

PART 2 - FACT SHEETS ONLY

FACT SHEET

Lack of Need for the Poseidon Project

Poseidon's proposed desalination plant will produce 50 million gallons of water per day (MGD), but has failed to demonstrate that the water is needed.

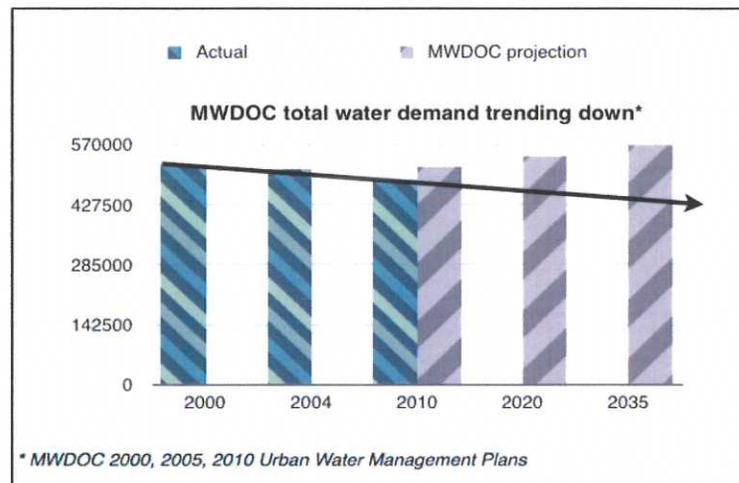
The demand for water in Orange County has consistently decreased since 2000.

The Municipal Water District of Orange County (MWDOC) has experienced a water demand decline from 524,000 AF (acre feet) in 2000 to 485,311 AF in 2010.¹ As water rates continue to rise and as agencies implement measures to comply with the State's directive to reduce water consumption 20% by 2020, this trend is likely to continue.²

Orange County has sufficient water supplies to meet demands until 2035.

MWDOC's 2010 Urban Water Management Plan states that "the MWDOC service area will have sufficient existing and planned supplies to meet full service demands under every water-year hydrologic scenario from 2015 through 2035."³

More recently, the lack of need is repeated in the March 29, 2013 draft EIR for the Orange County Water District (OCWD) Annexation Request by the City of Anaheim, IRWD, and YLWD: "The MWDOC Urban Water Management Plan long-term resource evaluation identifies ocean water desalination as a potential source of future supply, but desalination is not included in the current resource mix and the Huntington Beach desalination plant is not expected to be operational until at least 2017."⁴ Despite water consumption trending down, MWDOC continues to forecast increased water demand in its Urban Water Management Plan (UWMP) as seen on the graph below.



Orange County Water District's Groundwater Replenishment System has expanded its output of drinkable water.

¹ Mun. Water Dist. of Orange County., 2010 Reg'l Urban Water Mgmt. Plan 2-1 (June 2011), available at http://www.mwdoc.com/files/gallery/MWDOC_Final_2010_RUWMP.pdf (last visited October 8, 2013.)

² *Id.* at 2-2.

³ *Ibid.*

⁴ City of Anaheim, Irvine Ranch Water Dist., and Yorba Linda Water Dist., Project Env't Impact Report Orange County. Water Dist. Annexation Request, 5-5 (March 29, 2013), available at <http://www.ocwd.com/Portals/0/BoardAgendas/2013/05.A.1-8.Draft%20Annexation%20EIR%20with%20Appendices.pdf> (last visited October 8, 2013.)

Orange County has had tremendous success with the OCWD Groundwater Replenishment System (GWRS), which currently produces 70 million gallons of highly-purified water per day. Further expansion of the system was approved in 2011 bringing total future production up to 103,000 AF per year.⁵ Recently, GWRS staff has announced plans to increase pumping limits from 68% to 75%.⁶ The expansion means that the region will see an expected jump in water reuse from 12% to 37%.⁷

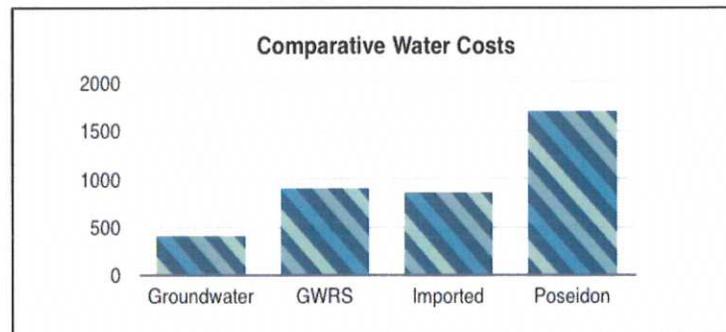
GWRS water is half the cost of the projected ocean desalination project water per AF, with multiple environmental benefits.

The Poseidon Project has obtained no signed Water Purchase Agreements.

The Huntington Beach project has zero signed agreements unlike Poseidon’s Carlsbad project that had nine signed water purchase agreements prior to approval.⁸ Poseidon has only secured “letters of interest” from water agencies, which are legally non-binding. In addition, these agencies have substantially reduced their level of interest over time. For example, Irvine Ranch Water District revised its interest down from 6,000 AF to 100 AF.⁹

Based on the higher project cost of Poseidon’s desalinated water, Orange County water agencies are not likely to be interested in purchasing water from Poseidon.

The price differential between desalination and Orange County’s already available water purchase options is too severe to attract agencies wanting to purchase water from Poseidon’s Huntington Beach Project. According the San Diego County Water Authority, the cost for Poseidon’s desalinated water from its Carlsbad plant is expected to cost \$1,849 - \$2,064 per acre-foot and \$2,014 - \$2,257 per acre-foot when the costs of a new pipeline are included.¹⁰ (See table below).



The cost differential between desalinated water and water obtained from other sources is not changing.

Despite repeated claims that cost differentials between desalinated water and imported water are expected to diminish, such claims have never been substantiated. The 2013 OCWD Annexation EIR attests to the lack of veracity

⁵ Gina DePinto, *OCWD Awarded \$1,000,000 Grant Towards Initial Expansion of the Groundwater Replenishment System*, October 26, 2011, available at http://ocwd.com/Portals/0/Pdf/OCWDRceivesDWRProp84WatershedMgtGrant_FINAL.pdf (last visited October 8, 2013.)

⁶ Orange County. Water Dist., Minutes of Meeting Board of Directors, 6 (January 16, 2013), available at <http://www.ocwd.com/Portals/0/BoardAgendas/2013/BOD-MINUTES-2013-01-16.pdf> (last visited October 8, 2013.)

⁷ Municipal Water Dist. of Orange County., 2010 Reg'l Urban Water Management Plan, 6-11 (June 2011), available at http://www.mwdoc.com/files/gallery/MWDOC_Final_2010_RUWMP.pdf (last visited October 8, 2013.)

⁸ San Diego County. Water Auth., Report out on October 2, 2012 and October 10, 2012 Public Meetings (Discussion) (October 17, 2012), available at <http://www.carlsbadca.gov/services/departments/water/Documents/10-12publicmeetingsreport.pdf> (last visited October 8, 2013.)

⁹ Letter from Paul Cook, P.E. Irvine Ranch Water Dist., to Scott Maloni, Vice President Poseidon Resources (Surfside) LLC (Apr. 25, 2013)

¹⁰ San Diego County Water Authority: <http://www.sdcwa.org/issue-desal>

of such assertions. The EIR states that as of 2013, the average costs for desalinated water in California continue to be higher than water obtained from other sources.¹¹ The average cost of desalinated water is roughly \$850 to \$1200 per AF compared to an average groundwater cost of roughly \$266 per AF (in Orange County) and average imported water costs of \$750 to \$800 per AF.¹²

The cost of water from Poseidon's Carlsbad desalination facility is substantially higher than the average cost for desalinated water in California.

As of 2013, the water from Poseidon's San Diego project is expected to cost between \$1849 and \$2064 per AF.¹³ Moreover, since energy constitutes over half of this cost, the upward price pressure on Poseidon's energy-intensive water will be significant as energy costs in California continue to rise.

Poseidon's desalination project has no demonstrated need, no committed partners and no business plan.

If Poseidon cannot demonstrate significant need for the water, then only a smaller scale plant with an alternative design that yields fewer environmental impacts should be considered.

For more information about this fact sheet, contact Debbie Cook at (714) 842-1873 or energymaven@gmail.com.

¹¹ City of Anaheim, Irvine Ranch Water Dist., and Yorba Linda Water Dist., Final Program/Project Env't Impact Report Orange County Water Dist. Annexation Request, 3-1 – 3-2 (September 24, 2013), available at <http://www.ocwd.com/Portals/0/BoardAgendas/2013/05.A.10.Final%20EIR.pdf> (last visited October 8, 2013.)

¹² *Id.* at 5-10.

¹³ San Diego County. Water Auth., Carlsbad Desalination Project, <http://www.sdcwa.org/issue-desal> (last visited October 8, 2013.)

FACT SHEET

Key Policy Developments vs. Poseidon's Huntington Beach Desalination Plant Permitting Timeline

Conclusions:

Poseidon knew as early as 2005 that the State Water Resources Control Board (SWRCB) was considering phasing out open ocean intakes for once-through cooling at coastal power plants throughout the state – including Carlsbad and Huntington Beach, but refused to modify their proposed project design or location because their business plan was based solely on co-locating with those facilities.

Starting in 2005, the SWRCB began its process to phase out open ocean intakes at coastal power plants. That policy was finalized in 2010. Poseidon's Carlsbad Desalination Plant was approved in 2007 before the policy was finalized. However, that is not the case in Huntington Beach. By 2010, Poseidon's Coastal Development Permit for its Huntington Beach Desalination Plant expired and had to be re-issued.

Poseidon knew full well at that time that phase out of the open ocean intake at Huntington Beach was a certainty, but the company refused to change or modify its business plan and proceeded at its own risk.

Poseidon knew in 2004 or before that the State was in the process of establishing a network of Marine Protected Areas (MPAs). The MPAs for the Southern California were finalized in 2010; nine MPAs are within 25 miles of Poseidon's proposed Huntington Beach Desalination Plant. Despite the phase out of open ocean intakes and the creation of an MPA Network, Poseidon again refused to modify their proposed project design or identify different locations and/or intake technologies that would reduce impacts at nearby MPAs.

In 1999, the California State Legislature passed the [Marine Life Protection Act \(MLPA\)](#) requiring the California Department of Fish and Wildlife to redesign the state's system of MPAs to increase its coherence and effectiveness at protecting the state's marine life, habitats, and ecosystems. After years of an exhaustive scientific and public process, the California Fish and Game Commission adopted a new system of MPAs in Southern California in 2010. By that time, Poseidon's permit for its proposed Huntington Beach Desalination plant had expired and had to be re-issued. To this day, Poseidon has never provided any information to CCC staff on the proposed desalination plant's impacts to MPAs, nor have they attempted to minimize those impacts despite being well aware of the existence of these MPAs and their importance to the long-term recovery of the state's marine resources.

Major Statewide Policy Developments (highlighted in green) vs. Huntington Beach Desalination Plant Permitting Timeline:

• **2004:** The Marine Life Protection Act Initiative is launched. The Initiative results in an improved statewide network of Marine Protected Areas in California -- including the implementation of a network of MPAs in Southern California.

• **2005:** The State Water Resources Control Board (SWRCB) begins its review of the phase out of Once-Through-Cooling (OTC) at 19 of California's coastal power plants due to significant destruction of marine life.

• **2006:** The Huntington Beach City Council approves a Coastal Development Permit for Poseidon's Huntington Beach Desalination Plant based on a CEQA review that assumes the Desalination Plant will be co-located with the AES Huntington Beach Generating Station (HBGS) and will use seawater from the power plant's "once-through cooling" system for the desalination facility's intake and discharge -- for the duration of the desalination plant's operating life. Appellants warned that pending regulation and cessation of power plant cooling water would make this "co-location" plan unworkable.

• **2006:** The CDP is appealed by several NGOs, including the Orange County Coastkeeper, the Surfrider Foundation, Residents for Responsible Desalination and Commissioners Reilly and Shallenberger. The Commission found substantial issue in April 2006 but, despite requests by the NGO appellants, did not hold a de novo hearing on the appeal.

• **2006:** The Commission staff sends the first of 13 Notice of Incomplete Letters to Poseidon requesting information on a number of issues, including but not limited to:

- An update of analyses provided during the City's EIR review to comport with the stronger standards in the Coastal Act vs. CEQA;
- Basic analyses that describe impacts for when the Desalination Plant is a standalone operation as well as mitigation measures that may be feasible to avoid or minimize adverse impacts;
- Identification of smaller facility alternatives that would produce less than 50 MGD based on signed water purchase agreements;
- Identification of alternative intake designs that could minimize entrainment and impingement;
- Identification of alternative sites that could minimize adverse impacts (the EIR limited its analysis of alternative sites to within two miles of the AES power plant);
- An overall estimated project cost in order for the CCC to determine feasibility of mitigation measures;
- Site specific geologic and geo-technical hazard studies that address:
 - Subsurface conditions
 - Seismic risks
 - Tsunami run-up zones
 - Sea level rise
- Proof of legal interest from various entities;
- Current status of federal permits from the Army Corps of Engineers and an incidental take authorization from NOAA under the Endangered Species Act or the Marine Mammal Protection Act, the latter requested by NOAA on May 5, 2005.
- Pipeline permit approval from the City of Costa Mesa who had voted to oppose the construction of the transmission pipeline in November 2005.

• **2006-2010:** Despite staff's repeated requests for information on impacts derived from "stand-alone operation", Poseidon initially refuses to acknowledge that it is likely that the AES plant would discontinue using seawater for cooling -- which would leave Poseidon solely responsible for mitigating the adverse impacts of continued use of that intake infrastructure.

• **2007:** The Commission approves a Coastal Development Permit for Poseidon's Carlsbad Desalination Plant. Two components of that permit, the Marine Life Mitigation Plan and the GHG Emissions Plan were not defined during the hearing except in broad terms and would be finalized in later hearings.

• **2008:** The MPA planning and design effort publicly launched in Southern California with the appointment of a Blue Ribbon Task Force, Science Advisory Team and Regional Stakeholder Group.

- **2009:** As part of the first of two Permit Revocation hearings for its Carlsbad permit, the Coastal Commission found that *Poseidon provided false or incomplete information* regarding the Marine Life Mitigation Plan that underestimated impingement rates and wrongly characterized its intake velocities.
- **2009:** As part of its February, 2009 letter in which the Commission staff reiterates most of its information requests from 2006, staff specifically requests proof that “water purchasers” will give up an amount of imported water equal to an amount of purchased desalinated water. *As of 2013, no proof of this claim has ever been submitted.*
- **2010:** After 5 years of hearings, the State Water Resources Control Board adopts regulations that phase out “once-through-cooling” (OTC) at coastal power plants due to their significant and irreversible impacts to marine resources. The AES Huntington Beach Generating Station is scheduled to stop OTC as of 2020 making Poseidon’s Desalination Plant a standalone operation and solely responsible for its adverse impacts on marine life.
- **2010:** The California Fish and Game Commission adopts the Marine Protected Areas network (MPAs) for the Southern California Coast. Nine MPAs are located within 25 miles of the Poseidon Desalination Plant, several within the area impacted by the intake system.
- **2010:** As part of a second Permit Revocation hearing on the Carlsbad Permit, the Commission found that *Poseidon intentionally provided false or incomplete information* in its Energy Minimization and Greenhouse Gas Reduction Plan and that it would not, as Poseidon had claimed, directly offset imports from the State Water Project or make its project carbon neutral.
- **2010:** Poseidon’s CDP issued by the City of Huntington Beach expires. A new SEIR is circulated and a new CDP is issued by the City of Huntington Beach – without addressing the Substantial Issues raised by the Coastal Commission in the 2006 appeal. The 2010 approval is appealed to the Commission, and Substantial Issue is found again. Despite requests by the NGO appellants, a de novo hearing is not scheduled.
- **2011:** Poseidon’s 2006 NPDES expires. The Regional Water Quality Control Board issues a new permit for “**temporary**” co-location operation of the proposed facility until the power plant discontinues withdrawing seawater in 2020 or sooner.
- **2011:** The State Water Resources Control Board convenes expert advisory panels on intake technologies and mitigation, as well as brine disposal -- as part of its development of an Ocean Plan amendment to regulate desalination facilities.
- **2012:** Southern California MPAs go into effect January 1, 2012. The first statewide network of MPAs in the U.S. (consisting of 124 MPAs) is finalized when the North Coast MPAs go into effect on December 19, 2012.
- **2012:** AES applies to the California Energy Commission (CEC) for the demolition of the HBGS power plant to be replaced by an air-cooled power plant, eliminating the need for large quantities of seawater.
- **2012:** Poseidon signs a Water Purchase Agreement with San Diego County Water Authority for purchase of the “product water” from Poseidon’s Carlsbad facility. The contracted purchase price is \$1849 to \$2064 per acre-foot – over twice the predicted cost (without the pipeline). In contrast, Poseidon has yet to show any binding agreements to purchase water in Orange County.
- **2012:** CCC biologist Jonna Engel visits the Poseidon site and finds that the on-site wetlands confirmed in an earlier site visit has been scraped by AES without a permit. This is an outstanding violation that has not been resolved.

