

THE GRACE F. NAPOLITANO

# PUREWATER

SOUTHERN CALIFORNIA

INNOVATION CENTER



Welcome to  
the Grace F. Napolitano Pure Water  
Southern California Innovation Center

A partnership between the Metropolitan Water District  
of Southern California and the Los Angeles County  
Sanitation Districts



THE METROPOLITAN WATER DISTRICT  
OF SOUTHERN CALIFORNIA



LOS ANGELES COUNTY  
SANITATION DISTRICTS  
*Converting Waste Into Resources*

## A LOOK INSIDE

# Our demonstration plant at the Grace F. Napolitano Pure Water Southern California Innovation Center produces **500,000** gallons of purified water daily.

Treated wastewater from the Sanitation Districts' A.K. Warren Water Resource Facility passes through the demonstration plant and undergoes a rigorous purification process to ensure it is safe for drinking. The purification process, which combines innovative and proven water treatment technologies, is tested and validated at the demonstration plant. Data collected is used to gain regulatory acceptance of the purification process and provides valuable information for the design needs of a full-scale purification plant.



### Preparing for a Full-scale Operation

The plant provides operational data, design insights and other relevant information for the construction of a full-scale advanced water purification facility 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, enough to meet the water needs of 1.5 million residents. The water would be delivered through more than 60 miles of pipeline to the region's groundwater basins, industrial facilities and potentially two of Metropolitan's water treatment plants.



### Ensuring the Highest Quality Water

Scientists and engineers are studying this purification process to confirm that the treated water surpasses all health and drinking water quality requirements for reuse. State-of-the-art instruments and laboratory analyses measure hundreds of water quality benchmarks at several points in the treatment process. This is to ensure that the process effectively purifies the water so that it is safe for groundwater replenishment and drinking. This also ensures that each step in the purification process is performing as expected.

Once approved by regulators, the treatment process could be used in water reuse projects throughout California, increasing efficiencies and reducing costs.



### Using the Latest Innovation

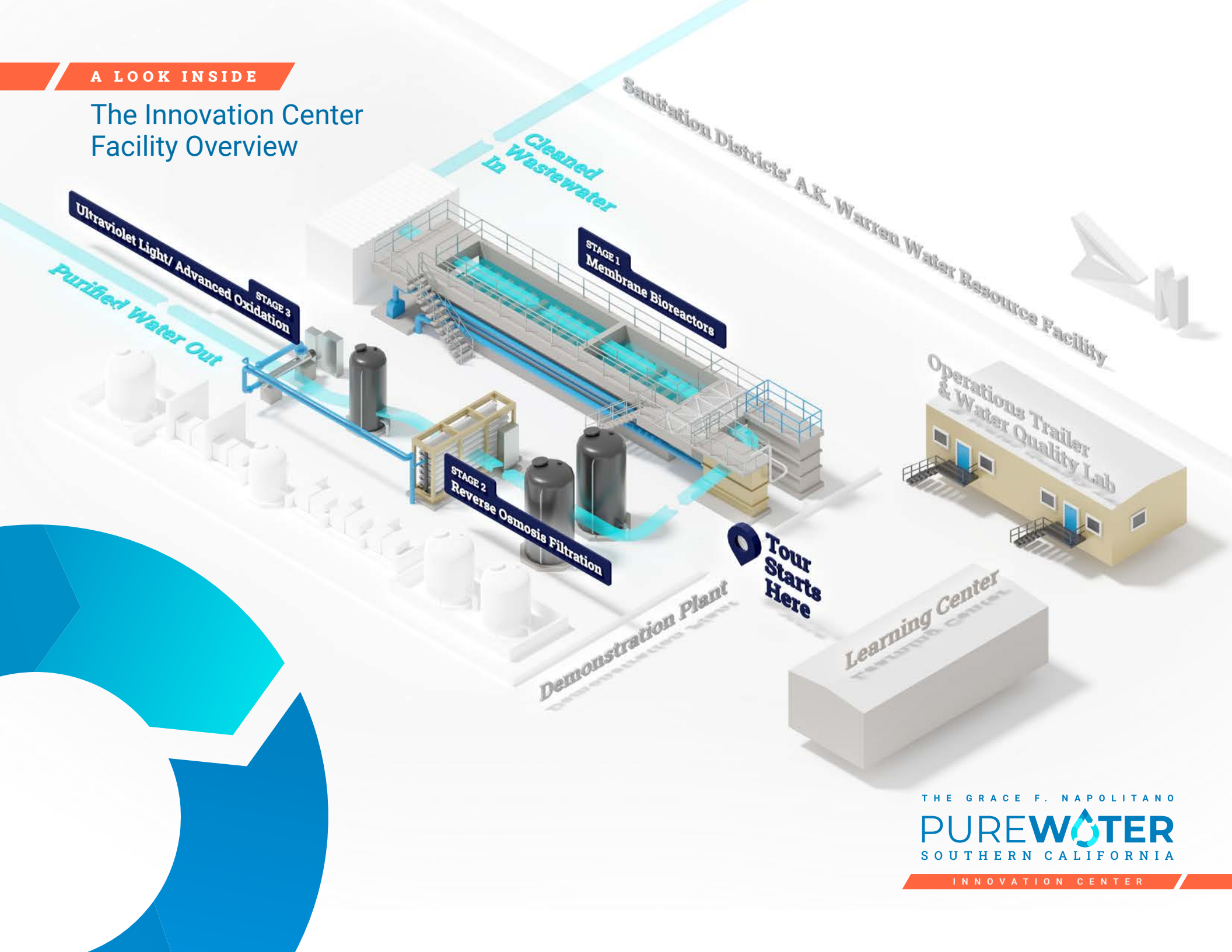
Research on the latest advancements in water reuse takes place at the Innovation Center, which also houses a Learning Center. Visitors are invited to learn more about the cutting-edge research taking place.

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# The Innovation Center Facility Overview





## Three-Stage Purification Process

The innovative three-stage purification process removes contaminants such as pharmaceuticals, pesticides, viruses and bacteria leaving clean and purified water. The water is extensively tested and monitored onsite and at Metropolitan's Water Quality Lab in La Verne. Because the demonstration plant is intended for research purposes and water-quality analysis only, the water processed through this facility is not reused.



### STAGE 1

#### Membrane Bioreactors

Membrane bioreactors use biological processes and membrane technology to clean water.

Air is added to biological process tanks to create an environment where helpful microorganisms that remove organic material and nitrogen compounds like ammonia and nitrate, can thrive.

Water then flows into tanks 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.

### STAGE 2

#### Reverse Osmosis

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

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

### STAGE 3

#### Ultraviolet Light/Advanced Oxidation

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. This is a final polishing step that ensures the water is safe and highly purified.

TO LEARN MORE  
[www.mwdh2o.com/purewater](http://www.mwdh2o.com/purewater)



### DID YOU KNOW?

Membrane bioreactors are an innovative technology for purifying water for groundwater replenishment and eventually for 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 for water reuse.



## SHARE WHAT YOU LEARNED

Help us spread the word on social media about the benefits of recycled water programs.

Use #PureWaterSoCal  
and tag @mwdh2o.

TO LEARN MORE   
[www.mwdh2o.com/purewater](http://www.mwdh2o.com/purewater)

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SOUTHERN CALIFORNIA

OUR WATER | OUR FUTURE

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