

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 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 29 July 2005.



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 two 30-inch vessels and AD-26 media. The AD26 system is augmented by a chlorine addition 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 to flow in parallel. Groundwater is pumped from the water-supply well through the AD-26 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 50 small community system applications and in over 1,000 residential applications.

Total As **	0.028	mg/L As
As(III)	0.016	mg/L
Alkalinity		mg/L @ CaCO3
Hardness **	264	mg/L @ CaCO3
Silica **	19.5	mg/L SiO2
Phosphate **	< 0.05	mg/L P04
Sulfate	<1.0	mg/L SO4
Iron **	0.37	mg/L Fe
Manganese **	0.09	mg/L Mn

The skid-mounted systems are equipped with automatic controls, backwashing features, switches, gauges, and sample ports for complete functioning packaged units. Instrumentation is provided on a control panel to measure critical operating parameters. Total gallon throughput and flow rate for each unit is measured continuously with dedicated flow totalizing meters. The AdEdge AD26 and APU systems do not generate liquid or solid hazardous waste. The system will be placed into operation in the fourth quarter of 2005.

Bayoxide E-33 is being implemented in three other locations in Texas, as part of the EPA Arsenic Treatment Program, those sites are Alvin, Bruni, and Wellman.

For More Information Contact

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