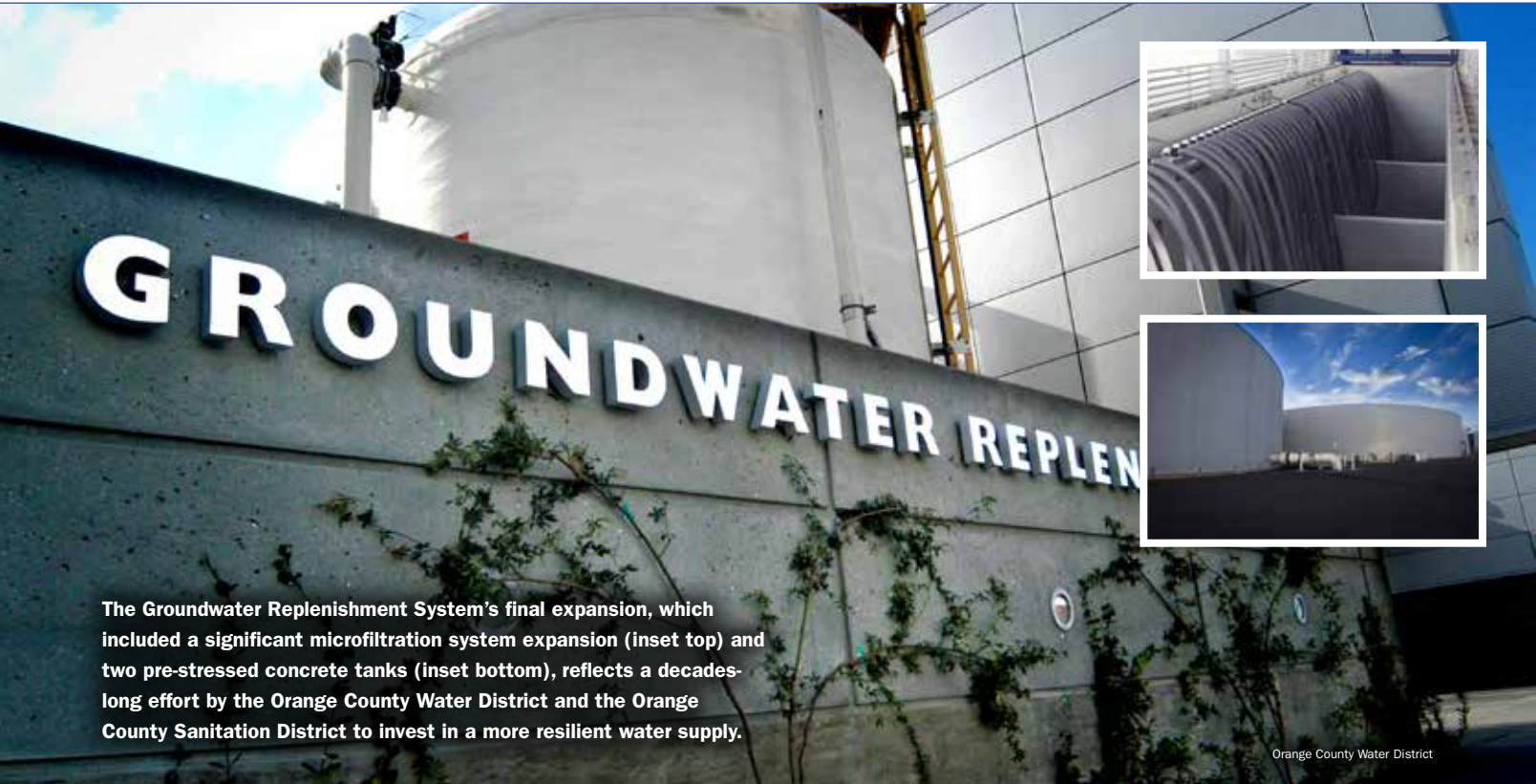


Finished Water

A PHOTOGRAPHIC PROFILE

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The Groundwater Replenishment System's final expansion, which included a significant microfiltration system expansion (inset top) and two pre-stressed concrete tanks (inset bottom), reflects a decades-long effort by the Orange County Water District and the Orange County Sanitation District to invest in a more resilient water supply.

Orange County Water District

ORANGE COUNTY COMPLETES GROUNDWATER REPLENISHMENT SYSTEM

With a glass of purified water in their hands, officials gathered to toast and dedicate the completion of the Groundwater Replenishment System (GWRS) on April 14, 2023. A joint project of the Orange County Water District (OCWD) and the Orange County Sanitation District (OC San), the GWRS is the world's largest indirect potable reuse facility. Completion of GWRS's final expansion project added 30 mgd to the system's capacity, upping its total to 130 mgd—enough to serve nearly 1 million people. The project also enabled 100% of OC San's reclaimable wastewater flows to be recycled for the first time.

The project's goals were to increase capacity for groundwater replenishment, capture and reuse all remaining reclaimable water being sent to the ocean, and reduce operating costs through the use of newer enhanced technologies and by improving the existing system's performance. Project components included expanding the Advanced Water Treatment Facility, which consists of

microfiltration (MF), reverse osmosis (RO), and ultraviolet (UV) light treatment processes; constructing a new pump station and two flow equalization tanks; rehabilitating a pipeline; and modifying OC San's headworks to be able to segregate reclaimable and nonreclaimable flows.

PROJECT SPECIFICS

Project Name: GWRS Final Expansion

Operator: OCWD and OC San

Designer: Black & Veatch

Completion Date: March 2023

Water Source: Treated wastewater (secondary effluent)

Technology: Three-step advanced treatment process consisting of MF, RO, and UV light with hydrogen peroxide

Project Cost: \$284 million

Service: With the final expansion complete, 100% of OC San's reclaimable wastewater flows, approximately 170 mgd, are sent to the GWRS. It's then recycled to produce 130 mgd.

Physical Size: The project added 12 new below-grade concrete basins, each with 684 UF membranes, as part of the MF system expansion. The RO system was expanded by six new 5-mgd RO units, each with 1,050 RO membranes. The UV system was expanded by three new trains, each with 432 individual UV lamps. In addition, two 7-mil gal pre-stressed concrete tanks were added for greater flow equalization.

Staff Size: 58

Number of Operators: 22

Special Features: The GWRS pumps water to recharge basins in Anaheim, Calif., where it naturally percolates into the Orange County Groundwater Basin and becomes part of the drinking water supply for 2.5 million people in north and central Orange County. GWRS water is also sent to injection wells located along Orange County's coast to create a seawater intrusion barrier that protects local groundwater supplies.