's MLMP, Page 6 of 16.)

**Issue 5:** *Poseidon also proposed deleting a requirement at Section 5.4 that would require a designed tidal prism to be maintained to ensure the wetland mitigation site has adequate tidal action.*

- **Poseidon Response to Issue 5:** Poseidon has revised its Plan to include a requirement at Section 5.4(a)(3) that would require a designed tidal prism be maintained if the Plan requires dredging. (See Poseidon's MLMP, Page 9 of 16.)

**Issue 6:** *Poseidon Proposes that any fees it pays for coastal development permits or amendments be credited against the budget needed to implement the mitigation plan.*

- **Poseidon Response to Issue 6:** Poseidon has revised Condition B, Section 2.0 to remove its proposal regarding the crediting of fees paid for coastal development permits or amendments. (See Poseidon's MLMP, Pages 13-14 of 16.)

**II. Responses to Staff's Recommendation to Include Conditions in Exhibit 2:** In this section we have responded to Staff's comment on page 15 of the Staff Report that Poseidon's Plan should be modified to include the conditions in Exhibit 2 by identifying each of the differences between Poseidon's Plan and Staff's Exhibit 2, followed by Poseidon's response.

- Poseidon's Plan removes the requirement in Section 2.0 that would require Poseidon to submit the proposed site and preliminary plan to the Commission within 9 months of the effective date of the approval, and removes Exhibit 2's "Preliminary Plan" requirements set forth in Staff's Exhibit 2 at §1.2.
  - **Poseidon Response:** Poseidon has revised its Plan to include the "Preliminary Plan" requirements (Poseidon's MLMP § 2.1, Pages 3-4 of 16.) and has modified its Plan so that a proposed site and preliminary plan will be submitted to the Commission within 10 months of the effective date of the approval. (See Poseidon's MLMP § 2.0, Page 2 of 16.)
- Poseidon's Plan adds three potential restoration sites (Agua Hedionda, San Elijo, and Buena Vista) for a total of 11 sites in Section 2.0.

- **Poseidon Response:** This remains part of Poseidon's proposal because these sites are in close proximity to the Project site, and have been recommended as potential mitigation sites by local and state agencies.
- Poseidon's Plan allows Poseidon to consider other sites that may be recommended by the Department of Fish and Game ("DFG") as high-priority wetlands restoration projects, while Staff's MLMP only allows additional sites to be considered with approval from the Executive Director. (Section 2.0.)
  - **Poseidon Response:** This remains part of Poseidon's proposal to allow consideration of sites that could be proposed by DFG.
- Poseidon's MLMP has objectives of providing "substantial" upland buffer and upland transition areas, as compared to Staff's objective of providing "maximum" upland buffer and upland transition areas. (See Poseidon's MLMP §§ 3.2(a),(d).)
  - **Poseidon Response:** Poseidon has revised Sections 3.2(a) and (d) of its Plan to incorporate Staff's proposed "maximum" language. (See Poseidon's MLMP, Page 5 of 16.)
- Poseidon's Plan deletes Staff's Objective in Section 3.2(c) of providing a buffer zone of an average of at least 300 feet wide, and includes a 100 feet-wide Objective.
  - **Poseidon Response:** Poseidon has revised Section 3.2(c) so that the Objective provides for a buffer zone that is an average of 300 feet wide, depending on the feasibility at the selected site(s), and not less than 100 feet wide. (See Poseidon's MLMP, Page 5 of 16.) This modification addresses Staff's concerns and will allow Poseidon to have necessary flexibility in selecting the mitigation site(s).
- Poseidon proposes commencing restoration construction within 12 months of approval of the restoration plan (Poseidon's MLMP § 4.2), while Staff proposes construction within 6 months of approval of the restoration plan (Staff's Exhibit 2 at § 2.2).
  - **Poseidon Response:** This remains part of Poseidon's proposal because it is a more reasonable estimate of time that will be required to undertake the restoration efforts.
- Poseidon's Plan adds a provision to assure that the mitigation is in place for 30 years, and therefore adds a definition of the facility's "full operating life" of 30 years from the date as-built plans are submitted. (See Poseidon's MLMP § 5.0)
  - **Poseidon Response:** This remains part of Poseidon's proposal because it provides clarity for Poseidon's responsibilities and obligations under the Plan.
- Poseidon modifies the requirement that the Executive Director will retain approximately two scientists and one administrative support staff to oversee the plan's mitigation and monitoring functions, and provides that the Executive Director shall retain staff as set forth in the "work program." (See Poseidon's MLMP Condition B § 1.0, Page 13 of 16.)

- **Poseidon Response:** This remains part of Poseidon's proposal because Poseidon does not believe this amount of staffing is necessary given the significantly smaller scope of Poseidon's restoration obligations compared to SONGS. Poseidon's proposal provides that the work program will identify the necessary staffing.
- Poseidon's Plan removes the cap on total costs for the advisory panel of \$100,000 per year contained in Staff's Exhibit 2, and requires the Executive Director to submit a proposed budget for the advisory panel to the Commission for approval on a biennial basis, and provides that any disagreement over the budget to be submitted to the Commission for resolution. (Poseidon's MLMP Condition B § 2.0.)
  - **Poseidon Response:** Poseidon has revised Condition B Section 2.0 to include Staff's language regarding the \$100,000 cap, but has retained its procedures for the budget due to the fact that the scope of Poseidon's restoration obligations will be significantly smaller than Edison's, and the budget for the advisory panel should bear a reasonable relationship to the scope of restoration. (See Poseidon's MLMP, Page 14 of 16.)
- Poseidon's Plan modifies the Executive Director's ability to amend the work program. (Poseidon's MLMP Condition B § 2.0.)
  - **Poseidon Response:** Poseidon has modified Condition B, § 2.0 so that it is now consistent with the language in Staff's Exhibit 2. (See Poseidon's MLMP, Page 15 of 16.)
- Poseidon's Plan requires submission of a written review of the restoration project's previous year by April 30 instead of an annual public workshop. Poseidon provides for a public workshop every fifth year, regardless of whether the project's performance standards have been met. (Poseidon's MLMP Condition B § 3.0, Pages 15-16 of 16.) Staff's Exhibit 2 provides for an annual public workshop, and would lower the frequency of this obligation to a five year review once performance standards are achieved.
  - **Poseidon Response:** This remains part of Poseidon's proposal because of the substantially limited size of the Poseidon's restoration project as compared to Edison's SONGS restoration project, and the significant cost already imposed on Poseidon's mitigation program.
- Poseidon's Plan gives the Commission, rather than the Executive Director, the authority to determine the success or failure to meet the performance standards, or necessary remediation and related monitoring.
  - **Poseidon Response:** Poseidon has modified Condition B, § 3.0 so that it is consistent with the language in Staff's Exhibit 2. (See Poseidon's MLMP, Page 10 of 16.)
- Poseidon's Plan adds a general dispute resolution provision that would allow any disputes to be heard by the Commission. (Poseidon's MLMP Condition B § 4.1, Page 16 of 16.)

- **Poseidon Response:** This remains part of Poseidon's proposal because it retains and states the permittee's implicit rights.
- Poseidon's MLMP allows for time extensions by the Executive Director at Poseidon's request upon a showing of good cause. Poseidon's MLMP Condition B § 4.2, Page 16 of 16.)
  - **Poseidon's Response:** This remains part of Poseidon's proposal.

## EXHIBIT C

### MARINE LIFE MITIGATION PLAN RATIONALE

In addition to the reasons set forth in Poseidon's letter to the Commission, below Poseidon has provided more detailed support for its position that the Commission should accept Poseidon's arguments concerning mitigation acreage, mitigation phasing and dredging over those offered by Staff. Accordingly, and for the following reasons, Poseidon respectfully asks the Commission to adopt Poseidon's Marine Life Mitigation Plan ("MLMP") as amended and set forth in Exhibit A, and without Staff's requested modifications from the Staff Report.

#### **I. POSEIDON'S RESTORATION ACREAGE IS CONSISTENT WITH COMMISSION PRACTICE**

Independent review has confirmed that Poseidon's proposed 42.5 acres is sufficient restoration to fully mitigate the Project's marine life impacts. Poseidon's entrainment study, which provides the basis for Poseidon's proposed 42.5 acres of wetland restoration, was reviewed by the Coastal Commission's independent expert, Dr. Pete Raimondi of UC Santa Cruz. Dr. Raimondi confirmed, among other things, that: (1) Poseidon's study design is consistent with recent entrainment studies conducted in California; (2) using CEC methodology and Coastal Commission precedent, the habitat restoration required to mitigate the Project's "stand-alone" operations would be 42.5 acres (37 acres to compensate for Agua Hedionda Lagoon ("Lagoon") species impacts, and 5.5 acres to compensate for open ocean species impacts); and (3) habitat mix for mitigation should include mudflat/tidal channel and open water habitat. This methodology is also consistent with the peer-reviewed and approved methodology the CEC applied to the Morro Bay Power Plant and the Moss Landing Power Plant.

Notably, Commission Staff originally recommended that Poseidon use CEC methodology to determine the Project's mitigation requirement. Staff, however, is now recommending a substantial *increase* in the mitigation acreage by applying a new standard that has not been peer-reviewed and which adjusts variables in the modeling estimates. Specifically, Dr. Raimondi suggested that in order to provide an even *greater* level of assurance that impacts to lagoon and ocean species will be mitigated, Poseidon could restore 12.9 to 25.7 acres above the 42.5 acres required under CEC methodology – for a total of 55.4 to 68.2 acres – to provide an unprecedented level of mitigation for the Project's "stand-alone" impacts that the Commission has never applied before. This "enhanced mitigation" proposal is inconsistent with CEC methodology and established, peer-reviewed methodology and precedent. Notably, Dr. Raimondi has not advocated that the Commission should apply the "enhanced mitigation" methodology, and has appropriately left to the Commission the decision of which methodology should be used.

