

ORANGE COUNTY SANITATION DISTRICT

WHAT WE DO



OC SAN
ORANGE COUNTY SANITATION DISTRICT





ABOUT US

The Orange County Sanitation District (OC San) is the third largest regional wastewater agency west of the Mississippi River. We provide wastewater collection, treatment, and recycling services for 2.6 million people in central and northern Orange County, California.

OC San is a publicly owned wastewater treatment agency that is funded by sewer user fees and charges. We are governed by a 25-member Board of Directors appointed from 20 cities, two sanitary districts, two water districts and one representative from the Orange County Board of Supervisors.

OUR MISSION

“To protect public health and the environment by providing effective wastewater collection, treatment, and recycling.”

SOURCE CONTROL



COLLECTIONS



URBAN RUNOFF



Before the water comes to us

OC San's Source Control Program was established in 1970. The program regulates and monitors industries to keep toxic pollutants out of the sewage system.

OC San works proactively with businesses and industries advising them on best management

practices that include installing pretreatment systems or using alternative chemicals. This relationship has helped our permittees reduce the amount of toxic pollutants discharged into the sewer system by more than 85 percent over the past 30 years. Source control is a critical component in treating the wastewater.

How the water gets here

OC San currently maintains and operates two facilities located in Fountain Valley and Huntington Beach that treat around 190 million gallons of wastewater per day from residential, commercial, and industrial sources.

Approximately 80 percent of our wastewater comes from residential customers in 20 cities, two sanitary districts, two water districts and a portion of the unincorporated area in Orange

County, California. The other 20 percent comes from commercial and industry facilities.

Residential, commercial and industrial sewer pipes connect to city sewer pipes. City pipes connect to OC San's large-diameter sewer pipes that are from 10-inches to 9-feet wide in diameter. OC San owns and maintains 388 miles of pipes (to be exact), and 15 pump stations throughout our service area.

Providing an essential service

OC San's Urban Runoff Program was established to protect and improve the quality of Orange County's coastal receiving waters. As the water flows across the urban landscapes and through the storm drain system, it can become contaminated with nutrients, pesticides, heavy metals, toxic chemicals, bacteria, and viruses. To remediate these various public health and environmental concerns, OC San accepts the diversion of urban runoff to the sewer when it is not raining. The urban runoff

is treated before being released into the ocean or sent to the Orange County Water District for reclamation.

Rerouting urban runoff before it reaches receiving waters allows OC San to provide essential public health and water quality protection. This program is instrumental in protecting areas of special biological significance and the recreational waters along Orange County's coastline.



WASTEWATER TREATMENT PROCESS

COLLECTIONS

When you flush the toilet, take a shower, or wash your dishes, the wastewater goes down your drain and pipes to your city's sewer system. OC San's regional sewer pipe network collects local system flow and transports the water to our treatment plants.

PRELIMINARY

Screening and grit chambers remove larger objects and materials that clog-up downstream treatment processes; anything from rags and dental floss to coffee grounds. At this point, the water still includes biodegradable solids and dissolved organics.

PRIMARY

The wastewater flows into large settling tanks where the remaining solids sink to the bottom of the tank, removing 80 percent of solids in the water. The resulting sludge and scum are sent to the digesters to undergo anaerobic digestion, which converts sludge to energy and fertilizer.

SECONDARY

The partially treated wastewater is then sent to aeration basins or trickling filters for further treatment. Microorganisms feed on the remaining organic materials in the wastewater. After the microorganisms (secondary sludge) are removed, the treated water is then sent to the Groundwater Replenishment System for recycling or is released into the Pacific Ocean.

ADVANCED TREATMENT

The treated water flows to the Groundwater Replenishment System, where it undergoes a state-of-the-art purification process consisting of microfiltration, reverse osmosis, and ultraviolet light with hydrogen peroxide for disinfection.



