

Worth Its Salt:

North Alamo Water Supply Corporation Victoria Road Reverse Osmosis Plant No. 5

The Victoria Road Reverse Osmosis Plant No. 5 is a brackish groundwater desalination plant located on the outskirts of Donna, Texas. The plant started operations in February 2012 with two reverse osmosis trains for a total design capacity of 2 million gallons per day of permeate water. The plant has blending capabilities for additional capacity. The plant also can be expanded to include two additional trains for a total of 4 million gallons per day of permeate with additional blending capability.

The facility consists of two trains constructed in a two-stage configuration with a 20:10 pressure vessel array. Each pressure vessel has seven elements. The membrane model installed is ESPA2-LD manufactured by Hydranautics. A turbo charger, an energy recovery device, is used at the inter-stage to convert pressure to energy and used to boost the second stage feed pressure. Each train is operated at 75 percent recovery to produce 1 million gallons per day of permeate water.

Two approximately 400 feet deep wells, one cased in stainless steel and the other in fiberglass, feed brackish groundwater from the Gulf Coast Aquifer to the desalination facility. The total dissolved solids concentration of the raw water is about 4,000 milligrams per liter. Pre-treatment includes suspended solids filtration through cartridge filters and addition of anti-scalant.

Post treatment includes the addition of caustic soda for pH control, calcium chloride for calcium addition and chlorine combined with liquid ammonium sulfate for chloramine disinfection. Concentrate disposal consists of blending concentrate with raw water to reduce the total dissolved solids concentration below the maximum limit of 12,800 milligrams per liter and discharging to a drainage ditch that empties into Laguna Madre.



Inside the building



Reverse Osmosis Trains



Feed Pumps



Energy Recovery Device



Cartridge Filter Casing