WASTEWATER TREATMENT PLANT IMPROVEMENTS

TIPTON, IOWA

COMPLETION DATE

Design: 2019
Construction: 2020-2021

COST

As-Bid: $7,269,000
Final Construction: $6,800,000

REFERENCE

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PROJECT DESCRIPTION

The City partnered with McClure to develop a long-term facility plan for improvements in late 2016. The study evaluated four viable alternatives that would comply with NPDES permit requirements and Iowa Nutrient Reduction Strategy guidelines. Ultimately, the City decided to consolidate the two WWTP facilities into an expanded facility at the West WWTP location. The expanded facility included the construction of a new Submerged Attached Growth Reactor (SAGR) treatment system and corresponding improvements to the three-cell aerated lagoon treatment system designed for future total nitrogen removal. A new UV disinfection system and Blower Building were also included in the project. Miscellaneous improvements to extend sanitary sewer service from the East WWTP were also constructed. Extensive value engineering completed with Woodruff Construction (General Contractor) resulted in the project being delivered nearly $500,000 under the original bid cost, saving the average sanitary sewer customer approximately $24 per year on their utility bills.

The challenge of changing water quality regulations can put communities into a difficult situation. The City of Tipton had owned and operated two wastewater facilities in multiple watersheds based on water quality requirements: the East WWTP, a three-cell aerated lagoon which was constructed near Sugar Creek in the mid-1980s, and the West WWTP, a three-cell aerated lagoon constructed in 2002 near Crooked Creek to replace an outdated trickling filter mechanical facility. Both facilities received new NPDES permits in 2016 which required upgrades to meeting ammonia-nitrogen limits during the winter, and E. coli limits during the disinfection season. Additionally, based on its average wet-weather design flow, the West WWTP was required to address nutrient removal due to the Iowa Nutrient Reduction Strategy. Having to make improvements at multiple locations caused the City to consider all available options to achieve water quality requirements while minimizing cost to their ratepayers and maximizing efficiency for operations staff.