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Clearwater's Groundwater Replenishment Project
Frequently Asked Questions

The city of Clearwater is working to ensure the future of our water. Clearwater utility professionals treat and deliver an average of 11.5 million gallons of drinking water and nearly seven million gallons of reclaimed water to customers each day. Preserving our valuable water resources is an important part of this industry, and one we take seriously. After thorough analysis and testing, the city of Clearwater is moving forward with the design and permitting phase of the indirect potable reuse initiative, the Clearwater Groundwater Replenishment Project. This project is being co-funded by the Southwest Florida Water Management District (District) and is one of several projects in the city's Integrated Water Management Strategy Program.

What does indirect potable reuse mean?
Indirect potable reuse is the blending of advanced treated, recycled or reclaimed water into a natural water source such as a groundwater basin with the intent of augmenting water supplies that can be used for drinking (potable) water.

What is groundwater replenishment?
Groundwater replenishment, also known as aquifer recharge, is used to improve water levels within the aquifer and provide additional water supplies. Groundwater replenishment is safely used throughout the country and the world.

What is this project all about?
The city's Groundwater Replenishment Project is a two-step process that includes purifying reclaimed water to better-than-drinking-water standards and recharging an aquifer using the purified water. The test results from the one-year operation of a small scale pilot purification plant reflected that the process successfully and consistently purified source reclaimed water that surpassed regulatory standards for drinking water. The city of Clearwater was the first municipality in Florida to demonstrate post-treatment stabilization for potable reuse. The city is moving forward with the Groundwater Replenishment Project and is building a full-scale Advanced Water Purification Plant with the capacity of processing a flow of up to 3 million gallons per day (MGD).

What is the project's goal?
The project's goal is to replenish the aquifer for future safe yields of groundwater for drinking water supply and to ensure the availability of more drinking water in the future. That includes purifying reclaimed water to better-than-drinking-water standards and recharging an aquifer using that purified water. The purpose of this project is to produce high quality drinking water that ensures sustainability and meets the current and future needs of our community.

Is it safe? If so, can you prove it?
Yes. The 2011 feasibility study concluded this groundwater replenishment project to be safe and economical. The results from the one-year pilot and demonstration phase (June 2013 to June 2014) further concluded that the process is safe and cost effective. Detailed information and reports are available on the project webpage at MyClearwater.com/groundwater. The city of Clearwater and the District are recommending implementation of this project after verifying that it is safe for people and the environment.

Who will this project affect?
This project will potentially affect groundwater well users within the northeastern portion of the city of Clearwater, in the northern part of Pinellas County. Recharging the aquifer with purified water will help keep the water within the aquifer fresher and help maintain and improve existing groundwater levels.

Where does my water come from, and where is it going in regard to this project?
Only three percent of the world's water is accessible fresh water that can be used for drinking water, and that water has been reused over and over again for millions of years. Water is used by people and animals and then it returns to our rivers, lakes and aquifers, where it is withdrawn, treated, and used again. Clearwater's drinking water comes from a groundwater source called the Floridian Aquifer, which sits on top of a layer of brackish, or somewhat salty, water. This aquifer is one of the major sources of groundwater in the United States and underlies all of Florida, southern Georgia, and small parts of adjacent Alabama and South Carolina. Clearwater customers use about 11.5 million gallons of potable water daily. Approximately 60 percent is pumped from 31 city-owned and operated groundwater wells; the remaining daily demand is supplied by water purchased from Pinellas County Utilities. The freshwater resource can be protected by balancing the recharge of the aquifer level and water withdrawals, protecting the fresh water from becoming salty.

Where does the currently unused reclaimed water go?
Unused reclaimed water is stored in reservoirs or storage tanks located in reclamation facilities and reuse sites. Transmission lines are used when water must be transported between sites that are not located near one another. Unused reclaimed water is a valuable resource that can be used to establish additional renewable water supplies that will supplement existing supplies to meet future water demands.

