

Poseidon Water’s Proposed Huntington Beach Seawater Desalination Project Brine Discharge Compliance with State Water Board Desalination Amendment

The Desalination Amendment’s preferred technologies for brine discharge in order to minimize the intake and mortality of all forms of marine life are: (1) comingling with treated municipal wastewater that would otherwise be discharged to the ocean unless wastewater can be sufficiently treated and distributed locally; and (2) a multiport brine diffuser. The Desalination Amendment states that *“nothing in this section shall preclude future recycling of waste water.”*

Within Orange County there are three existing wastewater facilities that discharge to the Pacific Ocean that are shown in Figure 1: the Aliso Creek Ocean Outfall; the San Juan Creek Ocean Outfall/JB Lanthem Treatment Plant; and the Orange County Sanitation District (“OCSD”) Treatment Plant #2.

Aliso Creek Ocean Outfall

The Aliso Creek Ocean Outfall in Laguna Beach is operated by the South Orange County Wastewater Authority (SOCWA) and is approximately 1.5 miles long, has a capacity of approximately 33.2 MGD, and an average annual discharge of approximately 12.8 MGD¹ at a salinity level of approximately 1 ppt². If the effluent from the Aliso Creek Ocean Outfall were to be commingled with the 56 MGD (63.1 ppt salinity) brine discharge of the Desalination Plant, it would only be adequate to dilute the Desalination Plant’s brine discharge to a salinity level of approximately 49 ppt. As such, there is insufficient pipeline capacity and dilution flows to accommodate the Huntington Beach Desalination Plant’s 56 MGD brine discharge and meet the Desalination Amendment’s receiving water quality standards.

Furthermore, the Aliso Creek Ocean Outfall is located over 15 miles south of the project site. Comingling the discharge from the Huntington Beach Desalination Plant with the Aliso Creek Ocean Outfall would require the construction of over 15 miles of new pipeline along the coast of Orange County, likely rendering the project infeasible due to the environmental, social, and economic impacts as well as the comparable period of time necessary to obtain agreements with SOCWA, permits and construct the connection facilities. In order to utilize the Aliso Creek Ocean Outfall it would require locating the desalination facility in closer proximity to the wastewater plant. In this regard, the offshore area around Laguna Beach contains approximately 2,603 acres of MPAs and 179 acres of kelp beds, as shown in Figure 2. Therefore, siting a desalination plant’s seawater intake and brine discharge in the area of the Aliso Creek Ocean Outfall could result in avoidable marine life mortality and habitat degradation from increased salinity levels.

For the aforementioned reasons the Aliso Creek Ocean Outfall is not an available existing wastewater discharge site and comingling the Huntington Beach Desalination Project’s brine discharge with wastewater from the Aliso Creek Ocean Outfall is not feasible.

San Juan Creek Ocean Outfall/JB Lanthem Treatment Plant

The existing San Juan Creek Ocean Outfall and JB Lanthem Treatment Plant, located in Dana Point and operated by the SOCWA, is approximately 2.2 miles long, has a capacity of approximately 36.8 MGD, and an average annual discharge of approximately 17.3 MGD with a salinity level of approximately 1.3 ppt³. If the effluent from the San Juan Creek Ocean Outfall were to be commingled with the 56 MGD (63.1 ppt salinity)

¹ South Orange County Wastewater Authority Website <https://www.socwa.com/About/AlisoCreekOceanOutfall.aspx>

² Order No. R9-2012-0013, NPDES No. CA0107611, Waste Discharge Requirements For The South Orange County Wastewater Authority Discharge To The Pacific Ocean Through The Aliso Creek Ocean Outfall

³ Order No. R9-2012-0012, NPDES No. CA0107417, Waste Discharge Requirements For The South Orange County Wastewater Authority Discharge To The Pacific Ocean Through The San Juan Creek Ocean Outfall

brine discharge with from the Desalination Plant, it would only be adequate to dilute the Desalination Plant's brine discharge to a salinity level of approximately 46 ppt. As such, there is insufficient pipeline capacity and dilution flows to accommodate the Huntington Beach Desalination Plant's 56 MGD brine discharge and meet the Desalination Amendment's receiving water quality standards.

