STARTING SMALL AND SCALING UP

The Advanced Purification Center is a demonstration facility that will generate information needed for the potential future construction of a full-scale recycled water plant. It uses a unique application of membrane bioreactors designed to significantly increase efficiency in water recycling. Scientists and engineers will test the process to ensure the resulting purified water meets the highest water quality standards. Once approved by regulators, the innovative process could be used around the globe.

ADVANCED PURIFICATION CENTER:

A 500,000 gallon/day demonstration facility

Cost: $17 million for construction

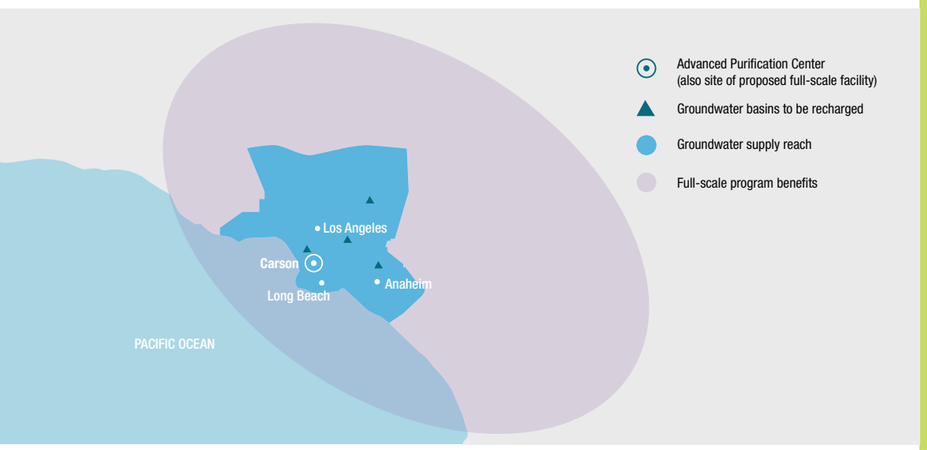
Timeline: Under construction; operation begins late 2018

FULL-SCALE ADVANCED WATER TREATMENT PLANT:

A full-scale facility would produce up to 150 million gallons daily, enough to serve more than 335,000 homes. Purified water would be delivered through 60 miles of pipelines to 4 groundwater basins in Los Angeles and Orange counties. These basins supply water to 7.2 million people.

Cost: $2.7 billion to build, $129 million annually to operate, resulting in a water cost of $1,600/acre-foot.

Timeline: 11 years to design and build, once approved



THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

SANITATION DISTRICTS OF LOS ANGELES COUNTY

THE PARTNERS

The Metropolitan Water District of Southern California is a state-established cooperative of 26 cities and water agencies serving nearly 19 million people in six counties. The district imports water from the Colorado River and Northern California to supplement local supplies, and helps its members to develop increased water conservation, recycling, storage and other resource-management programs.

The Sanitation Districts of Los Angeles County is a regional public agency consisting of 24 independent special districts serving over 5.6 million people in 78 cities and the unincorporated territory within Los Angeles County. The Sanitation Districts protect public health and the environment through innovative and cost-effective wastewater and solid waste management and, in doing so, convert waste into resources such as recycled water, energy and recycled materials.

www.lacsd.org

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September 2017

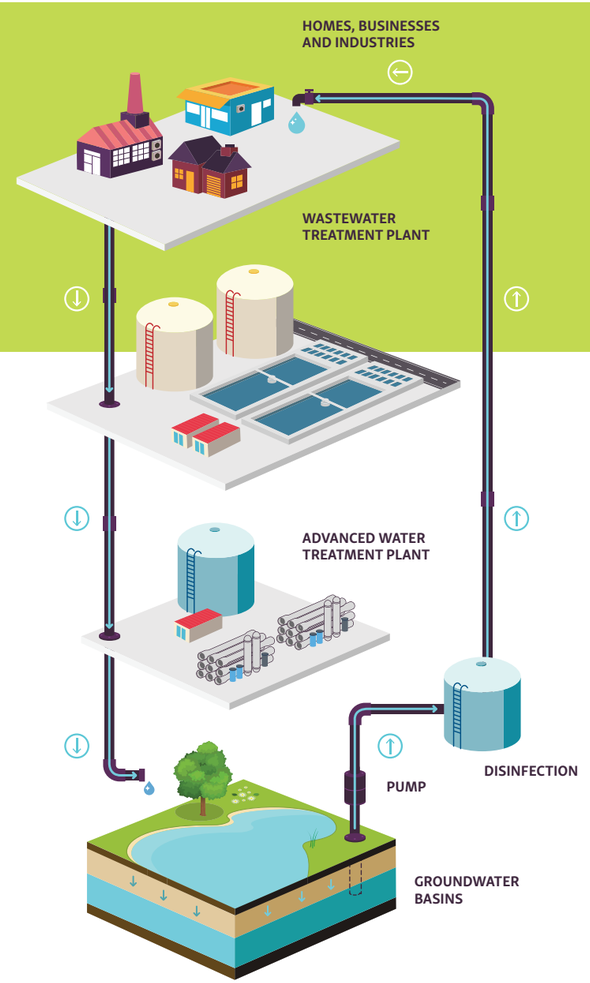
A NEW SOURCE OF WATER FOR SOUTHERN CALIFORNIA

Regional Recycled Water Advanced Purification Center

Water is too precious to use just once. So the Metropolitan Water District of Southern California is making a major investment in a potential water recycling project that will reuse water currently sent to the ocean. The Regional Recycled Water Program, a partnership with the Sanitation Districts of Los Angeles County, will purify wastewater to produce high quality water that can be used again. The program will start with a demonstration facility and could eventually become one of the largest advanced water treatment plants in the world.

