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A Salty Solution

Brownsville turns to Gulf of Mexico for drinking water

BY LYNN BREZOSKY / THE ASSOCIATED PRESS

On a one-acre site alongside a string of docked shrimp boats and fronting the turquoise waters of the Brownsville ship channel is a \$2.2 million assembly of pipes, sheds and whirring machinery — Texas' attempt at making Gulf of Mexico sea water suitable to drink.

Plant operator Joel del Rio is its guardian, constantly checking the intake pumps, the pretreatment filters, the discharge pond and the long pipes of the desalination unit. In an occasional moment of truth, he opens a small spigot at the end of a fat pipe and fills a plastic glass in hopes the finished product will taste "like regular bottled water."

"Sea water," he said. "It's never gonna run out."

The plant is a pilot project for the state's first \$150 million full-scale sea water desalination plant slated for construction in 2010.

Desalting the sea water is expensive, mostly because of the energy involved in pushing water through layers and layers of filters to strain it. Current cost estimates run at about \$650 per acre foot (326,000 gallons), as opposed to \$200 for purifying fresh water. But a glimpse around the world shows that when water needs are crucial, governments and private investors ante up.

Fawzi Karajeh, chief of water recycling and desalination for the California Department of Water Resources, said the state is hoping to get about half a million acre feet of water per year from desalination. It seems a tiny portion of the state's yearly 70 million acre feet budget.

In Texas, Gov. Rick Perry began pushing for Gulf of Mexico desalination in 2002 after a state water plan determined hundreds of communities could face water shortages in the next 50 years.

Texas leaders already have agreed to pour \$10 million more into the Brownsville venture, which got fast-tracked during a period of alarming drought and rapid population growth. Between 1990 and 2000, the Brownsville area grew 43 percent to 372,000 people, and the population is expected to approach 500,000 by 2020.

Every drop of the Rio Grande, the region's shared water source with northern Mexico, is already accounted for, and a 2001-2005 water treaty dispute with Mexico showed how Texas' southern neighbor can hoard the water in its upriver dams.

A plant that filters brackish groundwater now provides enough water to meet about one-fourth of the city's current peak demand, but brackish water is replenished largely by what seeps down through the soil and during a long-term drought may not be viable.

Genoveva Gomez, the Brownsville project's lead engineer, said the ship channel was chosen because passing ships stir up the water, making for the most challenging scenario for the filters.

Once the water is sucked into a large culvert, one of a rotating trio of pumps sends the raw product to the three competing pretreatment units. Each is designed by a company hoping to prove most effective to secure a contract with the full-scale plant. There, chemicals are added to remove bacteria and other impurities, leaving a product that is clear but still salty.

That water goes to the reverseosmosis plant. There, water is pumped at high pressure through pipes of tightly rolled filters with a hollow center. The filters trap the salts into a watery discharge, and the purified water collects in the center.

Tyson Broad of the Sierra Club in Austin said he was concerned the plant would be constructed on the shores of the Laguna Madre, the bay that separates the mainland from the Gulf, sending salty discharge into the bay.

"If that increases the salinity in the bay system, that's going to probably make the area less tolerable to fish and for any of the organisms that need to rely on the bay," he said.