• **2013:** The CEC releases its Environmental Review for the demolition and construction of the new AES air-cooled power plant. The more thorough AES application raises the issue of significant cumulative impacts due to the overlapping time frames of AES demolition and construction of the new power plant, the excavation and construction for Poseidon's desalination facility and the associated pipeline(s), and the ASCON remediation of the adjacent contaminated landfill. The CEC staff biologist found potential for significant impacts to adjacent wetlands and wildlife, as well as a near-by wildlife rehabilitation facility, from cumulative noise generated during concurrent construction and/or subsequent operation of the new generators and the desalination facility.

• **2013:** Five of the seven sitting Huntington Beach City Council Members send individual letters to the Coastal Commission asking that the Commission deny the CDP for the Poseidon Desalination Plant after Poseidon's attorneys (Latham & Watkins) send an email to the City specifically threatening legal action against the City if they take a collective vote. The Huntington Beach City Council wants to bring the project into conformance with its Local Coastal Plan.

• **2013:** In June, the Commission deems the Poseidon application 'complete' for the purposes of filing despite Poseidon's refusal to supply information that has been requested since 2006. One element of an off-shore seismic study requested seven years ago (2006) is first provided to the staff in October 2013, just one month before the scheduled November 2013 hearing.

• **2013:** On October 15th, the Commission releases its draft Sea Level Rise Guidance which states that "the best way to minimize risks to life and property from sea level rise related hazards is to avoid hazardous locations and to keep development out of harm's way. If feasible, development should not be proposed in locations subject to current or future risks from inundation, flooding or erosion." Studies show the site proposed for the Poseidon plant is in the zone predicted for inundation from sea level rise. That same week, Poseidon requests that the project not be analyzed for its potential 60-year operating life as spelled out in its Franchise Agreement and requests a special condition limiting its permit to 35-years.

• **2013:** The State Water Resources Control Board (SWRCB) is scheduled to release its draft Ocean Plan Amendment to establish state standards for desalination facilities.

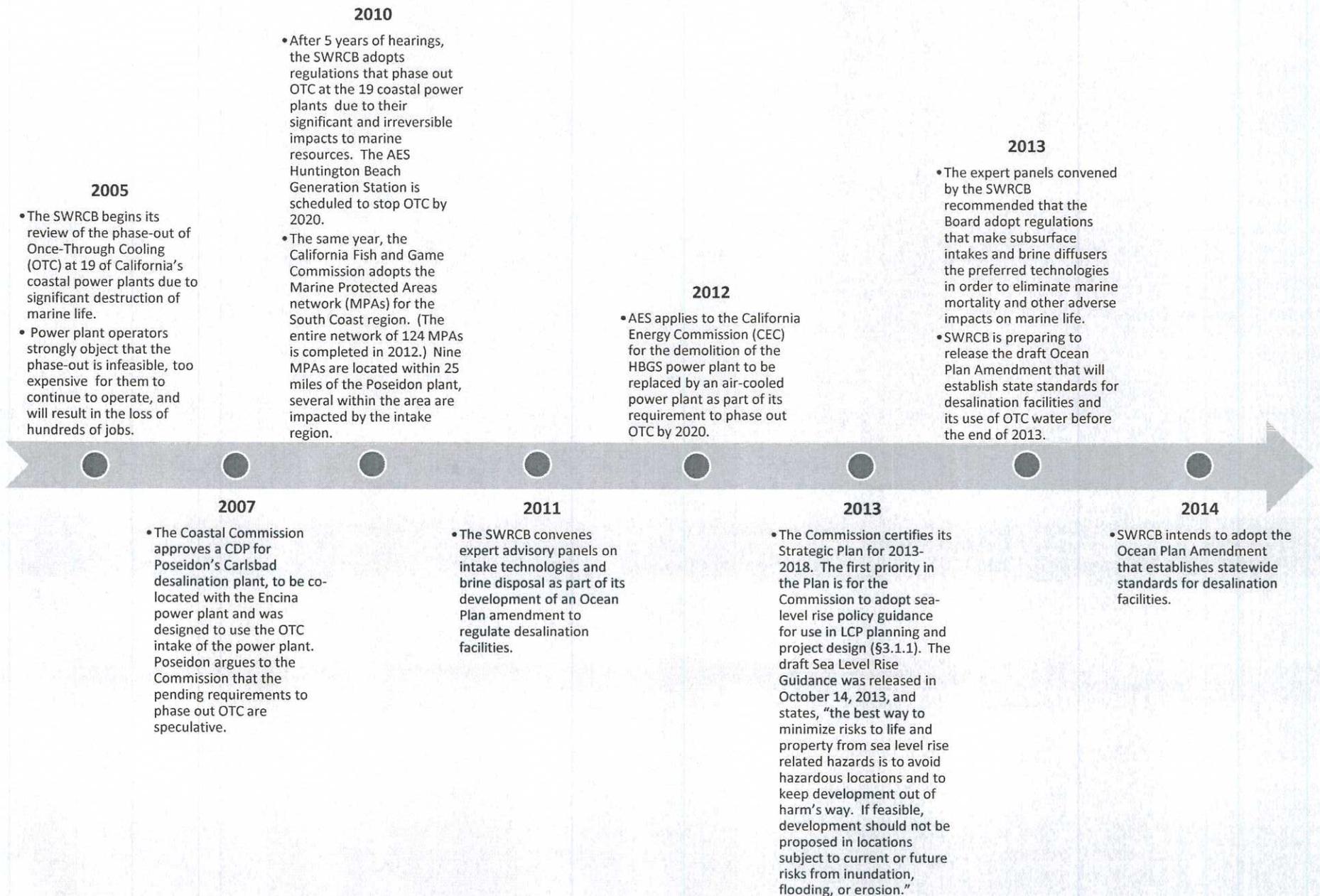
• **2014:** SWRCB is expected to adopt the Ocean Plan Amendment that establishes state standards for desalination facilities.

• **2018:** In public documents and on its website, Poseidon has predicted that the Huntington Desalination Plant will be up and running as of 2018.

• **2020:** The AES HBGS will terminate withdrawal and discharge of seawater in 2020, just two years after Poseidon's predicted date for completion of the proposed project, making the Desalination Plant a "stand-alone" facility and solely responsible for mitigating its significant and long term impacts to marine resources (including MPAs that are within the area impacted by the source water intake).

For more information on this Fact Sheet, contact Susan Jordan at 805-637-3037 or sjordan@coastaladvocates.com.

Legal and Policy Changes Since Approval of the Poseidon Carlsbad Desalination Plant in 2007



FACT SHEET

California's New Statewide Desalination Policy

California's Statewide Desalination Policy is a proposed Ocean Plan Amendment that will set standards for seawater desalination facilities statewide.

California's Ocean Plan sets statewide standards for protecting our ocean and marine resources that are enforced by individual Regional Water Quality Control Boards. Currently, the State Water Resources Control Board (State Board) is in the last steps of the process to establish regulations for the intake of seawater and the discharge of brine from seawater desalination facilities. The draft of these regulations is due to be published before the end of 2013 and could be released as early as November 2013.

To develop the science behind this Amendment to the Ocean Plan, the State Board contracted with several Scientific Expert Panels to develop reports and recommendations on key seawater desalination issues.

The Poseidon Huntington Beach Project does not meet any of the recommendations of the Scientific Expert Panels.

Intake of Seawater

Two tracks for permitting seawater intakes will likely be established by the State Board.

Track One would require the use of sub-surface intakes such as infiltration galleries or wells -- proven technologies that greatly reduce if not eliminate the intake and mortality of marine life. Track Two would allow the use of technology that is less protective to marine life, but only after showing that the preferred intakes are "not feasible."

Track Two facilities will likely be required to reduce and mitigate resulting marine life mortality.

If this "Track Two" approach is allowed, facilities will likely be required to use passive screen devices (e.g., cylindrical wedgewire screens) on the end of intake pipes to marginally reduce the intake and mortality of marine life. The project proponent will likely be required to mitigate the marine life mortality by either constructing or restoring essential fish habitat to "replace" the loss of marine life, or providing compensation to the State for restoring or creating the necessary habitat. How to calculate the necessary mitigation is complicated. But it's likely that new standards for mitigation will be modify what State agencies have done in the past.

Disposal of Concentrated Brine

Coastal desalination facilities discharge concentrated brine into the ocean for disposal.

Seawater desalination facilities remove salts and other impurities from the source water through reverse osmosis to produce freshwater that meets drinking water standards. Seawater has the greatest total dissolved solids of all potential source waters -- making it the most energy-intensive, the most expensive, and the highest in concentrated brine discharge.

Discharging concentrated brine into the ocean can have significant impacts on marine life.

Unlike other ocean discharges, concentrated brine is negatively buoyant, causing the heavy brine to sink to the ocean floor rather than float upward in the water column where natural turbulence dilutes the

discharge. If this undiluted brine discharge sinks to the seafloor, it can form a toxic layer on the sea floor -- destroying benthic habitat over time.

To ensure proper dilution, the Scientific Expert panel recommended three alternatives:

- Using spray brine diffusers that force the brine upward into the water column, where natural turbulence facilitates dilution.
- Mixing the water with a discharge from coastal sewage treatment plants; or
- Mixing the brine with a discharge from coastal power plants' cooling water;

Spray brine diffusers are a technology used worldwide to ensure rapid dilution that protects marine life and habitat.

The expert panels found that using spray brine diffusers will result in less mortality to marine life, much less than Poseidon's proposal to dilute the brine by withdrawing even more seawater through open ocean intakes. It has been argued by Poseidon's consultant that the seafloor turbulence created by spray brine diffusers would result in a cloud of sediment, adversely impacting marine life and habitat. This argument is specifically refuted in the revised reports.

Mixing brine with cooling water discharged from a power plant is not a long-term solution.

As is the case in Huntington Beach, most coastal power plants are planning to demolish existing generators and replace them with newer, efficient units that do not require ocean water for cooling. This means that there will not be a cooling water discharge available for diluting a desalination plant's brine discharge. Poseidon has not planned for the phase out of once-through-cooling at the ASE power plant that is scheduled to go into effect in 2020.

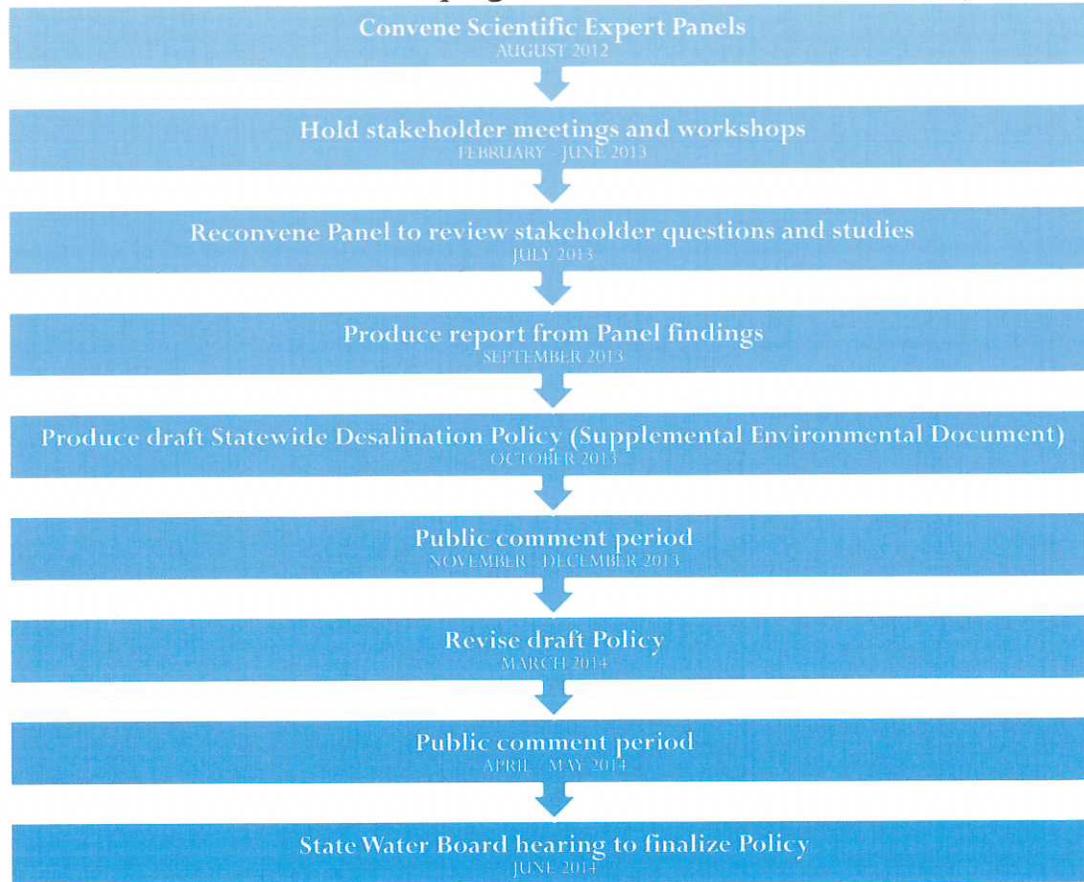
If the State Board adopts the recommendations of the Scientific Expert Panels, the "temporary" permit granted to Poseidon for operation while the power plant is withdrawing seawater will be invalidated.

Poseidon has relied on their "temporary" permit to show compliance with the Ocean Plan. That "NPDES permit will be reconsidered when the power plant discontinues using seawater for cooling – sometime before 2020. By then, the Ocean Plan amendment will be adopted and the permit will have to meet the new standards – likely requiring major modifications to Poseidon's planned facility. The City of Huntington Beach relied on that NPDES permit without any recognition that it is only temporary and not intended for the life expectancy of the project. In other words, the City did not ensure the facility would comply with the LCP policies to restore and protect marine life and water quality.

Both the Regional Board and City permits are under appeal. The arguments for reversing or modifying those permits are supported by the recent findings and recommendation in the Scientific Expert Panels' reports.

Poseidon's Huntington Beach Project does not meet any of the recommendations of the Scientific Expert Panels.

Process for the Developing the Statewide Desalination Policy



For more information about this fact sheet, please contact Ray Hiemstra at (714) 850-1965 or ray@coastkeeper.org.

FACT SHEET

Poseidon's 'Temporary' Regional Water Board Permit

Poseidon's existing NPDES permit was re-issued in 2011 and could be reopened after the State Water Resources Control Board adopts new standards for desalination plants¹.

Section C .1.a of Poseidon NPDES permit states "This Order may be reopened to address any changes in State or federal adopted rules, policies or regulations that would affect the quality requirements for the discharges."

Considering that the State Water Board is only weeks away from releasing its draft statewide policy on desalination and the anticipated approval of the policy is Spring 2014, Poseidon may be facing a reopening of their permit before the Huntington Beach facility can even begin construction. In fact, it is likely this will be the case as Poseidon's facility design meets none of the recommendations of the expert panels convened by the State Water Board to assist the Board in developing its new desalination policy.

The Regional Board's condition of approval of the Poseidon NPDES permit also allows for the permit to be reconsidered when the AES Huntington Beach Generating Station ceases use of its once-through-cooling system.¹

According to the NPDES permit:

If the HBGS permanently ceases operations of the once-through-cooling water system and/or if the HBGS permanently stops generating electricity at the current site, within 180 days of receiving such notice, the Discharger shall submit a separate Report of Waste Discharge to the Regional Water Board which evaluates any new design and technology requirements to conform with CWC Section 13142.5(b).²

Poseidon asserts that its Huntington Beach desalination plant will be operational in 2018. The HBGS will phase out the use of its open ocean intakes by 2020. Thus, the existing NPDES permit may only be applicable for two years of operation. In contrast, the CCC permit will be for a minimum of 35 years and possibly extended to 60 years.

The HBGS is scheduled to decommission its use of OTC by 2020, and applied to the California Energy Commission in 2012 to demolish its existing generators and "re-power" with modern generators that will not require seawater withdrawals for cooling.³ This will eliminate seawater withdrawal by the HBGS by the year 2020.⁴ Therefore, Poseidon's NPDES permit will expire long before the expected life, or possibly even the construction, of the proposed desalination facility because the HBGS is scheduled to cease seawater withdrawal by 2020.

The NPDES permit's limited duration does not ensure compliance with either the long-term mandates in the City's LCP or Coastal Act policies, which would protect marine life and water quality.

¹ ORDER NO. RS-2012-0007 Pg27, available at:

http://www.waterboards.ca.gov/santaana/board_decisions/adopted_orders/orders/2012/12_007_Poseidon_Resources_Surfside_Huntington_Beach_Reneal_of_WDR.pdf

² ORDER NO. RS-2012-0007 Pg 8

³ See: CEC Docket Log, available at: <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=00-AFC-13C>

⁴ SWRCB OTC Factsheet, available at:

http://www.swrcb.ca.gov/publications_forms/publications/factsheets/docs/oncethroughcooling.pdf.

Regardless of the outcome of the NPDES permit, the City and the Coastal Commission retain authority to prohibit excess withdrawal of seawater for brine dilution. Since the NPDES permit is “temporary” and the CDP is a permanent and irrevocable entitlement, the City and the Coastal Commission may still prohibit the withdrawal of seawater for brine dilution.

The current NPDES permit does not ensure that the discharge of concentrated brine will not have long-term impacts on coastal water quality.

The City’s CDP relied on findings in the NPDES permit, but did not recognize that the NPDES permit is limited to the time when the AES power plant is discharging “cooling water” from their generators.⁵ Therefore, the CDP issued by the City is not satisfactory to ensure that the discharge of concentrated brine will not have long-term impacts on coastal water quality and habitat.

Poseidon’s NPDES permit allows withdrawal of seawater above the volume required for operation of the power plant’s once through cooling system (OTC).

