



**San Diego County  
Water Authority**  
Our Region's Trusted  
Water Leader

# Twin Oaks Valley Water Treatment Plant



**Improving  
INFRASTRUCTURE**

The Twin Oaks Valley Water Treatment Plant is a submerged membrane water treatment plant providing high-quality drinking water for San Diego County. When completed in 2008, it was the largest plant of its kind in the world. Located next to the Water Authority's aqueduct in a semirural area north of San Marcos, the high-capacity treatment plant can provide enough water to serve up to 220,000 households per year.

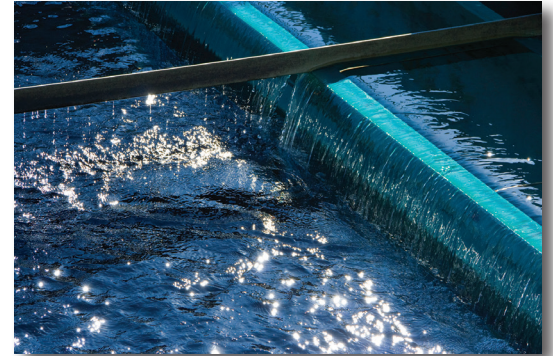
## Fulfilling an Urgent Need

Before construction of the Twin Oaks Valley Water Treatment Plant, nearly half of San Diego County's drinking water was purified by the Metropolitan Water District of Southern California. Growth in San Diego and Riverside counties increased the need for treated water, particularly during warm periods when water use is highest. Completion of the Twin Oaks facility has avoided treated water shortfalls when temperatures rise.



*The 2003 master plan identified a need for additional water treatment for the region. The Twin Oaks Valley Water Treatment Plant was completed in 2008.*

The Water Authority's water treatment plant increases the amount of treated water produced in and for San Diego County. It allows more local control of the county's treated water supply and increases water reliability for the region.



*The Twin Oaks treatment plant uses submerged membranes to produce high-quality drinking water.*

## Submerged Membrane Treatment

Conventional water treatment plants rely on gravity filters and chemical coagulants to remove the suspended solids and organic material in untreated water from rivers or lakes. In submerged membrane treatment, untreated water is filtered through membrane fibers. Pores in the membranes are large enough for water molecules to pass through, but small enough to filter out the vast majority of bacteria and viruses. Contaminants that do pass through are eliminated by a disinfection process similar to conventional treatment.

Submerged membrane treatment is different than reverse osmosis treatment, which is used at the Claude "Bud" Lewis Carlsbad Desalination Plant. High-pressure flows enable reverse osmosis membranes to separate the smaller dissolved solids and salts in seawater, creating a new water supply.

At the Twin Oaks plant, the Water Authority shares operational responsibilities through 2023 with CH2M Hill Engineers, Inc., an affiliate of the internationally recognized water infrastructure firm Jacobs Engineering. The Water Authority owns the facility and has the ultimate responsibility for the plant's safe and efficient operation.

## Twin Oaks Valley Water Treatment Plant

### A Win in Many Ways

The Twin Oaks Valley Water Treatment Plant provides benefits beyond the high-quality water it produces. Its strategic location, creative design, and use of membrane technology make it an efficient, money-saving facility.

- **High Quantity.** Each day, 100 million gallons of high-quality treated water can be processed, reducing the risk of shortages during warm weather.
- **Energy and Money Savings.** Gravity moves treated water to the Water Authority's aqueduct system, avoiding costly energy-intensive pumping.
- **High Quality.** Membrane treatment, in conjunction with the other processes at the plant, such as ozone primary disinfection, has a high degree of contaminant removal and helps meet increasingly strict water quality regulations.
- **More Environmentally Friendly.** The plant uses fewer chemicals than a conventional plant and produces minimal byproducts. This means fewer truck trips for supply deliveries and waste disposal.
- **Scarcely a Drop Wasted.** Virtually all the untreated water entering the plant leaves as high-quality drinking water.
- **Treating Emergency Supplies.** If imported water deliveries are interrupted by prolonged drought or catastrophe, the plant can deliver treated water into the Water Authority's system – saving the public from having to boil emergency supplies.
- **Distributing Desalinated Seawater.** The treatment plant serves as a distribution hub for the region's newest water supply from the desalination plant in Carlsbad. Desalinated seawater is delivered to Twin Oaks, where it is blended with imported supplies that have been treated at the Twin Oaks facility and then distributed throughout the region.

### Safety First

The Twin Oaks plant must adhere to rigorous health standards and is monitored by state and federal drinking water regulators. The facility was built to remain fully functional during and after an earthquake. The plant also meets safety requirements for the chemicals used in water treatment.



Working group members provided input to help the water treatment plant fit in with its neighbors.

### Being a Good Neighbor

Two-way communication with the neighboring community has been ongoing since the project's inception. A working group comprised of Twin Oaks Valley representatives provided valuable feedback to the Water Authority, inspiring design improvements that reduced the plant's impact on the surrounding neighborhood.

For more information, go to [sdcwa.org](http://sdcwa.org) and click on "Facilities and Operations." ■



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