Quarter 3 Update: July – September 2024

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The Springfield Water and Sewer Commission (Commission) has embarked on large-scale upgrades to replace 50- to 100-year-old drinking water infrastructure and to achieve compliance with regulatory limits for disinfection by-products (DBPs). This is a quarterly update on projects related to DBP compliance and water supply capacity.

The following projects to reduce DBPs in the Commission's drinking water and maintain a consistent supply of safe drinking water have progressed over the last quarter:

- **New Water Treatment Plant** – After opening the bids for the new West Parish Water Treatment Plant on June 25, Hazen evaluated the bids and provided a recommendation to award the contract to the low bidder, Walsh Construction Company, at $293 million. The contract was approved by the Commission Board on July 17. MassDEP State Revolving Fund Program reviewed the bid package and authorized the Commission to award the contract on August 27. The Commission awarded the contract and issued a Notice to Proceed (NTP) on September 9. A kick-off construction meeting is scheduled for October 3 and Walsh is familiarizing themselves with the site and preparing for construction.
- **42-inch Raw Water Transmission Main / Energy Dissipating Valve (EDV) and Equalization Tank Facility** – Construction has commenced on the 42-inch/EDV project. Northern Construction mobilized to the site and has installed erosion control, cleared the EDV site of trees, and installed timber matting to access points along the 42-inch pipeline. Regular construction progress meetings are underway. Northern is currently preparing to begin pipeline inspections and repairs. The substantial completion date for this project is December 11, 2025.
- **Clearwell & Backwash Pump Station** – CH Nickerson continues to complete punch list items. The Design-Build team is working to resolve warranty issues associated with air entrainment in the backwash piping and HVAC issues. Final completion is expected to be granted after completion of the major warranty items.
- **Cobble Mountain Hydroelectric Station Improvements for Primary Raw Water Conveyance** – Kleinschmidt completed a peer review of Stantec/Kleinfelder's conceptual design for power plant improvements in mid-August and presented the findings to the Commission. The Commission is currently working with Holyoke Gas & Electric, the contracted plant operator, to schedule the final design of selected improvements. Improvements to the power plant and raw water transmission system are projected to be completed in 2027 but the schedule may change as design progresses and more specifics are known about the project.

We have included additional information for each project on the following project update pages.

Please contact us if you would like more information about these projects. More information is also available at https://waterandsewer.org/projects/.

DBP Compliance

EPA Quarterly Update

New West Parish Water Treatment Plant

Project Purpose: This project is for design and construction of a new water treatment plant (WTP) to meet system demand while providing a higher level of treatment to achieve long-term, consistent compliance with the Disinfection By-Product (DBP) Rule. The new WTP will replace the existing direct filtration and slow sand filtration plants, which were not designed to remove adequate dissolved natural organic matter (NOM) to meet current regulatory limits for HAA5s and THMs.

The Commission has been in periodic non-compliance for HAA5s since 2018. To address this issue, after completing several studies, the Commission identified that modifications to the existing plant processes would not be sufficient to achieve compliance, and that the addition of clarification was needed to reliably remove NOM and maintain compliance. Based on the results of a three-season pilot plant operation, Dissolved Air Flotation (DAF) with a polyaluminum chloride coagulant was selected as the clarification process for the new conventional plant.

Delivery Approach: Design-Bid-Build with Hazen (Engineer) and Walsh Construction (Contractor). Planned financing using WIFIA and SRF.

Progress: After opening the bids for the new West Parish Water Treatment Plant on June 25, Hazen evaluated the bids and provided a recommendation to award the contract to the low bidder, Walsh Construction Company, at $293 million. The contract was approved by the Commission Board on July 17. MassDEP State Revolving Fund Program (SRF) reviewed the bid package and authorized the Commission to award the contract on August 27. The Commission awarded the contract and issued a Notice to Proceed (NTP) on September 9. A kick-off construction meeting is scheduled for October 3 and Walsh is familiarizing themselves with the site and preparing for construction. Based on the date of the executed NTP, substantial completion is projected for September 30, 2028, and final completion is projected for November 24, 2028.

