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TO: John H. Robertus
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FROM: Brian Kelley, Senior Water Resource Control Engineer
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SAN DIEGO REGIONAL WATER QUALITY CONTROL BOARD

DATE: April 3, 2009

SUBJECT: **SUPPLEMENTAL STAFF REPORT TO ADDRESS CHANGES REFLECTED IN POSEIDON'S REVISED FLOW ENTRAINMENT AND IMPINGEMENT MINIMIZATION PLAN DATED MARCH 27, 2009; ORDER NO. R9-2006-0065, NPDES NO. CA0109223, WASTE DISHCARGE REQUIREMENTS FOR THE POSEIDON RESOURCES CORPORATION, CARLSBAD DESALINATION PROJECT, DISCHARGE TO THE PACIFIC OCEAN VIA THE ENCINA POWER STATION DISCHARGE CHANNEL**

On March 27, 2009, Regional Board staff provided a Memorandum from Brian Kelley, Chiara Clemente, Deborah Woodward and Michelle Mata to John Robertus (March 27, 2009 Staff Report). The Staff Report addresses the March 9, 2009 Flow Entrainment and Impingement Minimization Plan (Minimization Plan), previously publicly noticed, as supplemented on March 18 and March 20, 2009 with statements from C. Nordby (March 18, 2009), H. Chang (March 20, 2009) and S. Jenkins (March 20, 2009). In that staff report, it was noted that additional materials were anticipated, and that an updated report would be provided to address such revisions. This supplemental report serves to summarize staff's analysis of the materials received from March 25, 2009 on, in order to assist the Regional Board in making a determination as to whether Poseidon's implementation of the Minimization Plan will result in the "use [of] the best available site, design, technology, and mitigation measures feasible to minimize the intake and mortality of all forms of marine life," as required by California Water Code (CWC) section 13142.5(b) and Order No. R9-2006-0065, under conditions of co-location operation for CDP benefit.

This supplemental Staff Report builds on the March 27, 2009 Staff Report, and therefore does not include the history and terminology referenced in the prior report. This supplemental report only addresses additional information received by Poseidon in the March 27, 2009 Minimization Plan and the April 1, 2009 Statement of Dr. Peter Raimondi, and contains staff's evaluation of the Minimization Plan in light of any new information.

Background

The analysis contained in the March 27, 2009 Staff Report relied on the following materials received from Poseidon:

- Flow Impingement and Entrainment Minimization Plan dated March 9, 2009.
- Revised statement from Chris Nordby dated March 18, 2009, replacing the statement included as attachment 7 of the March 9, 2009 Minimization Plan, to correct conversion of wet/dry weights.
- Statement (dated March 19, 2009, received March 20), Qualifications, and Data files from Howard H. Chang Ph.D., P.E., regarding the frequencies of the January and February 2005 storm events.
- Statement (dated March 19, 2009, received March 20) from Scott A. Jenkins Ph.D., addressing the effects of anomalous rainfall events on the biological data used to support Poseidon's impacts assessment.
- 3/25/09 E-mail from David Mayer to Catherine Hagan clarifying all data was collected and reported in wet weights.
- 3/25/09 E-mail from David Mayer to Catherine Hagan clarifying that the 04-05 flow data stating 0 MGD on certain days, are actually dates for which no flow data was available.

Since that time, the Regional Board has received and reviewed the following additional materials:

- Flow Impingement and Entrainment Minimization Plan dated March 27, 2009[1] reflecting minor revisions to Chapters 4, 5 and 6 from the March 9, 2009 Flow, Entrainment and Impingement Minimization Plan. There were no revisions to attachments 1-6[2] and 8. Attachment 7 has not been changed since March 18, 2009, . Attachments 9 and 10 are new.
    - Attachment 7 incorporates the revised statement from Chris Nordby dated March 18, 2009, with corrected calculations (as was submitted prior to the submittal of the March 27, 2009 Minimization Plan, and reviewed in the March 27, 2009 staff report).

[1] Redline versions, showing changes from the March 6, 2008 Minimization Plan to the March 9, 2009 Plan, the March 6, 2008 to the March 27, 2009 Plan, and the March 9, 2009 to the March 27, 2009 Minimization Plan were also provided by Poseidon, and posted on the Regional Board web-site for public review.
[2] Although Attachment 6 remains the same, the title on the cover page was amended to reflect that the collections occurred from June 2004 through May 2005 (not from June 2005 to May 2006, as was stated in the March 9, 2009 Attachment 7 cover page).

