



January 10, 2018

Hope Smythe, Executive Officer
Santa Ana Regional Water Quality Control Board
3737 Main Street, Suite 500
Riverside, CA 92501-3348

Cc: Terri Reeder, Chief of Basin Planning

Sent via email

Re: Technical Memorandum: Huntington Beach Desalination Review of Sea Level Rise Hazards

Dear Executive Officer Smythe,

On behalf of the Surfrider Foundation's (Surfrider) thousands of supporters throughout California, please accept the attached technical memorandum (memorandum), which evaluates the potential coastal vulnerability and impacts of Poseidon Water LLC's (Poseidon) proposed facility and the need for future coastal armoring using the best available science and most recent publicly available project descriptions. Surfrider is a non-profit grassroots organization dedicated to the protection and enjoyment of our world's oceans, waves and beaches fueled by a powerful network of activists.

We request the Santa Ana Regional Water Quality Control Board (Water Board) take the memorandum's findings into consideration as a component of their alternative sites analysis for the treatment plant and distribution system. Poseidon Water submitted an analysis of alternative sites – all within the coastal zone^{1,2,3}. The analysis included "Other Considerations" that should evaluate risks of site inundation from foreseeable sea level rise. The project partner, OCWD, has evaluated several alternative distribution systems – all originating at the proposed site adjacent to the AES-Huntington power plant. As summarized below, and explained in more depth in the memorandum, the proposed location may not be feasible for the life of the project, given the projected threats of sea level rise.

Further, the Final Order for the facility should make clear that any determination on the proposed site by the Regional Board would not preclude other State agencies with land use authority, including the Coastal Commission, from finding the site is not feasible for the project as proposed given the high hazards risk.

We urge the Water Board to consider the memorandum before issuing permits for the proposed facility and would like to highlight several important findings from the memorandum.

¹ Miller, Eric and Larry Allen. Huntington Beach Desalination Plant Intake Site Determination: Multiple Lines of Evidence Analysis. Miller Marine Science and Consulting, Inc. October 12, 2018. https://www.waterboards.ca.gov/santaana/water_issues/programs/Wastewater/Poseidon/2018/Oct/MLE_Intake_Location_Report.pdf

² Dudek. Response to Information Requests Related to Analysis of Alternative Sites Huntington Beach Desalination Project (HBDP) Part 1. July 29, 2016. slc.ca.gov/Info/Reports/Seawater/NGO_30-32.pdf

³ Dudek. Information Requests Related to Analysis of Alternative Sites -Intake, Discharge and Other Considerations Huntington Beach Desalination Project (HBDP) Part 2. slc.ca.gov/Info/Reports/Seawater/NGO_30-32.pdf

The site, as currently graded, is subject to the following coastal hazards:

- The proposed site will be subject to episodic events including, Federal Emergency Management Agency (FEMA) 500- year fluvial flooding, tsunami hazards, and flooding resulting from a closed barrier beach.
- The proposed site will be a critical water supply facility and thus the state of California's extreme sea level rise scenario, known as the H++ scenario, must be considered.
- The proposed site is subject to the "Island Effect". Surrounding areas lie at much lower elevations than the proposed facility. The proposed facility will eventually become an area of high ground surrounded by areas increasingly impacted by coastal hazards. This isolation is routine during high tide events with as little as one foot of sea level rise (potentially as early as 2030) and could impact supporting infrastructure to the facility including access roads, electricity, water and other necessary elements.

The site is reliant upon maintenance of the existing flood control channels, containment berm and grading:

- The continued management to maintain an open flood control channel across Huntington State Beach will be required to avoid barrier beach flooding.
- The site is dependent on proposed grading to avoid flooding impacts from groundwater daylighting caused by rising groundwater levels associated with sea level rise. This may create buoyancy forces and potential liquefaction issues below the proposed structures. With the proposed grading, 6 of the 18 proposed structures would potentially be flooded by 2070 in the H++ scenario.
- Tidal inundation could occur at the existing site several times a year with only 3 feet of sea level rise, coupled with a king tide event. The existing berms are serving as flood protection under these conditions but the site could still be inundated if hydraulic conditions exist (i.e., by a culvert or gap in containment berms).
- The existing berms would provide some level of flood protection under certain coastal wave flooding scenarios with 6.5 feet of sea level rise - which could cause sustained flooding when coupled with maximum wave run up.

More research is needed regarding several potential impacts:

- Examine potential impacts from groundwater daylighting to building foundations, taking into consideration sea level rise and increased water levels during a storm event, particularly within the Huntington Beach wetlands to the southeast of the site.
- Examine the combination of future fluvial and coastal hazards exacerbated by sea level rise. Existing coastal confluence models do not take changes in precipitation coupled with sea level rise into account.
- More information is needed regarding potential for increased coastal hazard impacts of the proposed facility to the low-lying surrounding community.
- The distribution network, depths underground and alignments are not yet finalized and need to be considered for coastal hazards as they may pose additional hazards to the surrounding community in the future.

The report also notes that this location further incentivizes the broader community to remain in the same location, increasing the need for future shoreline stabilization and changes to the flood control channel. This influence may limit future adaptation options beyond the life of

these facilities. This can be considered a maladaptive response to sea level rise. Indeed, it is important for state agencies to consider the site in the context of the historical wetlands that once existed and restoration as a potential alternative for this site. Restoration of wetlands could serve as a multi-benefit, cost effective approach to mitigating sea level rise and coastal hazard impacts and preserving public resources for the surrounding community.

Perpetuating development in this location increases the likelihood of reliance on coastal armoring by neighboring developments, including the Pacific Coast Highway, the AES Power Plant and residential communities. Secondary impacts could occur from armoring including recreation, ecosystems, an increase in wave run up and coastal flooding extents.

Thank you for your consideration of the attached coastal hazards report.

Sincerely,

A handwritten signature in cursive script that reads "A. Sackett".

Mandy Sackett