



Iron Removal with LayneOx Provides 500-GPM

Perry, Michigan



Perry, Michigan's proximity to Interstate 69 caused the city of 2,000-plus to grow as a bedroom community for Lansing commuters. Perry's potable water was from three wells supplying a combined 220,000 gallons per day to 755 connections. Iron levels in the city's water supply had been a problem back to the early 1960s. While there were no regulatory problems with the 2.0 mg/L iron levels, they still exceeded the USEPA's recommended (but not enforced) "secondary maximum contaminant levels" (SMCL) of 0.3 mg/L. More importantly, community feedback about aesthetic problems with taste and color, discolored laundry and problems with iron in fixtures. To help alleviate the problem the City's operations staff flushed mains three times per year and fed phosphates, but problems persisted since treatment didn't provide iron removal.

In 2005, Perry contracted with a consulting firm to look into treatment options. Layne conducted a filtration pilot study using manganese dioxide-based media, LayneOx™, and demonstrated that iron and manganese could easily be removed to below the secondary MCL. LayneOx is a highly efficient granular catalytic filter media with naturally high manganese dioxide content. The LayneOx process has the ability to remove many contaminants, including iron, arsenic, manganese, and hydrogen sulfide, all in one cost effective backwash process.

Based on results of the pilot, the consultant proposed an iron and manganese removal plant, installation of 4,000 feet of water and sewer main, a new well and abandonment of an existing well. Construction of began in mid-2008. The Layne-designed and constructed skid-mounted treatment plant consisted of four 5-foot diameter vessels, each with a loading rate of 6.37 gm/ft². The overall system was rated for 500-gpm. Backwash was fully automated, initiated primarily on a timed basis and secondarily on pressure drop.

Finished iron levels were below 0.1 ppm and customer complaints decreased dramatically. As residual iron dissipated, the quantity of water used per flush also decreased from 800K to 150K gallons. The client stated the City was pleased with system performance, cost, ease of use and system automation, which exceeded expectations that operators not be unduly burdened with operation and maintenance. The client even noted that the City has experienced a reduction in the use of home water softeners.

Owner:

- City of Perry, Michigan

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Completed:

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