

# Carlsbad Desalination Project

Permit Renewal Hearing

May 8, 2019

San Diego Water Board







Intake

Discharge















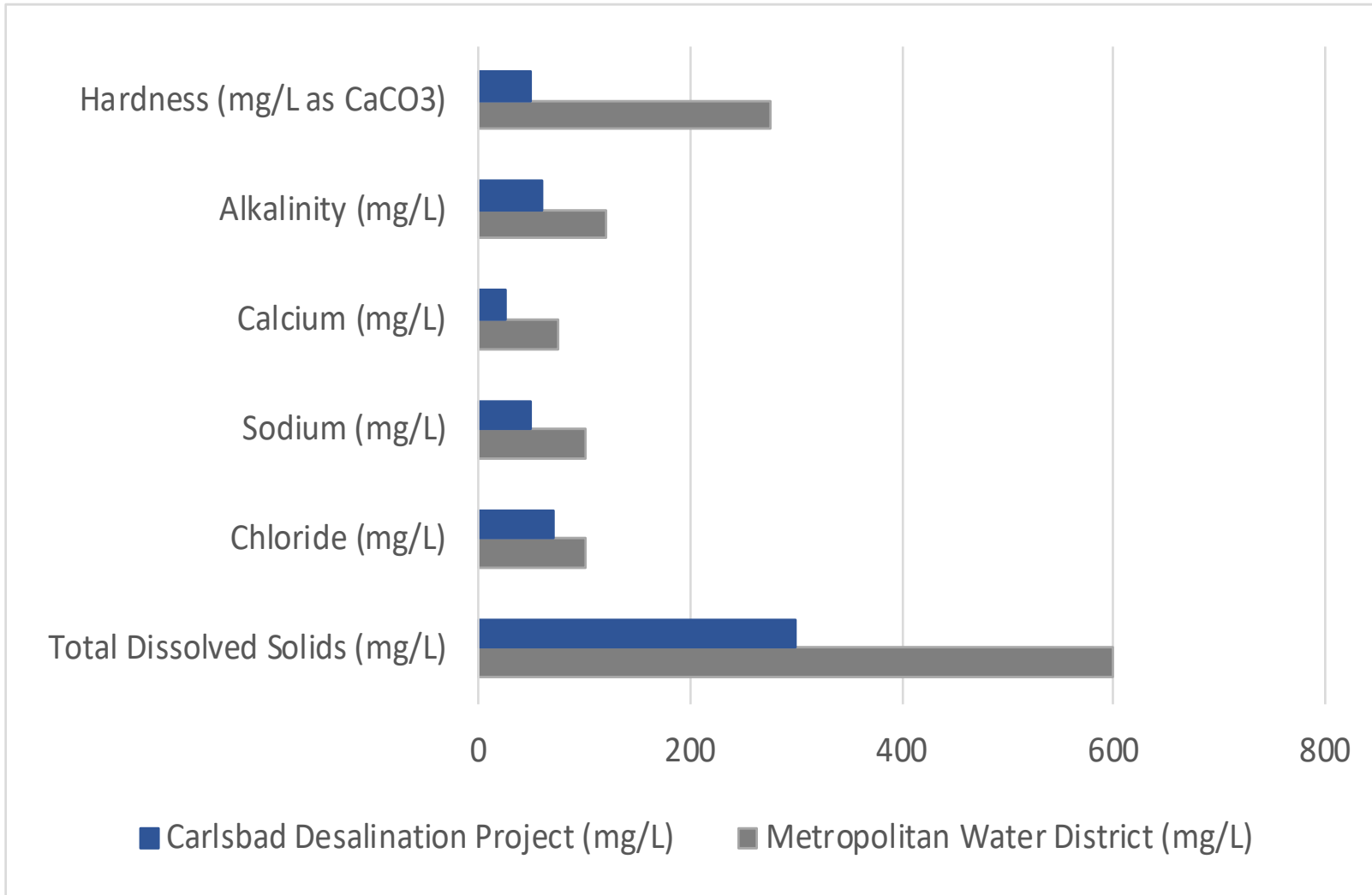




# Product Water Delivery System



# Water Quality Improvement



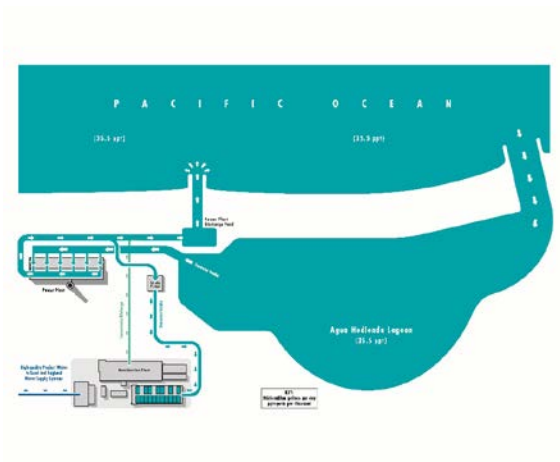


# Phased Implementation

The transition to stand-alone operations will be completed in three phases starting with the retirement of the Encina Power Station in December 2018.

