

Keystone Potato Products' Mine Pool Treatment System Expansion Project July 2014

Project Description: Keystone Potato Products extracts an average of 3 million gallons of mine-impacted well water per month that contains high levels of iron and manganese. This high iron and manganese residual in the water fouls plant processes, puts Keystone in violation of its NPDES wastewater discharge permit, and contributes to the Acid Mine Drainage (AMD) impairment of the Swatara Creek watershed. This project was for the design, construction and installation of a clarification system "in front of" the plant's ineffective greensand filtration system in order to effectively remove the high iron and manganese within the mine pool water.

Project Goals: Reduce iron and manganese levels in the treated water in order to provide clean water for the plant processes, put Keystone in compliance with its NPDES permit, and reduce the metal loading entering the Swatara Creek watershed.

Project Results: A 3,800 square foot building addition by Timberline Buildings, Hegins, PA was constructed to house the new treatment system by ProChemTech International, Brockway, PA. The treatment system consists of an initial aeration and chemical addition tank for the oxidation of iron and manganese, followed by a mix tank for achieving coagulant mix and flocculation of solids. Downstream of the mix tank is the workhorse of the system, the incline plate clarifier with an effluent weir capable of handling flows up to 200 gpm. A clearwell tank and pump at the end of the system supplies water to the existing greensand filters for any needed final polishing. A filter press and supporting components is also part of the system, which presses the iron and manganese sludge into a dry filter cake for disposal in a landfill. The project is effectively removing 10 lbs/day iron and 1 lb/day manganese to meet the project goals.



Raw well water entering treatment system



Treated water flowing over the effluent weir

Project Costs: Total project cost = \$587,822. Department of Community and Economic Development AMD Abatement and Treatment Program grant funding = \$274,347. Department of Environmental Protection Growing Greener grant funding = \$293,898.

Lessons Learned: A critical component to the treatment system is the effective introduction of chemicals (sodium hydroxide, sodium hypochlorite, potassium permanganate and polymer), into the treatment system. This would not have been possible without the automated computer control option that was included as part of system.

Partners: Schuylkill County Conservation District (Growing Greener grant sponsor)

Contact Information: Cory Schlegel, Keystone Potato Products, cschlegel@masserspuds.com