



November 19, 2018

David Gibson  
Executive Officer  
San Diego Regional Water Quality Control Board  
2375 Northside Drive, Suite 100  
San Diego, CA 92108-2700

Dear Mr. Gibson:

Subject: Renewal of Order R9-2006-0065 – Fish-Friendly Pump Procurement for Carlsbad Desalination Project Intake and Discharge Modifications

San Diego Regional Water Quality Control Board (“Regional Water Board”) Order No. R9-2006-0065 (“Order”) establishes requirements for the discharge of reverse osmosis concentrate and pretreatment backwash flows from the Carlsbad Desalination Project (“CDP”) into the Pacific Ocean via the Encina Power Station (“EPS”) discharge channel.

In accordance with the requirements of the Order, Poseidon Resources (Channelside) LP (“Poseidon”) submitted a Report of Waste Discharge on March 29, 2011 in application for renewal of the Order. On March 15, 2011, the State Water Resources Control Board (“State Water Board”) announced its intent to develop and potentially adopt an amendment to the Water Quality Control Plan for the Ocean Waters of California (“Ocean Plan”) to address effects associated with the construction and operation of seawater desalination facilities (“Ocean Plan Amendment”). The Ocean Plan Amendment was adopted by the State Water Board on May 6, 2015. Following the adoption of the Ocean Plan Amendment, Poseidon submitted an Amended Report of Waste Discharge dated September 4, 2015, an Addendum to the Amended Report of Waste Discharge dated August 16, 2016, and 58 technical appendices (collectively, the “ROWD”).

The ROWD describes proposed improvements to the CDP intake and discharge facilities to accommodate the transition of the CDP from co-located to permanent stand-alone operation in accordance with the Ocean Plan Amendment.

Over the past three years, Poseidon, the San Diego County Water Authority (“Water Authority”), the Regional Water Board, and the State Water Board have evaluated 21 different intake and discharge alternatives for the CDP. Based on this extensive, multi-year collaborative evaluation, and guided by the Ocean Plan Amendment, RWB staff, Poseidon and the Water Authority have concluded that Alternative 21 is best suited to comply with the requirements of the Ocean Plan Amendment.

As proposed, Alternative 21 intake and discharge modifications include, among other changes: (1) new intake screens and laterals located in Agua Hedionda Lagoon, (2) a fish-friendly flow augmentation pump station, and (3) improvements to the existing EPS intake and discharge tunnels.

**Poseidon Resources (Channelside) LP**

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In compliance with the Ocean Plan Amendment, the new wedge wire intake screens are designed to eliminate impingement mortality and reduce entrainment mortality using 1-millimeter (“mm”) slot openings with a through-screen velocity of 0.5 feet per second or less. The existing intake pump station will continue to deliver a portion of the screened seawater to the CDP for processing. The pretreatment backwash water and the reverse osmosis concentrate from the CDP will be transferred to the existing EPS discharge tunnel where it will mix with the remaining portion of the screened seawater that will be pumped from the existing EPS intake to the discharge tunnel by the fish-friendly flow augmentation pumps.

The EPS is scheduled to be decommissioned in the fourth quarter of 2018. The transition to stand-alone operation will be completed in three phases: (i) Poseidon will contract with the EPS to use the existing EPS screens and pumps to provide the source water for the CDP; (ii) Poseidon will operate the EPS screens in conjunction with new fish-friendly dilution pumps to provide the source water for the CDP (the “Interim Improvements”); and (iii) Poseidon will operate the fish-friendly dilution pumps in conjunction with the wedge wire screens installed in Agua Hedionda Lagoon to provide the source water for the CDP (the “Permanent Improvements”).

Poseidon plans to issue a purchase order for the fish-friendly pumps November 30, 2018 and complete the construction of the Interim Improvements December 31, 2019. Under ideal circumstances, we would wait until after the adoption of the revised Order to purchase the pumps. However, significant delays in the development of the revised Order require Poseidon to order the pumps this month to avoid curtailment of CDP operations in 2020.

Poseidon will be making an irreversible commitment to purchase fish-friendly pumps and variable speed drives with a combined value of greater than \$4 million. Considering these circumstances, Poseidon requests the Regional Water Board staff confirm that the pumps Poseidon proposes to purchase (described below and in Attachment 1) comply with the fish-friendly pump guidance included in section M.2.d.(2).(d).ii of the Ocean Plan Amendment:

*If the owner or operator of the facility proposes to use flow augmentation as an alternative brine discharge technology, the facility must: use low turbulence intakes (e.g., screw centrifugal pumps or **axial flow pumps**) and conveyance pipes; convey and mix dilution water in a manner that **limits thermal stress, osmotic stress, turbulence shear stress, and other factors** that could cause intake and mortality of all forms of marine life.*

Bold text indicates Ocean Plan Amendment criteria applicable to Poseidon’s proposed pump procurement.

Poseidon issued a request for proposals for the pump procurement that included the fish-friendly pump guidance noted above. Three bidders submitted proposals. The most responsive proposal was submitted by Indar, the pump division of the Ingeteam international industrial group headquartered in Spain. On November 16, 2018 Poseidon met with RWB staff to review the Indar pump fish-friendly design features, including:

- Axial flow pump (designated as fish-friendly pump in the Ocean Plan Amendment);
- Low speed - 235 rpm (minimizes pump related shear);

- Variable speed pump drives (further reduces pump speed and pump related shear);
- Water passes through pump in about one second (minimizes pump related shear stress);
- Even blade loading (minimizes pump related pressure gradient and shear);
- Blunt leading blade edge (minimizes impeller blade strike mortality);
- Minimizes freestream flow area (minimizes pump related shear); and
- Heat input less than 0.02 degrees Centigrade (minimizes pump related thermal stress).

Poseidon requests the Executive Officer provide written confirmation before November 30, 2018, that the Indar Axial Flow Pump complies with the requirements set forth in section M.2.d.(2).(d).ii of the Ocean Plan Amendment, since Poseidon must move forward with the procurement of the pumps on that date.

Thank you for consideration of this request.

Sincerely,



Peter M. MacLaggan  
Senior Vice President

Cc: David Barker  
Ben Neill  
Brandi Outwin-Beals  
Maureen Stapleton