The withdrawal of seawater above what is required for the power plant’s cooling conflicts with State regulations for the Huntington Beach Generating Station (HBGS) to immediately stop withdrawing seawater at any time when they are not generating electricity⁶. The NPDES permit erred in allowing Poseidon to withdraw more seawater, above what is being withdrawn and discharged by the power plant at a given time, strictly for use in operating the proposed desalination facility. This provision has been challenged to the State Board⁷. But, regardless of the outcome of the appeal of the NPDES permit, the permit does not allow Poseidon to continue withdrawing seawater for the life expectancy of the proposed facility. This is just another example of the tenuous nature of Poseidon’s NPDES Permit.

For more information about this fact sheet, please contact Ray Hiemstra at (714) 850-1965 or ray@coastkeeper.org.

⁵ ORDER NO. RS-2012-0007 page 44.

⁶ Petition for Review of NPDES Permit, at page 13-14 (supplied as Supporting Document)

⁷ ORDER NO. RS-2012-0007.

FACT SHEET

Impacts to Marine Protected Areas

In 2012, California finalized the nation's first science-based network of marine protected areas (MPAs), facilitated by state's landmark legislation, the Marine Life Protection Act.¹ Stretching from Oregon to the US/Mexico border, this network of 124 protected areas has been created to safeguard the productivity and diversity of marine life and habitats for future generations. The MPAs for the South Coast Region were finalized by the California Fish and Game Commission in 2010 and went into effect on January 1, 2012.

Open ocean intakes and brine discharge of desalination plants sited in MPAs could result in significant impacts to resources within these protected areas. Desalination plants sited in close proximity to MPAs may reduce larval connectivity between protected areas through entrainment and impingement, thereby compromising the effectiveness of the broader network. Careful analysis of new desalination facilities and their impacts on protected areas (including an understanding of larval dispersal and areas of sources and sinks) is essential to ensure lasting success of California's MPA network.

There are nine marine protected areas within 25 miles of the Huntington Beach Generating Station (HBGS).²

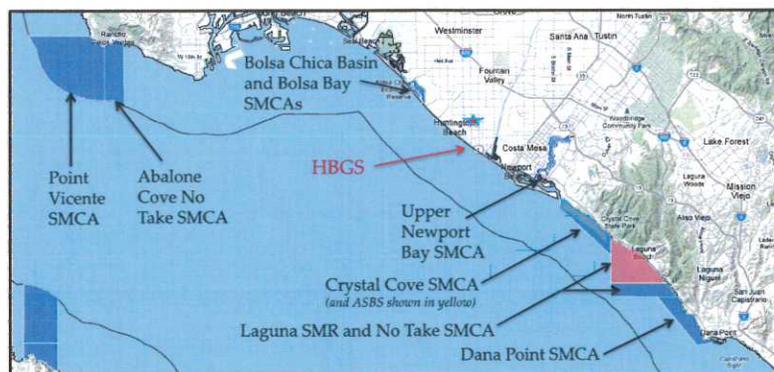


Image credit: NRDC

State Marine Reserves (SMRs) provide the highest level of protection by prohibiting the removal of all living marine resources within their boundaries. State Marine Conservation Areas (SMCAs) allow for a range of uses, including some recreational and commercial fishing.

Species likely to benefit from MPAs were identified based on a range of criteria including human impact, life history traits, limited adult home range, limited larval dispersal, ecological importance, and depressed population status.³ A full list of the species likely to benefit from protected areas in Southern California has been developed and includes many species of groundfish and nearshore finfish such as rockfishes, lingcod, cabezon, and sheephead, as well as invertebrates such as rock crabs, abalone, and spiny lobster.⁴ Ongoing conservation of these species and others that

¹ Marine Life Protection Act, as amended July 2004, Fish and Game Code Sections 2850-2863, available at http://www.dfg.ca.gov/marine/pdfs/mlpa_language.pdf

² See, <http://www.nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=43295&inline=true>

³ California MLPA Master Plan Science Advisory Team Draft Criteria for List of Species Likely to Benefit from Marine Protected Areas in the South Coast Study Region revised, February 12, 2009.

⁴ Master Plan Science Advisory Team Draft List of Species Likely to Benefit from MPAs in the MLPA South Coast Study Region, revised February 12, 2009.

will benefit from MPAs relies on the science-based design of individual protected areas and their ecological connectivity as a network.

MPAs were designed and must function as a network. Desalination plants that use open ocean intakes and are sited near MPA boundaries, such as the Huntington Beach facility, would remove larvae from the ecosystem, potentially compromising the effectiveness of the broader MPA network. California's network of MPAs was designed using specific scientific guidelines to maximize conservation success over the long term. These guidelines, which were developed by a Science Advisory Team (SAT) and outlined in the Marine Life Protection Act (MLPA) Master Plan⁵, include specific criteria for the size and spacing of MPAs to address goals 2 and 6 of the MLPA to: "sustain, conserve, and protect marine life populations" and "ensure that the state's MPAs are managed, to the extent possible, as a network".

In order to protect adult populations and ensure that MPAs are large enough to encompass the home ranges and movement patterns of adults within an individual protected area, the SAT determined that MPAs should have an alongshore span of at least 5-10 kilometers (but preferably 10-20 kilometers). To facilitate dispersal and connectivity of species across MPAs (allowing larvae from one MPA to grow, travel, and settle out in an adjacent MPA), the SAT found that MPAs should be placed within 50-100 kilometers (31-62 miles) of each other, based on currently known scales of larval dispersal across a range of taxa. Appropriately spaced protected areas containing similar habitats will likely be connected by larval dispersal and may contribute to the replenishment of fished populations between MPAs.⁶

Desalination plants sited outside, but adjacent to, MPA boundaries have the potential to reduce larval connectivity between protected areas by removing larvae from the ecosystem. Impacts to ecological connectivity between MPAs may compromise the effectiveness of the broader MPA network, especially because these areas were explicitly designed to function as an interconnected system. Expected benefits from protected areas may be diminished if entrainment or impingement from desalination operations cause localized or population-scale impacts.

The goals of the Coastal Act contain implicit protections for MPAs.

Section 30230 of the California Coastal Act states that:

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

Section 30231 goes on to state that:

"the biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment...."

Although designated under separate statute, MPAs are designed to address substantially similar ecosystem and species protection goals as Coastal Act Sections 30230 and 30231. MLPA goal 2 (to help sustain, conserve, and protect marine life populations, including those of economic value, and rebuild those that are depleted), mirrors Coastal Act

⁵ California Marine Life Protection Act Master Plan for Marine Protected Areas, revised draft January 2008, available at <http://www.dfg.ca.gov/marine/pdfs/revisedmp0108.pdf>

⁶ Saarman, E. et al. The role of science in supporting marine protected area network planning and design in California, *Ocean & Coastal Management*, Volume 74, March 2013, Pages 45-56, ISSN 0964-5691, available at <http://www.sciencedirect.com/science/article/pii/S0964569112002384>

language regarding sustaining the biological productivity of coastal waters, as well-designed marine protected areas increase productivity relative to fished areas by providing a haven for large prolific fish and refuge for larvae dispersing through ocean currents.

Similarly, MLPA goal 4 (to protect marine natural heritage, including protection of representative and unique marine life habitats in California waters for their intrinsic value) mirrors Coastal Act language regarding areas of special biological significance; and goal 1 (to protect the natural diversity and abundance of marine life and the structure, function and integrity of marine ecosystems), mirrors Coastal Act language regarding healthy populations of all species.⁷

The protections afforded marine ecosystems and species in California's MPAs are not only consistent with the policies of the Coastal Act, but are instructive and must be fully incorporated into decision-making if the Commission is to achieve its charge to protect "healthy populations of all species" and to provide "special protection to areas of special biological or economic significance." The Commission rightly made the determination that MPAs support areas and species of special biological significance in its recent decision on PG&E's proposed seismic survey for the Diablo Canyon Power Plant.⁸

Furthermore, the Commission, in adopting its 2013-2018 strategic plan, prioritized consideration of MPAs in its decision-making by including an objective to "*coordinate with OPC and other agencies to develop guidance or other protocols for addressing the protection and management of Marine Protected Areas through Commission programs and decisions.*"

We urge the Commission to recognize the ecological importance of MPAs when considering the effects and appropriateness of proposed desalination facilities, including Poseidon's proposed facility for Huntington Beach. The Commission must adequately account for potential impacts to MPAs, inconsistency with Coastal Act policies, and outstanding substantial issues in the final EIR.

For more information about this Fact Sheet, contact Jenn Eckerle at (415) 350-0976 or jennfeinberg.nrdc@gmail.com.

⁷ Fish and Game Code Section 2853(b)

⁸ California Coastal Commission [Addendum to Staff Report](#) for CDP Application E-12-005 and Consistency Certification CC-027-12, November 13, 2012, available at <http://documents.coastal.ca.gov/reports/2012/11/W13b-11-2012.pdf>

FACT SHEET

State of the Art Desalination Technologies vs. Poseidon's Outdated Open Ocean Intake and Discharge Technology

Poseidon's Huntington Beach desalination proposal uses outdated technology that guarantees adverse marine impacts and high energy demands. A survey of international best management practices highlights the need for Poseidon to re-design its facility to meet current international standards for protecting marine ecosystems and reducing energy demands.

Seawater Intakes

Subsurface intakes and infiltration galleries are internationally accepted as the best management practice for reducing impacts to the marine environment and costs for ratepayers.

Subsurface intakes "always produce a higher quality feedwater compared to conventional open-ocean intakes."¹ Improved water quality leads to a reduction in chemical use and energy consumption, consequently reducing greenhouse gas emissions and other potential environmental impacts.²

An added advantage of using a subsurface intake system is the vast reduction if not **elimination** of impingement and entrainment.³ Furthermore, "the life-cycle cost analysis of virtually *any capacity*, stand-alone RO treatment system will show that the use of the subsurface intake systems *reduces the cost* of desalination to the consumer, provided that the technology is locally available to construct the system."⁴

Fukuoka, Japan

The Fukuoka desalination plant (27 MGD capacity) has constructed a subsurface infiltration gallery to provide the plant's source water. The plant has been operating successfully for 8 years without the need to clean the off-shore gallery and with minimal cleaning of the membranes.⁵ Monitoring of the source water pumped from the gallery shows a very significant improvement in water quality,⁶ which requires less energy and allows Japan to provide less costly desalinated water to their customers. The desalination plant owners note that the facility has survived earthquakes and typhoons.

Sur, Oman

The Oman desalination plant (23 MGD capacity) receives 100 percent of its source water from subsurface intakes, proving subsurface intakes are feasible for large-scale desalination facilities. The design uses 32 wells drilled over a 12.5-acre area to deliver a total of 58 MGD source water to the facility.⁷ Significant

¹ Missimer et al., Subsurface Intakes for Seawater Reverse Osmosis Facilities: Capacity Limitation, Water Quality Improvement, and Economics. 322 Desalination 37, 49 (2013); available at: <http://www.kysq.org/docs/2013%20Desalination-Subsurface%20Intakes.pdf>.

² *Id.*

³ *Id.*

⁴ *Id.*

⁵ A. Shimokawa, Fukuoka District desalination system with some unique methods, National Centre of Excellence in Desalination, International Desalination Intakes and Outfalls Workshop Proceedings, Adelaide, South Australia, May 16–17, 2012.

⁶ Missimer et al., Subsurface Intakes for Seawater Reverse Osmosis Facilities: Capacity Limitation, Water Quality Improvement, and Economics. 322 Desalination 37, 44 (2013); available at: <http://www.kysq.org/docs/2013%20Desalination-Subsurface%20Intakes.pdf>.

⁷ *Id.*

water quality improvements are being achieved by using subsurface intakes instead of open-ocean intakes.⁸ Recent data also “demonstrates that subsurface intake systems produce high quality seawater by removing nearly all of the algae, a high percentage of the bacteria, a significant amount of the organic carbon, and a high percentage of the marine biopolymers that are currently believed to facilitate membrane biofouling.”⁹

Energy Demand

Renewable energy is used internationally to run large-scale desalination facilities. Solar technology can be connected directly to reverse osmosis processes, and many desalination systems operated in this way have been demonstrated to be feasible throughout the world.¹⁰ Wind powered desalination can be “one of the most promising options for seawater desalination,” especially in coastal areas with high wind potential.¹¹ Successful wind-powered plants include the Gran Canaria plant on the Canary Islands of Spain and the Centre for Renewable Energy Systems Technology in the United Kingdom.

Perth, Australia

Most desalination plants in Australia are located in Western Australia where the government requires new desalination plants to use renewable energy. The landmark project is the Perth Seawater Desalination Plant, which buys electricity generated by a wind farm north of Perth.¹² The plant is designed to optimize the energy consumption and requires 3.4 kwh/m³, including overhead, and 2.2kwh/m³ for the plant only.¹³

Brine Discharge

High-pressure diffusers are internationally accepted as the best management practice for diluting brine from large-scale desalination facilities. Two of the most active desalination nations, Israel and Australia, have laws similar to the U.S.’s Clean Water Act, and require desalination facilities to use the Best Available Technology (BAT) to minimize brine impacts to the marine environment.

Ashkelon, Israel

Israel’s largest desalination facility (86 MGD capacity) is in Ashkelon, and is required to use high-pressure diffusers to dilute brine, along with numerous best practices to ensure the diffusers minimize impacts on the marine environment.¹⁴ In Israel, a project proponent must have approved “background monitoring and implementation of an annual monitoring plan to examine and estimate the impact on the marine environment.”¹⁵ Israel also requires additional criteria to ensure optimal performance of the high-pressure diffusers, including:

- A minimum outfall length of 300 meters from the coastline;
- A minimum depth of 30 meters or distance of one nautical mile out to sea to avoid impairment to the coastal area;
- Sufficient distance from declared and proposed marine nature reserves and underwater habitats; and

⁸ *Id.*

⁹ *Id.* at 46.

¹⁰ International Renewable Energy Agency et al., *Water Desalination Using Renewable Energy: Technical Report*, pg. 10 (March 2012); available at http://www.limza.cl/p53/modulo4/Water_Desalination_Using_Renewable_Energy_-_Technology_Brief.pdf.

¹¹ *Id.*

¹² *Id.* at 17.

¹³ *Id.*

¹⁴ Iris Safrai and Alon Zask, Israel’s Ministry of the Environmental Protection. *Environmental Regulations for Discharging Desalination Brine to the Sea and its Possible Impacts*, pg. 3 (2007); available at <http://www.ildesal.org.il/pdf/130.pdf>.

¹⁵ *Id.*

- Mathematical dispersion models that characterize ocean conditions to maximize brine diffusion according to marine environmental standards.¹⁶

Binningup, Australia

In Australia, high pressure diffusers are required to dilute brine discharges.¹⁷ In Perth, the Southern Seawater Desalination Plant (74 MGD capacity) is required to implement high pressure diffusers that dilute brine at least 28 fold – resulting in levels of salinity and chemical concentrations unlikely to impact marine flora and fauna.¹⁸ The diffusers are required to be located in areas that avoid sensitive or uncommon benthic communities, with oceanographic conditions that enhance mixing and dispersion of the brine discharge.¹⁹ Furthermore, monitoring is conducted to verify that dilution and dispersion is occurring as planned and to ensure the performance of the diffusers are meeting salinity targets.²⁰

For more information about this fact sheet, contact Sean Bothwell at (949) 291-3401 or sbothwell@cacoastkeeper.org.

¹⁶ *Id.*

¹⁷ Jenkins et al., prepared for the State Water Resources Control Board, Management of Brine Discharges to Coastal Waters: Recommendations of a Science Advisory Panel, Technical Report 694, pg. 26 (March 2012), available at http://www.waterboards.ca.gov/water_issues/programs/ocean/desalination/docs/dpr.pdf.

¹⁸ Water Corporation, prepared for the Government of South Australia, Southern Seawater Desalination Plant Environmental Impact Statement, Chp. 8 Marine Impacts, pg. 196 (2007).

¹⁹ *Id.*

²⁰ *Id.*

FACT SHEET

Defining Feasibility under the Coastal Act

The Huntington Beach LCP and the Coastal Act requires Poseidon to prove that environmentally superior alternatives or technologies are infeasible, consistent with CEQA.

The burden of proof regarding project feasibility rests with the applicant. Accordingly, Poseidon must adequately demonstrate that an alternative with fewer environmental impacts is not feasible. Absent this, as the court explained in *Citizens of Goleta Valley v. Board of Supervisors*, 197 Cal. App. 3d 1167, 1183 (1988), the Coastal Commission must evaluate all the feasible options then “expressly require[s] adoption of the feasible [project] with the least substantial environmental impacts.”

Economic Infeasibility Claims Must Include Definitive Data.

Poseidon’s claim that alternative options or technologies are too costly falls short of meeting the burden of proof of infeasibility. In *Center for Biological Diversity v. County of San Bernardino*, 185 Cal. App. 4th 866, 884-85 (2010), the court determined that simply stating that capital and operational costs would increase was not enough, and that “meaningful comparative data” was required to support informed decision-making.

The court in *Uphold Our Heritage v. Town of Woodside*, 147 Cal. App. 4th 587 (2007) found that an economic infeasibility claim “must be evaluated within the context of the proposed project. ‘The fact that an alternative may be more expensive or less profitable is not sufficient to show that the alternative is financially infeasible. What is required is evidence that the additional costs or lost profitability are sufficiently severe as to render it impractical to proceed with the project.’” *Id.* at 599 (quoting *Goleta Valley*, 197 Cal. App. 3d).