In contrast to the "enhanced mitigation" proposal, Poseidon's restoration acreage methodology conforms entirely to Commission-accepted precedent, and Staff has not identified any mitigation projects using this methodology that have resulted in under-compensation for marine impacts. Poseidon's Area Production Foregone ("APF") calculation is extremely conservative because it assumes that the proportional mortality resulting from entrainment occur

across the entire area of the Lagoon. In fact, the habitat areas in the Lagoon for the three species used to calculate the APF estimate are all much smaller than the entire Lagoon. Accordingly, an averaging approach was used because it accounts for the uncertainty associated with the estimates of the exact areas of habitat associated for each species. This methodology is considered conservative and conforms entirely to standards and procedures used for APF determination at the Moss Landing project.

Staff has also suggested that if Poseidon does not use Staff's "enhanced mitigation" proposal, that Poseidon should be required to apply a mitigation ratio (such as 2:1 or 3:1) to its mitigation acreage so that Poseidon considers mitigation that may be "out of kind" or provided at some distance from the affected area. Staff, however, has not and cannot provide examples of any California entrainment mitigations that have applied a mitigation ratio on top of a conservative "in-kind" approach to mitigation that is consistent with CEC methodology, such as the mitigation acreage contained in the MLMP. Moreover, the MLMP ensures that Poseidon will provide "in-kind" restoration in the Southern California Bight similar to the affected area in the Lagoon.

For these reasons, Poseidon asks the Commission to approve its 42.5 acreage calculation over that proposed by Staff to ensure that the Project's mitigation is consistent with prior Commission approvals rather than subject to an obligation that is based on un-proven methodology.

## **II. PHASED MITIGATION IS APPROPRIATE FOR THIS PROJECT**

Poseidon's phased approach to mitigation would fully compensate for the Project's impacts to marine life under either of the power plant's operating scenarios. The initial phase of the mitigation plan would provide 37 acres of wetland restoration, which would fully compensate for Project-related impacts during the period when both the Encina Power Station ("EPS") and the Project are operating ("Phase I"). The second phase would provide up to 5.5 acres of additional restoration to address any additional unmitigated impacts occurring from Project operations when the EPS is decommissioned or when the EPS is providing less than 15% of the water needed for the Project based on the EPS's average water use over any three-year period<sup>1</sup> ("Phase II"). Below, Poseidon has identified the benefits of phased mitigation for this Project and explained why Staff's arguments against phasing are unsupported and inconsistent with the benefits that phasing would provide.

### **A. Phase I Mitigation Over-mitigates Project Impacts**

Under Phase I, Poseidon would restore 37 acres of wetland habitat similar to the affected habitats in Agua Hedionda Lagoon. Using CEC and prior Coastal Commission methodology, the Phase I mitigation would mitigate 87% of the total requirements for the Project's "stand alone" operations (when the EPS has ceased operating). Accordingly, the Phase I mitigation

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<sup>1</sup> This threshold is very conservative. The Phase I restoration project would fully mitigate the Project's impacts as long as at least 13% of the Project's seawater requirements are provided by the EPS. Poseidon's MLMP is conservative in that it requires Poseidon to implement Phase II mitigation if the EPS is providing an average of less than 15% of the Project's seawater requirements over a three-year period.

would fully mitigate the Project's impacts as long as at least 13% of the Project's seawater requirements are provided by the EPS. By providing this level of mitigation while the Project and the power plant are both operating, Poseidon will perform more mitigation than what is necessary to mitigate this stage of the Project's operations. For example, in the last 18 months the EPS would have provided over 65% of the water needed for the Project. Based on that number, Poseidon would have been required to provide only 14.9 acres of mitigation using CEC methodology and Commission precedent. Poseidon's Phase I restoration of 37 acres would be approximately 2.5 times the mitigation actually required. Therefore, through the phased approach to mitigation, Poseidon is actually providing the substantial majority of the mitigation required for the Project's stand-alone operations up front.

**B. Phase II Mitigation Provides New Opportunities to Reduce Impacts**

The MLMP requires Poseidon to implement mitigation measures for Phase II (including up to 5.5 acres of additional restoration) if the EPS stops using its existing seawater intakes for cooling purposes, or if the intakes provide less than 15% of Poseidon's needed water based on the EPS' average water use over any three-year period ("Phase II Pre-Conditions"). To ensure that the Commission is aware of the amount of water the EPS is providing to the Project, and when Phase II mitigation should commence, the MLMP requires Poseidon to submit that information to the Executive Director annually.

Wetland habitat restoration under Phase II would credit the 37 acres of restoration already provided for under Phase I, and provide assurances that stand-alone operations are fully mitigated in Phase II. Once either of the Phase II Pre-Conductions occur, the MLMP requires Poseidon to: (1) analyze the environmental effects of ongoing Project operations; (2) use that analysis to investigate and evaluate reasonably feasible technologies that are unavailable today, which may reduce any marine life impacts; and (3) provide its analysis of environmental effects and its evaluation of any reasonably feasible technologies to reduce marine life impacts to the Commission within 24 months. Accordingly, the Commission will be able to determine if Poseidon can further reduce the Project's impacts to marine life through reasonably feasible technologies, and may proportionally reduce Poseidon's habitat restoration obligation for Phase II mitigation based on that mitigation.<sup>2</sup>

In addition, Poseidon may assume dredging obligations of the Agua Hedionda Lagoon from the EPS within 24 months of the occurrence of either Phase II Pre-Condition, if feasible.<sup>3</sup> If Poseidon assumes dredging obligations, it will provide evidence of its obligations to the Commission, along with an analysis of how Lagoon dredging is beneficial to the Lagoon and

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<sup>2</sup> Note that in the event the Phase II Pre-Conditions do not occur, Poseidon's approval from the State Lands Commission requires Poseidon to undertake a substantially similar evaluation of environmental effects of ongoing Project operations and to investigate and evaluate new and developing technologies that are unavailable today to reduce any marine life impacts ten years after Project operations commence. Accordingly, if the State Lands Commission requires Poseidon to implement any such technologies that constitute "development", such development would be subject to Coastal Commission review and approval.

<sup>3</sup> Since Special Condition 12 of the Project's Coastal Development Permit requires Poseidon to obtain a new Permit approval from the Coastal Commission for any dredging activities, the Commission shall have oversight over any Lagoon dredging.

how such dredging activities may entitle Poseidon to some amount of restoration credit. (See Section C below).

In the event that Poseidon does not assume Lagoon dredging obligations (for example, if the EPS never fully ceases use of its intakes but operates the intakes at very low levels and continues to dredge the Lagoon), Poseidon's MLMP requires it to develop a plan within 24 months in which: (1) the Commission shall evaluate whether Poseidon's 37 acres of wetland restoration under Phase I has fully mitigated the Project's stand-alone operations; and (2) the Commission may reduce Poseidon's Phase II restoration based on the reduction to marine impacts caused by Poseidon's implementation of new, reasonably feasible technologies (as discussed above).

Accordingly, phased MLMP implementation would provide a tremendous incentive for Poseidon to investigate and invest in new technologies and opportunities to further reduce Project impacts and avoid additional mitigation costs. If Poseidon is required to provide all of the mitigation for the "stand-alone" operations upfront, there is substantially less incentive to invest in additional avoidance measures. In addition, the opportunity for the Commission to consider these issues once Project operations have commenced is another valuable benefit of phased implementation of the MLMP: with phased mitigation, Poseidon, the Commission and other regulatory agencies would have an opportunity to measure the actual impacts of the Project, and to evaluate new opportunities to further reduce the impacts and refine the scope of the Phase II mitigation as necessary to ensure the "stand-alone" Project impacts are fully mitigated.

If the Commission determines that none of the above-opportunities are feasible or if these opportunities in combination with the Phase I mitigation plan do not fully mitigate the "stand-alone" Project impacts, then the MLMP requires Poseidon to restore up to an additional 5.5 acres consistent with the performance standards and objectives used for the 37 acres provided under Phase I restoration.

### **C. Phased Mitigation is Not Speculative**

Commission Staff argue in the Staff Report that the Commission should require Poseidon to provide all mitigation up-front, rather than in two phases, because it considers "phasing to be speculative in that it is tied to unknown future operations of the power plant." Staff's argument is without merit. As set forth in MLMP Section 1.1, Poseidon will be obligated to provide the Executive Director annually with data demonstrating the power plant's seawater intake for the prior year, which will ensure that the Commission is always informed of the power plant's operations. Since the MLMP requires Poseidon to undertake Phase II mitigation when the power plant is decommissioned or when it provides less than 15% of the Project's water over a three-year period, the Commission will have the necessary data about power plant operations so that it will not need to "speculate" about when Poseidon will need to implement Phase II mitigation.

Staff also contends in the Staff Report that tying phased mitigation to the power plant's operations would be "inappropriate" because the power plant is not a co-applicant on the Project's Permit. Poseidon's Permit application and the Commission's approval, however, provide that the desalination facility's intake would be connected to the power plant's discharge

channel. Accordingly, the discharge from the power plant, to the extent it is available, will serve the Project's needs. In the past 18 months, the power plant would have provided over 65% of the water needed for the Project. It is both appropriate and there is no prohibition on allowing the phased approach proposed by Poseidon.