  - Attachment 9 was added to the Minimization Plan to incorporate the March 19, 2009 statements from Dr. Cheng and Dr. Jenkins regarding "outliers" in the 2004-2005 Encina Power Station (EPS) sampling data (also previously received, and evaluated as part of the March 27, 2009 Staff Report), and provide Poseidon's impingement estimation analysis based on these statements.
  - Attachment 10 was added to the Minimization Plan to provide an explanation for modifications made in Chapter 4 (Technology) to remove certain technology measures that were proposed in the March 6, 2008 Minimization Plan.
- A statement prepared for the Regional Board from Peter Raimondi Ph.D., titled "Review of Impingement Study and Mitigation Assessment-Carlsbad Seawater Desalination Project," dated April 1, 2009.
- A report from the EPS NPDES files by San Diego Gas and Electric (SDG&E), titled "Encina Power Plant Cooling Water Intake System Demonstration", 1980.

Staff's response to the additional materials received, as listed above, is outlined in the remainder of this report. Comments received will be responded to in the Regional Board's responses to comments.

Evaluation of Changes

A. Best Available Site
No changes were made to Chapter 2 (Site). No further evaluation has been conducted.

B. Best Available Design
No changes were made to Chapter 3 (Design). No further evaluation has been conducted.

C. Best Available Technology
The March 27, 2009 Regional Board Staff Report identified a combination of intake, screening and treatment technologies that were previously (in the March 6, 2008 Plan) found to be feasible impingement, entrainment, and flow reduction technology measures for the site specific conditions of the CDP. In the March 9, 2009 Minimization Plan, Poseidon proposes to install VFDs on the desalination plant intake pumps (not the EPS intake structure), but no longer proposes as feasible technology alternatives the installation of micro-screens, installation of low impact pretreatment technology, and return to the ocean of marine organisms captured by the screens and filters. The March 9, 2009 Plan did not explain why these previously feasible features are no longer considered feasible.

On March 27, 2009 Poseidon submitted an Explanation of Modification to Entrainment Minimization Technology Measures (Attachment 10) to supplement Chapter 4 of the

Minimization Plan (Technology). According to Attachment 10, Poseidon eliminated the proposed technology measures based on updated research and input from the California Coastal Commission, and the Commission's Scientific Advisory Panel, which concluded that because the entrained organisms would be subject to a number of stressors[3], and that any one or a combination of these stressors could result in mortality of the marine organisms prior to return to the ocean, an assumption of 100% mortality should be applied, thereby rendering additional minimization measures unnecessary. Staff concur that, if 100% mortality is assumed and there is adequate mitigation to compensate for this assumption, no additional technology measures are necessary.

D. Best Available Mitigation
(1) Quantification of Impacts from Impingement

The CDP's projected stand-alone impingement can be estimated from the 2004-2005 EPS impingement results using several of approaches, as described in Attachments 5 and 9 of the March 27, 2009 Minimization Plan.[4]

The various approaches produce a range of projected CDP impingement associated with stand-alone operations from 1.57 kg/day to 7.16 kg/day. Poseidon concludes that one approach is the most appropriate[5] and, using this approach, derives a projected CDP stand-alone impingement of 232 fish (4.7 kg) and 22 invertebrates (0.2 kg) per day. In his expert opinion to the Regional Board dated April 1, 2009, Dr. Raimondi agrees that this is an appropriate approach.

Poseidon goes on to explain that the above impingement projection should be adjusted/reduced to be more reflective of conditions expected to prevail over the project lifetime.[6] Poseidon considers two days of high-impingement to be storm-related outliers and, therefore, considers it appropriate to either (a) exclude the impingement that occurred on those days from the estimate of impact, or (b) downward adjust the impingement that occurred on those days by the probability of storm recurrence. If the two high-impingement days are excluded, as Poseidon proposes, the projected stand-alone impact falls to 2.11 kg per day of fish biomass. If the two high impingement days

[3] I.e. high pressures, significant changes in salinity, possible high temperature differences if the power plant is operating, and that they would be discharged from a lagoon environment to an open ocean environment.

[4] It is appropriate to evaluate the projected CDP impacts at 304 MGD because, during co-located operation for the benefit of CDP, the existing NPDES permit essentially allows for incremental impacts up to 304 MGD, i.e., the same amount as stand-alone operating condition.