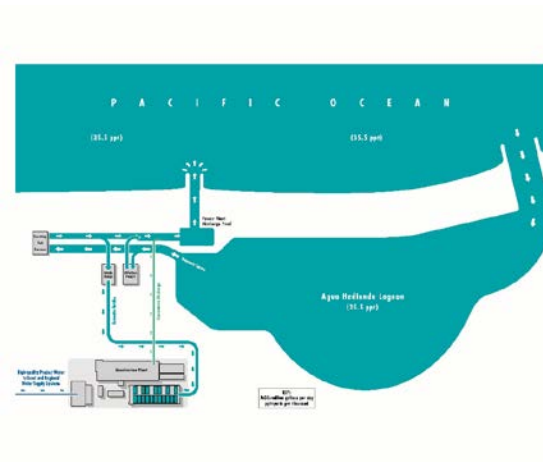
## Temporary Stand-Alone Dec 2018

Continued use of the the existing Power Plant pumps



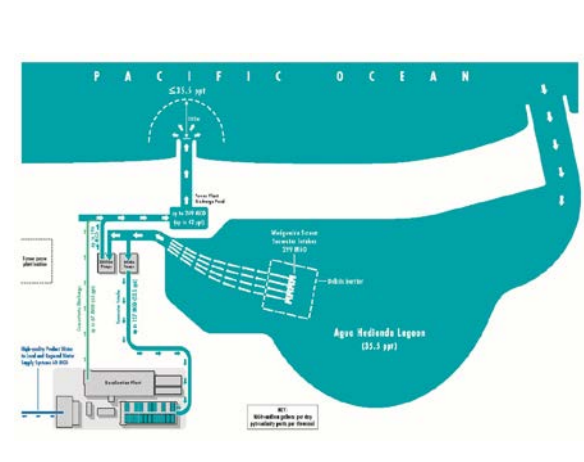
## Interim Stand-Alone June 2020

Replace power plant pumps with new fish-friendly dilution pumps



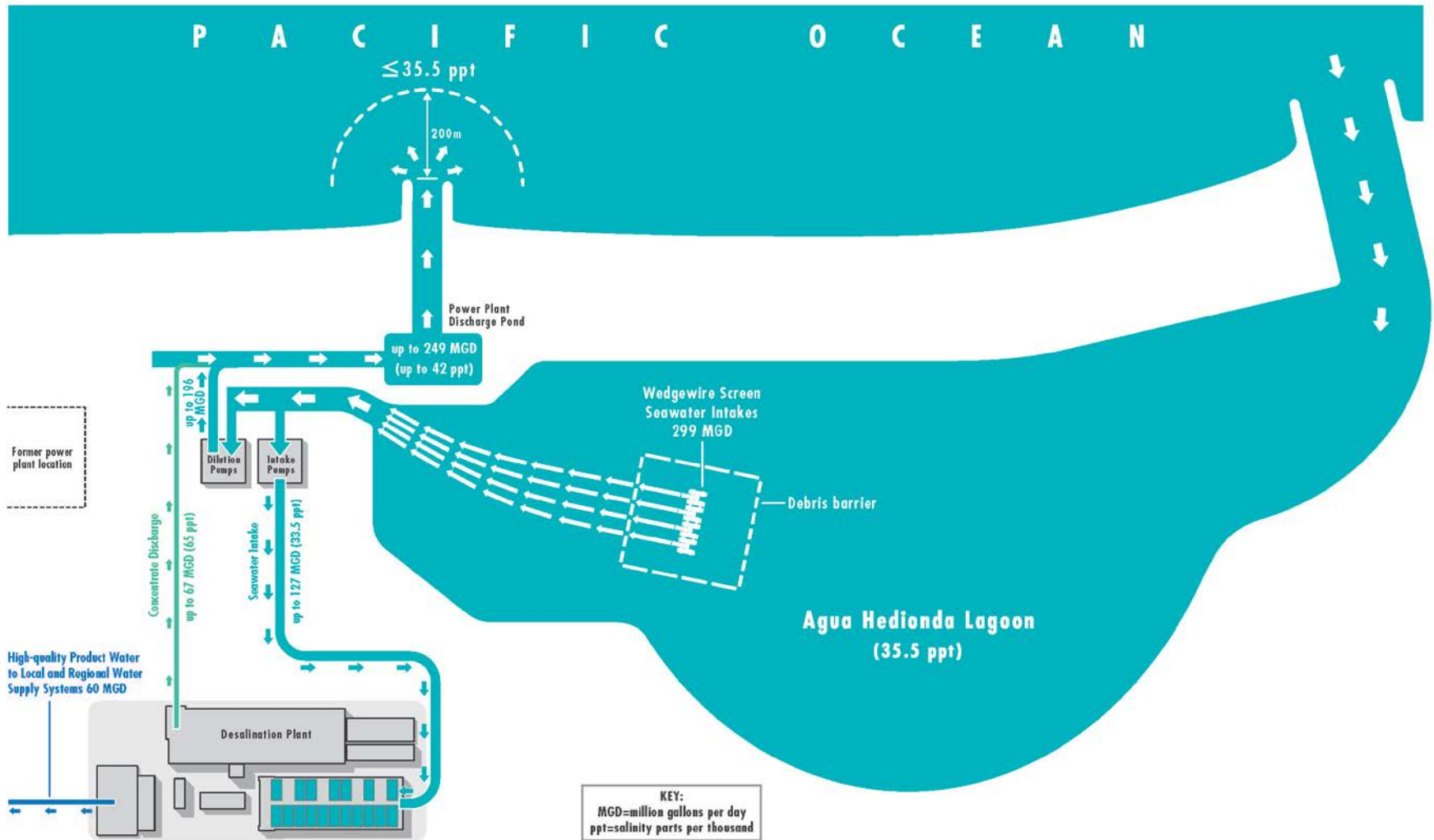
## Permanent Stand-Alone Dec 2023

1 mm intake screens operating with fish-friendly dilution pumps



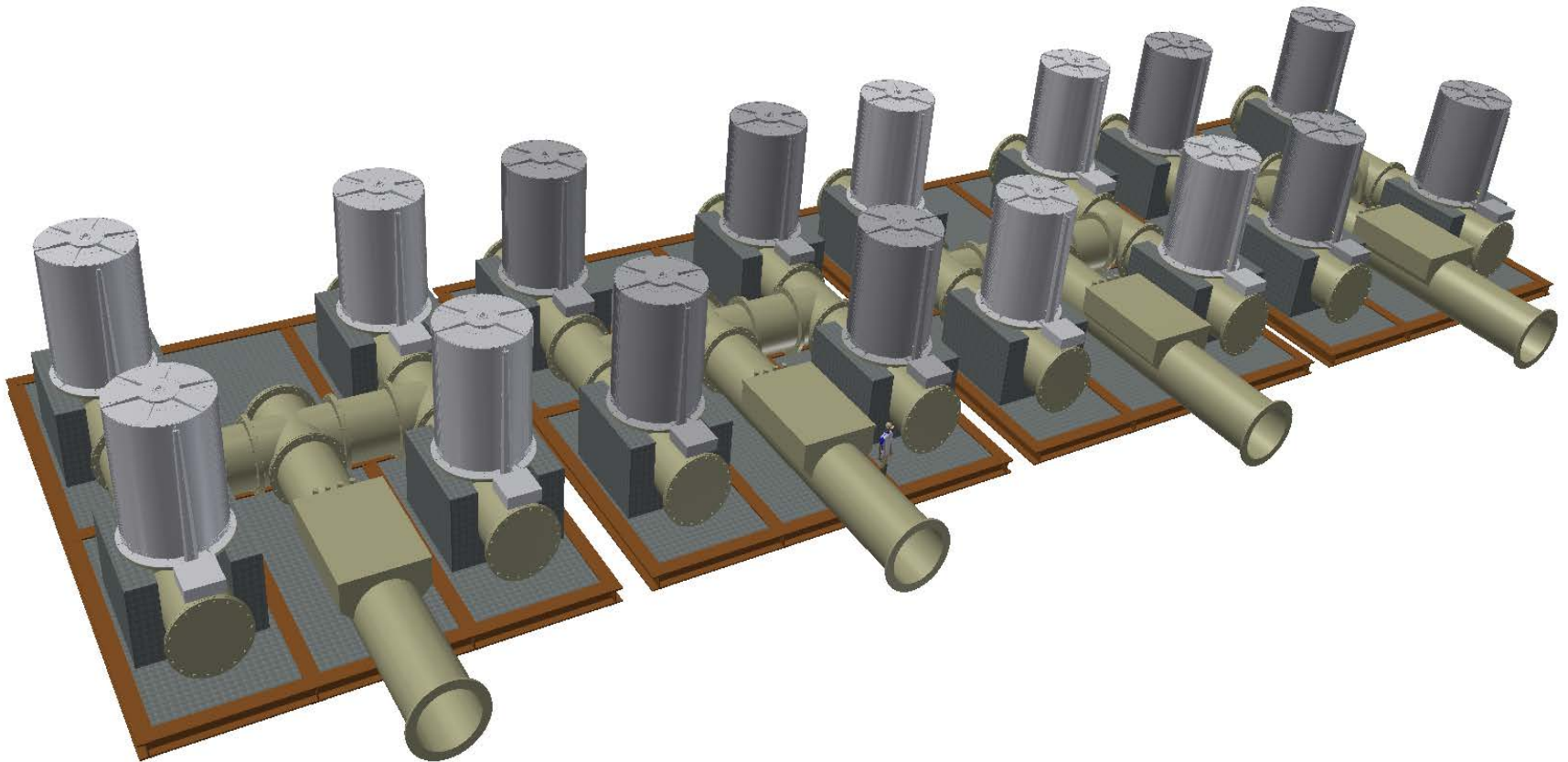


# Future Configuration





# Intake Screens



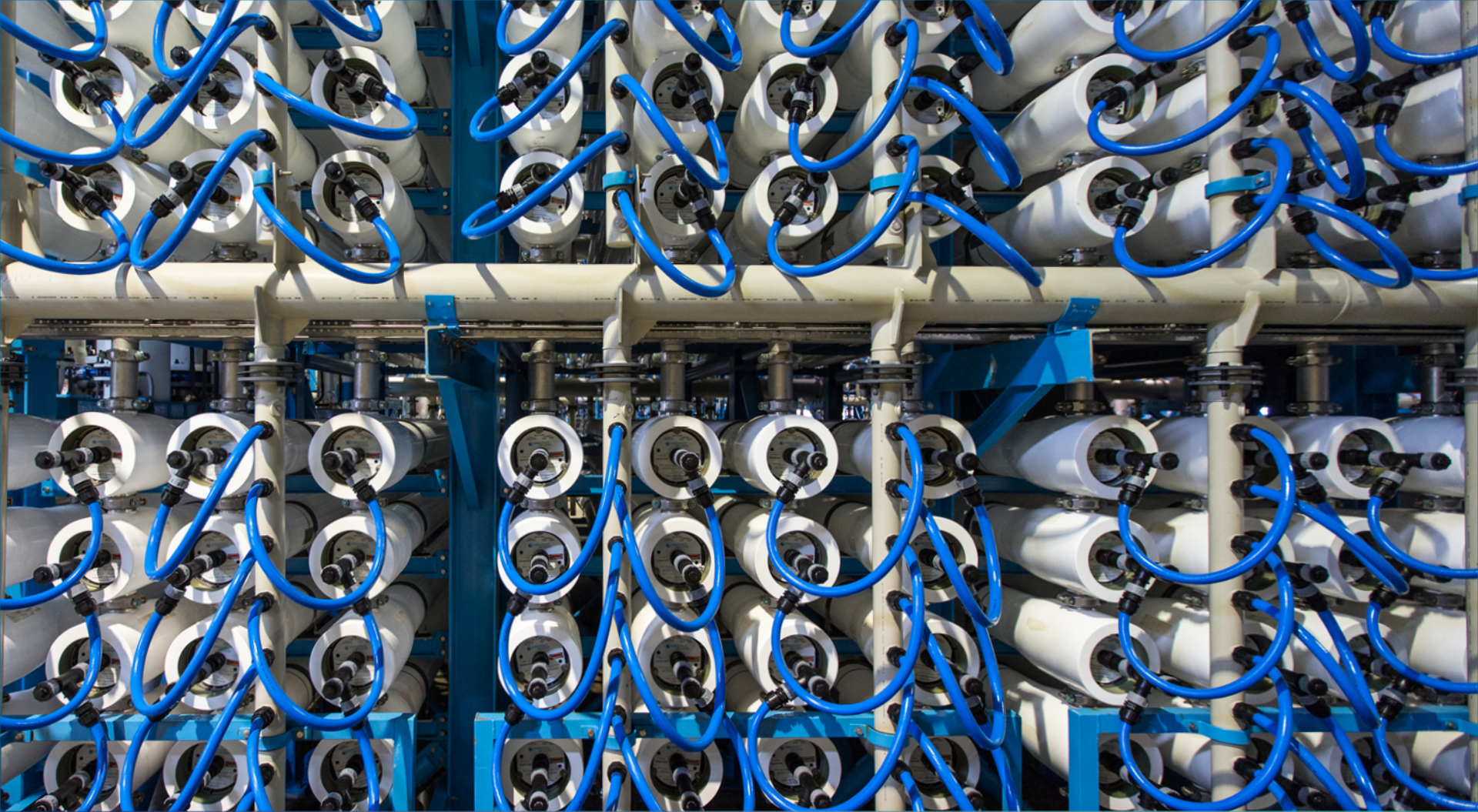




90.9 ACRES

33.5 ACRES