In addition to the reasons discussed above, a phased approach to mitigation for this Project is based on sound policy for the following three reasons:

- (1) EPS will operate indefinitely: As discussed above, while the EPS continues to operate, it will provide a significant portion of the seawater required for the Project, and the need for Project mitigation would be proportionally reduced. The power plant's generating capacity is subject to "Reliability Must Run" status, as contracted by the California Independent System Operator (Cal-ISO), which is meant to provide electrical grid reliability. At the October 2007 State Lands Commission meeting, an EPS representative testified that the units will remain in service indefinitely and that Cal-ISO would determine when they are no longer needed for grid stability. Further, in a July 12, 2007 letter to the Commission, EPS stated that at least two of its generating units "can be reliably operated for the foreseeable future." Because the power plant will continue to operate in some capacity and provide water to the Project, requiring more than 37 acres of mitigation up-front would substantially over-mitigate the Project's impacts for many years.
- (2) Phasing allows the Commission to retain authority and evaluate impacts: Due to the phased approach, the Commission would have ongoing involvement in the implementation of the MLMP alongside other regulatory agencies. This will allow the Commission to evaluate the impacts of the Project's *actual* operations, rather than relying on estimates, and will enable the Commission to more accurately determine what additional mitigation should be required to fully mitigate the Project's marine impacts (if any).
- (3) Other regulatory agencies retain authority to evaluate and address impacts: The Regional Water Quality Control Board ("Regional Board") and the State Lands Commission have indicated that upon decommissioning of the power plant, they will undertake an environmental review of the Project to determine what, if any, additional design, technology or mitigation measures should be required. Further, and to the extent that there are modifications to the Project as a result of power plant decommissioning or to comply with State Lands Commission or Regional Board requirements, such modifications would also be subject to review by the Coastal Commission for Coastal Act compliance.

For these reasons, Poseidon asks the Commission to reject Staff's argument about phasing, and to approve Poseidon's MLMP as set forth in Exhibit A, without Staff's recommended changes from the Staff Report.

### III. LAGOON DREDGING CREDIT SHOULD BE EVALUATED IN THE FUTURE

Pursuant to Poseidon's proposed MLMP, the Commission may decide at a later date whether Poseidon should receive any restoration credit for assuming dredging obligations of the Agua Hedionda Lagoon. Poseidon has not requested that dredging credit be applied to its mitigation obligations now; on the contrary, Poseidon is asking the Commission only to leave open the possibility of allowing such credit in the future if Poseidon assumes dredging obligations. Staff argues, however, that the Commission should decide now that Poseidon's potential dredging is not subject to restoration credit – even though approval of the MLMP does not involve any dredging approval.

Staff argues that Lagoon dredging would be inconsistent with Special Condition 8's requirement that mitigation be in the form of creation, enhancement or restoration of wetland habitat, but that argument is not supported by the evidence. The Lagoon supports a wide range of beneficial uses, including over 300 acres of marine wetlands and a variety of recreational activities, and needs to be dredged for those uses to continue. The sand dredged from the Lagoon would be placed on adjacent beaches so as to maintain, restore and enhance habitat for grunion spawning and enhance opportunities for public access and recreation along the shoreline. In recognition of the value these uses, the Commission previously granted wetlands restoration credit for inlet maintenance for Edison's SONGS project, and this precedent allowed one acre of restoration credit for every 3.3 acres of tidally exchanged wetlands supported by dredging. As applied to Poseidon, such credit would represent seventeen times the required 5.5 acres of mitigation required under Phase II. The MLMP does not specify the amount of restoration credit Poseidon should receive for dredging, and ultimately the Commission would need to determine the amount of credit to which Poseidon is entitled (if any) if Poseidon applies for such credit.

Finally, Staff argues that credit for dredging cannot be granted because EPS is obligated to dredge the Lagoon, and there is neither an agreement with EPS for Poseidon to undertake dredging nor is EPS a co-applicant for the Project. As discussed above, Poseidon is not asking for dredging credit now, only the possibility of such credit in the future, and Poseidon would provide the Commission with any dredging agreement with EPS, or a new Coastal Development Permit Application that may include EPS as a co-applicant, at the time it requests such credit. Accordingly, Staff's argument is without merit, and Poseidon asks the Commission to approve the MLMP as proposed by Poseidon in Exhibit A.

**Item W16a**  
**Exhibit 4**

**Transcript of**  
**August 6, 2008 hearing**  
**(Commission deliberations**  
**only)**

1 whoever makes the motion.

2 CHAIR KRUER: Exactly.

3 EXECUTIVE DIRECTOR DOUGLAS: Right.

4 CHAIR KRUER: Exactly, and your process sounds  
5 rational, but then it might even take longer. I am not sure.

6 EXECUTIVE DIRECTOR DOUGLAS: Yes, those are the  
7 points of differences, right.

8 CHAIR KRUER: Okay.

9 You don't get to speak, Mr. Geever.

10 MR. GEEVER: Mr. Chairman, I am going to ask you  
11 for an exception.

12 CHAIR KRUER: No, I am not going to give any  
13 exceptions tonight, at this hour, no, sir, cannot do it.

14 MR. GEEVER: I wanted to take issue with --

15 CHAIR KRUER: Well, you are not entitled to  
16 rebuttal. We have closed the public hearing, first of all.

17 MR. GEEVER: Okay.

18 CHAIR KRUER: Thank you, sir.

19 Okay, Commissioner Hueso.

20 [ MOTION ]

21 COMMISSIONER HUESO: Thank you.

22 I am going to move that we approve the Marine Life  
23 Mitigation Plan attached to the staff recommendation, as  
24 Exhibit 1, if modified as shown in Section 1.1 below, and  
25 Exhibit 2 of this memorandum as compliant with Special

1 Condition 8 of CDP E-06-013.

2 And, I will have some modifications.

3 CHAIR KRUER: Okay, it has been moved by  
4 Commissioner Hueso, seconded by --

5 Is there a "seconded" to your motion?

6 Anyone want to "seconded" it.

7 COMMISSIONER LOWENTHAL: Second.

8 CHAIR KRUER: Seconded by Commissioner Lowenthal.  
9 Would you like to speak to your motion?

10 COMMISSIONER HUESO: I would actually like to go  
11 through some of the modifications with staff, and maybe go  
12 over some of their recommendations that they have made, just  
13 to understand how they apply it.

14 We have gone over this in the discussion, but I  
15 would like to go over, for example, Modification No. 1, says  
16 Poseidon shall create or restore between 55 and 68 acres of  
17 coastal estuarine wetland habitat within the Southern  
18 California bite.

19 My question to staff about that, I mean, there  
20 were a lot of complaints about there not being a specific  
21 area, and staff also followed up that there aren't really  
22 expressed locations, in terms of where this mitigation will  
23 take place. In your recommendation, is that still the  
24 condition, in terms of we don't know where this is going to  
25 take place?

1           **ENVIRONMENTAL SPECIALIST LUSTER:** Staff consulted  
2 with the SONGS Scientific Advisory Panel, and our recommend-  
3 ation is based on input we got from the panel.

4           The conditions that the Commission imposed on  
5 Edison for the San Dieguito site, those were issued before  
6 Edison had selected its site, and so we feel that if Poseidon  
7 meets the same conditions that Edison was held to, and  
8 selects a site within the Southern California bite, that  
9 would provide adequate assurance that subsequent plans that  
10 come to you would be sufficient.

11           **COMMISSIONER HUESO:** So, we can still work out  
12 locations, in terms of optimizing the location, and there is  
13 the benefit of the improvements.

14           **ENVIRONMENTAL SPECIALIST LUSTER:** Right, as long  
15 as they are held to the same conditions SONGS was.

16           **COMMISSIONER HUESO:** And, getting to this specific  
17 acreage, you put a range of 55 to 68, that was your  
18 recommendation. Now, that is not a very, very specific  
19 number. Is that based on, again, putting the burden on the  
20 applicant to come back with a plan that mitigates the impacts  
21 of the project?

22           **ENVIRONMENTAL SPECIALIST LUSTER:** Staff felt that  
23 that was a decision for the Commission.

24           The two figures are based on the levels of  
25 confidence that derive from the study. If the Commission

1 wants 80 percent confidence that they would insure full  
2 mitigation for the impacts, the 55 acres, staff believes,  
3 would be sufficient. If you want 95 percent confidence in  
4 your decision, then you go with the higher number.

5 So, the Commission could either decide on a  
6 specific figure, this evening, or if Poseidon came back  
7 later, with a mitigation proposal, somewhere within that  
8 range, that would be the other option.

9 **COMMISSIONER HUESO:** So, is it so accurate, is it  
10 possible to get 95 percent with 37 acres? You are saying, is  
11 it impossible? is it improbable? is it that accurate? in  
12 terms of the possibility of getting the kind of mitigation  
13 that we want within a certain amount of acreage? Can that be  
14 achieved through a very intense mitigation monitoring of a  
15 specific acreage amount?

16 **ENVIRONMENTAL SPECIALIST LUSTER:** If you don't  
17 mind I will ask Dr. Raimondi to answer that.

18 **COMMISSIONER HUESO:** Sure.

19 **ENVIRONMENTAL SPECIALIST LUSTER:** He has far more  
20 expertise.

21 **MR. RAIMONDI:** There are really two issues here,  
22 you have addressed one of the. One of them is the amount of  
23 acreage that is required, and the other is insuring that it  
24 works, because, clearly, you could put in 50, 70, 100 acres  
25 and if it doesn't work, you get no compensation.

1           The key thing here is using the information that  
2 Poseidon provided, and just using what I laid out there --  
3 and again, we are not using any data that didn't come from  
4 Poseidon -- the 80 percent really is 55 acres, and the 95  
5 really is 68. In addition, you would still need to monitor  
6 it, to make sure that it works, because 68 acres of garbage  
7 is no compensation.

8           So, there are two issue, really.

9           **COMMISSIONER HUESO:** So, in terms of maybe hearing  
10 from Poseidon's representatives, in terms of what they can  
11 guarantee, in terms of providing the adequate mitigation for  
12 the project, you are saying you can do it with 42.5 acres is  
13 the claim that you are making?