Hence, Poseidon’s unsubstantiated contention that subsurface intakes are economically infeasible in Huntington Beach not only fails to meet the comparative data standard, it is also contradicted by their own statements to the contrary regarding their Carlsbad facility. In a February 28, 2013 *New York Times* article, Poseidon confirmed that if the California State Water Board requires they upgrade their intake technology for permitting purposes, “this eventuality [of switching to subsurface intakes] was covered in the financial planning.”¹

An Alternative Option or Technology Cannot Be Deemed Infeasible Based on Economics Alone.

Both CEQA and the Coastal Act define the term “feasible” to mean “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.” Cal. Pub. Res. Code § 30108. Therefore, the Coastal Commission must choose the alternative that best meets all the policies in the LCP and Coastal Act. Only then may the Coastal Commission consider inferior alternatives and after-the-fact mitigation, and only if the project proponent proves, through adequate studies, that the preferred alternative is economically and technically infeasible.

It follows that Poseidon’s financial incentive to characterize any preferred alternative as ‘infeasible,’ would first require substantial studies prior to the Coastal Commission’s decision. In this case, Poseidon identifies

¹ The New York Times. February 28, 2013. *In California, What Price Water* available at <http://www.nytimes.com/2013/03/01/business/energy-environment/a-costly-california-desalination-plant-bets-on-future-affordability.html?pagewanted=2&r=0>

itself as a “first mover and leading developer of seawater desalination in the United States” whose singular goal is to secure plant locations that are “co-located with power plants or other facilities with the capability to intake or discharge seawater.”² Poseidon’s patent describes the efficiency of its water purification invention as dependent upon co-location with a power plant. Anything that detracts from that singular goal would be, by definition, “infeasible” within the confines of Poseidon’s business plan. But this claim obviously lacks either the substance or the type of comparative data the courts require.

Poseidon’s Claim That Only its 50 MGD Desalination Facility is ‘Feasible’ of Producing Water to Meet Demand in Orange County is Unwarranted and Erroneous.

Poseidon makes the assertion that only a 50 MGD desalination plant is ‘feasible’ to meet water demand in Orange County, but provides no evidence to support this. Poseidon pre-committed itself to building a 50 MGD facility in Huntington Beach without first establishing a demonstrated and committed need. This approach stands in stark contrast to the permitting process of its Carlsbad facility where they had signed Water Purchase Agreements during the Commission’s review. Despite 7 years of effort, Poseidon has no signed Water Purchase Agreements in Huntington Beach. The project proponent, and potential water purchasers, cannot claim the contracts rely on a decision by the Coastal Commission first. Again, this argument is undermined by the precedent in Carlsbad, as well as the conditions in the contract under review in Orange County.³

For more information on this Fact Sheet, contact Sara Townsend at stownsend@montereylaw.edu

² See Poseidon Water. Overview. Available at http://poseidonwater.com/what_we_do/overview

³ “**Term Sheet: Proposed Water Reliability Agreement Huntington Beach Seawater Desalination Project**” available at http://www.mwdoc.com/pages.php?id_pge=173

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Poseidon's Definition of 'Infeasibility'

- In 2007, Commission staff recommended that the Commission require Poseidon to use a less-damaging subsurface intake technology for its Carlsbad Desalination Plant. Poseidon argued strenuously that a subsurface intake was 'infeasible'.
- In arguing that subsurface intakes were economically infeasible in Carlsbad, Poseidon suggested that it would raise the cost of the water from its [then] current estimate of \$950 per acre foot to \$1300 per acre foot.
- In a February 2013 article in the New York Times entitled "[In California, What Price Water?](#)" Poseidon and the San Diego County Water Authority (SDCWA) were queried by the reporter about whether or not Poseidon's Carlsbad Desalination Plant might be required by the State Water Resources Control Board to switch to a subsurface intake and how that might impact the cost of the water. The County and Poseidon's response was that "[this eventuality was covered in the financial planning](#)"¹ [directly contradicts what Poseidon told the Commission in 2007.](#)
- According to the SDCWA, the cost of the water is now DOUBLE what it told the Commission it would be, and significantly higher than the \$1300 per acre foot cost it said made subsurface intakes at the Carlsbad site economically infeasible:

"Water from the plant is expected to cost between \$1,849 and \$2,064 per acre-foot, depending on how much is purchased. The total cost, including a major pipeline to deliver the desalinated water, is projected at \$2,014 to \$2,257 per acre-foot."²

- The estimated cost of the Carlsbad Desalination Plant has risen from Poseidon's initial estimate of roughly \$300 million in 2007, to nearly \$1 billion today. The vast majority of its funding (\$734 million) came through Tax Exempt Private Activity Bonds authorized by the California Pollution Control Financing Authority.

Excerpts from CCC Staff Report, dated November 7th, 2007: See pages 32-36..

<http://documents.coastal.ca.gov/reports/2007/11/Th7a-11-2007.pdf>.

Poseidon contends that subsurface intakes would cause more significant impacts than those caused by the existing power plant intake and that they would be economically infeasible. In support of this contention, it has submitted several documents and cost estimates described below. Regarding economic infeasibility, Poseidon believes that subsurface intake options would be infeasible in part because they would raise the anticipated cost of desalinated water from

¹ In California, What Price Water, New York Times, 2/28/13: <http://www.nytimes.com/2013/03/01/business/energy->

² <http://www.sdcwa.org/issue-desal>

Poseidon's current estimate of \$950 per acre-foot to about \$1300 per acre-foot.

Poseidon's concerns about infiltration galleries are similar to those it expressed about slant-drilled wells – that galleries would be environmentally and economically infeasible.

Poseidon also contends such a system would be economically infeasible. Its October 2007 cost estimates show that an infiltration gallery for its Carlsbad facility would cost \$646 million.

However, similar to the costs described above, Poseidon provided no justification for these costs and several appear to be significantly inflated. For example, Poseidon cites a land cost of over eight million dollars,⁴⁰ and electricity costs of \$18 million; but again, actual land costs would likely be for a lease on state tidelands rather than a land purchase, and its electrical costs would likely be similar to its proposed project's operation of the power plant's cooling water pumps.

Poseidon also includes expected costs of \$59 million for environmental mitigation, although it is unclear why this was included, given that the gallery itself would serve as mitigation for the impacts caused by the estuarine intake and would not be expected to cause any significant impacts. Finally, the Commission notes that the entire cost of the facility in Spain using an

⁴⁰ See Poseidon's July 16, 2007 letter to Commission staff.

⁴¹ For comparison, the proposed fee for Poseidon's State Lands lease for the Agua Hedionda Lagoon jetties and its discharge structure is \$123,000 per year.

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Intake gallery was about \$200 million, so it is likely Poseidon's costs would be far lower than those it cites.

In comparing Poseidon's contentions about potential environmental impacts and costs of subsurface intakes with information about other proposed or operating facilities, the Commission finds that subsurface intakes appear to be a feasible and less environmentally damaging alternative and that Poseidon has not provided the level of detailed or credible information to show otherwise. Subsurface intakes would provide a feasible alternative that would result in substantially fewer adverse impacts, including complete avoidance of entrainment and impingement, and significantly reduced dredging-related impacts.

For more information on this Fact Sheet, contact Susan Jordan at 805-637-3037 or sjordan@coastaladvocates.com

FACT SHEET

Revocation Hearings: Coastal Commission Found Poseidon Intentionally Provided False or Incomplete Information on Carlsbad CDP. Same Misleading Information Provided for Huntington Beach CDP.

Revocation Hearings Are Rare. Poseidon Has Already Had Two.

A revocation hearing is an infrequent event with potentially serious consequences. It occurs when a petition is made to revoke a Coastal Development Permit (CDP) that was approved by the Commission.

Revocation 3-Part Test Sets a High Bar. It is Very Difficult to Revoke a Permit.

An applicant's permit can be revoked if all of the following criteria can be established:

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

December 2009: Revocation Hearing #1. Commission Found Poseidon Provided False or Incomplete Information Regarding the Marine Life Management Plan.

Poseidon never provided the necessary information Commission staff had requested in order to accurately analyze the Carlsbad project. There were significant data gaps that when the Commission approved Poseidon's Carlsbad CDP in 2007. To address this, seventeen (17) Special Conditions were attached that embodied the missing information.

Each of these 17 Special Conditions were conditions of approval for their permit. Special Condition 8, the *Marine Life Management Plan* (MLMP) required Poseidon to identify and propose mitigation for impacts to marine life. It further required the MLMP be reviewed and approved by the Commission prior to its implementation. The Commission heard this item during its August 2008 meeting, and approved it. Afterwards, Commission staff became aware of new and different information regarding the impacts of the project on marine life and requested Poseidon amend their permit to correct the discrepancy. Poseidon refused, and merely increased the amount of mitigation in the MLMP by 11 acres instead. This was the basis for the first revocation hearing.

Appellants contended that various elements of the MLMP were inaccurate, such as impingement effects, expected intake velocities, and potable water production levels. Staff found that although Poseidon did provide inaccurate information, there was no evidence that it was intentional.

The Commission agreed, but that only satisfied the first criteria of the 3-part test for revocation – that the applicant provided incomplete or false information. The Commission followed staff's recommendation to deny the revocation because of this, but three Commissioners still voted to revoke the permit. *The motion*

that passed included the finding that Poseidon provided false or incomplete information to the Commission.

February 2010: Revocation Hearing #2. Commission Found Poseidon Intentionally Provided False or Incomplete Information Regarding the Greenhouse Gas Plan.

Special Condition 10, Poseidon's *Energy Minimization Plan and Greenhouse Gas Reduction Plan* (GHG Plan) was also presented for Commission review and approval during the August 2008 meeting. After the Commission approved it, Commission staff became aware of new and different information regarding the most significant element of the GHG Plan – that there would be no one-to-one reduction in State Water Project imports as Poseidon had claimed. Again, staff requested Poseidon amend their permit to correct the discrepancy. And again, Poseidon refused. This was the basis for the second revocation hearing.

Appellants contended that the largest element of the GHG Plan, the automatic credit for reduced water importation from the State Water Project (SWP), had been intentionally misrepresented. Commission staff discovered a key document and received two letters from the Metropolitan Water District¹ that confirmed that Poseidon's desalinated water would not reduce pumping from the SWP on a one-to-one basis, as Poseidon had claimed it would. Further, staff found Poseidon intentionally withheld this document from the Commission.

Unlike in the previous revocation hearing, staff found reason to make detailed findings when it applied the 3-part test:

- 1) Yes, the applicant provided incomplete or false information;
- 2) Yes, the inaccurate or incomplete information was supplied intentionally; but
- 3) If the Commission had known of the information, it could, but likely would not have denied the permit or imposed different conditions.

These findings only satisfied the **first and second** criteria of the 3-part test for revocation. The Commission again followed staff's recommendation to deny the revocation because of this, however four Commissioners still voted to revoke the permit. *The motion that passed included the finding that Poseidon intentionally provided false or incomplete information to the Commission.*

The Same False and Misleading Automatic Credit for Reduced Water Importation Appears Again in the Huntington Beach CDP.

Ignoring the Commission's findings in Carlsbad that the automatic credit for reduced water importation constitutes intentionally providing false or incomplete information, Poseidon has included it again in the

¹ MWD has unequivocally stated three times that it will not reduce its imports from the SWP.

1. A 2005 Agreement between MWD and its water agencies prohibits desalinated water from reducing MWD's entitlements or usage of imported water supplies.
2. A December 17, 2009 letter from MWD to the Commission confirmed the 2005 Agreement and further stated that provision's, "sole purpose is to protect Metropolitan's imported water supply rights and entitlements."
3. A January 20, 2010 letter from MWD/San Diego County Water Authority to the Commission again confirmed MWD would continue to receive its full allotment of SWP water. Further, it clarified that the only impact the desalinated water may have on MWD would be to potentially reduce the amount of additional water supplies, above and beyond its full SWP allotment, that MWD may pursue.

GHG Plan for Huntington Beach. Poseidon appears to have summarily dismissed the Commission's 2010 revocation findings. This is likely due to the fact that the automatic credit allows Poseidon to automatically subtract 50% of its greenhouse gas emissions without providing verification, see *Fact Sheet - GHG Plan: Misleading Automatic Credit*.

Poseidon Has an Established Track Record of Supplying False or Incomplete Information to the Commission.

The Commission should not allow Poseidon to receive credit for a reduction in SWP water that will not occur.

FACT SHEET

Poseidon's efforts to silence the 'collective voice' of the Huntington Beach City Council

In May 2013, Huntington Beach Mayor Connie Boardman put an item on the City Council Agenda to vote to send a letter to the California Coastal Commission (CCC) indicating that the current City Council does not support Poseidon's proposed Huntington Beach Desalination Plant CDP as "currently presented" based on inconsistencies with its Local Coastal Program.

When Poseidon learned of the Agenda Item, their attorney from Latham & Watkins sent a letter via email to the City that strongly suggested that Poseidon would sue the City if the City voted to send the letter (email attached). Given the threat of litigation, the Council voted instead to send individual letters to the CCC.

"Poseidon believes that proposed Agenda Item 17 on the Huntington Beach City Council for this evening, Monday May 6th, 2012, is contrary to law and intends to exercise its legal rights and remedies if the Council were to take collective action to adopt the item.

To address our legal concerns and to remove the threat of potential litigation by any interested parties, we suggest that Agenda Item 17 be modified to remove all references to collection action by the City Council as a whole, so that it would instead be a discussion of potential letters that members of the Council might individually send to the Commission regarding the Poseidon project."¹

In a letter dated May 22, 2013, the Mayor of Huntington Beach Connie Boardman indicated that she agreed with the Commission's finding of "Substantial Issue" given the lack of enforcement of specific policies in the LCP. Her expressed hope was that Applicant would re-apply for a Project CDP so those inconsistencies could be resolved.

"...I agree with the Commission's findings of "substantial issues" and that the issuance of the CDP did not adequately enforce several provisions of our Local Coastal Program (LCP), and recommend the Coastal Commission deny the CDP.

The Applicant can re-apply for a Project CDP from the city that is consistent with our LCP. However, I believe that significant changes to the project may be required to resolve the substantial issues that were in violation of our Local Coastal Program."

Connie Boardman, Mayor of Huntington Beach (5/22/13)

In prior Commission hearings, several Commissioners have spoken passionately from the dais emphasizing the importance of local governments' input into CCC deliberations, explicitly acknowledging that they bring an important voice to the Commission that should be considered. Given that the City of Huntington Beach will bear the brunt of the project for decades to come, it deserves the opportunity to work with the applicant to design a project that is fully consistent with its LCP and the Coastal Act.

For more information on this Fact Sheet, please contact Susan Jordan at 805-637-3037 or sjordan@coastaladvocates.com.

¹ Email Communication from Christopher Garrett, attorney with Latham & Watkins representing Poseidon Resources to Mike Vigliotta, Chief Assistant City Attorney for City of Huntington Beach, dated Monday, May 6th, 2013

FACT SHEET

Marine Life Impacts: Entrainment and Impingement

The proposed plant's seawater intake unnecessarily kills marine life through what is known as entrainment and impingement.

Entrainment occurs when marine organisms such as plankton and larvae enter the seawater intake system and pass through the desalination facility. Impingement occurs when adult aquatic organisms such as fish and mussels that are too large to pass through the intake screens are trapped against them by the suction of the intake system. These impacts can affect marine life populations from miles away from the intake.



Impinged marine life on an open ocean intake pipe.¹

There are a variety of seawater intake technologies for desalination facilities, including surface and subsurface options, all with varying operational benefits and environmental impacts.

Open Ocean (Surface) Intakes

Open ocean intakes (pictured below, left) withdraw seawater directly from the ocean through off-shore inlet pipelines. **Wedge wire screens** (pictured below, right) placed on the end of an open ocean intake pipe marginally reduce the intake and mortality of marine life.

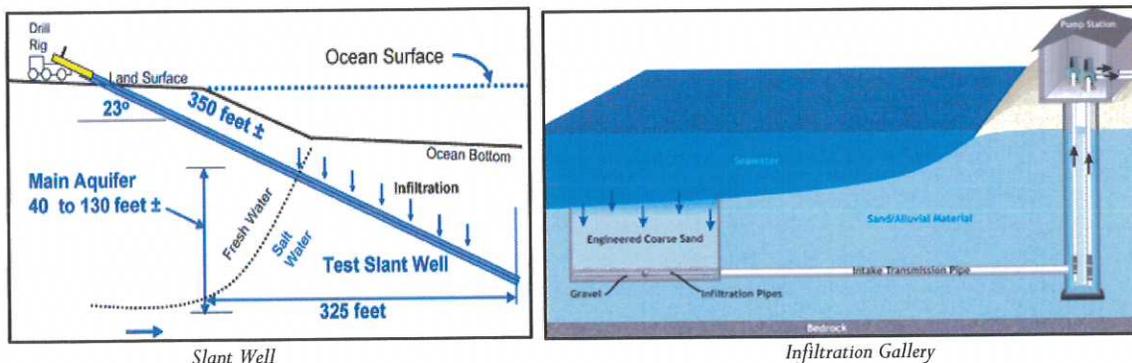


¹ Photo credit: <http://www.flickr.com/photos/silkebaron/3005399828/>

Open ocean intakes have substantially higher adverse impacts on marine life along with higher mitigation costs -- which is a key reason the State Water ordered 19 coastal power plants to eliminate the use of open ocean intakes for cooling. Using these same open ocean intakes for desalination facilities, after the power plants abandon them, will undermine California's on-going efforts to restore our precious marine life populations – including the recent implementation of the Marine Life Protection Act.

