

Recycled water for drinking: El Paso, Texas, diversifies water supply with potable reuse

The greater metropolitan area of El Paso, Texas, is home to one of the first plants in the United States to treat wastewater to drinking water standards. El Paso Water Utilities has met the challenges that come with living in a desert city by diversifying its water supply. Water reuse is a very important part of the water portfolio.

The drivers

El Paso is located in the Chihuahuan desert. The city gets its water supply from groundwater and from the Rio Grande. Water from the Rio Grande is only available during spring, summer and early autumn and is further limited in dry years. Extreme drought conditions over many years has shown a drying trend which has continuously reduced river flows, leaving less water available for the city.

The scheme at a glance

- El Paso Water Utilities Department (EPWU) controls the water systems that supply nearly 90 percent of all municipal water to more than 800,000 residents of El Paso County.
- EPWU uses groundwater and surface water for its potable supply, producing about 34 billion gallons a year of potable water for its customers.
- EPWU operates an Indirect Potable Reuse (IPR) facility at the Fred Hervey Water Reclamation Plant and recently expanded the plant. This plant treats wastewater to drinking water standards. The treated water is then injected into the Hueco Bolson (an aquifer) through a series of wells and infiltration basins to replenish the aquifer.
- The Fred Hervey Water Reclamation plant serves as a model and centre of learning for other inland cities facing diminishing supplies of fresh water.
- Through an agreement with the El Paso County Irrigation District, EPWU treats wastewater at other facilities and discharges it into the Rio Grande. EPWU plans to send some of the treated water directly to a proposed Advanced Water Purification Facility rather than downstream for other users. The direct potable reuse (DPR) facility will turn the treated water into drinking water and put it directly into the distribution system. Purified water will be a new source of drinking water to augment the water supply.

The path taken

Investigation

EPWU was one of the first departments in the U.S. to recognise the need to diversify its water resources and reduce its reliance on groundwater. In 1991, it completed a 50 year Water Resource Management Plan (1991-2040).



EPWU has been working with the Texas Commission on Environmental Quality (TCEQ) on its plans for the Advanced Water Purification Facility for the past year. A possible site has been selected near the Roberto Bustamante Wastewater Treatment Plant. There is sufficient effluent at this facility and there is a demand for resources in this area of the city.

Pilot

TCEQ has given EPWU the go ahead to build a pilot plant for the Advanced Water Purification Facility. The pilot plant is being constructed and expected to be complete in July of 2015. EPWU will test the plant for six to nine months before sending results to the TCEQ.

Approval for full-scale implementation

EPWU will need final approval from TCEQ to build the full scale facility. The facility is expected to go on-line in 2018.

Engaging the community

Engaging decision makers, regulators and politicians

In 1952, the El Paso City Council established a Public Service Board, a seven-member board of trustees that manages and controls EPWU and its systems. Members are appointed by the El Paso City Council and have expertise in financial management; general business management; engineering; environmental or public health; consumer/citizen advocacy; and communications, public administration and education. The seventh member is the mayor, who represents municipal government. The board reports to city and county government on water-related activities and issues.

Engaging customers

Public outreach is a very important component of the Advanced Water Purification Facility project. A robust communications strategy includes proactive media relations, a speakers bureau, and tours of the pilot plant.

In November 2013, EPWU surveyed its customers to determine their attitudes and information level about water issues, in particular their perceptions of direct potable reuse. Interviews were conducted by trained, bilingual telephone interviewers using a random sampling method. Based on the survey, about 84 per cent of the community supports direct potable reuse.

Along with the National Water Research Institute (NWRI), EPWU formed a panel of experts with different expertise (e.g. engineering, public health, public affairs) to get their feedback on the technical and public outreach portions of the project. Communications staff is publishing a video featuring interviews from the panel of experts.

Success factors

Proven technology already in use in Texas

The proposed advanced water treatment purification process uses rigorous and proven technologies that the Texas Commission on Environmental Quality had approved for similar plants in other parts of Texas.

Drought severity led to quicker approvals

Due to the severity of the drought, regulatory agencies have been supportive of EPWU in their efforts to get the plant approved.

Water quality not compromised

Drinking water regulations establish that surface and ground waters must be tested for inorganic chemicals. Drinking water must also be tested for organic chemicals (pesticides and insecticides), disinfectants and disinfection by-products, and microbial contaminants as specified by the State.

Sustained community support

Residents have continued and increasing confidence and satisfaction with EPWU. Over a 22-year period, confidence in the safety of drinking water has steadily increased from 60 percent in 1993 to 80 percent in 2015. Research shows that EPWU customers express continued high satisfaction with the cost of water, customer service, communication, and the management of water resources.

Lessons learnt

- Public acceptance will be one of the most significant challenges for the Advanced Water Purification Facility project. People want reassurance in terms of removing water-borne disease and industrial contamination and want to know that water from the purification facility will be the same quality as the water they are receiving.
- Having a communication and engagement strategy has resulted in positive results to this point.
- Talking to regulatory agencies as far in advance as possible is proving helpful. Once the concept was developed, the EPWU started meeting with regulators who were very keen to ensure they developed a relationship with the design team early on.
- Extensive preparation exercised to proceed with the construction of the facilities — studies, pilot plants, research, and the state / federal permitting processes — assured the success of the project.

Produced by the Australian Water Recycling Centre of Excellence, a national partnership of industry, research and government organisations working to develop water recycling solutions for Australia's future. www.australianwaterrecycling.com.au