14           **MR. ZBUR:** Yes, I mean I think we think that based  
15 upon the standards that were used for the Morro Bay Plant,  
16 and for the Moss Landing Plant, that the acreage amount  
17 consistent with that would be 42.5 acres.

18           **COMMISSIONER HUESO:** And, what level of mitigation  
19 would 42 acres provide?

20           **MR. ZBUR:** It would provide --

21           **COMMISSIONER HUESO:** In terms of a percentage?

22           **MR. ZBUR:** It would present 100 percent mitigation  
23 for the stand-alone operations.

24           **COMMISSIONER HUESO:** If monitoring showed that it  
25 didn't, would that mean that you are not let off the hook.

1 You would have to come back and do some work?

2 MR. ZBUR: Well, I think that one of the concerns  
3 that we have about the adoption of the staff recommendation  
4 is that it, basically, is just a very vague recommendation,  
5 if we conform it to the SONGS approach, which had a lot of  
6 details, which were related to a much, much larger  
7 restoration program, including very significant costs.

8 So, one of the things that we were hoping you  
9 would do is to use the -- start with the Poseidon plan, and  
10 if you wanted to make changes with respect to the acreage,  
11 and I think we want -- phasing is an important thing. Not  
12 having any phasing, really restricts the number of sites that  
13 we can do, that we can get entitled and ready to go on line,  
14 within the 24 months that the plan has required.

15 I mean, one of the things that is very important  
16 for us is that we are able to not delay the operation of the  
17 plant, and in order to not delay the operation of the plant,  
18 we need as broad a number of sites, as possible, and  
19 obviously, we are requiring all of that up front, so it  
20 potentially restricts the number of sites, and that makes it  
21 less likely --

22 COMMISSIONER HUESO: And, that would be required  
23 to come back to the Coastal Commission for approval, for each  
24 project?

25 MR. ZBUR: What the Poseidon proposal does is it

1 would require 37 acres up front. We would have to come back  
2 to the Coastal Commission within 24 months for a CDP for that  
3 project, at least 37 acres.

4 COMMISSIONER HUESO: That is 24 for the 37 acres?  
5 and, then?

6 MR. ZBUR: And, then, the Poseidon proposal was  
7 that we would have to do the additional acreage at the time  
8 that there was stand alone operations occurring, which would  
9 be that the power plant would completely shut down, or  
10 provides less than 15 percent of the water.

11 And, I actually wanted to dispute, there is a lot  
12 of information on the record which we can site, that provides  
13 explanation as to what the basis was of those figures.

14 COMMISSIONER HUESO: So, how did you come up with  
15 the 42.5? that is the 37 plus the 5.5 acres?

16 MR. ZBUR: Yes, the 37 plus the 5.5 acres. The 42  
17 acres is using the CEC methodology that was used for the  
18 Morro Bay and Moss Landing. The 37 acres was, in part,  
19 picked because the San Dieguito site, which is not the site  
20 that we will, necessarily, go to -- there are still issues  
21 with respect to permitting on that site -- but, we know that  
22 we can get 37 acres out of the San Dieguito site, if we can  
23 resolve issues with the JPA and some of the other entities  
24 involved in the site.

25 COMMISSIONER HUESO: So, under of the staff's

1 recommended modifications, now where it says, under 1.1 on 1  
2 we have to come up with a determination on the acres, and on  
3 No. 2 in conformity with Exhibit 2 -- and we will get to that  
4 a little bit later -- and in No. 3 it says when the 60 days  
5 of the Commission's approval of the modified plan, Poseidon  
6 shall submit for Executive Director's review an approval and  
7 review -- excuse me -- of a revised plan that includes these  
8 modifications.

9 So, that is not necessarily -- you are asking for  
10 24 months, as opposed to 60 days? does that condition apply  
11 to that?

12 MR. ZBUR: I didn't think we had any disagreement  
13 with the staff on the timing of when the CDP had to come  
14 back.

15 ENVIRONMENTAL SPECIALIST LUSTER: Right, and the  
16 60 days refers to once we decide on a plan this evening, that  
17 Poseidon returns within 60 days, and that incorporates all of  
18 the changes that are made. If we end up with some  
19 conditions, some Poseidon has proposed, and some staff has  
20 proposed, that there is one plan that encapsulates all of  
21 that.

22 COMMISSIONER HUESO: So, that would be taken care  
23 of by No. 3? there is no disagreement on timing for that?

24 ENVIRONMENTAL SPECIALIST LUSTER: I don't think  
25 there is any disagreement.

1                   **COMMISSIONER HUESO:** Special Condition No. 2, that  
2 refers to Exhibit 2, are there any disagreements on Item No.  
3 2?

4                   **ENVIRONMENTAL SPECIALIST LUSTER:** Yes, staff's  
5 recommendation in Exhibit 2, those are the conditions that  
6 the Commission required of SONGS. Staff modified some of  
7 those conditions to reflect some updates, and mitigation  
8 approaches, and you know, removed references to SONGS and  
9 Edison and replaced them with Poseidon.

10                   **COMMISSIONER HUESO:** Why are we referencing SONGS,  
11 specifically, because of their approach to the mitigation?  
12 what you are doing is recommending that exact same approach?

13                   **ENVIRONMENTAL SPECIALIST LUSTER:** Yes, going back  
14 a ways, over the last several months we have been working  
15 with Poseidon and up until about a month ago, Poseidon's  
16 proposal was to mitigate at San Dieguito adjacent to the  
17 SONGS restoration site, and they had come up with a very  
18 detailed preliminary plan, showing the number of acres of the  
19 different types of habitat, hydraulic analyses, showing the  
20 change in tidal flows, that sort of thing. And, so we were  
21 basing our approach, up until then on consistency with the  
22 adjacent SONGS restoration site. It all changed in the last  
23 month.

24                   We now no longer have that site as the selected  
25 mitigation area, but in consulting with the SONGS scientists,

1 we believe that the conditions that SONGS was held to would  
2 be applicable to Poseidon if they did estuarine restoration  
3 somewhere else in the Southern California bite.

4 So, that is how we ended up with proposing the  
5 SONGS conditions.

6 COMMISSIONER HUESO: Okay, and what part of those  
7 conditions can't you achieve?

8 MR. ZBUR: The SONGS conditions?

9 COMMISSIONER HUESO: Yes.

10 MR. ZBUR: I think what you have attached to the  
11 motion that we suggested that you make, included many things  
12 to respond to the staff's concerns relating to the  
13 inconsistencies within the SONGS plan. I don't think that  
14 there are very many, but I am trying to figure out what they  
15 are, frankly.

16 I think the only change, really, is with respect  
17 to how significant the funding and -- you know, the SONGS  
18 plan required the funding of a number of scientists, and  
19 really very frequent reports back to the Commission about the  
20 restoration plan. And, I think our plan, because it is a  
21 much smaller restoration effort, did not anticipate imposing  
22 that kind of costs, I mean, the number of scientists that  
23 would be employed full time with annual reports -- workshops,  
24 it wasn't even reports -- workshops back to the Commission.

25 So, I think that is the major change that remains

1 isn't it? plus the phasing and the number of acres.

2           **COMMISSIONER HUESO:** Couldn't you propose that as  
3 part of your mitigation plan? I mean, tell me here where it  
4 is that specific, where it calls out a specific number of  
5 scientists, and project management staff, and the other  
6 things you alluded to?

7           **MR. ZBUR:** Well, basically, it is not in our plan.  
8 It is in, basically, the old SONGS plan. There is a general  
9 recommendation, and a staff recommendation that we make this  
10 consistent with the SONGS plan.

11           It is in Section 1.0 Administration, and 2.0  
12 Budget and Work Program. There are differences between the  
13 SONGS approach, which required --

14           **EXECUTIVE DIRECTOR DOUGLAS:** Mr. Chairman, if I  
15 may, I think this is going to be virtually impossible for us  
16 to work through tonight.

17           **COMMISSIONER HUESO:** I agree, I mean --

18           **EXECUTIVE DIRECTOR DOUGLAS:** I think, if you would  
19 just work on major issues --

20           **COMMISSIONER HUESO:** Exactly.

21           **EXECUTIVE DIRECTOR DOUGLAS:** -- and then ask us to  
22 work with Poseidon, in terms of how we implement it, I think  
23 that is what everybody is looking to at the end of the day.

24           You know what our recommendations are on the  
25 points of contention. If you go with our recommendation on

1 acreage, fine, we will work through what the nature of the  
2 plan will have to be. If you go through each one of these,  
3 at least you will be able to act on the plan tonight, and we  
4 then come back and work through some of the details of what  
5 exactly has to be in the plan, relative to whether or not it  
6 is exactly tracking with the SONGS approach, or not.

7 But, that is something that we can work out. You  
8 have to decide the fundamental questions here, and if we have  
9 a dispute over any of those other items, we can bring those  
10 back to you, too. But, at least, in terms of what you have  
11 got before you, and what you have asked us to bring to you,  
12 was something that you could act on today that would lead to  
13 the issuance of the permit, and we were trying to do that.

14 I think the best way for you to go through it is  
15 to address the issues in contention.

16 MR. ZBUR: I think we would be comfortable in  
17 working out the issues with the staff, in terms of consistent  
18 with the SONGS, as they really are not that different.

19 I think the one thing we would ask that the  
20 Commission consider as part of the motion is that the detail  
21 with respect to the budget is something that we could work  
22 out with the staff, and potentially that would be -- the  
23 budget, in terms of how much we have to spend could be  
24 determined at the time the CDP comes forward.

25 COMMISSIONER HUESO: And, would you like a

1 specific acreage amount to be decided today? or could that be  
2 done through your discussions with the applicant?

3 EXECUTIVE DIRECTOR DOUGLAS: I think that is  
4 pretty fundamental. I get the sense, from talking with them,  
5 that that is what they want you to decide, and we would like  
6 that guidance, too.

