

# Treating Water, Changing Lives

Hartley Reverse Osmosis Water Treatment Plant - Hartley, Iowa  
City of Hartley, Iowa  
HR Green – Des Moines, Iowa

*The community of Hartley historically derived municipal water from the Dakota Sandstone aquifer, which was treated by aeration and filtration for iron removal, but retained extremely high hardness, sulfate, and total dissolved solids levels, earning its reputation for some of the poorest drinking water quality in the state of Iowa.*

After working with HR Green to implement an innovative Reverse Osmosis Water Treatment System the City now has some of the highest quality drinking water in the state. The water quality changed virtually overnight from a hardness of nearly 1300 mg/L to approximately 130 mg/L, a sulfate concentration of over 1,000 mg/L to approximately 150 mg/L, and a total dissolved solids (TDS) concentration of over 2,000 mg/L to approximately 300 mg/L.

Prior to the new treatment plant, the majority of the community purchased their drinking water separately from the public water system. Now they can drink it straight from the tap as most communities can. Most households can eliminate or significantly reduce the use of their personal home water softeners. This reduction in use of softeners is anticipated to help the City's wastewater treatment facility meet future chloride discharge limits. This project has truly made a difference in the lives of the citizens of Hartley.

Site constraints were overcome to mitigate the client's need and expense of finding and purchasing a new site. The new treatment building was designed to fit between the existing elevated water tower, groundwater well, clearwell, alley and streets, and three existing treatment buildings while maintaining Iowa DNR separation requirements for storage of fuel, chemicals, and sanitary discharge.



A negative overall project change order total exceeded the client's expectations and allowed them to apply the project reserve funding toward the needed rehabilitation of two existing buildings and some associated existing valves and piping to extend their useful life.

Backup power generation was added to ensure continued operation of the plant during power outages, something the City has never had. A secondary containment curb was added to meet well separation requirements and provide additional spill protection.

A central water quality instrumentation panel was constructed to continuously monitor water quality both locally and remotely through SCADA. Continuous monitoring of water quality greatly improved the ensured public safety of the potable water over the previous periodic manual monitoring.

Each reverse osmosis treatment train was fully equipped with individual water quality monitoring ports and a dual stage pumping system to reduce energy consumption.

