Case Study - The Gladden Acid Mine Drainage (AMD) Treatment Facility Project[1]

Eric E. Cavazza* and Thomas A. Gray[2]

Abstract: Tetra Tech, Inc., in partnership with the South Fayette Conservation Group (SFCG), designed and oversaw the construction of the Gladden Acid Mine Drainage (AMD) Treatment Facility[3] through a design-build project (in 15 months during a global pandemic) with funding provided by the Pennsylvania Department of Environmental Protection. The treatment plant, which is located 16 miles south of the Pittsburgh in South Fayette Township, Allegheny County, PA, was designed to treat 2.2 million gallons per day and remove 690 pounds per day of iron pollution from the Chartiers Creek watershed, eliminating one of the largest discharges in the watershed that accounted for over 40 percent of the stream's pollution load. The facility, which became operational in January 2021, is restoring water quality in four miles of Millers Run and three-and-one-half miles of Chartiers Creek to a trout-stocked fishery with improved recreational uses as a result. Millers Run has been on the Pennsylvania Fish and Boat Commission stocking list upstream of the discharge, and for the first time in 2022, the restored section of stream is on the PFBC schedule to be stocked. The sections of both streams that have been restored flow past Meyer and Middleton Parks and are extensively used by canoers and kayakers. The discharge, which ranges from 750 to 1,500 gallons per minute, originates from the abandoned Pittsburgh Coal Company's Montour No. 2 underground mining complex. The plant includes two pumping stations to extract the AMD from the mine pool and bring it to the surface for treatment. Treatment consists of aeration, oxidation with hydrogen peroxide and alkaline addition as needed. The iron is precipitated and settled in a clarifier. The clarified water is then routed through a polishing pond before final discharge to Millers Run. The iron sludge is collected and pumped from the clarifier via a pipeline where it is injected into a distant section of the mine for disposal. The total cost pf the project including engineering, permitting, earthwork, construction, and final grading and seeding was just over $13,000,000. The plant's annual operating cost is estimated to be $300,000 per year, and the plant is currently operated by the SFCG, the primary project partner.

Additional Key Words: Watershed Restoration, Design-Build Project.

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2. Eric E. Cavazza, P.E. (*presenter), VP, Legacy Coal Reclamation, Tetra Tech, Inc., OGA Operating Unit, 400 Penn Center Boulevard, Suite 200, Monroeville, PA 15235, and Thomas A. Gray, P.E., Senior Mining Engineer, Tetra Tech, Inc., OGA Operating Unit, 661 Andersen Drive Suite 200, Pittsburgh, PA 15220.

3. Work reported here was conducted near 40° 20' 22.9" N; 80° 10' 11.9" W.