ODOR CONTROL

In addition to the odors normally associated with wastewater, hydrogen sulfide is formed in sewer pipes while being transported to the treatment plants. OC San combats the possible release of these odors with control measures such as covering treatment areas and sealing manhole covers, as well as biological, activated carbon, and chemical air scrubbers to eliminate the odors that are produced.



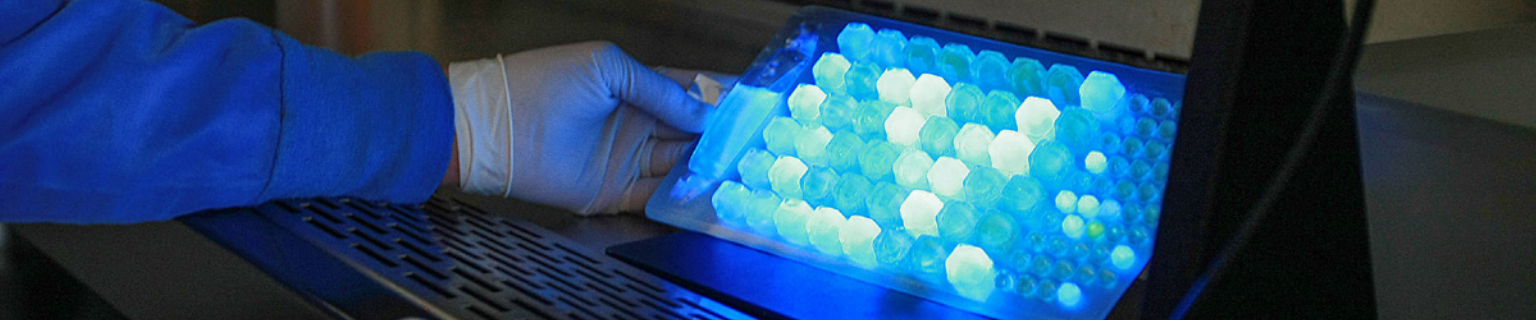
The Groundwater Replenishment System (GWRS) is a water recycling project jointly sponsored by OC San and the Orange County Water District (OCWD) that supplements existing water supplies by providing a new, reliable, high-quality source of water to recharge the Orange County Groundwater Basin and to protect it from seawater intrusion.

Operational since January 2008, the GWRS is the world's largest advanced water purification system for potable reuse.

OC San and OCWD worked together to finish the third and final step of the project — the GWRS Final Expansion, which was completed in early 2023. This expansion requires approximately 175 MGD of treated wastewater flow from OC San to produce 130 MGD of purified recycled water. The other 40 MGD of saltwater is returned to OC San for treatment and safe release into the Pacific Ocean. The completed project produces the equivalent of one year's water supply for over 1 million people.

The GWRS takes the treated wastewater that otherwise would be sent to the Pacific Ocean and purifies it using a three-step advanced process consisting of microfiltration, reverse osmosis, and ultraviolet disinfection/advanced oxidation.

Once purified, the water is either pumped underground near the coast to replenish the seawater intrusion barrier or it is sent to basins in north Orange County where the newly purified water filters into the ground and blends with natural rain infiltration, Santa Ana River water recharge and imported water recharge.



LABORATORY & OCEAN MONITORING

Our staff serve to fulfill OC San's mission of protecting public health and the environment by conducting monitoring necessary (as required by our NPDES Ocean Discharge Permit) to generate data that demonstrates OC San is effectively collecting, treating, and recycling our wastewater. In addition, impacts of OC San's highly treated wastewater discharge to coastal receiving water are evaluated by OC San's Ocean Monitoring Program based on three inter-related components: (1) Core monitoring; (2) Regional Monitoring; and (3) Strategic Process Studies.

Our team conducts daily sampling at 30 locations at both plants 365 days per year, weekly sampling at 36 beach stations along 19 miles of shoreline from Seal Beach to Crystal Cove, and monitoring at 185 square miles of our receiving environment (sediment, fish, invertebrates, ocean water) near our ocean outfall on board our ocean monitoring vessel, Nerissa. Samples are brought back to our lab where over 100,000 analyses are performed annually by chemical, microbiological, toxicological, and biological methods.





