



A LOOK INSIDE THE PLANT



WELCOME TO THE
REGIONAL RECYCLED
WATER ADVANCED
PURIFICATION CENTER

A PARTNERSHIP
BETWEEN THE
METROPOLITAN WATER
DISTRICT OF SOUTHERN
CALIFORNIA AND THE
SANITATION DISTRICTS
OF LOS ANGELES
COUNTY

A NEW SOURCE OF WATER FOR SOUTHERN CALIFORNIA

THIS CENTER IS A **500,000-GALLON-PER-DAY** DEMONSTRATION FACILITY WHERE CLEANED WASTEWATER FROM THE SANITATION DISTRICTS' JOINT WATER POLLUTION CONTROL PLANT IN CARSON IS PUT THROUGH A RIGOROUS PURIFICATION PROCESS TO ENSURE IT IS SAFE TO REUSE.

The demonstration plant is used to test the purification process, which combines proven water treatment technologies into an innovative treatment process. Data collected from this facility will be used to gain regulatory acceptance of the process as well as obtain information needed for the design of a full-scale facility.

PREPARING FOR A FULL-SCALE OPERATION

The Center will provide operational data, design insights and other relevant information for the potential construction of a full-scale advanced water treatment plant that would be one of the largest of its kind in the world. As envisioned, a full-scale facility could produce up to 150 million gallons of purified water daily, or 168,000 acre-feet each year, enough for more than 500,000 homes. The water would be delivered through over 60 miles of new pipeline to the region's groundwater basins, industrial facilities and potentially two of Metropolitan's water treatment plants.

ENSURING THE HIGHEST WATER QUALITY

Scientists and engineers are extensively studying this purification process to confirm that the resulting water surpasses all health and water quality requirements for reuse. State-of-the-art online instruments, along with laboratory analyses, measure hundreds of water quality parameters at several points throughout the process. This ensures each treatment step is performing as expected and that the resulting water is purified and safe for future groundwater replenishment and consumption.

Water quality and other performance data is further analyzed and thoroughly reviewed by experts and regulators. Once approved by regulators, the process could be used in water reuse projects throughout California, increasing efficiency and reducing costs.

USING THE LATEST INNOVATION

Research on the latest water reuse topics and developments is conducted at the Center. The facility is built with the flexibility to accommodate a variety of processes and operational conditions to produce data that could further advance water reuse. The site also includes a Learning Center, which provides an opportunity for the public, students and technical experts to visit and learn more about this cutting-edge research.



3-STEP PURIFICATION PROCESS

The innovative three-step purification process removes contaminants such as pharmaceuticals, pesticides, viruses, bacteria and potentially harmful chemicals leaving clean and purified water. The water is extensively tested and monitored throughout the process onsite and at Metropolitan's Water Quality Lab in La Verne. Since this is a test facility, the water is not reused and instead returns to the Joint Water Pollution Control Plant.



STEP 1

MEMBRANE BIOREACTORS (MBR_s)

MBRs use biological processes and membrane technology to clean water.

Air, and in some cases carbon, are added to biological process tanks (1A) to create an environment where helpful microorganisms thrive. The microorganisms remove organic material and nitrogen compounds, such as ammonia and nitrate.

The water flows into membrane tanks (1B) where thousands of straw-shaped membranes with tiny pores filter and remove microscopic materials, including microorganisms and other particles. Many are smaller than 1/100 of a grain of sand.



STEP 2

REVERSE OSMOSIS

Reverse osmosis is often considered the core water purification process and eliminates more than 99% of all impurities. Water leaving the MBRs is pressurized with a series of pumps and applied to tightly wound membranes, which selectively allow water molecules through the membranes' pores, while blocking the passage of microscopic materials, such as bacteria, pharmaceuticals and salts.

Reverse osmosis is widely used to purify water, most commonly to remove salt in seawater desalination projects. It is also used in many bottled water processes and groundwater replenishment projects.



