The Colorado River Municipal Water District (CRMWD) recently began producing a new municipal water source using treated wastewater effluent. CRMWD’s Raw Water Production Facility (RWPF) diverts up to 2.5 million gallons per day of effluent from the plant near Big Spring and treats it to near drinking-water quality.

The RWPF provides membrane filtration, reverse osmosis and ultraviolet oxidation to achieve a water quality superior to other raw water supplies controlled by the CRMWD. The product water is blended into the CRMWD’s Spence Pipeline east of Big Spring. This is believed to be the first facility in North America to blend reclaimed water directly in a raw water transmission pipeline.

Freese and Nichols managed permitting, completed the design, and provided construction and startup services for this unique facility. CRMWD selected Freese and Nichols for a feasibility study to assess water supply augmentation with reclaimed wastewater. Three regional projects were evaluated to serve CRMWD’s member cities and key-customers. Following the feasibility determination, Freese and Nichols was retained to navigate source-water approval by the Texas Commission on Environmental Quality (TCEQ) and to provide TPDES and Section 404 permitting, pilot testing, design and construction phase assistance.

The project was featured in the Texas WET Magazine’s November 2011 issue. FNI also presented this project at the WateReuse Symposium, the AWWA Annual Conference and Exposition, and several other venues. It also was selected as Reuse Project of the Year by Global Water Intelligence.

**FEATURES**

- Blends highly treated wastewater effluent directly into a municipal water supply
- Drought-resistant source of new water
- Produces water year-round
- Multiple engineered barriers for consistent quantity and high quality of new water

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**QUESTION?** What is reclaimed water, and what is potable reuse?

**ANSWER.** **Reclaimed Water** is wastewater treated to a quality suitable for its intended beneficial reuse. Although there is no industry-wide definition for **Potable Reuse**, it is often defined as “any **planned** use of reclaimed water to create or augment a potable water supply source,” and is often categorized as Indirect Potable Reuse (IPR) or Direct Potable Reuse (DPR). The reclaimed water is primarily municipal wastewater (with minimal industrial wastewater), treated and purified to comply with state and federal standards for drinking water or drinking water sources. There are **always** multiple environmental and/or engineered buffers involved in producing and delivering potable reuse water.

**QUESTION?** Who’s doing potable reuse?

**ANSWER.** It has been in practice in Windhoek, Namibia, since 1968. The LA County Sanitation District and Orange County Water District have been using purified reclaimed water for supplemental groundwater injection for about 50 years, and El Paso since 1985. The Upper Occoquan Service Authority has been practicing surface water augmentation outside Washington, D.C. since 1978. Recently, more direct blending of reclaimed water has been pursued, including the following Texas projects:

- CRMWD (Big Spring) Operational since April 2013
- Wichita Falls Conditional approval for operation
- Brownwood Permit and funding approved
- El Paso PSB Under design

**QUESTION?** Is it safe?

**ANSWER.** Yes. Properly treated reclaimed water is as safe or safer than conventional surface water sources. Several national science and policy organizations have recently weighed in on this subject. Using your smartphone, scan the top code (at right) for the National Research Council’s report on Water Reuse (2012) and the bottom code (at right) for the American Water Works Association’s policy statement update on reclaimed water.

**QUESTION?** What kind of permits do I need for reuse?

**ANSWER.** TCEQ established a system of reuse authorizations for non-potable reuse in accordance with Chapter 210 of the Texas Water Code. However, there is no specific permit or authorization for potable reuse.

For indirect potable reuse, a discharge permit is required before treated effluent may enter a natural watercourse. Retaining the right to withdraw/reclaim water after discharge requires a bed-and-banks water rights permit.

For direct potable reuse, a discharge is not made, and the original-use water rights continue. The water must be approved by TCEQ as a public water source; and due to the increased risk potential, TCEQ is requiring increased pathogen barriers and extensive monitoring for DPR projects.

**QUESTION?** What are the costs, and how does it compare to other water supply alternatives?

**ANSWER.** The graph below shows costs of water supply alternatives typically considered in Texas. Potable reuse is among the most cost competitive.

![Cost Comparison Graph](image-url)