7 COMMISSIONER HUESO: Well, I am going to propose  
8 then, a --

9 CHAIR KRUER: Well, you have prefaced your --

10 COMMISSIONER HUESO: Okay.

11 COMMISSIONER LOWENTHAL: [ Inaudible ]

12 COMMISSIONER POTTER: Mr. Chair, if I might, I am  
13 prepared to move through these items in an amending form, and  
14 then we can give direction accordingly.

15 CHAIR KRUER: Well, just a --

16 Yes, go ahead, sir.

17 COMMISSIONER LOWENTHAL: [ Inaudible ]

18 COMMISSIONER POTTER: Unless there is the desire  
19 to belabor this kind of conversation, anyway.

20 CHAIR KRUER: Commissioner Lowenthal, you don't  
21 have a problem with Commissioner Potter going?

22 COMMISSIONER LOWENTHAL: No.

23 CHAIR KRUER: Okay, thank you.

24 [ MOTION ]

25 COMMISSIONER POTTER: Okay, I offer an amending

1 motion that the restoration acreage be 55.4 acres.

2 I need a "second" and then I will speak to it,  
3 briefly.

4 COMMISSIONER HUESO: I'll second it.

5 CHAIR KRUEER: It has been moved by Commissioner  
6 Potter, seconded by Commissioner Hueso.

7 COMMISSIONER POTTER: My concern is that wetland  
8 restoration, I am compelled by the testimony by staff that  
9 the higher percentage of success is with the 55 or 68 number.  
10 That said, I also am concerned that this deal of like-kind  
11 restoration, that they not get credit for a restoration  
12 project that is not similar to this wetland.

13 The attachment that is here, Exhibit A, it does go  
14 through a fairly involved criteria, with minimum standards  
15 and objectives. I believe that that incorporated with the  
16 increased acreage would get us to a successful wetland  
17 mitigation project. That is my logic.

18 CHAIR KRUEER: Okay, and the "second"  
19 Commissioner Hueso, no question, please. Do you want to  
20 speak to it?

21 COMMISSIONER HUESO: No.

22 CHAIR KRUEER: Okay, any other Commissioners?  
23 Yes, Commissioner Shallenberger.

24 COMMISSIONER SHALLENBERGER: Question to the maker  
25 of the motion. If it turns out that this doesn't adequately

1 -- I mean, are there any performance standards that you are  
2 proposing to put in so that we know whether or not at the end  
3 of monitoring that 55.4 has, in fact, mitigated it?

4 COMMISSIONER POTTER: I think the CDP that comes  
5 in is going to be conditioned for the project, is due in 24  
6 months, and is going to have all of those necessary standards  
7 as part of that CDP application, that is my belief.

8 COMMISSIONER SHALLENBERGER: My question is which  
9 one rules? In other words, if we adopt the 5.4 now, and --

10 COMMISSIONER POTTER: It is 55.4.

11 COMMISSIONER SHALLENBERGER: -- 55.4, sorry, and  
12 right you are, and when we, in 24 months when we get the CDP,  
13 and the performance standard show that maybe that doesn't --

14 COMMISSIONER POTTER: It is proposed --

15 EXECUTIVE DIRECTOR DOUGLAS: No, if I may.

16 CHAIR KRUEER: Yes, Director Douglas.

17 EXECUTIVE DIRECTOR DOUGLAS: The way that I  
18 understand this would work is that 55.4 acres is what they  
19 have to restore. There are performance standards that have  
20 to be met, and to the extent that those performance standards  
21 aren't met, they have to take remedial action, but that  
22 doesn't necessarily mean an increase. It means that they  
23 have to go back and make the changes that are necessary to  
24 make it function to the level that it meets the performance  
25 standards. And, that is built into the --

1                   **COMMISSIONER POTTER:** And, specific to that, the  
2 5.0 in here, with the wetlands monitoring management  
3 remediation, reads monitoring management remediation shall be  
4 conducted over the full operating life of Poseidon's  
5 desalination facility, which shall be 30 years.

6                   So, there is never going to be a lapse of non-  
7 monitoring or mitigation.

8                   **CHAIR KRUER:** Okay.

9                   Commissioner Wan.

10                  **COMMISSIONER WAN:** Yeah, along the lines of what  
11 Commissioner Shallenberger was talking about, you know, I  
12 don't have -- I think the problem here is that, as it has  
13 been pointed out, we don't really have the plan in front of  
14 us. We have the elements here of what will be a plan, and  
15 that makes things very difficult and very uncomfortable,  
16 because you can say, well, they will come in in 24 months,  
17 and they will be required to do 55.4 acres of restoration,  
18 and there will be some performance standards, of which I  
19 don't know what they are now.

20                  There will be monitoring, of which I, essentially,  
21 don't know what that monitoring is, and then they will be  
22 required to meet these performance standards on these 55.4  
23 acres, but what happens if it turns out that they can't? what  
24 happens if it turns out that after all is said and done,  
25 because at this point, we do not even know where these acres

1 are going to be located, so it is very difficult to really  
2 know if it is adequate. What happens then? and there is  
3 where I am really uncomfortable with what we am doing now.

4 I was going to talk about the total issue of  
5 uncertainty, and whether you use 50 percent uncertainty, or  
6 80 percent in the 50 percent, plus mitigation.

7 But, even if you go with the 55.4 it is the  
8 uncertainty because we don't have a plan in front of us now.  
9 We are putting off the actual plan for 24 months that I don't  
10 know how you can do it.

11 CHAIR KRUER: Okay.

12 Commissioner Reilly.

13 COMMISSIONER REILLY: Well, the uncertainty isn't  
14 with performance standards or whether they are going to be  
15 able to do it. The uncertainty has to do with the impact of  
16 their project. And, it is not going to change.

17 Whatever performance standards we put on their  
18 mitigation, for success, is not going to change the analysis  
19 or the level of confidence that this Commission needs to be  
20 able to set mitigation acreage, so those are two separate  
21 issues, I believe.

22 And, you know, when this comes back, and you know  
23 a couple of us were here for Edison -- little grayer than we  
24 were then -- but, we were here, and when this comes back what  
25 is going to be before the Commission is adoption of an entire

1 restoration plan, you know, agreement on baselines, agreement  
2 on what performance standards we are going to use on this,  
3 and I am sure we are going to go back to some of the ones we  
4 have done before, and take a look at that. We are going to  
5 make decision on status reports. We are going to make  
6 decision on workshops and what period of time we do them  
7 over, and so all of those things will be before us, along  
8 with we will have an identification, hopefully, by then, of  
9 the sites that are involved, and but none of that has to do  
10 with setting the acreage. The acreage is based on the  
11 analysis, and the percentage level of confidence we have  
12 based on uncertainties.

13 I don't have a problem with going forward with  
14 this.

15 CHAIR KRUER: Okay, thank you, Commissioner  
16 Reilly.

17 EXECUTIVE DIRECTOR DOUGLAS: And, this is the  
18 approach that we took in San Onofre.

19 CHAIR KRUER: And, I am going to call for the  
20 question.

21 COMMISSIONER HUESO: I do want to include the  
22 concept of phasing into --

23 COMMISSIONER POTTER: I am going to move each one  
24 individually.

25 CHAIR KRUER: Phasing is in there.

1           Okay, with that, again the maker and seconder are  
2 asking for a "Yes" vote on the amending motion.

3           Would the Clerk call the roll.

4           **SECRETARY MILLER:** Commissioner Blank?

5           **COMMISSIONER BLANK:** Yes.

6           **SECRETARY MILLER:** Commissioner Burke?

7           **COMMISSIONER BURKE:** Yes.

8           **SECRETARY MILLER:** Commissioner Lowenthal?

9           **COMMISSIONER LOWENTHAL:** Yes.

10          **SECRETARY MILLER:** Commissioner Hueso?

11          **COMMISSIONER HUESO:** Yes.

12          **SECRETARY MILLER:** Commissioner Kram?

13          **COMMISSIONER KRAM:** [ Absent ]

14          **SECRETARY MILLER:** Commissioner Neely?

15          **VICE CHAIR NEELY:** Yes.

16          **SECRETARY MILLER:** Commissioner Potter?

17          **COMMISSIONER POTTER:** Aye.

18          **SECRETARY MILLER:** Commissioner Reilly?

19          **COMMISSIONER REILLY:** Yes.

20          **SECRETARY MILLER:** Commissioner Shallenberger?

21          **COMMISSIONER SHALLENBERGER:** No.

22          **SECRETARY MILLER:** Commissioner Wan?

23          **COMMISSIONER WAN:** No.

24          **SECRETARY MILLER:** Commissioner Achadjian?

25          **COMMISSIONER ACHADJIAN:** Aye.

1 SECRETARY MILLER: Chairman Kruer?

2 CHAIR KRUER: Yes.

3 SECRETARY MILLER: Nine, two.

4 CHAIR KRUER: Nine, two, the motion passes.

5 Next, on this.

6 COMMISSIONER POTTER: Yes, Mr. Chair --

7 CHAIR KRUER: Yes, Commissioner Potter.

8 [ MOTION ]

9 COMMISSIONER POTTER: -- before the tech crew took  
10 away the chart of options, and decided it was better to look  
11 at us -- okay, there we go.

12 I believe the next issue was the phased  
13 implementation, and I am prepared to move the phased  
14 implementation approach, that is proposed in the Poseidon  
15 recommendation, and if I get a "second" I'll speak to it.

16 COMMISSIONER HUESO: Second.

17 COMMISSIONER POTTER: The original approach was to  
18 take the 37.5 and then the balance up to the 42 and phase  
19 that. I am under the impression that they can do the 37 in  
20 the 2-year period, so then it leaves, basically, the balance  
21 between the 37 and 55, so whatever that is -- and my math  
22 says it is 18.4, so that would be the second phase.

