



Monterey Peninsula Groundwater Replenishment Project

Providing A Safe And Sustainable Water Supply

NATIONWIDE & INTERNATIONAL GROUNDWATER RECHARGE PROJECTS

Orange County, California

Orange County Water District's Groundwater Replenishment System (GWRS) is the largest Indirect Potable Reuse (IPR) project in the world, with over 35 years of experience beginning with the famous Water Factory 2. The GWRS takes highly treated wastewater that would have normally been discharged into the Pacific Ocean and purifies it using a three-step advanced water treatment process consisting of microfiltration, reverse osmosis, and oxidation with ultraviolet light and hydrogen peroxide. The GWRS produces 70 million gallons per day of high quality water that exceeds all state and federal drinking water standards for nearly 600,000 residents in north and central Orange County.

www.gwrssystem.com

West Basin Municipal Water District, California

The West Basin Municipal Water District's wastewater purification facility in El Segundo, California has been on-line since 1995. The water district uses microfiltration, reverse osmosis, and ultraviolet light technologies to treat recycled water for groundwater injection.

West Basin uses a combination of imported water and purified wastewater for the one-half mile long seawater barrier that encompasses over 100 injection wells to help protect the District's productive groundwater basin from seawater intrusion. Currently 7.5 million gallons per day of water that has been purified through a microfiltration and reverse osmosis process provides high quality water that helps to improve the overall quality of the water mix in the groundwater basin that supplies the region's drinking water requirements.

www.westbasin.com

Los Angeles County, California

The Water Replenishment District (WRD) of Southern California operates the Montebello Forebay Groundwater Recharge Project, one of the oldest ongoing natural groundwater recharge projects in the nation. WRD has managed the project, located in Los Angeles County, since 1962.

The Montebello Project filters an average of 45 million gallons per day of treated wastewater through the ground into the Los Angeles Central Groundwater Basin. This conserves approximately 150,000 acre feet per year. Treated wastewater runs through dual media filters at the Montebello Forebay Groundwater Recharge Project and is discharged into the Rio Hondo River where the water is diverted to the groundwater basins. The recycled water constitutes an average of 18.7 percent of the groundwater supply.

<http://ladpw.org/wrd/publication/system/montebello.cfm>

Sanitation Districts of Los Angeles County

The Sanitation Districts of Los Angeles County utilize recycled water from three of their water reclamation plants (WRP) for groundwater recharge. Below are descriptions of each plant:

The Whittier Narrows Water Reclamation Plant was the first reclamation plant built by the Districts in 1962. It provides primary, secondary, and tertiary treatment for 15 million gallons of wastewater per day. The plant serves a population of approximately 150,000 people. Virtually all of the purified water is reused as groundwater recharge into the Rio Hondo and San Gabriel Coastal Spreading Grounds or for irrigation at an adjacent nursery.

<http://www.lacsd.org/waswater/wrp/whittiernarrows.htm>

The San Jose Creek Water Reclamation Plant provides primary, secondary, and tertiary treatment for 100 million gallons of wastewater per day. The plant serves a largely residential population of approximately one million people. Approximately 35 million gallons per day of the purified water is reused at 17 different reuse sites. These include groundwater recharge and irrigation of parks, schools, and greenbelts.

<http://www.lacsd.org/waswater/wrp/sjc1.htm>

The Pomona Water Reclamation Plant provides primary, secondary, and tertiary treatment for 13 million gallons of wastewater per day. The plant serves a population of approximately 130,000 people. Approximately 8 million gallons per day of the purified water is reused at over 90 different reuse sites. These include irrigation of parks, schools, golf courses, landscaping and greenbelts, irrigation and dust control at the Spadra Landfill, and industrial use by local paper manufacturers. The remainder of the purified water is returned to the San Jose Creek channel where it makes its way to the unlined portion of the San Gabriel River. Therefore, nearly 100 percent of the water is reused since most of the river water percolates into the groundwater.

<http://www.lacsd.org/waswater/wrp/pomona.htm>

San Bernardino County, California

The Inland Empire Utilities Agency's (IEUA) recycled water from one of their treatment plants is also currently used to recharge the Chino Basin aquifer at the rate of 500 acre feet per year. The quantity of recycled water recharged into the Basin is scheduled to increase to 2,300 acre feet per year in the future.

