



Water Reuse

Water reuse is the practice of using treated wastewater for a beneficial purpose. The Texas Administrative Code (TAC) defines reclaimed water as “domestic or municipal wastewater that has been treated to a quality suitable for a beneficial use” (30 TAC §210.3).

Water Reuse Terminology

There are two major categories of water reuse: direct reuse and indirect reuse. Both categories can be used for potable purposes.

Direct reuse refers to the use of reclaimed water that is piped directly from a wastewater treatment facility to distribution system for beneficial use. Examples of direct reuse for non-potable uses include piping treated wastewater to an industrial center for manufacturing, or to a golf course for irrigation, or a power plant for cooling.

Indirect reuse refers to the discharge of reclaimed water back to an environmental buffer such as a lake, river, or aquifer, and retrieved to be utilized again. Indirect reuse projects that involve a watercourse require a bed and banks permit from the state, which authorizes the permit holder to convey and subsequently divert water.

Direct potable refers to the use of advanced treated reclaimed water that is piped directly into the distribution system or blended with the raw water supply and upfront of the water treatment plant.

Indirect potable refers to the use of treated reclaimed water to augment drinking water supplies by discharging it to a water body, such as groundwater or surface water, and subsequent treatment for potable consumption.

Regulations

A water reuse project that involves discharge to waters of the United States must comply with federal and state requirements pursuant to the Clean Water Act and the Safe Drinking Water Act, which ensures the quality of drinking water. In Texas, these regulations establish quality, design, and operational requirements for reclaimed water:

- 30 TAC Chapter 210
- 30 TAC Chapter 321, Subchapter P
- Texas Water Code §5.102, §5.103, §26.011, §26.0271, §26.121

Reclaimed water used for non-potable purposes is further categorized into Type I and Type II (30 TAC §210.32). Type I use includes applications where the public may come in contact with the reclaimed water, and in Type II use the public does not.

Facilities in Texas

In the past decade, several major potable reuse projects have been implemented in Texas. Indirect potable reuse projects include augmenting the City of Abilene’s Lake Fort Phantom Hill and the City of Wichita’s Lake Arrowhead as well as constructing the Tarrant Regional Water District’s and North Texas Municipal Water District’s wetlands.

In May 2013, the Colorado River Municipal Water District began operating the first direct potable reuse facility in the state and the nation. The District reclaims the wastewater effluent from the City of Big Spring, provides advanced treatment, and produces two million gallons per day of water that is blended with surface water.

In July 2014, the City of Wichita Falls began operating an emergency direct potable reuse facility. The City conveyed wastewater effluent through a 12-mile, above-ground pipeline, treated it in an existing treatment plant, and produced 5 million gallons per day of water that was stored in a holding lagoon and then blended with surface water. The plant was decommissioned in July of 2015.

In 2016, El Paso Water Utilities conducted pilot-scale testing for an advanced water purification facility. Presently, the utility has completed the design of the full-scale facility, and the plans are being reviewed by the Texas Commission on Environmental Quality. Once completed, the 10-million-gallon-per-day facility will be the first to allow advanced treated water to flow directly into the water distribution system.

Reuse in the State Water Plan

In the 2017 State Water Plan, reuse recommended water management strategies will produce 1,107,000 acre-feet per year by decade 2070, which accounts for 13 percent of all new water supplies. If these recommended strategies are implemented, direct potable reuse will produce 87,000 acre-feet per year by decade

2070, which is about 1 percent of all new water supplies; indirect reuse will produce 649,000 acre-feet per year, which is 7.6 percent; and direct reuse will produce 371,000 acre-feet per year, which is 4.4 percent.

Reuse Projects

The Texas Water Development Board (TWDB) published a three-part report documenting the history, current technological state, and the future research needs of reuse in Texas. The TWDB also published the first *Direct Potable Reuse Resource Document* in Texas to help communities assess direct potable reuse. The TWDB funded a project that monitors the water quality and treatment efficiency at the Raw Water Production Facility in Big Spring, Texas. The study developed a resource document that provides monitoring guidelines for direct potable reuse facilities.

More Information

To learn more about the TWDB's water reuse activities, please visit: www.twdb.texas.gov/innovativewater/reuse/index.asp.

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