[5] A weighted average, flow-proportioned approach, as described in Section 5.2.2 of the March 27, 2009 Flow Plan. See Table 5-3, e.g., last row. See also Attachment 5, approach 3B.

[6] March 27, 2009 Flow Plan, pages 5-6 and 5-7. Also see Attachment 9, page 8.

are adjusted by the probability of storm recurrence, the projected stand-alone impact is 2.24 kg per day of fish biomass.[7]

Staff does not agree that Poseidon's proposed exclusion or downward adjustment of the two high-impingement days is warranted. According to Dr. Raimondi's expert opinion provided to the Regional Board, Poseidon is making a logical error in concluding that the two higher-than-typical impingement days are outliers simply because they are associated with storm events that are (storm event) outliers. The expert opinion states, "There may be all sorts of other causes of higher than typical impingement. Indeed a few such impingement events may be typical each year. The problem is that unlike the historical record for storm or flow events we have no such record for impingement that would allow assessment as to how common or rare such high impingement events are." [In other words, there is not enough data to allow true identification of statistical outliers with respect to impingement (in contrast to, e.g., rainfall records where there is enough data to identify outliers and determine probabilities of rainfall events).] Dr. Raimondi concludes that there is no reason to discount the data provided, and the only reasonable approach is to use the flow proportioned average without adjustment.[8] Staff concurs that Poseidon's projection of 232 fish (4.7 kg) and 22 invertebrates (0.2 kg) per day uses a reasonable approach and produces a reasonable projection.

The March 27, 2009 Staff Report lists three reasons why rainfall does not appear to be the underlying cause of the high impingement on January 12 and February 23, 2005.[9] The March 27, 2009 Staff Report also presents plausible, non-rain-related alternative explanations for the high impingement on those two days.[10] An additional – and highly plausible – explanation for the high impingement on January 12 and February 23, 2005 relates to maintenance dredging of the lagoon. Maintenance dredging by EPS was initiated on January 3, 2005 and was completed on March 28, 2005. The start of the dredging was nine days prior to the January 12 survey. The period of dredging

[7] Poseidon does not provide associated projections for the number of fish individuals, number of invertebrates, and invertebrate biomass. Note: While expressing impingement impacts in terms of kilograms of biomass is useful and typical, it is also important to express the impact in terms of the number of individuals (of fish or invertebrates). Not only are impingement impacts typically expressed in terms of individuals (as well as weight), but individuals are more readily associated with important biological/ecological concepts (behavior, reproductive potential, life history characteristics, contribution to marine food webs, etc.)

[8] A weighted average, flow-proportioned approach, as described in Section 5.2.2 of the March 27, 2009 Flow Plan. Also Attachment 5, approach 3B.

[9] In brief, the three reasons are:(1) October 2004 heavy rainfall did not result in a spike of impingement; (2) the third, fourth, and fifth highest impingement days of fish biomass were not associated with storms; and (3) the mechanism by which heavy rainfall might translate to high impingement is unclear (see pages 14-15 of the March 27 staff report).

[10] In brief, the each of the high impingement days are associated with unique EPS operational circumstances and minus tides (page 15 of the March 27 staff report).

encompassed both high-impingement events, as well as other higher-than-typical events, such as the February 16, 2005 survey, when 714 crabs were impinged.[11]

A 1979 study of EPS impingement found that increased impingement of fish biomass was significantly related to dredging operations.[12] Impingement of invertebrates, particularly crabs, was also evident during the period of dredging in the 1979 study. Maintenance dredging is a significant disturbance to fish and invertebrates in the lagoon. One obvious effect of dredging is the displacement of benthic fish and invertebrates into the water column, making them vulnerable to impingement.[13]

The 1979 study of EPS impingement also evaluated the effects of storm conditions on impingement.[14] The intent of the storm analysis was to test whether impingement increases during and soon after a storm event, as compared to impingement on the days just preceding the storm. Five storm events were analyzed, and separate analyses were done for Units 1-3, Unit 4 and Unit 5. The study concludes that because some of the comparisons (13 of 20) are statistically significant, there is evidence that increased impingement is associated with storms events. However, it is apparent that the 1979 storm analysis is too flawed to warrant confidence in the conclusion that there is a significant relationship between storms and impingement. The primary problem is that four of the five storms are within the period of maintenance dredging. In fact, dredging began in the middle of the first storm period, on the same day as the rainfall, which means that the analysis of that first storm (and three others) does not adequately isolate the effects of storms from the effects of dredging. One cannot determine if an increase in impingement is related to storms or to dredging. The authors of the study acknowledge this problem as they state, "Unfortunately, the period of dredging overlapped that of storm conditions during the winter and early spring. Because of this, it is difficult to separate the effects of these two confounding variables..."[15]