BIOSOLIDS

Inside our digesters, the solids are heated to about body temperature — 98 degrees—for two to three weeks to allow the anaerobic bacteria — good bugs — to kill the pathogens — bad bugs. Biogas produced by this decomposition process is captured and used to generate power for over 60 percent of our facilities. The treated solids are now called “biosolids.”

During the dewatering process, giant centrifuges pull water out of the biosolids so they can be hauled to recycling locations.

One way OC San’s biosolids are recycled is by applying them directly on farm fields to grow non-food crops. This is commonly

referred to as “land application.” This soil amendment is black with a consistency like “cake-batter”, and it contains more beneficial nitrogen for plants than compost does.

Biosolids and biosolid compost have been used safely for decades. Research has demonstrated that the nutrients and beneficial microbes in biosolids create and maintain healthy soils and improve crop yields. Biosolids are also a valuable source of carbon. Amending soils with biosolids helps mitigate climate changes by storing carbon in the soil, which is a form of carbon sequestration. In this way, we keep the biosolids’ carbon out of the atmosphere.



CENTRAL POWER GENERATION SYSTEM

OC San has been a leader in energy efficiency for many years. As a standard practice, we design energy efficiency into every one of our projects. The Central Power Generation System (CenGen) helps us achieve our productivity and energy conservation goals. The Central Power Generation System has eight clean burning, internal combustion engines that power the generators used to produce more than 60 percent of the power required to run our two plants in Huntington Beach and Fountain Valley.

We have been able to substantially reduce electricity costs, we saved \$5.7 million in 2023 and, in turn, are keeping our rates low for our ratepayers. The Central Power Generation System was designed to minimize emissions and is fueled by natural gas and digester gas. Digester gas is produced during the wastewater treatment process and is approximately 65 percent methane and 35 percent carbon dioxide, and is an excellent fuel source.

A photograph of a construction site. In the background, a yellow excavator is working. Several construction workers wearing orange safety vests and hard hats are standing around a large, rectangular concrete structure being installed in a trench. Orange traffic barrels and a red trailer are also visible on the right side of the site. The scene is set on a dirt road with trees and a clear sky in the background.

CAPITAL IMPROVEMENT PROGRAM

The Capital Improvement Program (CIP) supports OC San's commitment to provide a reliable service to our ratepayers, expand resource recovery, and repair and replace aging infrastructure. We plan, design, and prepare for the future making sure that we meet our commitment of protecting public health and the environment. The ten-year CIP budget for Fiscal Years 2025-26 through 2034-35 is currently valued at \$3.6 billion.

Additionally, through our Asset Management Plan, we evaluate and determine how to prolong the life of our assets, or how best to

replace them with improved technology and innovative solutions. Our Climate Resiliency and Seismic Evaluation Studies helped to identify and assess potential risks to OC San facilities and assets, and developed mitigation strategies that are incorporated into our existing CIP to ensure resiliency for OC San.

We work each and every day to ensure our commitment to our community is met — that we are protecting public health and the environment in the most economical and innovative way possible.

HOW WE MANAGE OUR FINANCES

We are financially stable, keeping our rates affordable for our ratepayers, while always meeting our mission to protect public health and the environment. OC San is AAA rated by Fitch Ratings, Standard & Poor's and Moody's Investors Service Incorporated. The AAA rating represents the highest possible rating and is based on our management practices and financial strength, which means that we have access to low-interest financing on infrastructure improvements resulting in a cost savings for OC San's customers.

Providing a reliable service also includes prudent financial management. OC San has practices and safeguards in place to ensure its long-term fiscal stability. OC San has established fiscal policies and reserve criteria, which are included in the budget, and separately adopted investment and debt policies. These policies set the guidelines for planning the cashflow of OC San and have helped to stabilize the rates that our residents pay.

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