

# Project Profile



## City of Moulton, Texas Arsenic, Iron, Manganese Treatment System

### Background

AdEdge Technologies Inc. (AdEdge) was selected by the City of Moulton and Hejl, Lee, and Associates (HLA) to design a full-scale arsenic treatment project using its AD26 and Granular Ferric Oxide (GFO) adsorption technology. In addition to designing the system, AdEdge assisted HLA in obtaining a construction permit from the Texas Commission on Environmental Quality (TCEQ) for the system. Supporting documentation on the extensive piloting and field performance along with design and construction documents were submitted to TCEQ to obtain technology approval and a construction permit. TCEQ issued the approval and the construction permit on July 29, 2005. Fabrication of the system was conducted concurrently.



### Treatment System

The AdEdge arsenic treatment system consists of a completely integrated packaged treatment system with two main components: an AD26 system for iron and manganese removal and an Arsenic Package Unit (APU) for arsenic removal, both skid mounted and automated to accommodate a maximum 100 gpm design flow. The first component in the treatment train is the iron/manganese removal system, which consists of twin 30-inch vessels and AD26 media. The AD26 system is augmented by a chlorine feed module prior to the treatment system. This module injects and monitors free chlorine to enhance iron and manganese oxidation and subsequent filtration prior to arsenic polishing. The second component is an arsenic adsorption skid-mounted unit rated for 100 gallons per minute (gpm). Arsenic treatment and removal occurs in an Adsorption Package Unit (APU) configured in parallel. Treated water is pumped from the water-supply well through the AD26 pre-treatment unit and the APU and into a 10,000-gallon storage tank. From the storage tank, groundwater flows through booster pumps, a hydropneumatic tank, and into the distribution system. The 42-inch diameter APU vessels each contain Bayoxide E33® adsorption media. Bayoxide E33® is a granular ferric oxide (GFO) media that has been in commercial use since 1999. AdEdge has used GFO media in over 100 small community system applications and in over 2,500 residential applications. The Bayoxide E33® is being implemented in three other locations in Texas, as part of the EPA's Arsenic Demonstration Program; those sites are Alvin, Bruni, and Wellman, Texas.

Total As **	0.028	mg/L As
As(III)	0.016	mg/L
Alkalinity		mg/L @ CaCO <sub>3</sub>
Hardness **	264	mg/L @ CaCO <sub>3</sub>
Silica **	19.5	mg/L SiO <sub>2</sub>
Phosphate **	< 0.05	mg/L P <sub>04</sub>
Sulfate	< 1.0	mg/L SO <sub>4</sub>
Iron **	0.37	mg/L Fe
Manganese **	0.09	mg/L Mn

### Performance

The skid-mounted systems are equipped with automatic controls, backwashing features, switches, gauges, flow meters, and sample ports for complete functioning packaged units. A PLC and color touch screen interface allow for simple user access and operation. Since operations began in early November, 2005 treating approximately 35,000 gallons per day, effluent samples have indicated excellent iron and manganese removal with high efficiency arsenic removal to non-detectable levels, well below the new arsenic treatment standard of 10 ppb.

### For More Information Contact

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