A second shortcoming of the 1979 storm analysis has to do with the storm events selected for analysis. No rainfall data are provided in the study, but judging from rainfall records for that year, two of the storms seem especially minor particularly in terms of rainfall.[16] One (on May 8, 1979) appears to have had only one day of rainfall of 0.09

[11] This was the highest number of invertebrates impinged in a given survey. The next highest was 184 crabs on April 13, 2005. Typically, fewer than 100 invertebrates were impinged per day (e.g., Table 5-1).
[12] San Diego Gas and Electric (SDG&E). 1980. Encina Power Plant Cooling Water Intake System Demonstration. Page 7-56 to 7-57, and 7-137. Dredging was conducted from February 20 to April 25, 1979. The dredge was operated six days per week during the entire period.
[13] San Diego Gas and Electric (SDG&E). 1980. Encina Power Plant Cooling Water Intake System Demonstration. Pages 7-137 to 7-138.
[14] San Diego Gas and Electric (SDG&E). 1980. Encina Power Plant Cooling Water Intake System Demonstration. Pages 7-54 to 7-56.
[15] 1979 study, page 7-57
[16] Staff referred to the monthly total precipitation records for San Diego WSO Airport: http://www.wrcc.dri.edu/cgi-bin/cliMONtpre.pl?casand Staff acknowledges that rainfall at Agua Hedionda Lagoon may differ to that recorded at the San Diego Airport.

inches.[17] One (in April 1979) appears to have had no rainfall at all.[18] Two storms within the 11-month study period appear to have had comparable to greater rainfall and all units in operation but were not included in the analysis (October 19 and November 22, 1979 with 0.73 inches and 0.27 inches, respectively), and the most significant storms were just outside the study period (in January 1979 and 1980).[19] There are additional questionable aspects of the analysis (e.g., having to do with the inclusive dates for the storms analyzed, units in operation, statistical methods and levels of significance used).

The 1979 study also evaluated the effects of tidal height on impingement.[20] The intent of the analysis was to test whether the impingement of fish differed during spring and neap tide periods.[21] No tide data, tables or figures are provided to support the analysis so the method of analysis is not entirely clear, but it appears that impingement during spring tide periods was compared to that during neap tide periods throughout the year in a series of 46 comparisons (presumably 13 for number of fish and 13 for weight of fish). The study concludes that "The evidence suggests that tidal conditions, as considered in this evaluation, had no evident effects on the total number or weight of fish impinged."[22] The above analysis may provide a comparison of overall spring and neap periods. However, it does not adequately test whether impingement is related to tidal height. This is because the analysis (a) does not isolate the effects of the tide from the effects of other factors, and (b) does not provide a clear comparison of high and low tide conditions. Including all days of a neap or spring tide series, as the analysis appears to do, effectively blurs the high and low tide conditions on both a weekly scale (tides gradually change from neap to spring and back, so the transition days do not distinctly reflect spring or neap condition) and a daily scale (two high and two low tides typically occur each day).

More refined analyses would better test whether impingement is related to tidal height. Such analyses might entail comparisons of impingement during minus tides to

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[17] Rainfall for May 1979 was 0.09 inches, according to the monthly total precipitation records for San Diego WSO Airport.

[18] The storm period has no black triangle indicating rain on Table 7.3-3. Rainfall for May 1979 was 0.02 inches, according to the monthly total precipitation records for San Diego WSO Airport.

[19] The rainfall for Jan 1979 and Jan 1980 was 5.82 inches and 5.58 inches, respectively, according to the monthly total precipitation records for San Diego WSO Airport.

[20] 1979 study, pages 7-72 through 7-73.