23 And, the details of that is to be worked out by  
24 staff. What staff wanted was direction on these items, and  
25 so for that reason I would throw that out as the approach.

1                   **CHAIR KRUER:** Okay, Commissioner Hueso?

2                   Commissioner Reilly.

3                   **COMMISSIONER REILLY:** I would be willing to  
4 support that if the Phase 2 had a time certain placed on it.  
5 And, you know, we are talking about bringing it back within 2  
6 years. They are anxious to get this project up and going, I  
7 understand, and in their concern, they may not be able to get  
8 -- well, they were concerned that they weren't going to be  
9 able to get 42.5 acres, I am assuming they are concerned they  
10 are not going to be able get 55.4 within a 2-year period.

11                   I am willing to let them come back with 37 on a  
12 Phase 1, but from the time of that approval of Phase 1, I  
13 don't think we should let more than 5 years pass before we  
14 require the Phase 2 to come back.

15                   **COMMISSIONER POTTER:** And, I would include that --

16                   **CHAIR KRUER:** Is that okay with you, Commissioner  
17 Potter, as the maker of the motion?

18                   **COMMISSIONER POTTER:** -- in my recommendation.

19                   **CHAIR KRUER:** Commissioner Hueso, is that okay  
20 with you?

21                   **COMMISSIONER HUESO:** Yes.

22                   **CHAIR KRUER:** Okay, is there anyone else who wants  
23 to speak to that amending motion?

24                   Commissioner Lowenthal.

25                   **COMMISSIONER LOWENTHAL:** So, with the acreage

1 change to 55.4 what would Phase 2 acreage be?

2 COMMISSIONER POTTER: It would be 18.4.

3 COMMISSIONER LOWENTHAL: So, it will be clearly  
4 the difference as what is in the report?

5 COMMISSIONER POTTER: Yes.

6 CHAIR KRUEER: Yes, and thank you, Commissioner  
7 Lowenthal.

8 EXECUTIVE DIRECTOR DOUGLAS: What I understand the  
9 motion to be is that the initial acreage is 37, that has to  
10 be done, and then according to their suggestion for phasing,  
11 which is when the power plant goes down --

12 COMMISSIONER POTTER: No, that got changed to 5  
13 years.

14 EXECUTIVE DIRECTOR DOUGLAS: Okay, so the second  
15 phase comes in when?

16 COMMISSIONER POTTER: Within 5, that is per the  
17 Reilly idea.

18 COMMISSIONER REILLY: Five years after your  
19 approval on Phase 1.

20 EXECUTIVE DIRECTOR DOUGLAS: All right, that is  
21 more workable, thank you.

22 CHAIR KRUEER: Commissioner Wan.

23 COMMISSIONER WAN: I still have a problem with the  
24 phasing, although with the time certain, it is a little bit  
25 better, because we are going to have a long period of time

1 where are going to have impacts, and we are not going to have  
2 any mitigations for those impacts.

3 And, in part, that is because I don't know when  
4 this is going to come on line, relative to these dates, and  
5 you have to remember, that if you start with 37 acres 2 years  
6 from now, it takes time to build it, and it takes even more  
7 time, quite a few years, before it is actually functioning.

8 So, we are now looking at 2 years before they  
9 start, to, probably, you know, 5 or 6 years down the road  
10 before we even start to get anything out of the first phase,  
11 and if you add some time on it, by the time you get, quote,  
12 full mitigation, if you ever do, you are talking about 10  
13 years, and you have had all of those impacts you haven't  
14 accounted for.

15 And, so pushing this out, remember it takes time  
16 for all of this. Pushing it out this way really leaves us  
17 with a whole lot of impacts to that ocean without any  
18 mitigation.

19 CHAIR KRUER: Commissioner Reilly.

20 COMMISSIONER REILLY: I don't disagree with what  
21 Commissioner Wan said, but I would point out that SONGS  
22 operated for 20 years before we got that mitigation, so and  
23 we finally got it, and it is happening, and I think there is  
24 a balance here between being able to move forward on this  
25 project, for the local water needs, and our being able to

1 nail down the mitigation that fully mitigates what is going  
2 on, in terms of impacts.

3 EXECUTIVE DIRECTOR DOUGLAS: And, I might add that  
4 the 5-year component is 5 years from what?

5 COMMISSIONER REILLY: Adoption of Phase 1.

6 EXECUTIVE DIRECTOR DOUGLAS: The permit for Phase  
7 1. It may be that they decide, in looking at that, that it  
8 is better to do it all at once, and they may, indeed, find an  
9 area that is big enough to accommodate the whole thing, so  
10 that would be an option open to them.

11 But, at least, this way, it is workable and we  
12 don't get into the ambiguity of when does it trigger, and  
13 when does it not.

14 CHAIR KRUER: Commissioner Scarborough, then  
15 Commissioner Shallenberger.

16 COMMISSIONER SCARBOROUGH: That was -- thank you,  
17 Chair, that was part of my question, was it 2 plus 5, or how  
18 did you get to the 5 plus 5, but I also wondered what would  
19 be the association, or the relationship between the 5 years,  
20 versus when the power plant does, potentially, close? I  
21 didn't understand why Poseidon had chosen the plant closing,  
22 and was wondering if I could enquire with them why that was  
23 chosen, and how it relates to 5?

24 CHAIR KRUER: Okay.

25 MR. ZBUR: The reason why we had suggested doing

1 the phasing at the plant closing is because, essentially, at  
2 that time we think there will be other kinds of technologies  
3 we can put in place that would reduce the potential impinge-  
4 ment entrainment impacts that we don't have now, because we  
5 have to, basically, rely on the power plant flow, so that is  
6 why we thought that at that point we would have a technology  
7 incentive to avoid additional mitigation by doing it through  
8 avoidance and technology.

9 So, that is why we prefer doing it at the power  
10 plant closure.

11 **COMMISSIONER SCARBOROUGH:** What is the estimated  
12 time of that? time frame?

13 **MR. ZBUR:** It is uncertain. I mean, it could be a  
14 few years, or it could be a long time. According to the  
15 methodology, we are fully mitigated in the interim on the 37  
16 acres, under the 50 percent compensated criteria, we would be  
17 fully mitigated, 2.5 times mitigated at the get go, until --  
18 that is where that 15 percent number came from. We are fully  
19 mitigated until you get to the power plant only operating 15  
20 percent of the time.

21 **COMMISSIONER REILLY:** That is where we got the 7  
22 years.

23 **CHAIR KRUER:** Commissioner Shallenberger.

24 **COMMISSIONER SHALLENBERGER:** Yes, I would like to  
25 hear from staff, Dr. Raimondi, about what you think about the

1 phasing? and how workable that is?

2 MR. RAIMONDI: I am not going to comment about the  
3 motivation for the phasing, but the practicality of it, as we  
4 have had some experience with SONGS.

5 In the SONGS permit there was language that  
6 allowed there to be restoration, and up to 2 wetland areas.  
7 There was the initial phase where there was the selection of  
8 the wetlands, where restoration could be done, and in the  
9 end, Southern California Edison, and their partners, decided  
10 it was logistically more easily to do it at a single wetland  
11 for all sorts of reasons. It minimized the monitoring, it  
12 minimized the costs associated with the permitting, it  
13 minimized the construction costs, it was just cheaper to do  
14 it.

15 Another thing about it, and again, it is going to  
16 matter how you decide to do the monitoring, but with SONGS  
17 they are on the hook for working for what they call the full  
18 operating life of the plant.

19 So with phasing you are going to have two  
20 sequences. You will have the first 37 acres, which will go  
21 for a 30-year period, if you adopt that, and then the second  
22 17 or 16 acres that will be out of phase with that, and will  
23 go longer, so that becomes problematic from a monitoring  
24 standpoint, financially, as well, because you have to carry  
25 the monitoring longer.

1                   **COMMISSIONER SHALLENBERGER:** But, it is  
2 problematic to the project proponent, not to us, in terms, I  
3 mean, they could decide to do them all at once.

4                   **MR. RAIMONDI:** Yes, but there is a stronger issue,  
5 and that is it is way better. It is possible, and I am  
6 sympathetic to them, at this point, about being able to find  
7 the acreage, but it is way better for the system if it is 55  
8 rather than two pieces. You are going to have much more  
9 likelihood of it working, and it is probably going to link  
10 into other restorations, so from an ecological point of view,  
11 bigger is better.

12                   **CHAIR KRUER:** Right, okay.

13                   **COMMISSIONER POTTER:** Well, just as the maker, to  
14 that issue. It is a real estate issue. I mean if the  
15 opportunity is out there, and during this period of working  
16 with staff, they realize we would do better to do it in one  
17 fell swoop, fine then come back and tell us that.

18                   I understand the logic behind what you are saying,  
19 but it is going to be more of a property acquisition problem  
20 is my suspicion.

21                   **CHAIR KRUER:** Okay.

22                   Commissioner Lowenthal, and then we are going to  
23 call for the question, if that is okay with everybody, unless  
24 there is somebody who hasn't spoken yet.

25                   **COMMISSIONER LOWENTHAL:** I wanted to just be clear

1 on when the second -- I know we have the 5-year time frame,  
2 but just from the proponent's presentation there were  
3 different triggering mechanisms, so under our new scheme what  
4 would actually trigger Phase 2?

5 **EXECUTIVE DIRECTOR DOUGLAS:** It would be 5 years  
6 from the first phase, that is, the 37 acres, which has to  
7 come in for a permit within 24 months, as I understand it,  
8 right, and then once that permit is issued, that is what I  
9 understand, then the 5-year period is triggered.

10 But, I would suggest that the maker of the motion  
11 also incorporate in it that if they want to do the entire  
12 amount together, that that would be okay, they don't have to  
13 wait.

