STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY GAVIN NEWSOM, GOVERNOR

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January 28, 2019

RE: Comments on Tentative Order No. R9-2019-0003 (NPDES Permit No. CA0109223) and California Water Code section 13142.5(b) determination – Poseidon Resources (Channelside) LP desalination facility

VIA EMAIL: Ben.Neill@waterboards.ca.gov

Dear Mr. Neill:

Thank you for the opportunity to comment on the above-referenced Order. Coastal Commission staff is providing below several comments and recommendations we request be incorporated into the proposed Order.

Comments:

- **Climate Change Action Plan:** We appreciate that the Order, at Section VI.C.2.d (page 20), requires Poseidon to prepare a Climate Change Action Plan that shows compliance with similar plans required by other agencies, including the Coastal Commission. We have informed Poseidon that its current *Energy Minimization and Greenhouse Gas Reduction Plan*, which the Commission required as part of its initial 2007 approval of Poseidon's facility, is not consistent with the Commission's requirements. Due to new information and changes that have occurred since the Commission's original approval of that Plan, we have asked Poseidon to seek an amendment from the Commission to modify that Plan.

- **Brine Discharge Study:** The Order (at Section C.2, pages 17-18) would require Poseidon to conduct a study to compare the entrainment effects that result from flow augmentation versus those that would result from a multiport diffuser. Our current understanding of the effects resulting from these different intake and discharge methods is that the facility is likely to cause less total entrainment when using a diffuser rather than flow augmentation. The Order also requires that Poseidon complete this study before it installs the newly-required screened intake to ensure that the installed intake system is properly sized to accommodate the discharge system selected as a result of the study.

  We request that the Board allow for Commission staff review and comment on two main components of this study – i.e., the Work Plan and the Final Report – prior to the Board's final consideration and possible approval of those components. We expect that the Commission will be relying in part on the adequacy of this Work Plan and Final Report during its review of the coastal development permit applications that Poseidon will be submitting to implement any intake and discharge design changes that result from the study.

Recommendations: We have two recommendations for modifying the Order to address two as-of-yet unmitigated impacts to marine life – those that result from higher-than-evaluated entrainment/impingement rates at the facility and those that result from ocean acidification.

- **Modify Order to address unmitigated adverse entrainment and impingement impacts:** The Order, at Section IV.C – Intake Specifications (page 12), states that the facility's intake of seawater must not exceed 330 million gallons per day ("MGD") with the existing intake pumps and 299 MGD with the new intake pumps. However, the remainder of the Order evaluates project effects and establishes standards, limitations, and mitigation requirements based on just the 299 MGD volume.

  We understand that the existing intake pumps (which remain from the prior power plant operations) cannot operate to provide less than 330 MGD for Poseidon's stand-alone operations. However, that volume is more than Poseidon's facility requires to produce its expected water supply and is more than the Order has used to identify the facility's adverse impacts to marine life and as the basis for the facility's mitigation requirements. Although these existing pumps are scheduled to be replaced within a year or two, the 31 MGD difference between the 330 and 299 MGD flows represents a significant additional adverse impact to marine life for which no mitigation has been proposed.

  We recommend the Order be modified to require mitigation that addresses this impact. Because the adverse impacts expected from this additional 31 MGD are expected to be short-term (one or two years until the pumps are replaced), and because the impacts would be similar to those that occur during the transition of coastal power plants away from once-through cooling systems (for example, as described in the May 4, 2010 State Water Resources Control Board *Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling*), we recommend the Board include a mitigation requirement similar to the interim mitigation in-lieu fee implemented as part of that once-through cooling policy.[1] Based on the State Water Resources Control Board's most recent available determination of that mitigation fee for the Encina Power Station,[2] the fee, if applied to Poseidon's 31 mgd "overage" would be approximately $66,000 per year.[3] The Board could then direct that

[1] See: https://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/interim_mitigation.html#determinations

[2] See State Board's July 25, 2018 *Invoice for the 2016-2017 Interim Mitigation Period for Encina Power Station – Once-Through Cooling Policy*, accessed January 18, 2019 at: https://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/interim_mitigation.html

[3] The once-through cooling in-lieu fee includes three components: 1) cost for entrainment per million gallons ("mg"); 2) cost per pound of impinged fish; and 3) a management and monitoring fee. The first two components are adjusted for inflation each year and the third component is equal to 20% of the sum of the first two components. Using last year's determination for the Encina facility, and adjusting for Poseidon's unmitigated flows being 11.2% of Encina's flows, the fee for Poseidon would be approximately $66,000 though that amount will need to be adjusted slightly upward to reflect the State Board's most recent inflation-adjusted fees.

