

Project Profile



Orchard Highlands USEPA Arsenic Treatment Demonstration Goffstown, New Hampshire

Background

In 2004 AdEdge Technologies Inc. (AdEdge) was selected to implement six full-scale arsenic treatment demonstration projects as part of the USEPA Office of Research and Development arsenic research program (Round 2). These six sites were in addition to three USEPA Round 1 demonstration sites awarded to AdEdge in 2003. The purpose of the research effort is to provide information to fill-in gaps that exist for a number of technologies or compliance approaches and provide this information to utilities, engineering firms, regulatory officials, and others. One of the Round 2 sites, located in Goffstown, New Hampshire, is a small subdivision community that uses groundwater to meet its water-supply needs. The groundwater resource in Goffstown was determined to contain arsenic concentrations above the proposed maximum contaminant level (MCL) that will take effect in January 2006 (i.e., 10 parts per billion). Analytical data for the Orchard Highlands water system is summarized in the table to the right. AdEdge designed and installed a treatment system to safely and effectively remove arsenic from the drinking water source. The treatment system is described in the following paragraph.



Treatment System

The AdEdge arsenic treatment system consists of a skid-mounted unit rated for 10 gallons per minute (gpm). Arsenic treatment and removal occurs in an Adsorption Package Unit (APU) configured to flow in series (i.e., lead/lag). Groundwater is pumped from the water-supply well through 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 18-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 **	0.033	mg/L As
As(III)	< 0.05	mg/L
Alkalinity	85	mg/L @ CaCO3
Hardness **	25	mg/L @ CaCO3
Silica **	26.0	mg/L SiO2
Phosphate **	< 0.20	mg/L P04
Sulfate	6.0	mg/L SO4
Iron **	<0.025	mg/L Fe
Manganese **	0.01	mg/L Mn

The skid-mounted system is 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 adsorption system does not require any chemicals or regeneration, and the process does not generate liquid or hazardous waste. The system was placed into operation in April 2005 and has been operating for several months meeting all discharge requirements.

For More Information Contact

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