

## 2019 ACEC of Maine Engineering Excellence Awards



**Wright-Pierce** received the Honor Award for Shaping Future Project Procurements for its work on the Brunswick Sewer District (BSD) Wastewater Treatment Facility Upgrade. Wright-Pierce engineers worked closely with the BSD, which owns, operates, and maintains a 4 million gallons a day wastewater treatment facility (WWTF) serving approximately 4,400 residential and commercial users. Built in 1966, the facility had not been upgraded since 1991. Located on the banks of the Androscoggin River, a tributary of Merrymeeting Bay, the aging facility required extensive upgrades to maintain compliance with discharge regulations. BSD hired Wright-Pierce engineers to provide full design engineering, permitting, and funding assistance, along with construction administration services for the completion of the \$22 million WWTF upgrade project.

To best meet BSD's goals, the project was delivered using a Construction Management at Risk (CMAR) method rather than the traditional design-bid-build approach utilized on most municipal WWTF projects. The CMAR method maximized the project scope and minimized project cost through a process of close collaboration among the owner, engineer, and construction manager from the initial design stage, through construction.

The CMAR approach resulted in numerous benefits, including enabling the Owner to obtain a Guaranteed Maximum Price (GMP) to confirm adequate funding for the project before entering into a construction contract; consistent owner and construction manager input to streamline design decisions and control construction costs, construction sequencing, and schedule; the pre-purchase of materials and equipment to avoid future market price increases; construction sequencing and fast-tracking of specific improvements in order to keep the facility in operation during construction; and a shorter design and construction schedule. Cost savings realized by using the CMAR method were used to complete "stretch goals" not originally included due to budget constraints and shared between the Owner and Construction Manager.

The facility improvements which will improve effluent water quality include new headworks addition with mechanical screening, septage receiving, and influent flow measurement; replacement of the primary and secondary clarifier sludge removal mechanism, conversion of hydraulically-driven trickling filters to mechanically-driven; replacement of existing belt filter press dewatering system with new rotary fan dewatering and conveyance system; new chemical storage and feed systems; ancillary plant-wide upgrades, including instrumentation, SCADA, and electrical modifications; and a new 10,000 foot maintenance garage to consolidate operations and maintenance functions. The project also improved energy efficiency with new equipment, updated building systems, automated processes including modification to the solids handling facilities and sludge dewatering equipment to reduced electricity consumption and the chemicals required to optimize treatment. All of these improvements will deliver significant operational cost savings.

This was the first project in Maine to use the alternative CMAR delivery approach and receive DEP Clean Water SRF Funding. As a result of this project, Maine DEP is proposing draft rule changes to Chapter 595 Rules to better accommodate the CMAR delivery method on future projects.