[21] Spring tides are characterized by a relatively large vertical range between the high and low tides on a given day, and neap tides are characterized by a relatively narrow range between the high and low tides on a given day. Very low ("minus tides") and very high tides occur on days during a spring tide series. Moderately low and moderately high tides occur on days during a neap tide series. Tides change with the phase of the moon; spring tides occur during full and new moons. As a simplified rule of thumb, a week of spring tides alternates with a week of neap tides throughout the year. (See, e.g., tide table for 2004-05 at: http://co-ops.nos.noaa.gov/get_predictions.shtml?year=2004&stn=1812+San+Diego&secstn=La%20Jolla+(Scripps+Institution+Wharf)&thh=%2b0&thm=0&tlh=-0&tlm=4&hh=*0.92&hl=*0.97

[22] 1979 study, page 7-73.

impingement during (a) the same-day high tides, or (b) the closest neap lows that occur at comparable times of day as the minus tides. (The latter might control for day-night effects that could be a factor in the former.) In the 1979 study, 24-hour impingement was sampled in two, 12-hour intervals, so refined analyses of impingement and tidal height would require careful screening and selection of 12-hour samples with appropriate tidal level and timing within the 12-hour sample. In the 2004-05 study, 24-hour impingement was sampled in six, 4-hour cycles, so more refined analyses would be possible and relatively straightforward. The analyses could be done for the separate units and in total. Such analyses would better test whether impingement is related to tidal height.

The 1979 EPS study also evaluated the relationship between impingement of fish and different conditions of flow rate, under the operating circumstances from February 4 through January 4, 1979.[23] The study has several conclusions, two of which are briefly presented here. First, there was no statistically significant correlation between the flow rate to Units 1-3 and number or weight of fish impinged at the (shared) traveling screens of Units 1-3. Second, there was a statistically significant positive correlation between the flow rate to Unit 4 and the number and weight of fish impinged on the traveling screens of Unit 4.

One aspect of the Unit 4 flow rate and impingement relationship is of particular concern to staff. During a period of approximately two months, from about late-May to mid-July, Unit 4 appears to have operated at a very low level, less than about 40 MGD.[24] During that time, however, relatively high rates of impingement were observed.[25] For example, during the week of July 8-14, the Unit 4 average daily flow rate was less than 40 MGD (27,000gpm).[26] During the same week, the average daily number of fish impinged was 323 fish.[27] Staff interprets this to mean that, at Unit 4, low flow volume does not necessarily translate to low impingement. As such, any modified pump configuration implemented by Poseidon during temporary EPS shutdown should take this into consideration.

(2) Quantification of Impacts from Entrainment

No changes were made to Section 5.3 of the Minimization Plan (Entrainment Calculations). No further evaluation has been conducted.

(3) Proposed Mitigation for Combined Impacts

[23] 1979 study, page 7-74 through 7-77; Figures 7.8-1 through 7.8-5 on pages 7-163 through 7-167.
[24] 1979 study, Table 7.5-2 on page 7-40; Figure 7.8-1 on page 7-163. Note: by staff calculation, 27,000 gpm = 38.9 mgd
[25] 1979 study, Table 7.5-3 pages 7-41 through 7-51; Figure 7.8-3 on page 7-165.
[26] 1979 study Table 7.5-2 on page 740.
[27] 1979 study, Table 7.5-1 on page 7-38. Note that, although the column headings indicate "Total Number" the numbers in the columns are daily means for the week (per the table caption).

The March 18, 2009 supplemental statement by C. Nordby (included in the March 27 Minimization Plan as Attachment 7), with consideration to the revised calculations, claims that, "In addition to mitigating for entrainment, the mitigation project will provide the additional benefit of offsetting CDP's estimated stand-alone impingement. That is, the MLMP accomplishes two objectives: it mitigates fully for all entrainment and mitigates fully for all impingement that may result from CDP's stand-alone operations."

Chapter 6.2.1 of the Minimization Plan states that "37 acres of intertidal mudflats and subtidal habitat will have a fish biomass productivity of 5,600 kg WW/yr, and 55.4 acres of such habitat will have a fish biomass productivity of 8,385 kg WW/yr. The precise habitat composition of the mitigation site(s) will be determined and vetted at the design stage of the mitigation planning, and the proposed mitigation site(s) will be reviewed to confirm that it will provide no less than 1,715.5 kg per year of fish biomass productivity. This 1,715.5 kg per year of predicted fish biomass productivity shall be calculated in a manner which excludes the predicted biomass for entrained lagoon fish species (i.e., gobies, blennies, and garibaldi)." Thus, Poseidon claims that the MLMP assures that the Project will result in a net productivity of fish biomass.