STEP 3

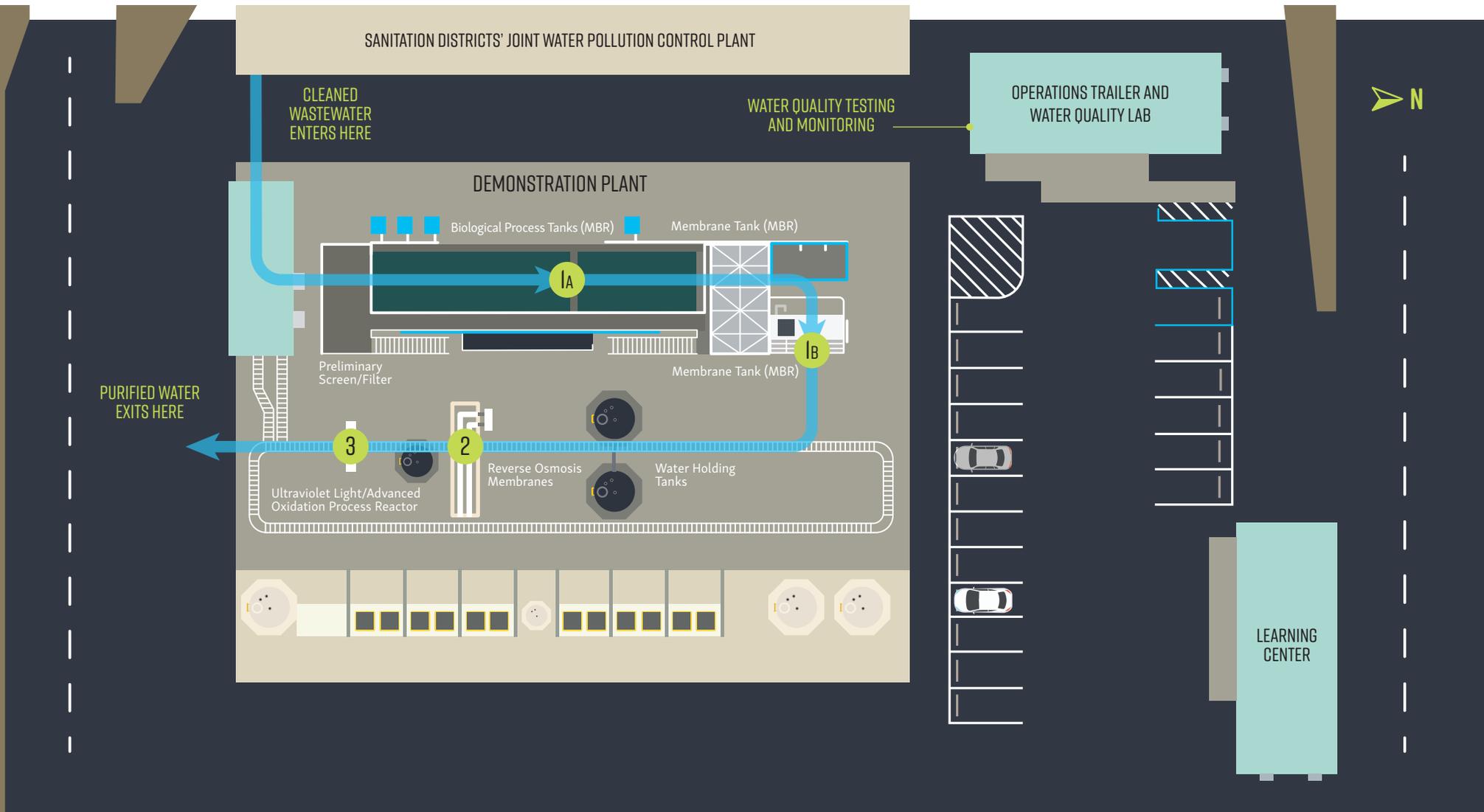
ULTRAVIOLET LIGHT/ADVANCED OXIDATION PROCESS

Ultraviolet light is a powerful disinfectant used to inactivate viruses in water. When ultraviolet light is combined with a strong oxidant, either hydrogen peroxide or sodium hypochlorite, extremely reactive molecules are created. These molecules remove trace chemical compounds that may remain. The combination of the ultraviolet light and strong oxidant is referred to as the Advanced Oxidation Process (AOP). This is a final polishing step that ensures the water is safe and highly purified.

Did you know? MBRs are promising technology to purify water for groundwater replenishment and eventual reuse as drinking water. They are widely used for wastewater treatment and initial studies by Metropolitan and the Sanitation Districts found they may be a cost-effective first step in the purification process.



Regional Recycled Water Advanced Purification Center





*THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA*



SANITATION DISTRICTS OF LOS ANGELES COUNTY

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