How it works

The process begins with wastewater discharged from homes, businesses and industries. After the wastewater has been cleaned and treated, it flows to an advanced water treatment plant where it is further purified. The water then replenishes groundwater basins and is eventually pumped up, disinfected and used again.



Why it works

- Uses region's largest untapped source of treated wastewater, currently sent to the ocean.
- Produces a drought-proof source of water, readily available rain or shine.
- Prepares the Southland in the event of a catastrophic earthquake by increasing local water supplies.
- Replenishes groundwater basins, which provide 30% of Southern California's water supply and have seen levels drop to historic lows in recent years.
- Helps meet needs of region's growing economy and population at a cost comparable to other local water resources.
- Helps ensure regional water reliability through diversifying sources, in addition to conservation, local supply development and imported water.

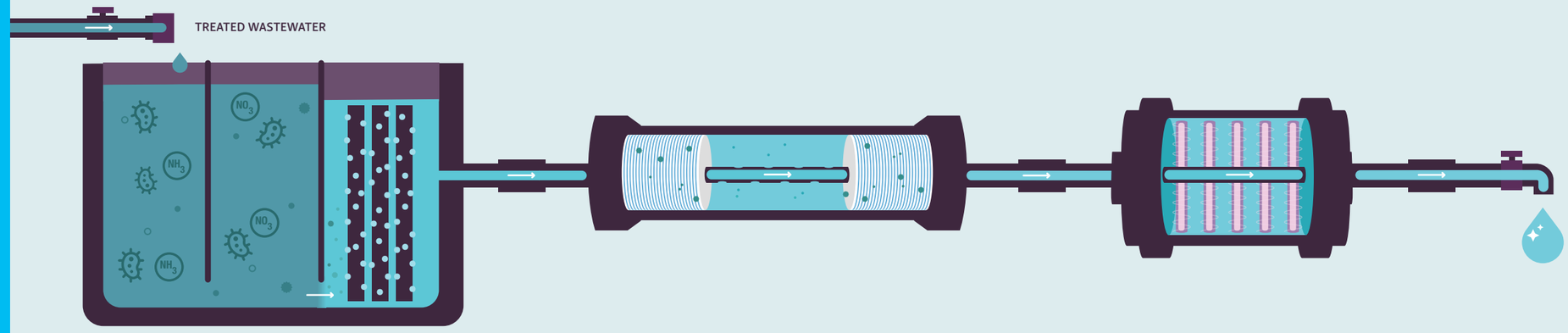
INTRODUCING THE REGIONAL RECYCLED WATER ADVANCED PURIFICATION CENTER

The new Regional Recycled Water Advanced Purification Center is a demonstration facility that takes treated wastewater from the Sanitation Districts' Joint Water Pollution Control Plant in Carson and applies a rigorous purification process to ensure the water is safe to reuse. The facility uses both tried and tested water treatment technologies employed across the world for decades and innovative processes to remove contaminants such as pharmaceuticals, pesticides, viruses, bacteria and potentially harmful chemicals down to the microscopic level, leaving only clean water.

THE PURIFICATION PROCESS

After wastewater is cleaned and treated through multiple processes, it flows to the Regional Recycled Water Advanced Purification Center for additional treatment.

The end result is high quality, purified water that could eventually help replenish groundwater.



1 **Membrane Bioreactors:** Microorganisms remove ammonia and other nitrogen compounds, while membranes filter tiny particles, smaller than 1/100 of a grain of sand.

2 **Reverse Osmosis:** Pressurized membranes further remove microscopic materials, such as bacteria, pharmaceuticals and salts, eliminating more than 99% of all impurities.

3 **Ultraviolet/Advanced Oxidation Process:** Ultraviolet light and a powerful oxidant destroy any remaining viruses and trace chemical compounds.

CONTINUING A RECYCLED WATER LEGACY

The past five decades have seen recycled water use in Southern California grow exponentially, for both irrigation and groundwater replenishment.

1962

The Sanitation Districts' Whittier Narrows Water Reclamation Plant becomes the first plant in the U.S. intentionally designed to recycle water, using it to recharge groundwater basins.

1970s

As Southern California's population grows, recycled water lines are constructed alongside new development to irrigate schoolyards, parks and golf courses.

1975

Water Factory 21 begins purifying wastewater in Orange County and using it to replenish and protect groundwater from seawater intrusion. Becomes first plant in the world to use reverse osmosis.

1980s

Wastewater treatment plants add processes to produce more recycled water. Purple pipes are adopted as industry standard to distinguish recycled water for irrigation, firefighting and industrial use.

1980 recycled water usage: 17,000 acre-feet

1990 recycled water usage: 100,000 acre-feet

1995 – 2005

Several new water recycling facilities are built that use reverse osmosis. The resulting water is used for groundwater recharge and industrial use.

2000 recycled water usage: 175,000 acre-feet

2008

Orange County embarks on the largest water reuse project of its kind in the world, eventually purifying 100 million gallons of water daily to replenish groundwater supplies. Becomes the gold standard for water recycling.

2010 recycled water usage: 315,000 acre-feet

2014

San Diego advances a water recycling program that for the first time in California would use recycled water to fill a drinking water reservoir.

TODAY

Water agencies from Ventura to San Diego continue to take steps towards implementing large recycling projects. The Regional Recycled Water Program will take the exponential growth of recycled water use in Southern California even farther.

2016 recycled water usage: 400,000 acre-feet

1 acre-foot = 325,851 gallons