IEUA also supplies water to the Prado Regional Park Lake in southwestern San Bernardino County. The excess flow is being discharged into the Cucamonga Creek Flood Control channel and the Santa Ana River.

www.ieua.org

Reno, Nevada

The Tahoe-Truckee Sanitation Agency Water Reclamation Plant combines conventional activated sludge secondary treatment with biological phosphorus removal to treat the wastewater. The treated water is released into the Truckee River, which is the source of the City of Reno's water supply.

www.ttsa.net or <http://63.150.38.132/jsp/index.jsp>

Las Vegas, Nevada

Since the 1950s, secondary treated wastewater has been discharged into the Las Vegas Wash. The Wash is located between the Las Vegas Valley and Lake Mead and represents two percent of the flow into Lake Mead. Lake Mead is the primary drinking water source for the Las Vegas Valley.

www.lvwwd.com

El Paso, Texas

The Fred Harvey Water Reclamation Plant recovers and treats wastewater, which is then injected into the groundwater. The water eventually travels to one of El Paso's potable water fields to become part of the drinking water supply.

In 2004, a total of 577 million gallons of recycled water were returned to the Hueco Bolson aquifer.

http://www.epwu.org/wastewater/fred_hervey_reclamation.html

Scottsdale, Arizona

Since 1998, the Scottsdale, Arizona Water Campus has produced 12 million gallons per day of tertiary treated wastewater that is used primarily on parks, medians, and golf courses. In winter, when irrigation is reduced, 10 million gallons per day receives advanced purification at a state-of-the-art membrane water purification facility where microfiltration and reverse osmosis purify the water to meet or surpass drinking water standards before it is used to recharge groundwater sources.

Water produced from the reverse osmosis process will be used to recharge groundwater supplies, by injection into a series of dry wells. Reverse osmosis water will be injected into these wells, and the water will flow through an additional 500 feet of soil, known as the vadose zone, before reaching the natural water table. The combination of membrane and soil treatment will ensure groundwater quality.

In 2006, the Water Campus recharged almost 6,000 acre feet (1,955,106 gals) of recycled water and Central Arizona Project (CAP) water. Scottsdale will continue to expand the Water Campus and its recharge capacity. Scottsdale is also looking at innovative technologies to use some of its existing wells to put water back into the ground, instead of taking it out.

www.scottsdaleaz.gov

City of Peoria, Arizona

After the wastewater is highly treated to meet State of Arizona Department of Environmental Quality standards, the recycled water is sent to rapid infiltration basins on-site. As the water infiltrates downward, it is treated again in a natural process called "soil-aquifer-treatment" prior to it reaching the groundwater table hundreds of feet below ground surface. The City of Peoria currently recharges 2,000 acre feet a year from their Beardsley Water Reclamation Facility. This facility is permitted by Arizona Department of Water Resources as an Underground Storage Project. Peoria receives long-term storage credits from the Arizona Department of Water Resources.

<http://www.peoriaaz.com/Utilities/oldfiles/groundwaterrechargef.htm>

City of Glendale, Arizona

The newest type of water developed by Glendale is recycled water. Their recycled water is being used directly on landscaping (such as at Arrowhead Ranch) and being stored in the aquifer.

Direct use of recycled water benefits the city by fulfilling a water demand that would otherwise be met using potable water.

<http://www.glendaleaz.com/utilities/watersources.cfm>

Fairfax, Virginia: Upper Occoquan Sewage Authority (UOSA), Millard H. Robbins, Jr. Water Reclamation Plant

Since UOSA came on-line in 1978 to replace 11 secondary wastewater treatment plants that were decommissioned, the quality of water in the Occoquan Reservoir has dramatically improved. The quality of the UOSA recycled water is generally much higher than that of the receiving stream. During times of normal precipitation, the UOSA Water Reclamation Plant effluent makes up about five percent of the total inflows to the Occoquan Reservoir. The Occoquan Reservoir is a major source of drinking water for Northern Virginia.

www.co.fairfax.va.us

NEWater Facilities in Singapore

To meet the increasing water demand of its 4.2 million people with limited land and diminishing water resources, Singapore's Public Utilities Board (PUB) looked beyond conventional answers to find creative and sustainable water supply solutions. Singapore designed a demonstration project and then "water reclamation" plants in Bedok and Kranji to produce potable water (NEWater) from recycled secondary effluent, subsequently adding a third NEWater plant in Seletar.

The latest ultrafiltration/microfiltration and reverse osmosis membrane technologies, followed by ultraviolet light disinfection, treats recycled water to standards higher than the drinking water standards of the World Health Organization and the U.S. Environmental Protection Agency. Today, NEWater goes to high-tech industries requiring ultra-pure water, and a small percentage is blended with reservoir water for drinking water supply purposes (about one percent of Singapore's drinking water supply). The project has been fully operational since 2003.

http://www.pub.gov.sg/NEWater_files/index.html

For more information contact:



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