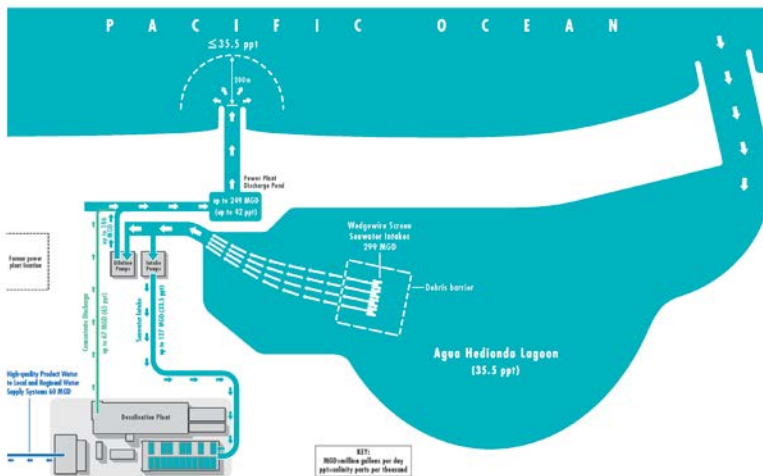


## Background Information

# Flow Augmentation vs. Diffuser

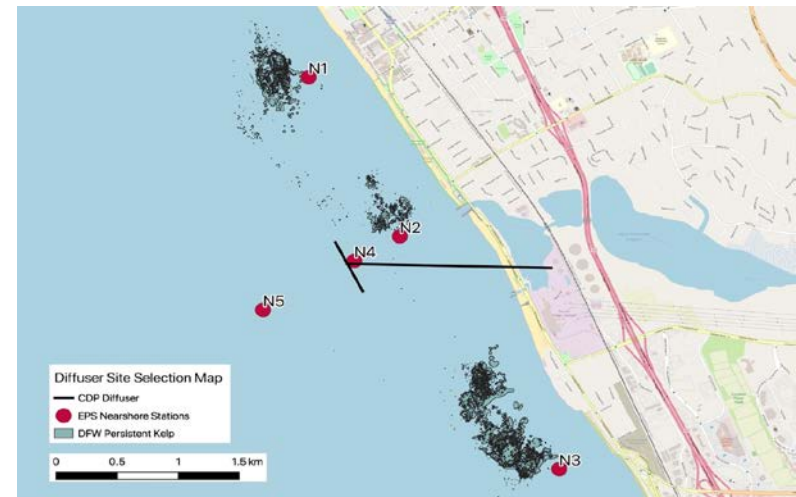
Both discharge technologies require the same amount of dilution water, but the dilution occurs at different locations and marine life impacts are different. Flow augmentation avoids construction of an ocean outfall and results in lower intake and mortality of all forms of marine life under these site specific conditions.

## Flow Augmentation (Using fish-friendly axial-flow pumps)



- Brine discharge from the CDP is diluted with