

### Southmost Regional Water Authority Brackish Groundwater Treatment Facility

#### Background

|                            |   |
|----------------------------|---|
| <b>Location:</b>           | Brownsville, Texas  |
| <b>Water Authority:</b>    | Southmost Regional Water Authority (partners include the Brownsville Public Utilities Board, Brownsville Navigation District, City of Los Fresnos, Valley Municipal Utility District #2, and Town of Indian Lake) |
| <b>Year Operational:</b>   | 2004  |
| <b>Design Capacity:</b>    | 7.5 million gallons per day (MGD)   |
| <b>Production Wells:</b>   | 20 wells installed in the Gulf Coast Aquifer  |
| <b>Total Project Cost:</b> | \$21.6 million (well-field cost is about \$9.1 million)   |

#### Treatment Process

Pretreatment includes the addition of chlorine to oxidize the arsenic, filtration using cartridge filters, and anti-scalant to prevent membrane fouling. There are six reverse osmosis trains constructed in a two-stage configuration, 22:11 pressure vessel array. Each pressure vessel has seven elements. The membrane model installed is ESPA2, manufactured by Hydranautics. Each train is designed to produce 1.1 MGD at 75 percent recovery. An interstage booster pump between the first and second stages is used to boost the feed pressure to the second stage. The concentrate flow is discharged to

a drainage ditch located near the facility that ultimately empties into the Brownsville Ship Channel.

#### Plant Expansion

The facility is currently undergoing upgrades and construction will be completed in January 2015. Two additional reverse osmosis trains will be added to increase design capacity from 10 to 11 MGD. A pretreatment facility consisting of microfiltration will be added to reduce the iron and arsenic levels in the raw water. The aquifer has also been evaluated to optimize the potential yield of the well field.



Reverse Osmosis Trains



Cartridge Filter Casing



Concentrate Disposal  
to Drainage Ditch

The Texas Water Development Board (TWDB) is the state agency charged with collecting and disseminating water-related data, assisting with regional planning, and preparing the state water plan for the development of the state's water resources. TWDB administers cost-effective financial assistance programs for the construction of water supply, wastewater treatment, flood control, and agricultural water conservation projects.