

Project Profile

Highland Hills MHC Highland, MI 450 GPM AD26 Arsenic, Iron System



Background

In January 2008 AdEdge Technologies, Inc. was selected among other vendors by Nationwide MHP to supply a turnkey arsenic, iron, and manganese treatment system for the Highland Hills MHP in Highland, Michigan. The system consists of multiple wells that combine together to serve potable water to 306 connections and a population of 765 in the community. Several options were considered based on the need to remove the 1 mg/L iron and arsenic from 13 ppb to below the new MCL of 10 ppb. An AdEdge AD26 oxidation / filtration system was selected as the best overall approach to simultaneously remove both contaminants while having a small footprint to fit into the existing building space without a building expansion. Work was closely coordinated with Atwell-Hicks, the site's engineer. Following award, all appropriate permitting documents were prepared and submitted to MDEQ for approval with the permit being granted in March 2008. The AdEdge scope of work included system design, supply, installation, piping including sewer tie ins, and electrical. 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 two skid mounted triplex packaged treatment systems with six vessels in parallel to treat up to 450 gallons per minute (gpm). A design filtration rate of 8.5 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.

Performance

Installation was completed and the system was officially started up in July 2008. Since operations began, the system has consistently met all the EPA MCLs for arsenic, iron, and manganese. Arsenic in the treated water has been recorded consistently below detection (<2 ppb). Monitoring and periodic sampling of the system is performed by the site's certified operator in accordance with the MDEQ permit.

For More Information Contact

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Priority Parameters	
pH**	Assume 7.5
Total As**	11-13 mg/L As
As(III)	mg/L (if known)
Sulfides**	none mg/L
Hardness**	226-234 mg/L @ CaCO3
Alkalinity**	175.0 mg/L @ CaCO3
Silica**	no data mg/L SiO2
Phosphate**	no data mg/L PO4
Sulfate**	19-21 mg/L SO4
Iron**	0.8-.9 mg/L Fe
Manganese**	no data mg/L Mn