14 **COMMISSIONER POTTER:** I literally stated that 3  
15 minutes ago, but that is my intention, and I think everybody  
16 else concurs, that if they come back and can do it great,  
17 okay.

18 **EXECUTIVE DIRECTOR DOUGLAS:** Okay.

19 **CHAIR KRUER:** Okay, and we are going --  
20 Ms. Schmeltzer, we are going to call for the  
21 question. I thought I mentioned.

22 **CHIEF COUNSEL SCHMELTZER:** I am sorry, I just did  
23 want to make sure, on this timing question, I thought I heard  
24 the Executive Director say two different things.

25 There is the provision of coming in for a permit

1 within 24 months, and it being issued within the 24 months --

2 **COMMISSIONER POTTER:** Specific to the 37, and if  
3 they want to go ahead and try to do more at that time, for  
4 economy sake, then fine, they can go to the full 55.4, but  
5 they have an option to go ahead and do it in a phase.

6 **CHIEF COUNSEL SCHMELTZER:** Right, and I understand  
7 that, but if they just do the 37 within the first 24 months,  
8 that the trigger is not -- the trigger is within 24 months.  
9 It is not if the permit takes longer than that to issue.

10 **COMMISSIONER POTTER:** No.

11 **EXECUTIVE DIRECTOR DOUGLAS:** No, my understanding  
12 was, that they have to come in for a permit within 24 months,  
13 and then it depends on what the Commission does. They may  
14 have conditions about the issuance of that permit. My  
15 understanding was that the 5 years starts from the issuance  
16 of the permit.

17 **COMMISSIONER REILLY:** That is correct.

18 **COMMISSIONER POTTER:** Correct.

19 **CHAIR, KRUEER:** That is correct, Mr. Douglas, thank  
20 you.

21 Yes, Commissioner.

22 **COMMISSIONER SCARBOROUGH:** I am not sure where you  
23 are headed with your phasing in your motions, where does the  
24 dredging fit into this?

25 **COMMISSIONER POTTER:** I was going to that in the

1 next --

2 CHAIR KRUER: We will get to -- I think we are  
3 going to call the question, here, and then we will get to the  
4 other amending, if there are other amending things.

5 Again, the amending motion, the maker and seconder  
6 are asking for a "Yes" vote.

7 Would the Clerk call the roll, please.

8 MR. ZBUR: Mr. Chair, can I just so there is not a  
9 dispute on this, can I just make sure there is clarity on  
10 what the timing is on the motion. We are assuming it is 24  
11 months --

12 COMMISSIONER POTTER: I am hoping it gets moved  
13 sometime tonight.

14 MR. ZBUR: -- 24 months -- well, only because I --  
15 24 months to get our application in, which is what we thought  
16 it was, and then from the date that the permit is issued, so  
17 if it takes 9 months or a year to get the permit approved,  
18 from the date the permit is issued, then the 5 years runs,  
19 and then I assume that we have to get another permit  
20 application in within that 5 years?

21 COMMISSIONER POTTER: That is correct.

22 CHAIR KRUER: Correct.

23 MR. ZBUR: Thank you for that clarification.

24 CHAIR KRUER: Okay, thank you.

25 Would the Clerk call the roll, please.

1           **SECRETARY MILLER:** Commissioner Burke?  
2           **COMMISSIONER BURKE:** Yes.  
3           **SECRETARY MILLER:** Commissioner Lowenthal.  
4           **COMMISSIONER LOWENTHAL:** Yes.  
5           **SECRETARY MILLER:** Commissioner Hueso?  
6           **COMMISSIONER HUESO:** Yes.  
7           **SECRETARY MILLER:** Commissioner Kram?  
8           **COMMISSIONER KRAM:** Yes.  
9           **SECRETARY MILLER:** Commissioner Neely?  
10          **VICE CHAIR NEELY:** Yes.  
11          **SECRETARY MILLER:** Commissioner Potter?  
12          **COMMISSIONER POTTER:** Aye.  
13          **SECRETARY MILLER:** Commissioner Reilly?  
14          **COMMISSIONER REILLY:** Yes.  
15          **SECRETARY MILLER:** Commissioner Shallenberger?  
16          **COMMISSIONER SHALLENBERGER:** Yes.  
17          **SECRETARY MILLER:** Commissioner Wan?  
18          **COMMISSIONER WAN:** Yes.  
19          **SECRETARY MILLER:** Commissioner Achadjian?  
20          **COMMISSIONER ACHADJIAN:** Aye.  
21          **SECRETARY MILLER:** Commissioner Blank?  
22          **COMMISSIONER BLANK:** Yes.  
23          **SECRETARY MILLER:** Chairman Kruer?  
24          **CHAIR KRUER:** Yes.  
25          **SECRETARY MILLER:** Unanimous.

1                   **CHAIR KRUER:** Okay, the amending motion passes.  
2                   Commissioner Potter, do you have anymore amending  
3 motions?

4                   **COMMISSIONER POTTER:** I am going to actually ask  
5 for staff clarification on these last two items. I think  
6 they blend together.

7                   Staff is saying that new technologies not appropo,  
8 or in this consideration, and the applicant is saying they  
9 would like the ability to utilize new technology.

10                  And, the other one is this dredging credits, can  
11 you explain what the conflicts are here?

12                  **EXECUTIVE DIRECTOR DOUGLAS:** What I understand,  
13 relative to the new technology, that is that if they can come  
14 up the way that they had originally proposed it, if they come  
15 up with technology that shows that they can filter the water  
16 and avoid entrainment impacts, because of new technology,  
17 that there ought to be some adjustment in the mitigation  
18 requirement.

19                  It seems to me that one way you could address  
20 that, and you know, we have some sympathy for that position.  
21 Obviously, if we could avoid the impacts altogether, that  
22 would be the best. But, if in that 5-year period, for the  
23 second phase, they can come up with technology that shows  
24 that they are not having impacts, you could then factor that  
25 into whether or not it necessary to add that. But, take that

1 into account in the permit that would be applied for in the  
2 Phase 2.

3 COMMISSIONER POTTER: Okay, with that said, I move  
4 that we amend to allow to encourage the use of new  
5 technologies --

6 CHAIR KRUER: Commissioner Potter.

7 COMMISSIONER POTTER: He spoke, I didn't preface.

8 CHAIR KRUER: Let me, just to be clear on it. I  
9 am not sure about that.

10 Let me just go to Vice Chair Neely for one second,  
11 and then I am coming right back to you for your motion.  
12 There is a question of you prefacing.

13 COMMISSIONER POTTER: I would like to know where  
14 in the law you can't speak anyway. I think that is something  
15 that Rusty Arias made up from his stay in the state assembly.

16 VICE CHAIR NEELY: Mr. Chairman, I don't have any  
17 questions at this time.

18 CHAIR KRUER: Okay, Commissioner Potter.

19 [ MOTION ]

20 COMMISSIONER POTTER: All right, I'll move to  
21 amend, and incorporate in the motion that we encourage the  
22 use of new technologies under the framework that was  
23 expressed by the Executive Director.

24 COMMISSIONER HUESO: I'll second it.

25 COMMISSIONER POTTER: With the intent of lessening

1 the impact.

2 CHAIR KRUER: Just a second.

3 Commissioner Potter has made the motion, and  
4 recommending a "Yes" vote, and Commissioner Hueso seconded  
5 that motion.

6 Commissioner Potter, would you like to speak to  
7 that motion?

8 COMMISSIONER POTTER: No, I think Mr. Douglas and  
9 I worked pretty well on that item. That was exactly what I  
10 wanted him to say, so thank you.

11 COMMISSIONER REILLY: Mr. Chairman.

12 CHAIR KRUER: That is why it was prefaced.

13 COMMISSIONER REILLY: Let me ask.

14 *Staff is going to be incorporating the concept of*  
15 *the 2-year application, and the 5 years afterwards, is staff*  
16 *willing, in discussing that 5 years, willing to incorporate*  
17 *language that suggests that they look into new technology to*  
18 *lessen impacts, and that as part of that 5-year hearing, if*  
19 *they are able to do that, could be a review of mitigation*  
20 *requirement?*

21 EXECUTIVE DIRECTOR DOUGLAS: Well, that is what I  
22 discussed, and I think that is what the motion would do, and  
23 we don't have a problem with that.

24 COMMISSIONER REILLY: Are you willing to just  
25 incorporate that into the staff?

1           **EXECUTIVE DIRECTOR DOUGLAS:** I would rather have  
2 the Commission do it.

3           **COMMISSIONER REILLY:** That's fine, okay.

4           **CHAIR KRUER:** Commissioner Wan.

5           **COMMISSIONER WAN:** I just have a question on this  
6 one, and that is, I am assuming it is always okay, if you can  
7 avoid the entrainment, that is the best, because the fact is  
8 -- I don't care what you say -- no matter what mitigation you  
9 perform, no matter how you try to compensate for it, you  
10 never get full compensation. So, the best thing is always  
11 avoidance, so I am certainly not opposed to that.

12           The question I want to make sure is that when they  
13 come back for the review, that we are talking about a review  
14 that requires some kind of proof, and not just a statement,  
15 "We want to use it." That there is going to be some real  
16 scientific analysis done to make sure that that is the case,  
17 because up until now there doesn't seem to be anything that  
18 has been developed that can avoid the entrainment, and we  
19 went through that in great and painful detail when we did  
20 SONGS.

21           So, I am not aware of it, and I just want to make  
22 sure that we know how this is going to be handled.

23           **EXECUTIVE DIRECTOR DOUGLAS:** Obviously, the proof  
24 would have to be that there are reductions in impacts, or  
25 elimination of impacts, in order for us to consider -- if

1 this motion passes -- a reduction of the Phase 2 mitigation  
2 requirement.

