

Project Profile

Bois Forte Reservation Palmquist Site – Minnesota Arsenic, Iron, Manganese Treatment



Background

In May 2007, AdEdge Technologies, Inc. was selected by Indian Health Services to supply an arsenic, iron, and manganese treatment system for the Bois Forte Reservation – Palmquist Community Water System in Minnesota. The system has two wells that combine together to serve potable water to 50 connections in the tribal community. The system serves a population of approximately 150 people at 80 gpm with an arsenic, iron, and manganese level of 20 ug/L, 1.17 mg/L, and 0.19 mg/L respectively. An AdEdge AD26 oxidation / filtration system was selected as the best overall approach to simultaneously remove the iron, manganese and arsenic. The packaged AD26 system utilizes an NSF 61 Certified manganese dioxide media (AD26) that is excellent for co-contaminant removal. The technology was selected based on overall cost, the small footprint, and simplicity of operation. The raw water quality of the combined wells is shown to the right.



Treatment System

The AdEdge AD26 arsenic treatment train consists of a completely integrated packaged treatment system with three carbon steel vessels in parallel to treat up to 100 gallons per minute (gpm). A design filtration rate of 8-9 gpm/sq foot is nearly 3 times higher than conventional greensand filtration offering high efficiency removal with smaller vessels and lower cost. The AD26 automated system equipped with a PLC, automated butterfly valves, and control panel is integrated with chlorine addition and monitoring for process control and disinfection purposes. The system is pre-engineered, pre-piped, and skid mounted for ease of installation and operation. A continuous free chlorine monitor on the system allows the operator to maintain desired disinfection residual in the distribution system. The AD26 technology has been deployed successfully by AdEdge on many high arsenic, iron, and manganese wells to date and as also on 3 full scale EPA arsenic demonstration projects.

Priority Parameters		
pH **	8.00	
Total As **	0.012	mg/L As
As(III)	no data	mg/L (if known)
Sulfides **	no data	mg/L
Hardness **	173	mg/L @ CaCO3
Alkalinity **	213.0	mg/L @ CaCO3
Silica **	no data	mg/L SiO2
Phosphate **	no data	mg/L P04
Sulfate **	7.4	mg/L SO4
Iron **	1.17	mg/L Fe
Manganese **	0.19	mg/L Mn

Performance

Installation was completed and the system was officially started up in October 2007. Since operations began, the system has consistently met all the EPA MCLs for arsenic, iron, and manganese. Monitoring and periodic sampling of the system is performed by the reservation's certified operator. Oversight of the system is being monitored by the Indian Health Service personnel who provide technical assistance to the Tribe.

For More Information Contact

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