

# Carlsbad Desalination Project

2023 Annual Salinity Summit  
Multi-State Salinity Coalition

February 23, 2023



**Michelle Peters**

**Technical and Compliance Manager**



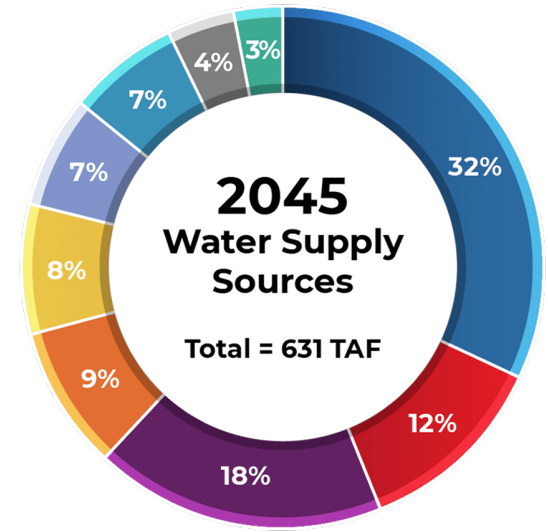
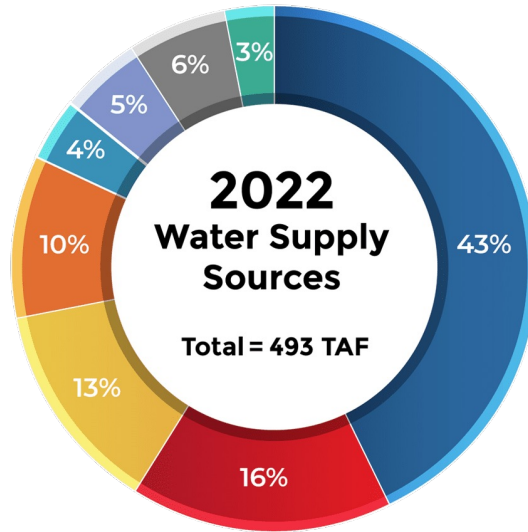
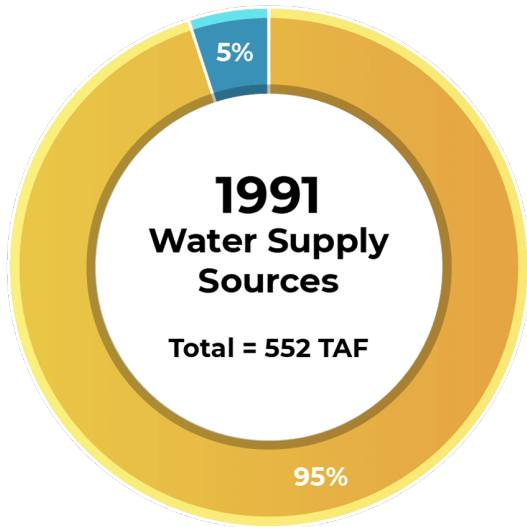
**POSEIDON WATER**

# Why Ocean Desalination?

- New, local water supply
- Reduces need for imported water
- Drought-proof supply
- Improved water quality
- Enhances regional supply reliability and local control
- Strong public support
- Complements water recycling



# Diversifying San Diego County's Water Supply Sources



(TAF=Thousand Acre-Feet)

- Metropolitan Water District
- Conserved Water / Imperial Irrigation District
- Conserved Water / Canal Lining

- Seawater Desalination
- Recycled Water
- San Luis Rey Water Transfer

- Groundwater
- Local Surface Water
- Potable Reuse

# Public Private Partnership | Water Purchase Agreement

## ➤ **Poseidon:**

- Permit, Design, Build, Own, Operate, and Maintain the Plant
- Permit, Design and Build the 10 mile 54-inch diameter conveyance pipeline to connect to existing aqueduct pipeline
- Supply Product Water: 30-year take-if-delivered contract for water, minimum purchase of 48,000 AF, option up to 56,000 AF with San Diego County Water Authority

## ➤ **San Diego County Water Authority (“SDCWA”):**

- Relining of 5.5-mile reach of aqueduct pipeline
- Water Treatment Plant improvements to accommodate desalinated water flows
- Receive Product Water meeting quantity and quality requirements
- Own, Operate and Maintain the Product Water Pipeline