The San Juan Creek Ocean Outfall and JB Lanthem Treatment Plant are located approximately 25 miles south of the proposed Huntington Beach project site. Comingling the discharge from the Huntington Beach Desalination Plant with the San Juan Creek outfall would require the construction of 25 miles of new pipeline along the Coast of Orange County, likely rendering the project infeasible due to the environmental, social, and economic impacts as well as the comparable period of time necessary to obtain agreements with SOCWA, permits and construct the connection facilities. In order to utilize the San Juan Creek Ocean Outfall it would require locating the desalination facility in closer proximity to the wastewater plant.

Additionally, the South Coast Water District ("SCWD") is proposing to build a 5 MGD desalination plant at Doheny Beach in Dana Point and utilize the San Juan Creek Ocean Outfall to dispose of the plant's brine. Even without SCWD's planned use of the San Juan Creek Ocean Outfall and wastewater flows, there is insufficient pipeline capacity and dilution flows to accommodate the Huntington Beach Desalination Plant's 56 MGD (63.1 ppt salinity) brine discharge. Furthermore, the area in the vicinity of the San Juan Creek Ocean Outfall contains approximately 96 acres of MPAs and approximately 34 acres of kelp beds that provide habitat for various marine organisms, as shown in Figure 2. Therefore, locating a desalination plant with a brine discharge could negatively affect these sensitive areas and marine habitats.

For the aforementioned reasons the San Juan Creek Ocean Outfall is not an available existing wastewater discharge site and comingling the Huntington Beach Desalination Project's brine discharge with wastewater from the Alison Creek Ocean Outfall is not feasible.

Orange County Sanitation District Treatment Plant #2

In a May 27, 2016 letter, the Orange County Sanitation District stated,

"Wastewater Ordinance does not currently allow disposal of concentrated seawater from a desalination plant directly to the outfall, and OCSD's treatment plant is not able to treat concentrated sea water through its wastewater treatment process. In order to approve such a discharge, OCSD's Board of Directors would need to amend its Wastewater Ordinance, and an extensive technical, engineering and environmental analysis would first be required before the feasibility of utilizing OCSD Treatment Plant No. 2 could be determined.

"OCSD Treatment Plant No. 2 includes a 120-inch, 4.5-mile ocean outfall that today discharges an average of 80 million gallons per day (MGD) of treated wastewater to the ocean. OCSD has adopted a 5-year Strategic Plan that establishes a goal for Future Water Recycling – Determine partnerships, needs, strategies benefits and costs associated with recycling of Plant No. 2 effluent water. In this regard OCSD is working with the Orange County Water District (OCWD) on the final phase of the Groundwater Replenishment System (GWRS) which will reduce the long-term wastewater discharge from Treatment Plant No. 2 by an estimated 30 MGD. The remaining 50 MGD of effluent will have an estimated salinity of approximately 3 ppt.

"This anticipated reduction in wastewater flows does not take into account additional wastewater recycling efforts that could further reduce long-term discharge volumes. We understand the proposed Huntington Beach Desalination Project is designed to withdraw an annual average of 106 MGD and discharge back to the ocean an average of 56 MGD of concentrated seawater with a salinity level of approximately 63 ppt. As such, it is not anticipated that future wastewater discharges at Treatment

Plant No. 2 would be adequate to meet the receiving water limitations for salinity for either partial or full discharge of the desalination plant's 56 MGD discharge through OCSD's ocean outfall."

For the aforementioned reasons the OCSD Plant #2 is not an available existing wastewater discharge site and comingling the Huntington Beach Desalination Project's brine discharge with wastewater from OCSD Treatment Plant #2 is not feasible⁴.

State Policy affecting existing wastewater facilities and flows

The Desalination Amendment states that *"nothing in this section shall preclude future recycling of waste water."* Legislation is pending in the California state legislature that could impact the availability of wastewater flows for the purpose of comingling brine from desalination plant. SB 163 introduced by Senator Hertzberg mandates each wastewater treatment facility that discharges through an ocean outfall to achieve at least 50 percent reuse of the facility's actual annual flow by 2026 and 100 percent by 2036. This legislation, if enacted into law, would make it generally infeasible to comeingle desalination facility brine with existing wastewater flow as the primary method of dilution and discharge. Even if SB 163 isn't enacted into law, a primary emphasis is being placed on wastewater recycling throughout the state in order to protect groundwater basins and develop new drought-resilient water supplies consistent with the policy goals found in Governor Brown's Water Action Plan and the California Department of Water Resources State Water Plan.

⁴ The Desalination Amendment defines feasible as *"capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors."*