Sub-Surface Intakes

The use of subsurface intake systems for seawater reverse osmosis (SWRO) desalination plants significantly improves raw water quality, reduces chemical usage and environmental impacts, decreases the carbon footprint, and reduces cost of treated water to consumers. These intakes include wells (vertical, angle, and radial type) and galleries, which can be located either on the beach or in the seabed.² Subsurface wells draw water from the saline coastal aquifer below the seafloor. These 'well' intakes rely on ocean water percolating through the seafloor and replenishing the aquifer. Where natural conditions aren't right for these wells, engineers can design man-made shallow "infiltration galleries" that are constructed on the seafloor. The basic idea is that infiltration galleries draw in seawater through pipes covered by a layer of coarse sand – a man-made system that mimics natural systems.



In general, subsurface intake options have marginally higher upfront construction costs compared to using open ocean intakes that power plants are required to discontinue using. But in the long-term – these intake systems provide operational, environmental, and economic benefits. By naturally filtering out suspended solids, the facility can reduce energy demand for pretreatment and other costs. And these alternatives reduce, if not eliminate, marine life mortality and mitigation costs.

The State Water Resources Control Board is poised to adopt new policies that will regulate seawater intake technologies.

In 2010, the State Board passed the Once-Through Cooling (OTC) Policy, a resolution requiring power plants to cease the use of open ocean intakes for once-through-cooling by 2020. This action was a result of the overwhelming evidence³ that open ocean intakes have serious negative impacts to marine resources.

² Missimer et al., Subsurface Intakes for Seawater Reverse Osmosis Facilities: Capacity Limitation, Water Quality Improvement, and Economics. 322 *Desalination* 37, 44 (2013); available at: <http://www.kysq.org/docs/2013%20Desalination-Subsurface%20Intakes.pdf>.

³ SWRCB August 2012 and September 2013 Intake panel reports, available at: http://www.waterboards.ca.gov/water_issues/programs/ocean/desalination/

The OTC Policy does not apply to desalination plants because the State Board made a decision to develop a separate policy specifically for those types of facilities. The process began in 2011 with the development of scientific expert panels and a series of stakeholder meetings. A draft of those regulations is scheduled to be released in 2013 and will conclude in the spring of 2014 with the formal adoption of a statewide desalination policy.

Scientific experts have recently found that subsurface intakes are ecologically preferable, and that wedgewire screens provide only marginal benefits to marine life.⁴

The State Water Board appointed an Intake Panel comprised of experts on ocean intakes. This panel's mission was to examine the use and impacts of ocean intakes and develop mitigation recommendations for the State Water Board in drafting a statewide desalination policy. The Intake Panel released two reports that identified subsurface intakes as the preferred method for use in desalination plants and open ocean intakes with wedgewire screens as an inferior secondary option.⁵

The panel's second report, released in September 2013, examined the effectiveness of wedgewire screens on open ocean intakes to reduce marine life mortality. The panel found that the screens yielded only marginal benefits, supporting the panel's initial finding that sub-seafloor wells or "infiltration galleries" are the "best technology available."

Poseidon's proposed plant design for Huntington Beach uses open ocean intakes, an obsolete technology that has long been proven to be highly harmful to marine life, and will be prohibited by the state's OTC Policy by 2020.

Poseidon Resources first proposed using an open ocean intake in 1998. Despite changes in government regulations designed to phase out open ocean intakes and advances in technology for desalination plant intakes, Poseidon's proposed design has remained the same. Their plan is to use the Huntington Beach Generating Station's existing intake, which was commissioned in 1958, specifically for the power plant's purposes and not intended for the production of potable water.

In 2010, new state regulations required the power plant to decommission its once-through-cooling (OTC) open ocean intakes by 2020. This would classify the Poseidon desalination facility as a "standalone operation" that seeks to continue using the obsolete open ocean intake system. Poseidon has made no attempt to modernize their intake design, instead arguing that the pre-existing 55-year-old intake system, proven by numerous studies to decimate marine life,⁶ would be appropriate for use for the next 30 to 60 years.

In contrast, local public agencies considering desalination are testing and proving the effectiveness of new technologies, including the Municipal Water District of Orange County's implementation of sub-seafloor slant wells in Dana Point and the Long Beach Water Department's infiltration galleries. So while effective new technologies that safeguard marine life do exist, Poseidon has not demonstrated a diligent attempt to

⁴ SWRCB Intake Panel Report (September 2013), available at:

http://www.waterboards.ca.gov/water_issues/programs/ocean/desalination/

⁵ Id.

⁶ California Energy Commission Report, available at: <http://www.energy.ca.gov/2005publications/CEC-700-2005-013/CEC-700-2005-013.PDF>

adopt design modifications—such as reducing plant capacity—that would be less costly, less impactful to the environment, and consistent with the recommendations of the scientific community.⁷

The City of Huntington Beach’s analysis of preferred ocean intake technologies misrepresented realistic implementations of slant well infrastructure.

The Applicant supplied a misleading analysis of the impacts from alternative intake technologies and practices.⁸ Poseidon’s documents show structures on the beach that would theoretically impact access and recreation. However, it is feasible and preferable to bury this infrastructure below the beach, a design demonstrated at a pilot desalination facility in Dana Point.⁹ A recent peer-reviewed and published scientific article additionally undermines the Applicant’s argument that sub-seafloor intakes are infeasible.¹⁰

Furthermore, Poseidon has yet to conduct an adequate “feasibility study” to support their assertions that alternative intakes, like infiltration galleries, cannot replace the outdated cooling intake system. The partial information provided to staff in October (2013) is not sufficient to conclude that alternative intake systems are too expensive or technically infeasible, as Poseidon claims.

Poseidon’s flawed analysis of preferable intake systems is based, in part, on an unsubstantiated assumption that the project will need to produce 50 MGD.

Poseidon has argued that if the proposed plant is to produce 50 million gallons per day (MGD) there is a need to withdraw 127 MGD of “source water,” 27 MGD of which will be used for “in-plant dilution.”

However, the use of pressurized spray brine diffusers,¹¹ as recommended by scientific experts, would eliminate the need to withdraw the additional 27 MGD solely for in-plant brine dilution.

More importantly, Poseidon has failed to produce evidence indicating that 50 MGD of product water is necessary.¹² Poseidon has not entered into any signed Water Purchase Agreements with any local agencies. Furthermore, the service area’s Urban Water Management Plans do not indicate a commitment to adding 50 MGD of desalinated water to regional water supply portfolios. Consequently, the review of sub-surface intakes, which effectively eliminates the intake and mortality of marine life, has not been fully considered for a scaled-down facility with reduced capacity.

For more information about this fact sheet, contact Ray Hiemstra at (714) 850-1965 or ray@coastkeeper.org.

⁷ Thomas Missimer, “Subsurface intakes for seawater reverse osmosis facilities: Capacity limitation, water quality improvement, and economics” (April 2013), available at: <http://www.kysq.org/docs/2013%20Desalination-Subsurface%20Intakes.pdf>.

⁸ Poseidon Resources presentation

⁹ Municipal Water District of Orange County, Presentation on Pilot Doheny Desalination Facility, available at: <http://www.mwdoc.com/documents/FeasibilityStudySummary.ppt>.

¹⁰ Desalination Journal 322 (2013), available at: <http://www.kysq.org/docs/2013%20Desalination-Subsurface%20Intakes.pdf>

¹¹ Pressurized spray brine diffusers, as discussed in the fact sheet entitled “Brine Disposal and Salinity,” force the brine upward into the water column, where natural turbulence facilitates dilution.

¹² Poseidon’s failure to demonstrate a need for the project is further discussed in the fact sheet entitled “Lack of Need.”

FACT SHEET

Brine Disposal and Salinity of Discharge Water

The plant's outfall will unnecessarily degrade water quality.

The desalination of seawater to make drinking water produces hyper-saline brine mixed with chemicals used to reduce clogging and clean desalination membranes. Regardless of the method of disposal, brine discharges degrade water quality and impact habitat. However, by utilizing the best available technology, such as “multi-port spray brine diffusers”, water quality and habitat impacts can be minimized.

As an example, facilities that use subsurface intakes need less and sometimes no chemical additives to remove solids to reduce membrane fouling and fewer cleaning chemicals, thereby reducing water pollution. Using multi-port diffusers rather than open outfalls eliminates the need for additional seawater withdrawals to dilute brine discharges, reducing marine life mortality. Multi-port diffusers also increase dilution rates, reducing the size of the Zone of Initial Dilution (ZID) where water quality and habitat impacts are the greatest.



Brine outfall pipe

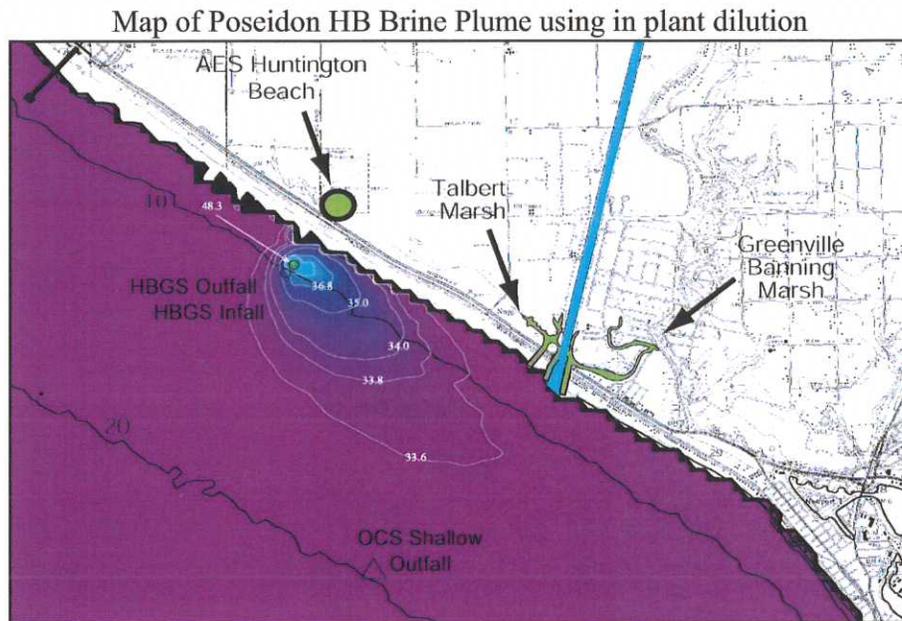
California is making decisions on desalination facility outfalls.

The California State Water Resources Control Board (SWRCB) is nearing completion of a statewide policy for desalination facilities. This process began in 2011 and should be completed in the spring of 2014. As part of this process the State Water Board created a Brine Panel made up of experts from throughout the United States to examine the use and impacts of desalination facility outfalls and provide recommendations to the State Water Board for developing the statewide desalination policy.

The Brine Panel released its report in August 2012 identifying multiport diffusers as the preferred method for disposal of raw effluent from desalination plants². After the release of the report some desalination proponents made claims that multiport diffusers were more harmful to marine life than other brine dilution strategies, specifically “in plant dilution” which involves drawing in additional seawater to dilute the brine. To address these concerns (and others) the State Water Board requested responses from the Brine Panel in the summer of 2013. This panel studied all of the available data on this issue and concluded in their September 2013 report that impacts to organisms in the water entrained for dilution by diffusers are likely less, and perhaps much less, than impacts to dilution water used for in-plant dilution³. This finding

supports the findings of the Brine Panel that multiport diffusers are the preferred option for desalination plants such as Poseidon Huntington Beach that discharge brine only. Based on this information the statewide policy currently under development will likely require the use of spray brine diffusers.

The Expert Panel's Report recommendations for minimizing the adverse impacts of brine disposal are not only considered best practices by the expert panel. Importantly for the Commission's deliberation, if the Applicant were to revise their design of the facility to implement the recommendations of the "Brine Discharge Expert Panel", it would eliminate the conflict in enforcing policies in the City's LCP and the Coastal Act that mandate minimizing impacts to marine life from the intake of seawater, as well as other policies that mandate maintaining existing water quality.



The proposed facility's discharge system would create a plume of high-salinity brine that extends one-half mile along the coast. ¹

What Poseidon is proposing.

Poseidon first proposed using an open ocean discharge in 1998, fifteen years ago. But despite the advances in technology for brine disposal, and requests from the community, Poseidon's proposed design has remained the same. Their plan is to use an outfall that was put into service in 1958, fifty-five years ago, for a powerplant that disposes of warm water. Warm water rises to the surface and disperses quickly, but the brine Poseidon will produce is cold and dense, and will sink to the seafloor where there is little turbulence to disperse it. The fact is that the outfall was not designed, or ever intended, for the disposal of brine. It is important to note that the brine Poseidon proposes to dispose of is not just concentrated seawater, but a mixture of seawater and chemicals⁴ used for desalination including

- Concentrated brine having approximately twice the concentration of ambient seawater.
- Additives: coagulants (ferric sulfate, ferric chloride)

¹ City of Huntington Beach EIR, May 2010

² Brine panel report pgs. iii and 44

³ 2013 intake panel report pg. 4

⁴ ORDER NO. RS-2012-0007 pg. F-9-12

- Cleaning solutions for membranes

Instead of installing an outfall designed for brine, Poseidon is proposing a “work around” to their outfall problem by using what is called “in plant dilution.” This process will require them to withdraw an additional 27 million gallons of seawater a day to dilute the brine they produce to just below the level of toxic effects before dumping it in the ocean. This extra water combined with the obsolete outfall results in a brine plume (see above map) that extends for almost a mile down coast from the site. Due to the fact that they also plan to use an obsolete open ocean intake the additional withdrawal of seawater will result in additional, unnecessary destruction of the marine life living in that 27 million gallons a day, the equivalent of 41 Olympic sized swimming pools.

Common sense would suggest that since Poseidon is building a facility that will operate independent of the powerplant (which will cease use of the outfall in 2020) they would modify their outfall design to adapt to modern technology, but that is not the case. Poseidon has made no attempt to modernize their outfall design, instead focusing their efforts for fifteen years on convincing decision makers that using a fifty five year old outfall designed for another purpose is appropriate for use for brine disposal over the next thirty to sixty years.

In the meantime technology has continued to move forward, with multi-port diffusers proving to be effective in Australia, Spain and elsewhere. So while effective new technologies that are protective of marine life, water quality and habitat exist, Poseidon’s outfall design continues to live in the 1950’s when protecting marine life was not a priority. The problem is Poseidon’s refusal to consider any design changes to their original proposal for an outfall. This decision has been made in spite of the fact that the AES powerplant will implement newer technology and abandon use of the outfall after 2020. It is time Poseidon moved out of the past and embraces 21st century technology.

For more information about this fact sheet, contact Ray Hiemstra at (714) 850-1965 or ray@coastkeeper.org.

FACT SHEET

Project Is Inconsistent With ESHA and Wetlands Policies

On-Site Wetlands Were Ignored and Illegally Removed.

Contrary to multiple LCP and Coastal Act policies, a valid jurisdictional wetlands delineation was not performed for the proposed project. The EIR statement that there were no wetlands on-site is contradicted by:

- Field data sheets—hydrophytic vegetation is identified, thus satisfying the Commission's standard for wetlands.
- 2009 site visit—Commission staff biologist identified wetlands on-site
- 2010 SI hearing—Commission determined an additional on-site wetlands delineation was needed
- 2012 site visit—Commission staff biologist discovered wetlands removed by property owner without a permit
- 2012 enforcement action—against property owner for removing wetlands without a permit
- 2013—Commission staff determined there were previously 3.5 acres of wetlands on-site.

ESHA, Wetlands, and a Wildlife Rehabilitation Center Are Adjacent to the Site.

The proposed project would be located immediately adjacent to the Huntington Beach Wetlands Conservancy's Coastal Marsh Restoration Complex, an area comprised of 11 coastal wetland habitat types that support six endangered species. The Conservancy owns and manages 118 acres of wetlands between the Santa Ana River and Newland Street. Its mission is to "restore and preserve the few remaining wetlands in Huntington Beach and throughout Orange County."¹ One of its parcels, Magnolia Marsh, is located between Magnolia Street and the proposed project. Restoration of its historic marsh channels and reintroduction of the full tidal influence were completed in 2010. Magnolia Marsh now features an elevated observation deck, water tours, and an interpretive center for the public to learn about and interact with coastal wetlands.

The proposed project is also adjacent to the Wetlands & Wildlife Care Center, a rehabilitation center for injured, sick, or oiled wildlife. The Care Center receives hundreds of birds and other local, native species each year that are sick or injured. These animals are rehabilitated and released back into the wild when healthy. As a member of the Oiled Wildlife Care Network, the Center also receives and treats animals that have been rescued from oil spills. Rehabilitating birds and wildlife are housed in open-air enclosures immediately adjacent to the proposed project.

Adjacent ESHA Serve as Habitat For 6 Endangered Species And An Additional 17 Species of Special Concern.

The Huntington Beach Wetlands Complex is home to 6 endangered species: California Least Terns (*Sterna antillarum browni*), Light-footed Clapper Rails (*Rallus longirostris levipes*), Belding's Savannah Sparrows (*Passerculus sandwichensis beldingi*), Western Snowy Plovers (*Charadrius alexandrinus nivosus*), Ventura Marsh

¹ See Huntington Beach Wetlands Conservancy and Wetlands and Wildlife Care Center of Orange County Interpretive Center at <http://www.hbwetlands.org/pdfs/Report06.17.08.pdf>.

Milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*), and Salt Marsh Bird's-beak (*Cordylanthus maritimus* ssp. *maritimus*). An additional 17 species of birds, butterflies, bats, insects, and plants, considered species of special concern by the California Department of Fish and Wildlife (CDFW), are also found within these recently restored wetlands.

Impacts To ESHA, Wetlands, and Sensitive Species Have Not Been Adequately Analyzed or Mitigated.

Both the EIR and the CDP issued by the City of Huntington Beach fail to even mention, much less analyze, the impacts of expected noise levels of construction and facility operations on the endangered and sensitive species living next door. The CDFW and United States Fish and Wildlife Service consider sound levels that are above 60 decibels and exceed ambient levels as constituting the take of protected species, which require special federal and state permits. The EIR identified operational noise levels up to 108 decibels, which greatly exceeds the 60 decibels threshold. At a minimum, the noise impacts to sensitive species must be identified, mitigated, and any required permits for impacts obtained.

The California Energy Commission (CEC) has also expressed concern over the omission of noise impacts to endangered and sensitive species in its review of the proposed demolition of the Huntington Beach Generating Station and construction of the new Huntington Beach Energy Project (immediately next to the proposed project). That project will occur at the same time as Poseidon's project, therefore CEC staff examined the potential cumulative sound impacts from both projects. They found there could be significant adverse impacts to a much larger area than what has been identified. They were unable to determine whether these impacts can be adequately mitigated and have requested additional studies.²

The EIR indicates that construction dewatering will not impact ESHA and wetlands, but provides no evidence to support this. Given the characteristics of the surrounding groundwater levels and their connection with the wetlands, however, it seems probable that construction dewatering will affect a larger area than identified in the EIR, and may include the adjacent ESHA and wetlands.

Adjacent ESHA and Wetlands Lack Required Buffer.

Current LCP Policies require a minimum 100-foot buffer between new development and wetlands, and evidence that the buffer will adequately protect habitat quality. The proposed project violates these requirements as it contains project elements within 100 feet of wetlands.

For more information about this Fact Sheet, contact Sara Townsend at stownsend@montereylaw.edu

² See California Energy Commission, 12-AFC-02 Preliminary Staff Assessment – Noise and Vibration, October 2013.

FACT SHEET

Impacts to Public Recreation

Poseidon's project violates the California Coastal Act's policy protecting "coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas" (§30220).

The proposed desalination plant presents substantially adverse impacts to public recreational activities, most notably surf fishing. The brine discharge from the facility can be up to twice the salinity level of local seawater¹. This elevation in salinity will result in the displacement of mobile fish species including the halibut, croaker, barred perch and striped bass that commonly populate this particular stretch of beach. In addition, the continued entrainment of organisms in the proposed open ocean intake system after the AES power plant ceases its intake of seawater will continue to disrupt marine habitat and deter the presence of fish in this area.

The project also violates the relevant LCP Policy C3.1 to "Preserve, protect, and enhance, where feasible, existing public recreation sites in the Coastal Zone."

The discharge of brine and continued entrainment of marine life by the project would not "preserve or protect," but rather impede recreational fishing opportunities. Further, while the cessation of the intake system for power plant cooling water may "enhance" marine habitat and marine life, the continued entrainment by the desalination plant will negate any gains to recreational fishing. In fact, the impacts to recreational fishing were not estimated in the EIR but were summarily determined to be insignificant.²

The project could generate a 'perceived' threat to public health.

As the public becomes aware of the discharge of brine and cleaning fluids offshore of the project site, they may avoid the area due to the degradation of the environment and a perceived threat to their health. As an example, the Salton Sea has similar salinity to the proposed discharge for at the Poseidon Huntington Beach plant. While fish and other aquatic life survive there, the diversity of species is very limited. Also, while the water at the Salton Sea poses no threat to human health, the perception is that the Sea is polluted. As a result, the public avoids recreational contact with the water such as swimming and wading out of fear of health effects.

The EIR does not adequately address the adverse impacts of elevated salinity levels on fish.

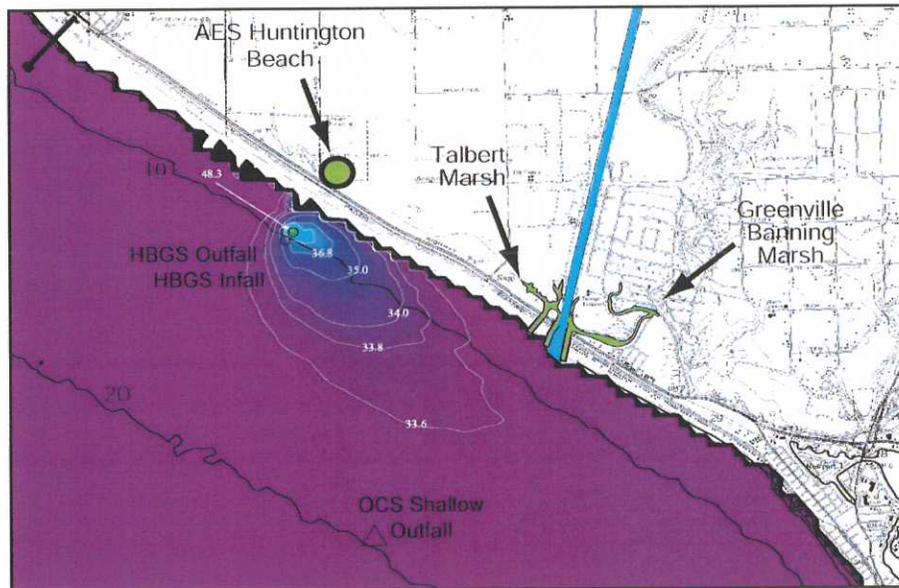
The City of Huntington Beach's Environmental Impact Report appropriately notes that fish will avoid higher salinity areas.² However, the analysis fails to consider the implications of this dynamic. The brine plume will artificially interfere with the naturally occurring ecosystem, forcing fish to move away, thus negatively impacting recreational fishing activities along a half-mile stretch of Huntington State Beach.

Additionally, a velocity cap used on the open ocean intake is specifically designed to create a horizontal intake flow that mobile fish will avoid, resulting in a decrease in the fish population in the area as they swim away from the combination of high salinity brine and intake flows.

¹ Seawater and the California Coastal Act, March 2004

² City of Huntington Beach EIR, May 2010

* City of Huntington Beach EIR Appendix M Intake effects



The plume of elevated salinity is projected to extend approximately .5 miles from shore and .5 miles along the coast, deterring the presence of fish in this area.³

The decline of recreational surf fishing would negatively impact the local tourism economy. Second to Florida, California ranks second in the number of people participating in coastal recreation (17.6 million participants), and first in the nation in the number of residents that participate in marine recreation annually (12.2%).⁴ It is estimated that over 5 million people visit Huntington Beach each year for recreational purposes.⁵ Recreational fishermen, whether local or visiting, contribute greatly to Huntington Beach's economy through spending on transportation, equipment, goods and services.⁶

For more information about this fact sheet, contact Ray Hiemstra at (714) 850-1965 or ray@coastkeeper.org.

³ City of Huntington Beach EIR, May 2010

⁴ *Understanding the Economic Potential of Marine Recreational Fishing: California*, March 2006

⁵ City of Huntington Beach EIR, May 2010

⁶ Id.

FACT SHEET

Poseidon's Proposed Desalination Plant is Highly Vulnerable to Sea Level Rise

The proposed Poseidon Desalination Plant is highly vulnerable to coastal hazards associated with sea level rise.

The National Research Council projected that sea level may rise by as much as 55-65 inches in California by 2100.¹ A 1.4 meter sea-level rise will put 480,000 people at risk of a 100-year flood event; 110,000 people are at risk in Orange County alone.² Huntington Beach is the second most vulnerable city to sea level rise in California, with the largest total exposed population.³

Projected sea level rise should serve as a floor rather than a ceiling for coastal planning for desalination facilities.

When higher sea levels coincide with high tides, storm surges and other extreme weather events, shoreline infrastructure is at risk of episodic flooding sooner and to more areas than may be indicated by our sea level rise maps.⁴



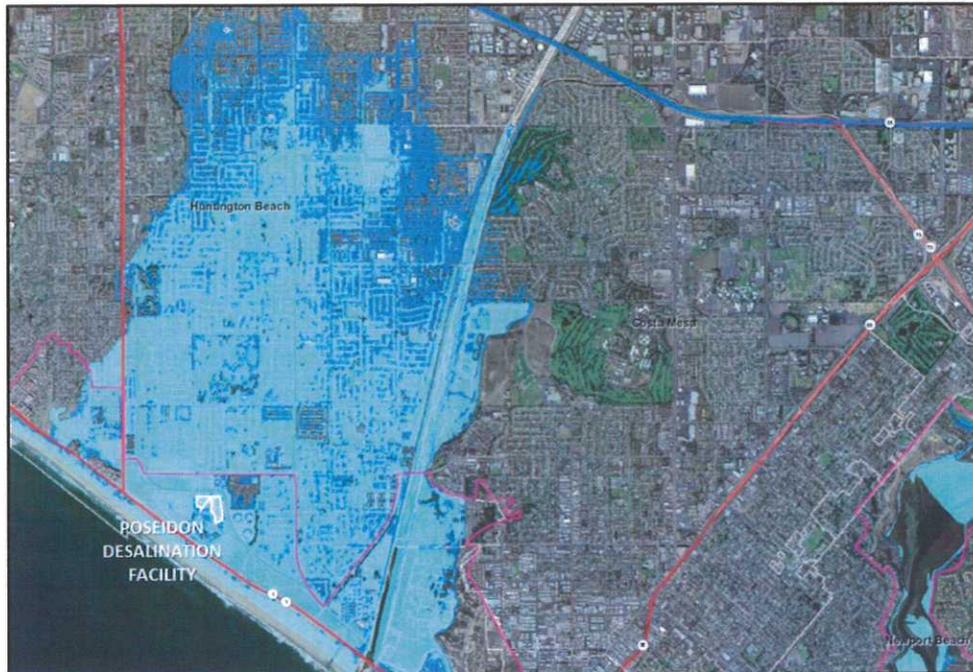
This image from NOAA's Digital Coast Sea Level Rise and Coastal Flooding Impacts Viewer shows projected sea level rise by 2050, in relation to the proposed facility site.⁵

¹ Natural Resource Council, Sea-Level Rise Projections for California (NRC, 2012) at p. 3.

² Pacific Institute, Impacts of Sea Level Rise on the California Coast p. 2,42, <http://www.pacinst.org/wp-content/uploads/2013/02/report16.pdf>

³ Climate Central, Sea Level Rise and Storm Surge Threats for California <http://slr.s3.amazonaws.com/factsheets/California.pdf>.

⁴ See California Climate Change Center, "The Impacts of Sea-Level Rise on the California Coast," (May 2009), available at www.pacinst.org/reports/sea_level_rise/report.pdf (Impacts of Sea-Level Rise on the California Coast); California Natural Resources Agency, "2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2006" (Dec. 2009) (California Climate Adaptation Strategy) at pp. 65, 68.



This excerpt of a California Flood Risk: Sea Level Rise map for the Newport Beach quadrangle shows that the proposed facility is sited in a location that would be vulnerable to inundation from 1.4 meters of sea level rise by 2100.⁶ The light blue area indicates the current 100-year Coastal Base flood zone, and the dark blue area indicates sea level rise.

Projected sea level rise makes the Poseidon project riskier and costlier than it would otherwise be.

Damage from sea level rise in California across sectors has been estimated to result in “tens of billions of dollars per year in direct costs and expose trillions of dollars of assets to collateral risks.”⁷ One hundred billion dollars’ worth of California property is already at risk from projected sea level rise. If shoreline facilities are permitted and approved in sea level rise and hazard areas, they will likely require structural protective barriers such as sea walls, groins, breakwaters and other coastal armoring structures, triggering an additional suite of costs and impacts to our state and coast such as the loss of potential buffering habitat for inland migration and public access. Projected sea level rise impacts to the Poseidon facility could also cause other environmental harms such as spills and discharges associated with inundation.

It is critical that the Commission limit existing risk to people, property, and ecosystems, and prevent development that subjects the state and its people to additional financial and public safety dangers.

The California Coastal Commission’s Draft Sea Level Rise Policy Guidance, released on October 15th, 2013, states that the best way to minimize risks to life and property from sea level rise related hazards is to

⁵ National Ocean and Atmospheric Administration, Digital Coast Sea Level Rise and Coastal Flooding Impacts Viewer (April 2010), available at: <http://csc.noaa.gov/slr/beta/viewer/>.

⁶ Pacific Institute, California Flood Risk: Sea Level Rise, Newport Beach Quadrangle (2009), available at http://www.pacinst.org/reports/sea_level_rise/hazmaps/Newport_Beach.pdf. The State of California Sea-Level Rise Guidance Document, available at http://www.opc.ca.gov/webmaster/ftp/pdf/docs/2013_SLR_Guidance_Update_FINAL1.pdf provides Sea-Level Rise projections

⁷ California Climate Adaptation Strategy at p. 3, citing D. Roland-Holst and F. Kahr, U.C. Berkeley “California Climate Risk and Response,” (November 2008), available at: http://www.next10.org/research/research_crr.html.

avoid hazardous locations and to keep development out of harm's way.⁸ While the Poseidon desalination plant does not qualify as "public infrastructure," the draft guidance outlines the problems associated with siting infrastructure in areas known to be vulnerable to sea level rise:

"Public Infrastructure: Low lying roads, wastewater treatment facilities, energy facilities, stormwater infrastructure, and utility infrastructure such as potable water systems and electricity transfer system are at risk of impaired function due to erosion, flooding and inundation."⁹

The Poseidon project requires a sound sea level rise analysis in order to comply with existing Coastal Act policies and proposed requirements for Coastal Development Permits.

All locations currently subject to inundation, flooding, wave impacts, erosion or saltwater intrusion will be exposed to increased risks from these coastal hazards with rising sea level. The Commission's recently released Sea Level Rise Guidance lays out an extensive process to ensure that projects are planned, located, designed and engineered for the changing water levels and associated impacts that might occur over the life of the development. A minimum of 75 to 100 years should be considered as the design life for structures, and an even longer time period may be appropriate for infrastructure such as an ocean desalination facility. This analysis must occur *before* a Coastal Development Permit can be obtained.

Poseidon is trying to avoid proper design and siting of its facility by requesting a permit for only 35-years, despite the fact that the projected potential life expectancy of the facility is described in public documents as 60-years.¹⁰

In mid-October, Poseidon suddenly requested that the Coastal Commission restrict their Coastal Development Permit to 35-years in order to avoid a full analysis of the impacts of sea level rise on the 60-year projected life of the facility.¹¹ In contrast, the CDP for Poseidon's Carlsbad Desalination Plant has **NO** end date. In addition to sea level rise, this truncated permit length raises the issue of providing a water supply that may need to be decommissioned in 35-years due to siting design flaws.

Commission approval of the Poseidon facility is at odds with hazard avoidance and other key coastal planning principles. An early top priority near-term action identified for state policymakers in the 2009 Ocean and Coastal Resources Section of the Climate Adaptation Strategy (CAS) was to "avoid establishing or permitting new development inside future hazard zones in most cases if new protective structures would be necessary." The CAS makes clear that "state agencies should generally not plan, develop, or build any new significant structure in a place where that structure will require significant protection from sea-level rise, storm surges, or coastal erosion during the expected life of the structure."¹²

For more information about this fact sheet, contact Sara Aminzadeh of California Coastkeeper Alliance at sara@cacoastkeeper.org.

⁸ See California Coastal Commission Sea Level Rise Policy Guidance Public Review Draft October 14, 2013.

⁹ Ibid. p. 33.

¹⁰ Huntington Beach Pipeline Franchise Agreement, p. 9

¹¹ Email Communication from Scott Maloni to Alison Dettmer, dated October 18, 2013 (Submitted as Supporting Document).

¹² California Climate Adaptation Strategy at p 73.

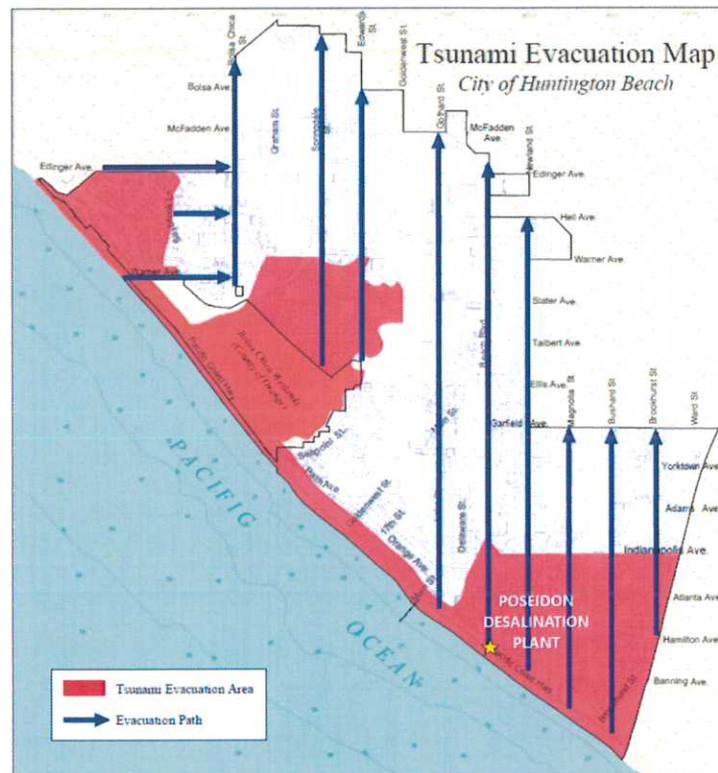
FACT SHEET

The Proposed Poseidon Desalination Plant is Located in a Tsunami Hazard Zone

The proposed Poseidon Desalination Plant is located in a tsunami hazard zone.