seawater from Agua Hedionda Lagoon prior to discharge to the Pacific Ocean via the existing discharge channel
- The dilution water passes through the 1 mm screens and fish-friendly pumps prior to mixing with the brine

## Multipoint Diffuser System



- A 72" outfall pipeline conveys the brine discharge from the CDP 4,000 feet offshore to multipoint diffuser system
- The diffusers eject brine into the water column at a high velocity to promote rapid diffusion and dispersion



# Comparison of Marine Life Impacts

Marine life mortality calculations conducted in accordance with the Ocean Plan demonstrate that flow augmentation at the Plant produces lower impacts than a multiport diffuser.

| Area of Production Foregone (APF) |                   |             |                    |              |
|-----------------------------------|-------------------|-------------|--------------------|--------------|
|                                   | Flow Augmentation |             | Multiport Diffuser |              |
| Flow (MGD)                        | 171               | 196         | 170                | 217          |
| Estuarine Habitat APF (Acres)     | 36                | 40.9        | 17.6               | 22.2         |
| Coastal Ocean Habitat APF (acres) | 39.8              | 47.5        | 441                | 562.5        |
| <b>Total APF (acres)</b>          | <b>75.8</b>       | <b>88.4</b> | <b>458.6</b>       | <b>584.7</b> |

*APF is the calculation of the habitat required to replace the organisms lost to entrainment*

# Brine Discharge Empirical Study

Ocean Plan requires a 12 month study following start-up of flow augmentation system to confirm marine mortality rates are “comparable” to multiport diffusers.

