



City of Olathe

COUNCIL AGENDA ITEM

MEETING DATE: 4/20/2021

FOCUS AREA: Infrastructure (Engineering)

STAFF CONTACT: Mary Jaeger / Nate Baldwin

SUBJECT: Report on the WTP2: Electrical Modifications and Improvements Project, PN 5-C-028-20, and the WTP2: Chemical Feed Modification Project, PN 5-C-026-20.

ITEM DESCRIPTION:

Report on the WTP2: Electrical Modifications and Improvements Project, PN 5-C-028-20, and the WTP2: Chemical Feed Modification Project, PN 5-C-026-20.

SUMMARY:

Reliable electrical power, communications, and chemical feed systems are critical to the production and distribution at any water treatment facility. The utility and standby power systems at Water Treatment Plant No. 2 (WTP2) and associated collector wells are inefficient in providing the reliable power needed. WTP2 was originally constructed in the 1960s. The facilities, including utilities and standby power, have been expanded over multiple projects. The result of these expansions has yielded electrical systems which are complex and counterintuitive. The capacity of the electrical system and its respective arrangement is not suitable for the City to grow its production capabilities. Furthermore, standby power is insufficient to back up the water production needs and is limited in its distribution on the plant site by an aged distribution system.

On September 17, 2019, City Council awarded Black and Veatch Corporation (Black & Veatch) a Professional Services Agreement to conduct a full evaluation and study of the power supply and electrical distribution systems for the WTP2 and collector well sites.

To ensure that the City has both a redundant and a reliable power supply, Black & Veatch recommended the installation of a secondary power feed from Evergy's 95th and Waverly substation. This work will include new voltage switchgear and re-utilization of the existing on-site generator at WTP2. Additionally, Black & Veatch recommended looping the electrical feed around the WTP2 facility with a medium-voltage service loop. This proposed upgrade for a reliable and redundant power feed loop will install multiple transformers throughout the site and allow for more localized power step-down while removing the reliance on one motor control center and transformer for a single point of failure.

The City has four collector wells that supply over 75% of the raw water to WTP2, but only 44% of this raw water supply is provided with back-up power. Black & Veatch recommended the installation of small generator units at 2 of the collector wells sites that lack a backup power supply. The smaller units are more economical and allow for flexibility in the event of a natural disaster or catastrophic power failure, such as the rolling blackouts in February 2021.

The SCADA system was also evaluated, and Black & Veatch recommended upgrades to both the hardware and software system that control the operation of this facility. These updates will allow the system to migrate from a stand-alone to a server-based SCADA system. Additionally, the new security features will help protect network communications between system nodes and overall exposure to external threats. This work will include a review of the current fiber network on-site and full replacement of the conduit within the proposed electrical duct bank.

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Finally, as part of the Electrical Power Study, Black & Veatch reviewed the chemical feed systems throughout the plant. Recommended improvements to the chemical storage and handling will increase the safety, operation and reliability for plant staff. Improvements include installation of a new fluoride feed system and storage tanks, secondary ammonia storage tank, expansion of the polymer containment and tank and completion of the chemical ductbank.

It is anticipated that design will begin in Summer 2021 with construction tentatively scheduled to begin in Spring 2023.

FINANCIAL IMPACT:

Funding for the WTP2: Electrical Modifications and Improvements Project and the WTP2: Chemical Feed Modification Project, as approved in the 2021-2025 Capital Improvement Plan, includes:

Revenue Bonds	\$14,333,000
<u>Water & Sewer Fund</u>	<u>\$ 2,573,000</u>
Total	\$16,906,000

ACTION NEEDED:

No action requested at this time. Staff will return to Council in May 2021 to request approval of a Supplemental Agreement for design of the project.

ATTACHMENT(S):

- A. Project Handout
- B. Project Location Map
- C. Project Fact Sheet