The proposed plant is located in a problematic site that is inappropriate for building new critical infrastructure.

Tsunami inundation maps developed by the California Geological Survey show that the Poseidon project site would be vulnerable to major flooding in the event of a tsunami.



This excerpt of the City of Huntington Beach tsunami evacuation map shows that the proposed facility site would be submerged in the event of a tsunami.¹

A recent USGS study found that a tsunami caused by a distant earthquake would inundate the project site.

A report published by the U.S. Geological Survey in September 2013 described findings from a theoretical earthquake off the coast of Alaska, simulated with a magnitude of 9.1². The report states that the earthquake would send waves of 3 to 10 feet to southern California, submerging low-lying coastal

¹ City of Huntington Beach, Tsunami Evacuation Map (September 2010), available at http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CC4QFjAA&url=http%3A%2F%2Fwww.huntingtonbeachca.gov%2Fabout%2Fmaps%2Ftsunami-evacuation.pdf&ei=FsRVUp_mA6qdiAL2kIDYBg&usq=AFQjCNGCx5p8GWAjgLVMAYtVt69a7qAWLw&bvm=bv.53760139.d_cGE&cad=rja (last visited October 9, 2013). Also supplied as a Supporting Document.

² United States Geological Survey, The SAFRR (Science Application for Risk Reduction) Tsunami Scenario 10 (2013), available at http://www.smgov.net/uploadedFiles/Departments/OPM/Contact_Us/tsunami%20study.pdf (last visited October 8, 2013.)

communities including Huntington Beach and Newport Beach. Though the waves would be smaller in size than those reaching Northern California, the damage to Orange County would be greater because the region has more coastal development and less protection from sea cliffs.

An Orange County Grand Jury study found that a locally-generated tsunami would cause even more damage.

The 2007-2008 Orange County Grand Jury set out to assess the County's tsunami preparedness for a worst-case scenario tsunami wave reaching 32 feet in height, and concluded that locally-generated tsunamis—from local earthquakes or offshore landslides—would be far more disastrous than tsunamis generated by distant earthquakes. The report warns that “critical infrastructure such as sewage treatment plants and distribution systems for water, electricity and natural gas could be out of service for weeks.”³

Poseidon twice failed to produce a sound tsunami hazard analysis.

On two occasions, Poseidon failed to provide the Coastal Commission with requested information pertaining to geotechnical and tsunami hazards for the project site.

In July 2012, the Commission issued a Notice of Incomplete Application (NOI) to Poseidon, requesting a tsunami hazard analysis based on a run-up height of 16 feet. Poseidon contracted Geosyntec, a consulting engineering firm, who deemed this figure unsubstantiated and did not perform the requested evaluation.⁴

In March 2013, the Commission requested an analysis based on a 13-foot run-up, and in response, Geosyntec provided one based on a 10-foot run-up, contending that “tsunami hazard is not anticipated to present a significant risk to public health and safety at the project site.” Geosyntec only takes into account the “possible tsunami impacts on the proposed site improvements related to inundation of up to 3 feet of water include seepage, soil, erosion, and loading on proposed structures.”⁵

Geosyntec also developed a response to the more recent USGS SAFRR study, contending that “the project site would not be inundated by a tsunami generated by the scenario.”⁶

The LCP places restrictions on new developments in a tsunami zone.

The goals, objectives, and policies presented in the Huntington Beach Local Coastal Program include “minimiz[ing] risks to life and property in areas of high geologic, flood and fire hazard through siting and design to avoid the hazard.” Also “development permitted in tsunami and seiche susceptible areas shall be designed and sited to minimize this hazard and shall be conditioned to prohibit a shoreline protective device.”

The plant's problematic site contradicts its viability as insurance for water reliability.

Poseidon has claimed that the plant would serve as viable backup source of water in the event of a tsunami or earthquake, but studies conducted by the U.S. Geological Survey, the California Emergency

³ Orange Cnty. Grand Jury, *Paradise Lost: If a Tsunami Strikes the Orange County Riviera...* 5 (2008), available at <http://www.ocgrandjury.org/pdfs/tsunami/tsunami-report.pdf> (last visited October 8, 2013.)

⁴ Letter from Scott Maloni, Vice President, Poseidon Water, to Tom Luster, California Coastal Commission, Energy and Ocean Resources Unit (September 20, 2013), supplied as Supporting Document.

⁵ Response to Coastal Commission April 22, 2013 Requests for Additional Information (May 9, 2013.)

⁶ Letter from Scott Maloni, Vice President, Poseidon Water, to Tom Luster, California Coastal Commission, Energy and Ocean Resources Unit (September 20, 2013), supplied as Supporting Document.

Management Agency, and the Orange County Grand Jury show that the site location itself is highly vulnerable to tsunami inundation.

In addition, Poseidon's modeling values for their own tsunami risk assessment are inconsistent with the claim that the plant would provide a necessary source of water in a worst-case scenario catastrophe.

For more information about this fact sheet, contact Ray Hiemstra at (714) 850-1965 or ray@coastkeeper.org.

FACT SHEET

Seismic Hazards

The proposed Poseidon desalination plant is sited in a seismic hazard zone.

The proposed plant lies in the Newport-Inglewood Structural Zone (NISZ) and sits astride the Newport-Inglewood Fault Zone (NIFZ) within the NISZ. The NISZ stretches some 40 miles south from Santa Monica to at least Newport Beach, where the NIFZ has been considered to pass offshore. Geologists believe the NISZ joins the Rose Canyon Fault, which, in turn, extends at least another 110 miles to the San Diego area.

The Newport-Inglewood Fault Zone is truly a zone, not a single line on the surface or plane in the subsurface.

The zone is characterized by continuing complex earth deformation exemplified by folding and faulting and has produced features such as the topographically low sedimentary coastal basins bordered inland by topographically elevated erosional remnants of uplifted areas like the Huntington Beach and Newport Mesas. The NIFZ in Huntington Beach is shown in more detail in the figure below.

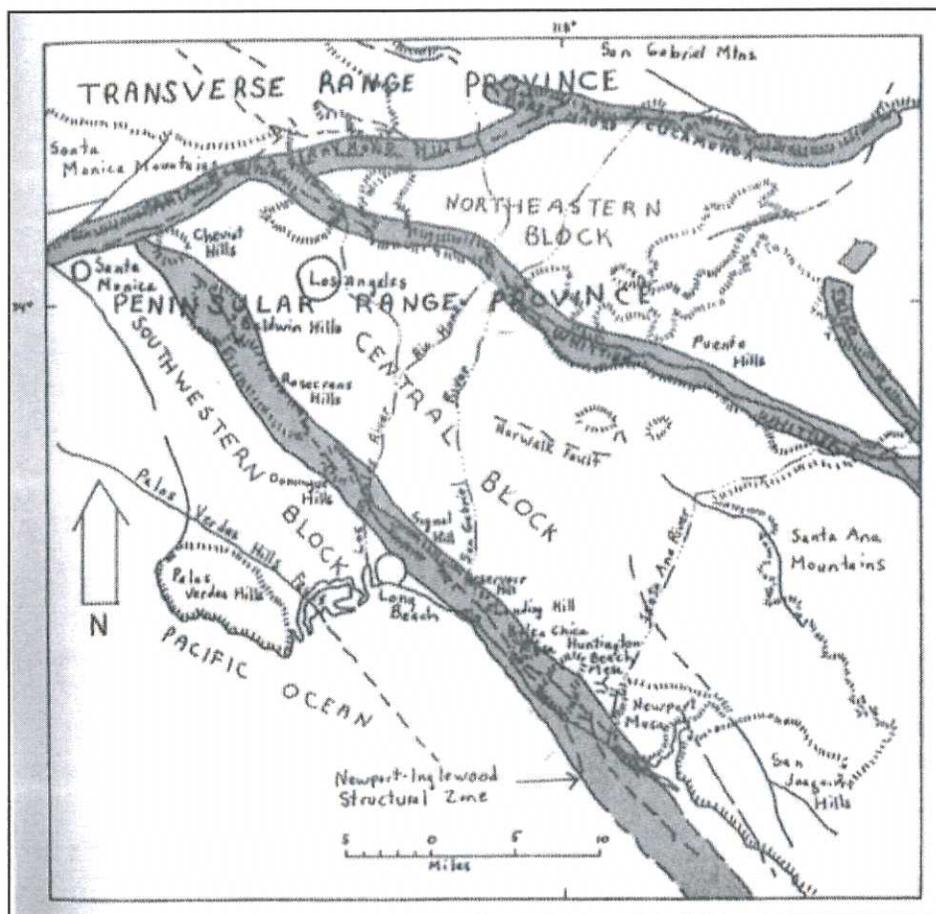


Figure 1: Map of major Southern California Fault Zones including the Newport-Inglewood Fault Zone running through Huntington Beach!

¹ Leighton-Yen and Associates, Huntington Beach Geotechnical Input, 1974, project site added.

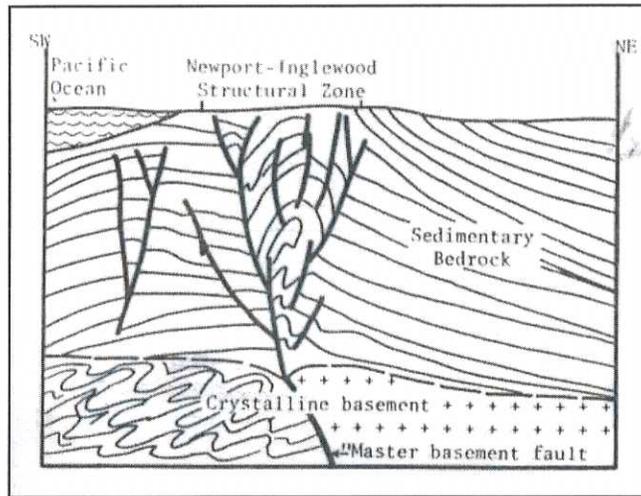


Figure 2: Diagram showing the cluster of faults that form the Newport-Inglewood Fault Zone in Huntington Beach.²

The Newport-Inglewood Fault (NIF) is the dominant fault in Huntington Beach. The NIF segment in Huntington Beach consists of a series of splays schematically shown horizontally in Figure 1 and vertically in Figure 2 above.

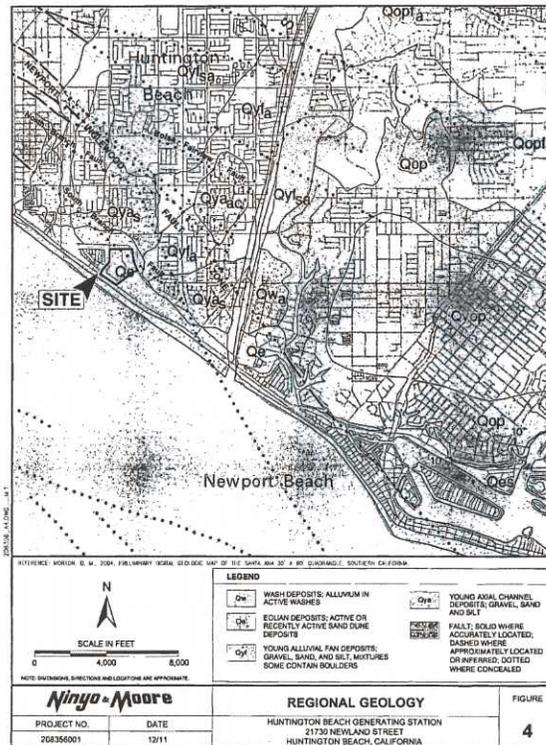


Figure 3: Map of individual faults that form the Newport-Inglewood Fault Zone In Huntington Beach.³ (Larger version provided on pg. 5)

² Huntington Beach Seismic – Safety Element, 1974.

The following geologic hazards are or may be associated with the NIF in the Huntington Beach area: fault displacement, fault creep, earthquake shaking, liquefaction⁴, lurching, expansive soils, differential compaction, and subsidence.

The proposed Poseidon desalination plant lies along a substantially large earth deformation feature.

The natural earth forces involved in both the NISZ and NIFZ are incredible, immutable and continuing. The forces associated with the NIFZ will continue to manifest themselves periodically, and often destructively, within man's very short time frame. The NIFZ is a geologically young, active fault,⁵ meaning that the fault and its associated hazards will exist as long as humankind exists.

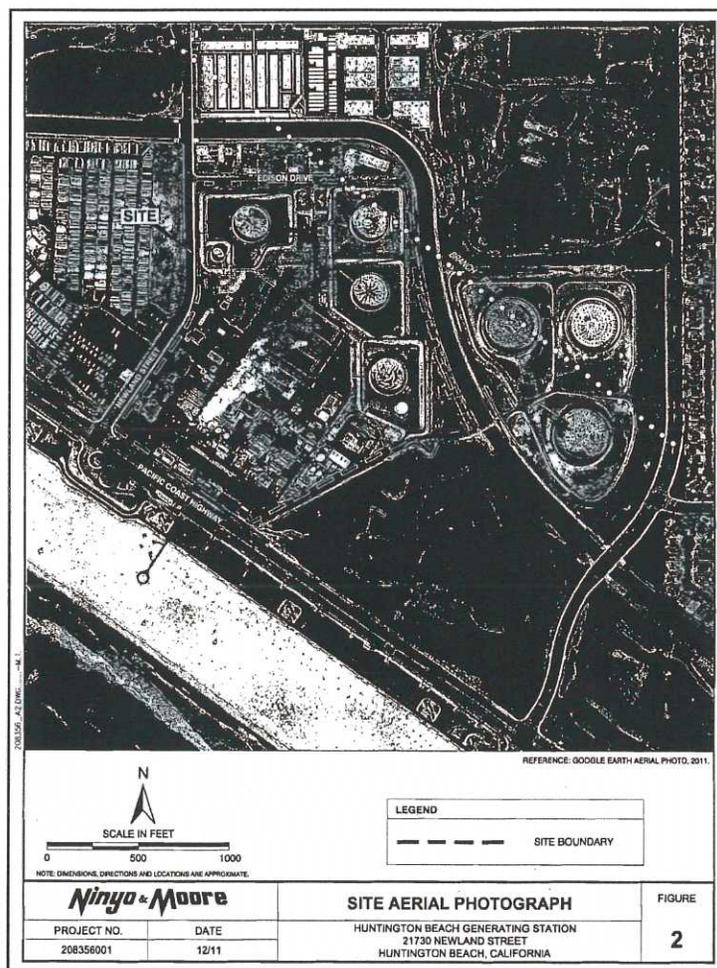


Figure 4: Detail map of fault running directly through the proposed Poseidon Desalination Plant project site.⁶ (Larger version provided on pg. 6)

³ Ninyo & Moore, Preliminary Geotechnical Evaluation for Huntington Beach Generation Station (December 2011), supplied as Supporting Document.

⁴ Liquefaction refers to the process, often in an earthquake, by which earth materials are transformed into a liquid-like substance, acting much like quicksand.

⁵ L-Y Ibid.

⁶ Ninyo & Moore Ibid.

The NIF has been considered the 4th most dangerous fault in California precisely because so many critical facilities are located in close proximity to the fault. The Poseidon desalination plant will become a critical facility, if approved, developed, and relied upon as a water source.

The project site lies also near the epicenter⁷ of the 1933 Long Beach Earthquake, which has been considered the 4th most disastrous U.S. earthquake. The epicenter is a mere 3.5 miles off of Newport Beach.

Poseidon has not conducted a thorough or accurate geotechnical evaluation to assess site-specific seismic risk.