How pure is purified water and how is it made?
Clearwater Public Utilities stays abreast of advancements in technology, health science, and government regulations in order to provide a constant, safe supply of water. Today's technologies have the capability to purify reclaimed water to safely replenish the aquifer. The purified water is made by passing the reclaimed water through four water treatment processes, including ultrafiltration (UF), reverse osmosis (RO), an advanced oxidation process (AOP) of hydrogen peroxide addition upstream of ultraviolet (UV) treatment, and membrane contactors. These combined processes provide a multiple barrier treatment approach and remove pathogens, inorganic and organic compounds, and very small molecular weight compounds called microconstituents (e.g., sucralose, caffeine), creating a purified water. This purified water is then conditioned so that it will blend well with the groundwater in the existing aquifer.

What kind of water quality testing will be used?
Clearwater routinely collects and tests water samples long before it reaches your water tap, and it will be no different with this project. Monitoring and testing was a large part of the pilot and demonstration phase. Rigorous water monitoring and testing will be required once the recharge wells are constructed. The purified water from the plant will be tested on an hourly, daily, weekly, monthly and quarterly basis. Results will be compiled and analyzed on a consistent basis once the plant is operational.

What did the test results from the pilot project show?
The test results confirmed that the pilot plant successfully and consistently purified the source reclaimed water to better-than-drinking-water standards. The test results are available in reports on the project webpage at MyClearwater.com/groundwater.

How will the water be injected into the aquifer?
At least four recharge wells will be used to introduce the purified water into the aquifer. A pipeline from the water purification plant will deliver the purified water to these wells.

Is this a toilet-to-tap project?
No. The source of water supply for the water purification plant is reclaimed water, which will be treated by the water purification plant to better-than-drinking-water standards. This purified water will be conditioned and then used to replenish the aquifer.

Signs are posted around the city not to drink reclaimed water. So why is it safe to inject treated water into the aquifer and later to drink?
The water that will be injected into the ground is purified water, which is reclaimed water that has been treated to better-than-drinking-water standards using advanced treatment technologies. This is a safe and proven process that meets federal and state regulations, and it has been used around the world. It is proven safe and effective.

What are the water flows at the Advanced Water Purification Plant?
Approximately 3.8 million gallons per day (MGD) of reclaimed water will enter the Advanced Water Purification Plant for treatment, producing about 3 MGD of purified water that will be conditioned and then utilized to recharge the aquifer. The other approximately 0.8 MGD of water is reject water from the treatment processes and will be disposed into a deep injection well.

Who supports, monitors, and approves this project? Who makes up the project team?
This project is cooperatively funded by the District, which provides support and funding for local government projects to beneficially use reclaimed water to help meet the region's water supply needs. The project has been reviewed by the Florida Department of Environmental Protection. The project team includes the city of Clearwater, the Southwest Florida Water Management District, Tetra Tech (Engineering Consultant), Leggette, Brashears & Graham Inc. (Hydrogeology Consultant), and Alfonso Communications, Inc. (Public Outreach). The project team has been actively involved in public outreach with residents in and around the city and also with municipalities within the northern Pinellas County area.

What other groups or cities have or are developing projects like this?
Orange County, California has an existing groundwater replenishment project as does El Paso, Texas, and Scottsdale, Arizona. In Florida, some municipalities have piloted potable reuse projects and are investigating next steps.

What regulations are in place to ensure this project is safe?
State rules regulating potable reuse include Florida Administrative Code (F.A.C.) 62-600. Additionally, there are potable reuse guidelines as developed by the California Department of Public Health (CDPH) that are being used to ensure this project is safe. The project will be implemented only after it receives final approval from the Florida Department of Environmental Protection.

When will the water purification plant be built, where will it be located, and when will purified water be replenishing the aquifer?
Design of the Advanced Water Purification Plant began in January 2016. The plant will be located at the city's Northeast Water Reclamation Facility. The Advanced Water Purification Plant and recharge well construction is anticipated to begin in 2017.

What are the costs, and who is paying?
Current project capital costs are about $29 million for the Advanced Water Purification Plant and the groundwater recharge well system. The project costs will be paid by the city of Clearwater, with the District funding 50 percent of the project costs.

How can one learn more about Clearwater's Groundwater Replenishment Project?
Today's treatment technologies are highly advanced and can purify reclaimed water to better-than-drinking water standards. To learn more, visit MyClearwater.com/groundwater. Informational presentations are available for neighborhood and civic associations by calling (727) 562-4960.