	Encina at 100,630 mg for the year	Poseidon at 11,315 mg per year (31 mg x 365 days), or 11.2% of Encina's flows.
Entrainment fee:	$482,017.70	$53,985.98
Impingement fee:	$7,929.60	$888.12
M&M fee:	$97,989.46	$10,974.82
Total:	**$587,936.76**	**$65,848.92**

mitigation fee towards projects that benefit the marine environment, similar to the projects eligible to receive the mitigation fee collected under the once-through cooling policy. Not only would imposing this fee address a currently unmitigated project impact, it appears to be a feasible way to provide mitigation, as it would add only slightly more than $1.00 per acre-foot to Poseidon's costs to produce its water.[4]

- **Modify Order to address unmitigated ocean acidification impacts:** Discharges from desalination facilities are generally more acidic (i.e., have lower pH values) than ocean water. Recent monitoring reports show that Poseidon's discharge averaged about 7.8 pH units,[5] whereas the ocean waters off of San Diego tend to have a higher average pH, ranging from about 8.1 to 8.2 units.[6]

  California has identified a number of concerns about the increasing acidification of ocean waters that is resulting from climate change. For example, the state has identified acidification as causing adverse impacts to mussels, crabs, oysters, sea urchins, market squid, several rockfish species, and other marine biological resources, many of which have valuable ecosystem and economic values.[7] The state is represented on an Ocean Acidification and Hypoxia Science Task Force that has recommended the state take action to "reduce local pollutant inputs that exacerbate ocean acidification."[8] The state has also developed an Ocean Acidification Action Plan, which includes "reduce the pollution that causes ocean acidification" as one of its strategies.[9]

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[4] $66,000 per year for 56,000 acre-feet of production equals ~$1.18 per acre-foot.

[5] Poseidon's monitoring reports from January through November 2018 show that its discharge had an average pH of 7.8 units, with a high of 8.1 units and a low of 7.01 units. See: https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportEsmrAtGlanceServlet?reportID=1&firstRun=Y&facilityName=&partyName=&regDrop=&countyDrop=&orderNo=R9-2006-0065&wdid=&npdesPermit=&ciNo=&reportTypeDrop=&reportFreqDrop=&reportYearDrop=2018&runReport=Run+Report] (accessed January 23, 2019).

[6] See, for example, Arce, Gabriel, *Memorandum presented to California Regional Water Quality Control Board, San Diego Region 9 – The Policy Response Guide to Ocean Acidification*, Scripps Institution of Oceanography, June 2016.

[7] See, for example, the Ocean Protection Council's *Impacts of Ocean Acidification on California Living Marine Resources*, December 2018.

[8] See The West Coast Ocean Acidification and Hypoxia Science Panel – Major Findings, Recommendations, and Actions, April 2016. Available at: http://westcoastoah.org/wp-content/uploads/2016/04/OAH-Panel-Key-Findings-Recommendations-and-Actions-4.4.16-FINAL.pdf (accessed January 24, 2019).

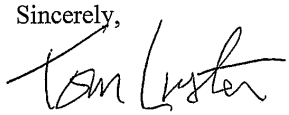
[9] See State of California Ocean Acidification Action Plan, October 2018, available at: http://www.opc.ca.gov/webmaster/_media_library/2018/10/California-OA-Action-Plan-Final.pdf (accessed January 23, 2019).

As currently proposed, the Order cites the state's standard effluent limitations for a discharge pH – i.e., that the discharge must be between 6.0 and 9.0 units and be no more than 0.2 units from that which occurs naturally. We recommend that the Board consider modifying the Order to require that Poseidon's discharge have a pH of no less than that of the receiving waters. It appears that this more stringent protection can be required using the Board's existing authority – for example, through the biological requirements of the water quality standards,[10] or through other available legal mechanisms.[11]

This more protective pH standard also appears to be feasible to implement. Poseidon's treatment process already involves adjusting its source water pH upwards and downward – to improve efficiency, to better remove certain constituents, to prepare water for the distribution system, etc. – and this standard would presumably require adding just one more pH adjustment before the discharge leaves the facility.

Thank you again for the opportunity to comment. Please contact me at 415-904-5248 or tluster@coastal.ca.gov if you have any questions.

Sincerely,



Tom Luster
Senior Environmental Scientist
Energy, Ocean Resources, and Federal Consistency Division

Cc: Poseidon Water – Peter MacLaggan
State Water Quality Resources Board – Daniel Ellis

[10] For example, as stated in the Tentative Order's Section V. A. 5.a (at page 15), which states: "Marine communities, including vertebrate, invertebrate, and plant species, shall not be degraded."

[11] See, for example, Arce, *Policy Response to Ocean Acidification*, and Center for Ocean Solutions, *Why Ocean Acidification Matters to California, and What California Can Do About It: A Report on the Power of California's State Government to Address Ocean Acidification in State Waters*, Stanford Wood Institute for the Environment, Stanford University, California, 2012.