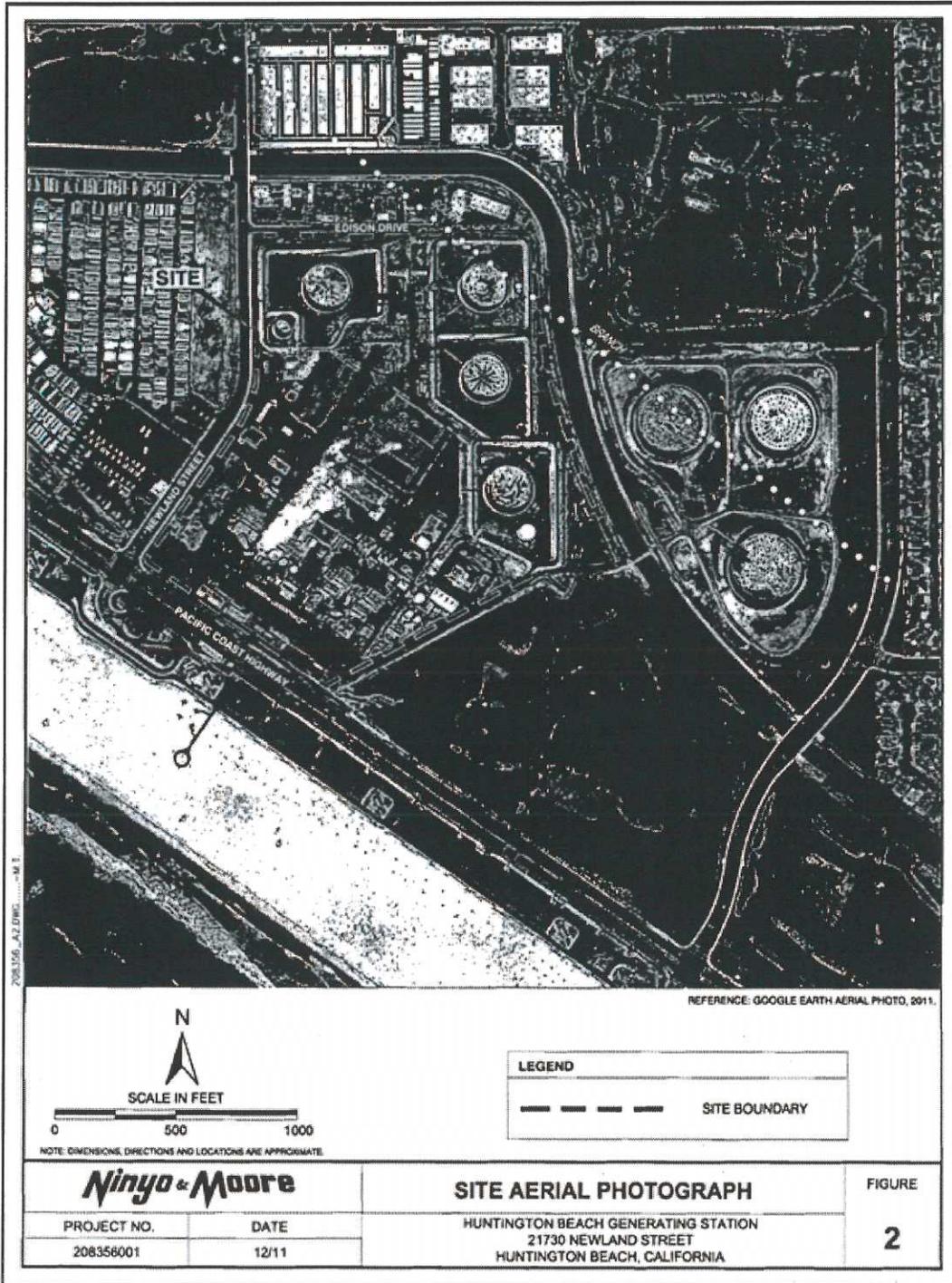
Only after this project is approved will some critical geotechnical studies be completed to determine the viability and risk level of this project, whether further public monies should be used further to support the project, and whether the safety and welfare of the public will be fully protected.

Should geotechnical problems arise later, the size and criticality of the project suggest that public subsidies will be required and sought to repair or replace this facility.

For more information about this fact sheet, contact Dr. Robert Winchell, Professor Emeritus, 1995, Geological Sciences at California State University, Long Beach at (714) 846-4003 or doctor_bob_92647@yahoo.com.

⁷ Epicenter refers to the surface location directly above the earthquake origin.

Detail Map of Fault Running Directly Below Proposed Poseidon Desalination Plant Site



Analysis of Proposed Delivery Pipeline

The delivery pipelines and appurtenances to move the desalinated water to consumers does not exist, and has not been adequately proposed, identified or analyzed.

A delivery pipeline is an essential “public service” that is not currently available to support the 50 MGD output of the proposed seawater desalination proposal.

The CDP fails to identify a specific pipeline route(s), making it impossible to ensure that the pending pipeline would be consistent with Huntington Beach’s Coastal Element policies.

The CDP does not adequately analyze all the public services necessary to serve the proposed Poseidon project despite Huntington Beach’s Coastal Element policies that mandate “[a] finding that adequate services can be provided to serve the proposed development...”¹

Furthermore, although both the 2006 CDP and 2010 CDP allow only one delivery pipeline route, the current proposal before the CCC has multiple major pipeline routes. Such multiple pipelines may be in violation of the Non-exclusive Pipeline Franchise Agreement between the City of Huntington Beach and Poseidon Resources.

Without committed buyers for the water, a delivery route cannot be adequately proposed.

As noted in the fact sheet “Lack of Need for the Poseidon Project,” the applicant has not reached signed water purchase agreements, so where the water may be transported is unclear. The proposed solutions in the meantime, and potential environmental impacts thereof, have been a series of vaguely defined pipeline routes. The alignment, design, and impacts of delivery pipelines and appurtenances should have been finalized prior to the City approving the CDP, as mandated in LCP Policy 1.2.3.

Furthermore, with no final determination of a pipeline route(s), it is premature to conclude that the CDP adequately “[requires] appropriate engineering and building practices for all new structures to withstand ground shaking and liquefaction...”²

On behalf of Poseidon, Richard Brady & Associates produced a flawed evaluation of potential pipeline routes.

¹Huntington Beach Local Coastal Program § C1.2.3

²Huntington Beach Local Coastal Program § C10.1.4



The Brady report examines a regional “north delivery” system comprised of 10 miles of new and replacement pipeline ranging in size from 36 - 54 inches and two underground booster pump stations.³

The Brady report makes no mention of the ASCON Toxic Landfill along which one of the pipelines is proposed to be installed. Furthermore, the report fails to consider the high groundwater table in the South Huntington Beach area as well as the large sanitary sewer lines which convey the wastewater to the Orange County Sanitation District’s sewage treatment plant in the southeast Huntington Beach.

Furthermore, and notably, throughout the CEQA permitting processes, respective initial pipeline pressures of 195 psi and 206 psi were significantly underestimated.

The Brady report inadequately determines the total cost associated with building a pipeline.

The estimated cost for the proposed delivery facilities is approximately \$70,000,000 including an extremely low 20% contingency for adverse geological conditions and existing underground utilities in an existing urban environment as well as 10% for other construction risks.⁴ A similar pipeline being constructed for the Carlsbad project is estimated at almost three times the cost or \$200,000,000. Annual operations and maintenance costs are estimated between \$1.5 million to \$1.8 million.⁵

³Memorandum from Howard Johnson, Vice President, Richard Brady & Associates to Scott Maloni, Vice President, Poseidon Resources, 13 (January 2013) available at <http://www.coastkeeper.org/wp-content/uploads/2010/09/Richard-Brady-Associates-Report-1-28-13-final.pdf> (last visited October 8, 2013.)

⁴Memorandum from Howard Johnson, Vice President, Richard Brady & Associates to Scott Maloni, Vice President, Poseidon Resources, 16 (January 2013), available at <http://www.coastkeeper.org/wp-content/uploads/2010/09/Richard-Brady-Associates-Report-1-28-13-final.pdf> (last visited October 8, 2013.)

⁵ East Orange Cnty. Water Dist., East Orange Cnty. Water Dist. Gen. Manager’s Report 6, available at http://www.eocwd.com/media/agenda/Special_Meeting_Agenda_2-19-13.pdf (last visited October 8, 2013.)

The cost estimates could greatly increase when a final pipeline design is submitted.

The Brady report must be considered by the Commission as a very basic, preliminary pipeline sizing exercise and cost estimate for proposed delivery facilities.

If the project were to be built, a final design should include subsurface exploration for soils, groundwater and existing utilities and substructures which the Memorandum neglects to do so. Pipeline design should include backflow prevention valves and accommodation for elevation changes, the effects of hydraulic transients, diurnal consumption cycles, and possible additional storage facilities. Such investigation could substantially alter the route and costs of the proposed delivery system.

For more information about this fact sheet, please contact Dave Hamilton at de.hamilton@verizon.net.

FACT SHEET

Greenhouse Gas Plan (GHG Plan): No Guaranteed Reduction in State Water Imports

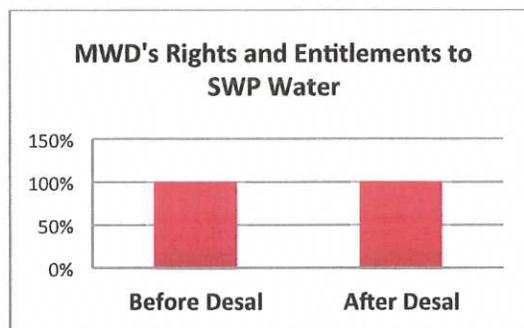
Poseidon is Misleading the Commission by Claiming that the Huntington Beach Desalination Project will Result in a Guaranteed Reduction in State Water Project Imports Into Orange County.

The 5th project listed in the GHG Plan is an 'automatic' credit to Poseidon for saving GHGs from the State Water Project (SWP). The automatic credit is based on the idea that Orange County will receive 56,000 acre feet (AF) less of imported water from the SWP each year because they will soon have 56,000 AF more of desalinated water each year instead.

This is the exact same 'automatic' credit Poseidon claimed in their 2008 Carlsbad GHG Plan. The Commission found that **Poseidon intentionally provided false or incomplete information** about the automatic credit during a 2010 hearing to revoke their permit (*see Revocation Hearings Fact Sheet*). Inexplicably, Poseidon has ignored the Commission's findings and simply proposed the same erroneous automatic credit again.

There Is No Basis For The Automatic Credit Because MWD Will Continue SWP Imports.

Orange County receives SWP water from the Metropolitan Water District (MWD). The automatic credit would be for SWP water that travels from the Sacramento-San Joaquin Delta to Orange County. But in letters to the Commission¹, MWD confirmed that it would continue to import the full allotment of SWP water whether a desalination facility is built or not. Further, a MWD subsidy agreement provides a discount of \$250/AF so long as desalination water augments, rather than reduces, MWD's imported water supplies².



There Are Only Two Ways Desalination Water May Potentially Reduce SWP Imports.³

Poseidon would need to provide verifiable data and evidence, such as a contract amendment, of either of the following:

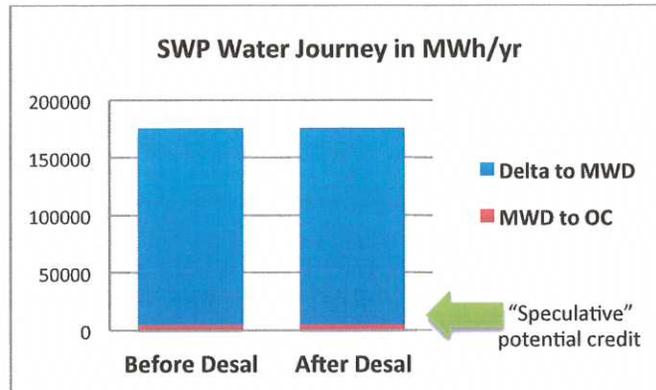
1. According to MWD, desalination water may potentially reduce the need for MWD to import additional supplies. MWD defines additional supplies as transfers, exchanges, and other marginal supplies, above and beyond its current SWP entitlements. No data exists at this time to even calculate an additional supply credit, but it would be far less than the automatic credit by virtue of MWD's definition.

¹ See California Coastal Commission Staff Report: Request for Revocation at p 10 of 22. January 28, 2010. Poseidon Resources (Channelside) LLC/Cabrillo Power II LLC. Available at <http://documents.coastal.ca.gov/reports/2010/2/W6a-2-2010.pdf>.

² See November 1, 2013 Letter from Pacific Institute to California Coastal Commission regarding MWD subsidy agreement.

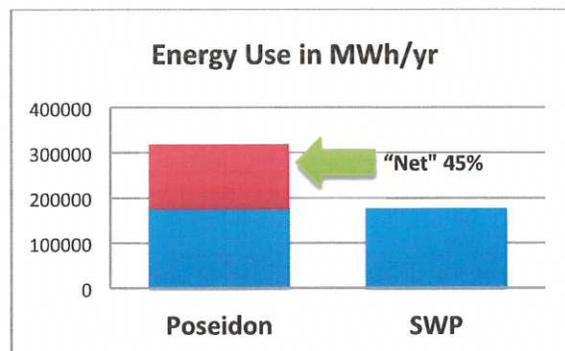
³ *Supra* note 1.

2. If, due to the desalination water, MWD instead sends SWP water from Los Angeles to some other destination besides Orange County, and if those emissions can be calculated and verified, then a credit may be warranted. However, by its own admission, Poseidon told the Commission during its 2010 revocation hearing⁴ that although MWD will still import all of its SWP water into Los Angeles, where that water goes next is “speculative.” Poseidon has since cited a 2010 study that states the SWP water, “is not expected to be imported into Orange County.” Even if Poseidon could provide evidence, beyond mere expectations, that SWP water no longer travels from Los Angeles to Orange County, it would only be 3% of the automatic credit they are currently asking for.



With SWP Automatic Credit, Poseidon is Only Required to Offset the Remaining “Net,” or Just 45% of Total GHGs Emitted.

If given the SWP automatic credit, Poseidon will only account for its “net” GHG emissions. Poseidon invented the “net” concept and has defined it as the difference between the energy used by the SWP and the energy used by Poseidon. At best, this equates to only 45% of its total emissions.



For more information on this Fact Sheet, contact Sara Townsend at stownsend@montereylaw.edu

⁴ Ibid.

FACT SHEET

No Guarantee of Required Energy Minimization

The Coastal Act Requires Energy Minimization. But The GHG Plan Offers No Guarantee That Energy Consumption Will Be Minimized.

Section 30253(d) of the Coastal Act requires that the proposed desalination facility minimize energy consumption, and LCP Policy C8.3.1 encourages energy conservation. But Poseidon's *Energy Minimization and Greenhouse Gas Reduction Plan* (GHG Plan) merely lists four projects that Poseidon may or may not undertake to reduce the amount of energy consumed. The 5th project is an unverified automatic credit for energy reduction from imported water (*see GHG Fact Sheet*). The GHG Plan offers no assurance of energy minimization.

Ocean Desalination Consumes More Energy Than Any Other Water Source.

The California Department of Water Resources has identified ocean desalination as one of the most energy intensive water supply options available in California.¹ Poseidon projects its desalinated water will require two times more energy than importing water from Northern California.² Other companies have drawn similar conclusions. For example, an Inland Empire Utilities Agency report found that ocean desalination would use over ten times more energy in its service area than water recycling. And the Los Angeles Economic Development Corporation found ocean desalination to emit more greenhouse gases than any water source.

Contrary To The LCP, The Proposed Desalination Facility Will Tax The Most Electrically Constrained Area In The State.

LCP Policy C1.2.3 requires that adequate electricity services can be provided for the proposed project. From an energy supply perspective, it is extremely problematic to site a coastal desalination plant anywhere south of Oxnard. Known as "local capacity areas," this stretch of the coast does not have enough generation within their area to meet their energy needs and must import significant amounts of energy from elsewhere. The proposed desalination facility will place new demands of 33 to 36 megawatts (MW) on the grid in the Los Angeles Basin.

Earlier this year, the California Public Utilities Commission (CPUC) authorized approximately 2,000 MW of new generation in Southern California to meet future planned energy needs. The CPUC is currently undertaking a proceeding to determine whether to authorize additional generation in this same region. It would appear that the energy requirements of the proposed facility in Huntington Beach, combined with the 32 MW of new energy demands for its Carlsbad facility, may necessitate future CPUC authorizations for new generation. Therefore, it is unclear

¹ See California Department of Water Resources, *Water Desalination Findings and Recommendations 4* (2003). Available at http://www.water.ca.gov/desalination/pud_pdf/Findings-Recommendations.pdf

² Poseidon Resources. *Huntington Beach Desalination Plant. Energy Minimization and Greenhouse Gas Reduction Plan*. April 30, 2010.

whether adequate electricity services can be provided for the proposed project, which is inconsistent with the LCP requirement to do so.

Increased Energy Use In Huntington Beach Will Increase Marine Life Impacts.

LCP Policy C1.1.1 requires that new development avoid significant adverse effects on coastal resources. As described above, the proposed project will increase the total amount of energy demand in Huntington Beach by 33 to 36 MW. If this additional energy comes from the Huntington Beach Generating Station there will be an increase in marine life and water quality impacts associated with that additional energy generation. No analysis of these new impacts was provided, which is inconsistent with the LCP requirement to do so.

The Proposed Desalination Facility is Contrary to Ongoing Statewide Mandates To Decrease Fossil Fuel Dependence and GHG Emissions.

The California Global Warming Solutions Act of 2006, AB 32, requires that statewide greenhouse gas emissions be reduced to their 1990 levels by 2020. The California Air Resources Board (CARB) has spent the last seven years designing and implementing this mandatory reduction program. While only the largest GHG emitters are currently regulated by this statute, CARB encourages and rewards those who voluntarily engage in GHG emissions reductions.

Pursuant to Executive Order S-03-05, all state agencies are required to work together to meet these required GHG emissions reductions as members of California's Climate Action Team. The Coastal Commission is part of the Coastal and Ocean Resources Working Group whose mission is to support the implementation of AB 32 and ensure the state's ability to adapt to climate change impacts on its ocean and coastal resources.

In its 2008 Climate Change Scoping Plan document, CARB found that one way for the state to achieve GHG emissions reductions is by replacing existing water supply and treatment processes with more energy efficient alternatives.³ The proposed project would do the opposite. It runs counter to the state's GHG emissions reduction goals because it increases energy consumption, GHG emissions, and further exacerbates climate change.

*For more information on this Fact Sheet, contact Sara Townsend at stownsend@montereylaw.edu,
or Joe Geever at jgeever@surfrider.org.*

³ See California Air Resources Board. Climate Change Scoping Plan Appendices, Volume I C-134 (2008). Available at http://www.arb.ca.gov/cc/scopingplan/document/appendices_volume1.pdfhttp://www.arb.ca.gov/cc/scopingplan/document/appendices_volume1.pdf