

# Water Grand Challenges: Water Conservation

## Water Reuse Options in Texas

**Background** – As the need for water increases in Texas, alternative water management strategies need to be adopted to meet this demand. Reuse is an important strategy that could greatly enhance the longevity of water usefulness without the need to increase supply. Water reuse generally refers to the process of using treated wastewater for a beneficial purpose. There are many misconceptions regarding water reuse. Reclaimed water is not the same as greywater, which is untreated and typically comes from household sources such as showers, sinks, and baths. In contrast, reclaimed water is highly regulated, managed, and offers many beneficial uses at the municipal and state level. Water reclamation falls into two categories, direct or indirect reuse. Direct reuse refers to the introduction of reclaimed water directly to the point of distribution, such as taking treated wastewater to a community golf course for watering purposes. Indirect use takes the treated effluent and places it in a source for later use, such as a lake, river, or aquifer.<sup>1</sup>

Despite some misunderstanding among the public, reclaimed water can be safe for contact and its use is well developed. The Texas Administrative Code Title 30 § 210.3 categorizes reclaimed water into Type I and Type II. Type I reclamation is for use where humans may come into direct contact with the water, whereas type II is for use where humans will not come into contact with the reclaimed water.<sup>1</sup> As can be seen in the table, there are a myriad of uses for each type of reclamation. The following sections are going to discuss some successful programs that have implemented a water reclamation program in Texas as well as future directions the State may take.

### Type I Common Uses

- Landscape irrigation
- Fire protection
- Toilet and urinal flushing
- Watering milking animals

### Type II Common Uses

- Dust control
- Cooling tower applications
- Natural bodies of water with no human contact

**Current Implementation** – Many reclamation programs and technologies have been implemented in communities all across Texas. Perhaps the most noteworthy and successful program that has been executed is the El Paso Water Utilities (EPWU) reclaimed water program. Spurred by the realities of being a desert city, many conservation-oriented water management practices have been put in place. The reclamation program sustains four plants that distribute the treated effluent for non-potable purposes such as application to parks, sports fields, landscapes, construction purposes, and numerous other

purposes. The EPWU estimates that, since the conception of the water ordinance in 1991, they have conserved 231 billion gallons of water.<sup>2</sup>

While El Paso is often used as an ideal example of successful water conservation initiatives, in the last few decades there have been several water reuse programs implemented throughout the state. The City of Abilene's Lake Fort Phantom Hill project, Tarrant Regional Water District's constructed wetland project, Cleburne's water reclamation project for power plant cooling water, and San Antonio Water System's recycled water project are just a few examples. The Colorado River Municipal Water District and the City of Brownwood are also developing a direct potable reuse project that would expand the uses for reclaimed water.

**Future Implementation** – The 2012 State Water Plan estimates that existing supply from water reuse is projected to produce roughly 614,000 acre-feet of water per year by 2060. This supply would be increased to 1.5 million acre-feet per year if additional recommended water management strategies for reuse are implemented by 2060.<sup>3</sup> This leaves ample space for improvement on many fronts. One issue that challenges the implementation of water reuse projects is the perception of the public that reclaimed water has negative health effects, or is directly toxic if human contact happens. This can potentially be remedied through educational outreach in order to change the perception of reclaimed water. The other issue is adequate funding for more water reuse programs. Water reuse is a relatively cheap solution to water scarcity problems in Texas.

The Texas Water Development Board (TWDB) has several funding programs in place that can be used for implementing water reuse projects, including the Clean Water State Revolving Fund, the Water Infrastructure Fund, the State Participation Program, Rural Water Assistance Fund, Texas Water Development Fund II (Financial Assistance Account), and the Water Research Grant program. However, even with these funding sources many communities cannot adequately place the infrastructure necessary to implement successful reclamation programs. It will require federal funding, perhaps through the Title 16 Program and EPA Research Grant Program as well as novel state funding agencies prepared to invest in the states future. Fortunately, many of these funding issues are currently being discussed in the Texas Legislature. With limited funding across the board, it is more important than ever to have affordable and effective solutions to water scarcity issues.

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<sup>1</sup> Arroyo, Jorge. Shirazi, Saqib. *History of Water Reuse in Texas*. Texas Water Development Board, 2011.

<sup>2</sup> Lee, Leslie. *Re-water*. Texas Water Resource Institute. TxH20, Fall 2011

<sup>3</sup> *2012 State Water Plan*. Texas Water Development Board, 2012