Dr. Raimondi's April 1, 2009 statement notes that the mitigation habitat proposed does not match the habitat upon which the productivity rate was derived, and also recognizes that mitigation ought to be measured in terms of increased productivity (i.e. not taking into consideration the productivity that already exists), if restoration is proposed. Section 3.1.c of the MLMP currently requires that Poseidon "Creates or substantially restores[28] a minimum of 37 acres and up to at least 55.4 acres..." The remaining narrative of the MLMP and the Minimization Plan refers only to "restoration". As indicated in the paragraph above, the MLMP also does not specify the exact habitat composition[29].

The April 1, 2009 statement by Dr. Raimondi also concludes that it is inappropriate to offset impingement losses with the mitigation already required to compensate for entrainment impacts. Additionally, Dr. Raimondi points out that, when using averages in calculating impacts, a degree of confidence (or certainty) should be applied to those values[30]. Dr. Raimondi states that "in typical inferential statistics, confidence limits of 95% are generally used," and that when evaluating compensatory mitigation, "higher confidence levels are used to provide greater certainty that there is full compensation

[28] The USACE/USEPA Mitigation Rule replaces the common term "creation" with "establishment" and defines it as "the creation of vegetated or unvegetated waters of the US where the resource has never previously existed" and defines "restoration" as re-establishment or rehabilitation to return natural or historic functions to a former or degraded aquatic resource."

[29] Section 3.1.b requires "Potential for restoration as tidal wetland, with extensive intertidal and subtidal areas"

[30] This was the same rationale that prompted the Coastal Commission to require additional mitigation for entrainment impacts that would assume an 80% confidence interval, rather than 50%.

for impacts." In the context of the CWA 401 Certification program, where unavoidable wetland impacts are evaluated against appropriate mitigation, regional boards routinely apply mitigation ratios higher than 1:1, to compensate for both temporal loss and inherent variability between the functions impacted and those created through mitigation. Applying the various confidence limits to the impingement results of method 3-B[31], Dr. Raimondi derived the following recommended mitigation alternatives.

Mitigation necessary with 100% intertidal and subtidal mudflats			Mitigation necessary with 40% intertidal and subtidal mudflats		
50%	80%	95%	50%	80%	95%
11	18	21	28	45	54

Calculations in the table are based on impacts of 4.7 kg/day (model 3B), CDP flow of 304 MGD (i.e. EPS temporary shut down conditions), fish production of 151.36 kg (wet weight)/acre, and applying only creation mitigation (i.e. created acres, not acres restored).

Conclusions

In summary, staff concludes the following:

1. Of the alternatives evaluated, Poseidon has proposed the best site, design, and technology feasible under conditions of co-located operation for the benefit of CDP.

2. Based on its independent analysis, and that of Dr. Raimondi, Posedion has not proposed the best mitigation feasible to address the intake and mortality due to impingement.

3. Based on Dr. Raimondi's expert testimony, additional mitigation in the form of created habitat suitable to offset impinged species should be required.

4. Because the permit allows for intake of up to 304 MGD for the benefit of CDP, mitigation should be designed to compensate for this scenario.

5. In terms of which approach should be used to calculate estimated impingement impacts, method 3B (i.e. proportional model, 4.7 kg/day) is the most appropriate.

6. Without additional data to verify both the cause, and the fact that the anomalous numbers were indeed "outliers", the high numbers should be included in calculating the impingement estimates.

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[31] Method 3-B from Table 5.2 of the Minimization Plan is Dr. Raimondi's recommended methodology for calculating impacts. Refer to the section on quantification of impingement impacts in this report for further discussion.

7. Since the MLMP as drafted and approved by the CCC allows for an unspecified habitat composition, mitigation acreage calculations should be reflective of this approach.

8. In light of Dr. Raimondi's comments and staff's direct experience in wetland mitigation through the 401 certification program, a 95% confidence limit should be applied.

9. A 95% confidence interval (i.e. less than 1:1 mitigation) does in fact give the Discharger credit for technology measures that will be applied that were not factored into the impingement calculations.

10. If Poseidon were required to conduct periodic monitoring of impingement and entrainment and compare the losses to the productivity of the mitigation habitat, corrections could be made to reflect a more accurate assessment of necessary mitigation. And alternatively, the NPDES discharge permit could be modified to assess compliance with 13142.5 (when collocated for the benefit of CDP) by a more direct measure of productivity (i.e. species, size, number, and weight). If compliance were assessed in such a manner, some of the conservative measures applied in staff's recommendations above (namely, numbers 1 and 2e) would not be necessary.