# Claude “Bud” Lewis Carlsbad Desalination Plant

- 30-year Water Purchase Agreement contract
- \$1 billion investment
- Largest, most advanced seawater desalination facility in North America
- Operating since December 2015
- Delivered over 100 billion gallons of high-quality drinking water to San Diego County to date



# Energy Minimization and Greenhouse Gas Reduction Plan

- **The Carlsbad Desalination Plant is the first major infrastructure project in the State of California to achieve net-carbon-neutrality**
  - Eliminating the need to transport as much water from northern California, offsetting up to 190,000 megawatt-hours of electricity and 68,000 tons of carbon emissions each year.
  - High efficiency process design and energy recovery devices reduce plant energy consumption by 146,000 megawatt-hours of per year and reduce carbon emissions by the plant 42,000 tons year.
- **Other features of the Greenhouse Gas Reduction Plan**
  - Sequester 2,100 metric tons of carbon each year through the use recycled CO<sub>2</sub>
  - Sequester carbon through reforestation
  - Purchase carbon offsets for the residual portion of plant energy not supplied by renewable sources.



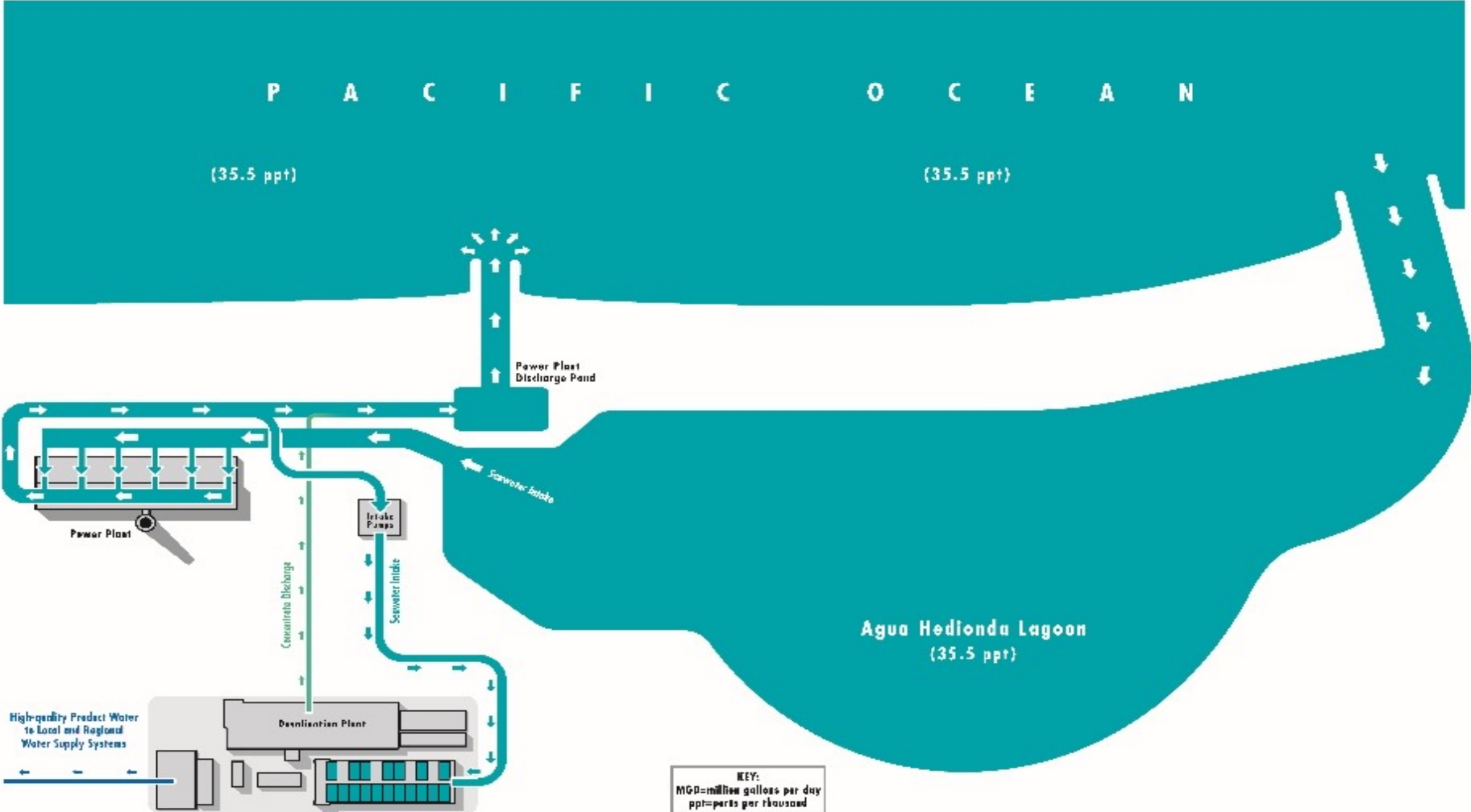
Discharge Channel

Mouth of Lagoon

Intake Channel







P A C I F I C O C E A N

(35.5 ppt)

(35.5 ppt)

Power Plant  
Discharge Pond

LT2 Sampling Point

Agua Hedionda Lagoon  
(35.5 ppt)

Existing  
Pak  
Screens

Intake  
Pumps

Outlet  
Pumps

Seawater Intake

Concentrate Discharge

Seawater Intake

Desalination Plant

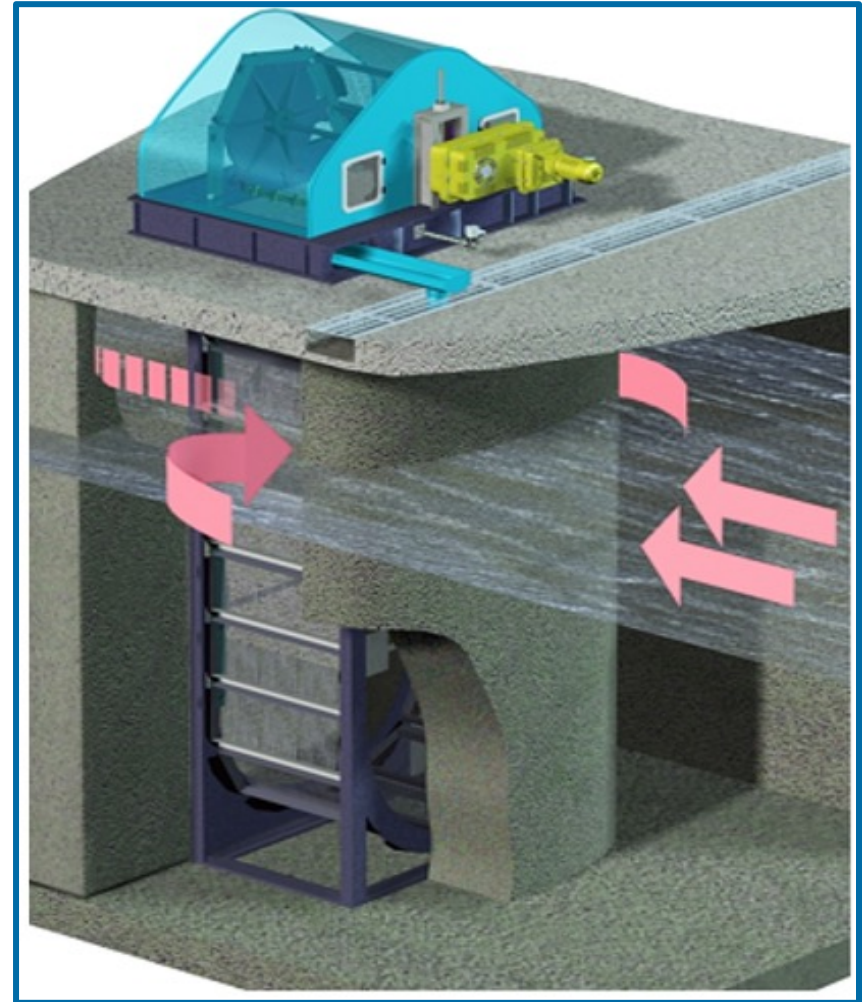
KEY:  
MGD=million gallons per day  
ppt=parts per thousand

