



Case Study

Orange County Expands Water Supply with Advanced Wastewater Reclamation



Customer

Orange County Water District (OCWD), Fountain Valley, CA

Challenge

To find an additional water source for arid, fast-growing Orange County

Solution

U.S. Filter Memcor® CMF-S system

Benefits

- Able to recharge groundwater basin
- More water available for irrigation & industrial use
- Reduced ocean contamination from wastewater discharge
- Prevents seawater intrusion into groundwater basin
- 10-15% lower operating costs than competitive filtration technology
- 20% lower capital costs than competitors
- Smaller plant footprint saves space
- Improved performance & life of downstream RO system
- Expandable while minimizing downtime

Background

Founded in 1933, Orange County Water District (OCWD) is located south of Los Angeles. The District manages a huge groundwater basin—larger than Southern California’s biggest reservoir—that provides reliable, high quality groundwater to 20 Orange County cities and water agencies and their 2.3 million customers. That population is estimated to increase to 3 million by 2020.

The Challenge

Needed a New Water Source

Between land annexation and population growth over the decades, OCWD’s responsibilities have greatly expanded since its founding in 1933. At that time, 86% of groundwater was used for agricultural irrigation. Today, with rapid urbanization and the county’s farmland sharply dwindling, agriculture accounts for less than 4% of groundwater usage. At the same time, the county’s need for potable water has grown exponentially.

Groundwater management took on even greater urgency during a recent multi-year drought, with replenishment rainwater for the basin in short supply.

The Solution

Faced with the possibility of a perpetual water shortage, OCWD sought to implement advanced municipal secondary treated wastewater reclamation systems for irrigation, industrial and indirect potable re-use applications, as a cornerstone of its groundwater replenishment project.

Extensive pilot plant and demonstration-scale testing of membrane technology from three competitive membrane suppliers led OCWD to award U.S. Filter a contract for a Memcor® Continuous Microfiltration-Submerged (CMF-S) system.

The Results

A Sustainable Water Supply

OCWD now operates one of the world’s largest microfiltration wastewater treatment systems, with a capacity of 86 million gallons per day. Microfiltration, combined with downstream reverse osmosis (RO) and advanced oxidation (ultraviolet light plus hydrogen peroxide) produces water that is suitable for groundwater injection to recharge the basin, along with irrigating parks, golf courses, schoolyards, cemeteries and greenbelts, plus some industrial uses.



Greening the Ocean

The reclamation of secondary treated wastewater is a green alternative to discharging it into the ocean, reducing ocean pollution while providing a barrier to prevent seawater intrusion into the groundwater basin.

Lower Capital, Maintenance & Operating Costs

With Memcor® CMF-S, OCWD's operating costs are estimated to be 10 to 15% less than those of the nearest competitive filtration technology, with a 20% advantage in capital costs.

Submerging the membranes in an open tank simplifies piping manifolds, cutting down on the peripheral equipment needed. That further reduced the plant's footprint and lowered capital, maintenance and operating costs.

More Capacity in Less Space

The Memcor® system has more than five times the treatment capacity of a conventional clarification system housed in the same footprint.

Its self-contained "building block" modular design, with membrane modules pre-loaded into arrays and ready for on-site skid mounting, further reduced OCWD's space requirements.

Improved Performance of Downstream RO

Wastewater is now treated with the Memcor® CMF-S system to remove suspended solids, bacteria and other contaminants.

The high-quality effluent improves the reliability of the downstream RO system and reduces its capital and operating costs.

Expandable for Future Needs

The modular design of a Memcor® CMF-S system will make future expansion at OCWD practical by simply adding additional arrays or skids. What's more, the existing Memcor® CMF-S modules will be able to remain in operation as additional arrays and skids are installed, minimizing downtime costs.

As arid Orange County continues to grow, facing the ongoing challenge of increased water demand and limited water supplies, Memcor® CMF-S technology is helping OCWD plan for its future needs.

A Technological Breakthrough

Only a decade ago, the idea of treating municipal wastewater by combining microfiltration with reverse osmosis and advanced oxidation was considered impractical. But today, innovative U.S. Filter Memcor® microfiltration technology has made wastewater treatment at OCWD a cost-effective and desirable option.

About U.S. Filter's Memcor® Division

With a global installed base of over 700 plants, Memcor® technology has demonstrated its performance, efficiency, versatility, upgradability and cost-effectiveness, plus compatibility with other upstream and downstream systems. U.S. Filter's track record of developing state-of-the-art water treatment solutions makes continuous

microfiltration the technology of choice for the 21st century. It's designed to meet not only today's strict water quality standards, but also to anticipate future regulatory requirements. Compared with conventional technologies, the costs of chemicals, operation and capital are all reduced. Municipalities and industries worldwide are meeting their water quality goals with Memcor® technology. For more information, visit www.memcor.usfilter.com.

World leaders in membrane filtration solutions

2330 Scenic Highway
Snellville, GA 30078
USA
www.memcor.usfilter.com

Innovative U.S. Filter Memcor® microfiltration technology has made wastewater treatment at Orange County Water District a practical and desirable option.