3 But, this leaves that open, and it is up to them  
4 to try to find that technology, and again, if they decide  
5 right up front, we are not going to worry about that, we are  
6 just going to do the 55.4 acres, then it becomes a moot  
7 point.

8 CHAIR KRUER: Okay.

9 EXECUTIVE DIRECTOR DOUGLAS: But, it leaves open  
10 that opportunity.

11 CHAIR KRUER: Okay, I am going to call on the  
12 amending motion.

13 Priscilla's got her pen up, and we'll need a brief  
14 break.

15 Call the roll, please, on the amending motion, on  
16 the technology.

17 SECRETARY MILLER: Commissioner Lowenthal?

18 COMMISSIONER LOWENTHAL: [ inaudible ]

19 VICE CHAIR NEELY: Speak up, she can't hear you.

20 COMMISSIONER LOWENTHAL: Yes.

21 SECRETARY MILLER: Commissioner Hueso?

22 COMMISSIONER HUESO: Yes.

23 SECRETARY MILLER: Commissioner Kram?

24 COMMISSIONER KRAM: Yes.

25 SECRETARY MILLER: Commissioner Neely?

1 VICE CHAIR NEELY: Yes.  
2 SECRETARY MILLER: Commissioner Potter?  
3 COMMISSIONER POTTER: Aye.  
4 SECRETARY MILLER: Commissioner Reilly?  
5 COMMISSIONER REILLY: Yes.  
6 SECRETARY MILLER: Commissioner Shallenberger.  
7 COMMISSIONER SHALLENBERGER: Yes.  
8 SECRETARY MILLER: Commissioner Wan?  
9 COMMISSIONER WAN: Yes.  
10 SECRETARY MILLER: Commissioner Achadjian?  
11 COMMISSIONER ACHADJIAN: Aye.  
12 SECRETARY MILLER: Commissioner Blank?  
13 COMMISSIONER BLANK: Yes.  
14 SECRETARY MILLER: Commissioner Burke?  
15 COMMISSIONER BURKE: Yes.  
16 SECRETARY MILLER: Chairman Kruer?  
17 CHAIR KRUER: Yes.  
18 SECRETARY MILLER: Unanimous.  
19 CHAIR KRUER: The amending motion passes.  
20 Commissioner Potter, any more?  
21 [ MOTION ]  
22 COMMISSIONER POTTER: I am going to move that the  
23 dredging restoration credit be at the Commission's  
24 discretion, and if I get a "second" I'll speak to it.  
25 COMMISSIONER HUESO: Second.

1                   **CHAIR KRUER:** Moved by Commissioner Potter,  
2 seconded by Commissioner Hueso.

3                   Commissioner Potter, would you like to speak to  
4 your motion?

5                   **COMMISSIONER POTTER:** I think my concern is, and  
6 this is sort of an open ended question, that whether they can  
7 even get ownership of the dredging operations, and can  
8 incorporate that in, remains pretty much unanswered, and may  
9 remain there for awhile.

10                   So, if there does seem to be a dredging plan that  
11 comes forward, and we can get something tangible there about  
12 how is going to be operated? who is going to do it? when it  
13 is going to occur? all of those ingredients, then it is up to  
14 the Commission to decide if that is something that we want to  
15 entertain at that time. That is my thought behind it.

16                   **CHAIR KRUER:** Okay, Commissioner Potter or  
17 Commissioner Hueso, anything else?

18                   Anyone else? Commissioner Wan.

19                   **COMMISSIONER WAN:** Just very quickly, if you are  
20 going to leave this open for the discretion -- and I think I  
21 heard Commissioner Potter say this, but I just want to make  
22 sure -- there is one thing, there is a big difference between  
23 dredging connected with maintaining the project, and dredging  
24 for mitigation, because as in SONGS it is required for the  
25 mitigation, and as long as the dredging credit is understood,

1 it is for whatever future project they are going to be  
2 dredging for, not for the desal plant, then I would find that  
3 acceptable.

4 COMMISSIONER POTTER: That is --

5 COMMISSIONER WAN: You understand the distinction?

6 CHAIR KRUER: Commissioner Reilly.

7 COMMISSIONER REILLY: If I understood the staff  
8 correctly, earlier, your statement was if dredging becomes  
9 part of the project, and becomes a reality, as opposed to a  
10 possibility, then staff would do a full analysis of that  
11 activity, at that time, both in terms of impacts and in terms  
12 of benefits, and be prepared to make recommendations relative  
13 to whether additional conditions had to be added, or benefits  
14 would be accorded to that.

15 I guess, I would prefer to wait to see what  
16 happens with that issue, before we pre-judge it, that's all.

17 EXECUTIVE DIRECTOR DOUGLAS: That is the way we  
18 understand it, and this motion would just say that they could  
19 come in for credit for dredging, but they would have to prove  
20 that it warrants it, so that is fine with us.

21 CHAIR KRUER: Okay.

22 Call for the question.

23 Clerk, would you call the roll, please. They are  
24 asking for a "Yes" vote, on the amending motion.

25 SECRETARY MILLER: Commissioner Hueso?

1 COMMISSIONER HUESO: Yes.  
2 SECRETARY MILLER: Commissioner Kram?  
3 COMMISSIONER KRAM: Yes.  
4 SECRETARY MILLER: Commissioner Neely?  
5 VICE CHAIR NEELY: Yes.  
6 SECRETARY MILLER: Commissioner Potter?  
7 COMMISSIONER POTTER: Aye.  
8 SECRETARY MILLER: Commissioner Reilly?  
9 COMMISSIONER REILLY: No.  
10 SECRETARY MILLER: Commissioner Shallenberger?  
11 COMMISSIONER SHALLENBERGER: Yes.  
12 SECRETARY MILLER: Commissioner Wan?  
13 COMMISSIONER WAN: No.  
14 SECRETARY MILLER: Commissioner Achadjian?  
15 COMMISSIONER ACHADJIAN: Aye.  
16 SECRETARY MILLER: Commissioner Blank?  
17 COMMISSIONER BLANK: Aye.  
18 SECRETARY MILLER: Commissioner Burke?  
19 COMMISSIONER BURKE: No.  
20 SECRETARY MILLER: No?  
21 COMMISSIONER BURKE: [ Inaudible ]  
22 SECRETARY MILLER: Commissioner Lowenthal?  
23 COMMISSIONER LOWENTHAL: Yes.  
24 SECRETARY MILLER: Chairman Kruer?  
25 CHAIR KRUER: Yes.

1                   **SECRETARY MILLER:** Nine, three.

2                   **CHAIR KRUER:** Nine, three, the amending motion  
3 passes:

4                   And, now we will need back to the main motion,  
5 okay. Back to the motion, and again the maker and the  
6 seconder are asking for a "Yes" vote.

7                   Commissioner Wan has her hand up.

8                   **COMMISSIONER WAN:** Just on the main motion, this  
9 is not an amending motion, and I just want a quick  
10 explanation as to why I am going to vote "No" and the reason  
11 I am going to vote "No" is that I don't believe, if you look  
12 at this whole thing, that we really are getting the kind of  
13 assurances we need that this is real mitigation, and the  
14 reason is -- and that this is adequate mitigation -- this is  
15 going to be doing, this facility, once it becomes a stand  
16 alone facility, essentially, what once-through cooling does,  
17 and once-through cooling has been found by the courts to be a  
18 violation of the *Porter Cologne Act*, and I don't see how -- I  
19 don't even know why you bother to phase out the power plant,  
20 if you are just going to substitute something that is going  
21 to do exactly the same thing. It is not acceptable, because  
22 it is not protective of the ocean.

23                   Our oceans are under horrific assault, and this  
24 kind of thing is simply not appropriate, particularly, when  
25 we get a plan that is -- we deferred our decision, we passed

1 the power plant, deferred the decision on the mitigation, and  
2 now we are again with all of the things that we had in the  
3 amending motions, deferring the real plan for another 2  
4 years.

5 We will not see a full plan, and I don't think you  
6 can approve a mitigation without the appropriate plan, and if  
7 I had a full plan in front of me, it might be different, but  
8 I don't, and without that I don't have the confidence to know  
9 just the real extent of the mitigation that is going to take  
10 place here.

11 And, let me, again, say mitigations here, as  
12 elsewhere, does not give you complete compensation.

13 CHAIR KRUEER: Okay, would the Clerk call the roll  
14 on the main motion, please, as amended by the Commission.

15 SECRETARY MILLER: Commissioner Kram?

16 COMMISSIONER KRAM: Yes.

17 SECRETARY MILLER: Commissioner Neely?

18 VICE CHAIR NEELY: Yes.

19 SECRETARY MILLER: Commissioner Potter?

20 COMMISSIONER POTTER: Aye.

21 SECRETARY MILLER: Commissioner Reilly?

22 COMMISSIONER REILLY: Yes.

23 SECRETARY MILLER: Commissioner Shallenberger?

24 COMMISSIONER SHALLENBERGER: Yes.

25 SECRETARY MILLER: Commissioner Wan?

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COMMISSIONER WAN: No.

SECRETARY MILLER: Commissioner Achadjian?

COMMISSIONER ACHADJIAN: Aye.

SECRETARY MILLER: Commissioner Blank?

COMMISSIONER BLANK: Yes.

SECRETARY MILLER: Commissioner Burke?

COMMISSIONER BURKE: Yes.

SECRETARY MILLER: Commissioner Lowenthal?

COMMISSIONER LOWENTHAL: Yes.

SECRETARY MILLER: Commissioner Hueso?

COMMISSIONER HUESO: Yes.

SECRETARY MILLER: Chairman Kruer?

CHAIR KRUER: Yes.

SECRETARY MILLER: Eleven, one.

CHAIR KRUER: Okay, the Commission hereby approves  
the main motion, as amended by the Commission.

We will take a break.

\*

\*

[ Whereupon the hearing concluded at 7:35 p.m. ]