High-quality Product Water  
to Local and Regional  
Water Supply Systems

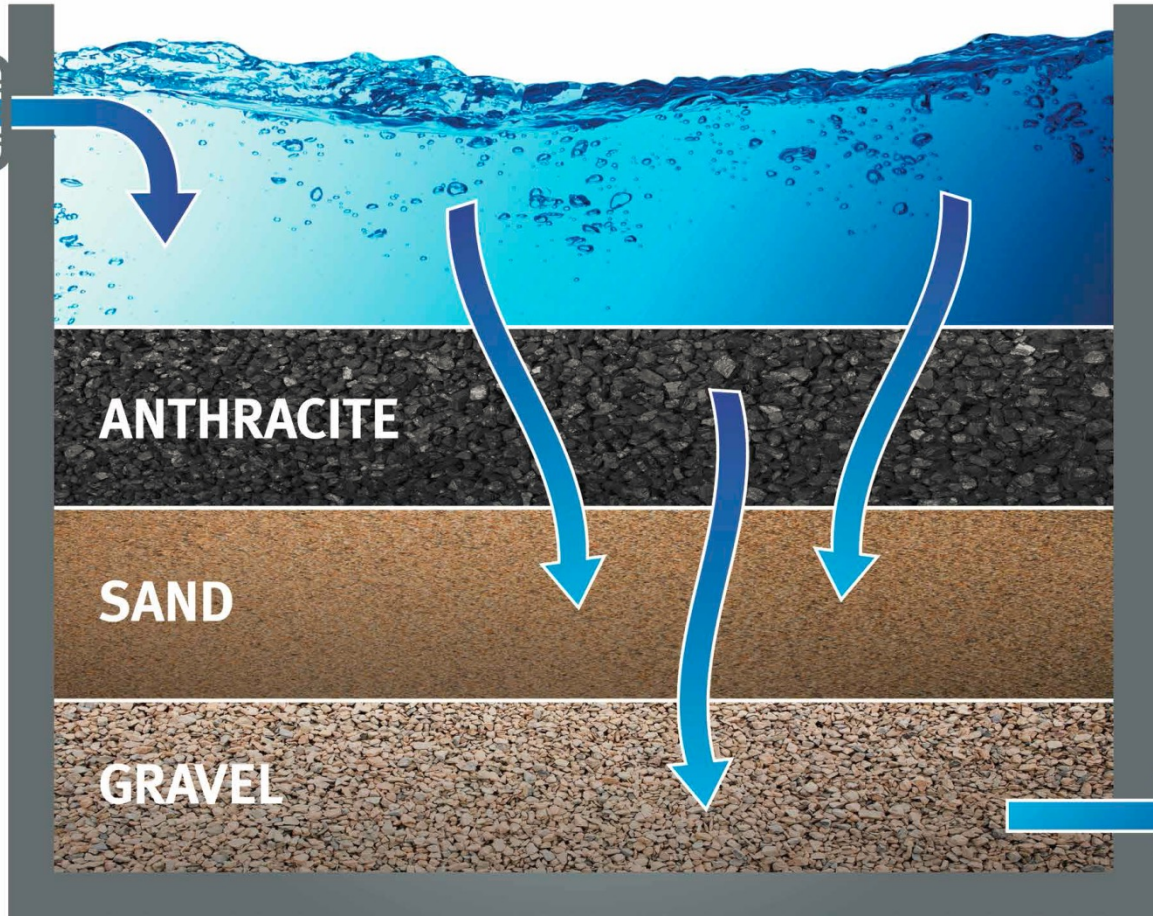
# Phase 1 Intake Improvements



# Phase 2 Intake Improvements



**IN**



**ANTHRACITE**

**SAND**

**GRAVEL**

**OUT**









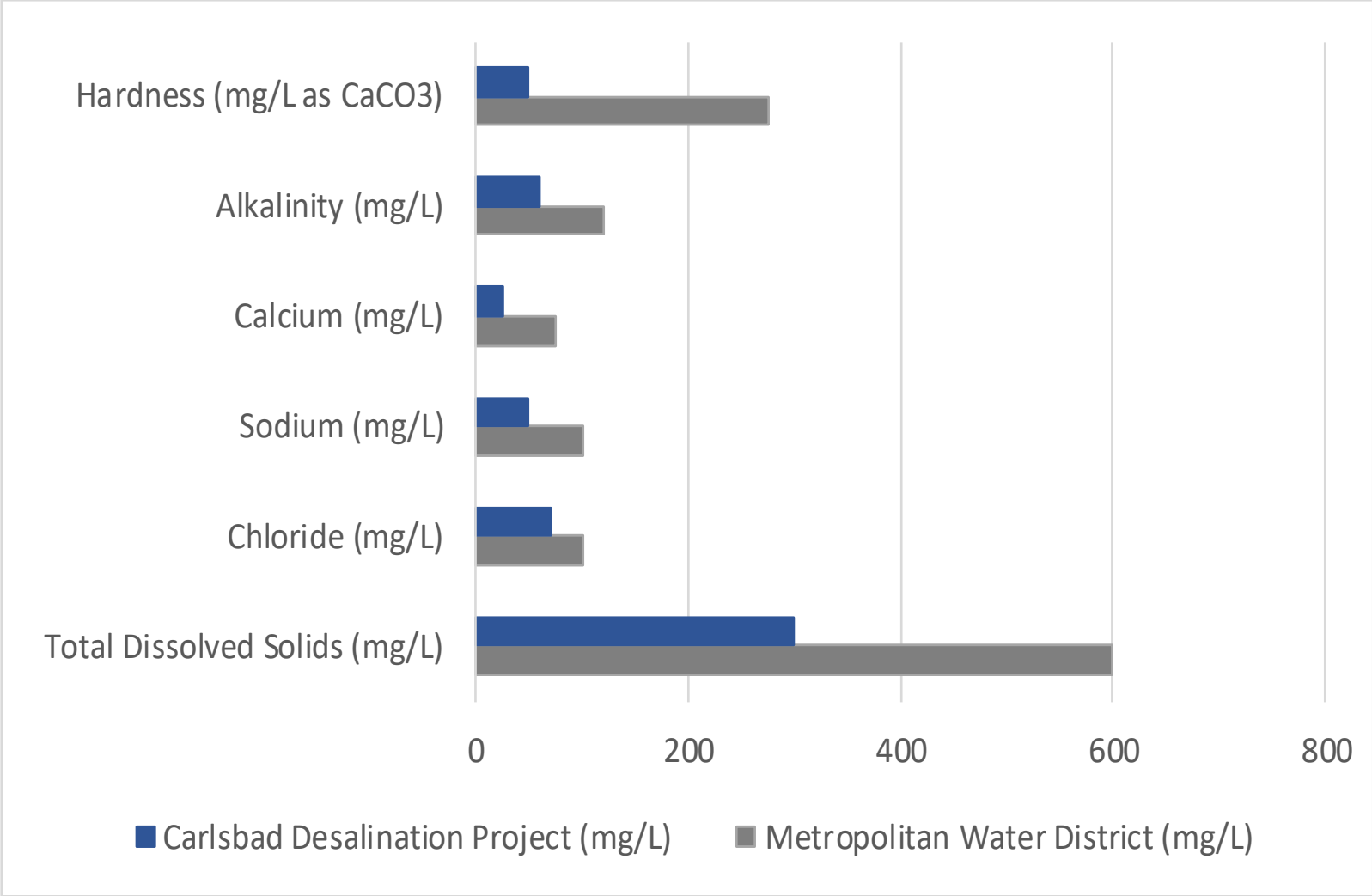




# Water Delivery System



# Water Quality Improvement



# Overall Performance

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- Seven years of successful operations
- Delivered over 100 billion gallons of high- quality, drought-proof water
- Largest source of local water
- Supplied 9% of regional water demand
- Enhanced the quality of the Water Authority's treated water supply
- Improved water quality benefits to local residents and business and helps local water recycling projects
- Will be the first desalination plant in operation fully compliant with California Ocean Plan Desalination Amendment

# Thank You!

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San Diego County Water Authority  
Water Research Foundation  
Southern California Salinity Coalition  
Arcadis – Brent Alspach/Greg Imamura  
Carlsbad Municipal Water District  
City of Escondido  
City of San Diego  
Helix Water District  
Olivenhain Municipal Water District  
Otay Water District  
Sweetwater Authority  
Vallecitos Water District



**POSEIDON** WATER