Supply Chain: Lead times for some electrical equipment can be as high as one to two years. Supply chain impacts on this project are a concern but were considered during the development of the project schedule.

Schedule: The contract was scheduled to be awarded in July of 2024 with substantial completion in June 2028 and final completion in September 2028. The contract award was delayed by several weeks for MassDEP SRF review.

October 2023 progress rendering of the new WTP exterior and landscaping

42-inch Raw Water Transmission Main, Energy Dissipating Valve, and Equalization Tank

Project Purpose: This project is for the repair of the 42-inch bypass raw water conveyance PCCP pipeline and construction of a new energy dissipating facility (EDV) at the outlet. The pipeline and EDV facility were damaged when a new EDV failed in 2019. The pipeline and EDV facility provide an important alternative/redundant route for raw water to bypass the Cobble Mountain Hydroelectric Station (CMHS), the Intake Reservoir, and the 72-inch Intake Tunnel. The EDV facility provides necessary energy dissipation for the 42-inch outlet, which conveys high pressure water (approximately 200 psi) directly from Cobble Mountain Reservoir. The project also includes the design of a new raw water equalization (EQ) tank that will be used in the future to directly provide raw water to the new water treatment plant. The EQ tank will eventually replace the need to use the sedimentation basin for raw water storage.

With the 42-inch raw water transmission bypass out of service, the Commission currently relies on the Diversion Gates (the low-level dam outlet) to release water from the Cobble Mountain Reservoir when the CMHS is offline for routine maintenance. This outlet was not designed to operate as a regular intake and is not operable remotely, requiring staff to regularly perform a complicated confined space entry that would require assistance from a technical rescue team should an emergency evacuation be required. With the 42-inch bypass out of service, there is currently no bypass for the 72-inch Tunnel.

Returning this route to service will allow the Commission to take the CMHS and 72-inch Intake Tunnel offline for maintenance when needed while maintaining raw water supply to the current and future water treatment plants.

Delivery Approach: Design-Bid-Build with AECOM (Engineer).

Progress: Construction has commenced on the 42-inch/EDV project. Northern Construction mobilized to the site and has installed erosion control, cleared the EDV site of trees, and installed timber matting to access points along the 42-inch pipeline. Regular construction progress meetings are underway. Northern is currently preparing to begin pipeline inspections and repairs. The substantial completion date for this project is December 11, 2025.

Supply Chain: Supply chain impact on this project is uncertain.

Schedule: The combined project is now projected to be completed in December 2025, which is later than projected in the 2023 quarterly updates. Some project delays were related to needing to secure a waiver from EPA WIFIA program for the specified valves for the facility which are not made in America. Other delays have been related to the need to coordinate some aspects of the design with the design of the new WTP.

DBP Compliance

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Clearwell & Backwash Pump Station

Project Purpose: This facility replaced the existing clearwell and backwash, domestic, and process water pumps.

The existing clearwell was a 1920s slow sand filter that was retrofitted for use as a clearwell and backwash water storage tank for the direct filtration plant in the 1970s. The structural integrity of the clearwell is uncertain and the roof is leaky, allowing rainwater to infiltrate into the filtered water. The roof leaks were temporarily mitigated by the installation of a geomembrane cover over the clearwell. The clearwell could not be taken offline for maintenance, presenting a single point of failure for the direct filtration plant. The existing backwash, domestic, and process water pumps were original to the plant; parts were no longer readily available for more frequently necessary repairs.

This project provided the reliability and redundancy needed to maintain existing operations and also functioned as the first component of the new water treatment plant.

Delivery Approach: Design-Build with AECOM (OPM), Tighe & Bond (Engineer), and CH Nickerson (GC). Financed by MA Drinking Water SRF.

Design Progress: Tighe & Bond submitted the final design documents in November 2022.

Const. Progress: CH Nickerson continues to complete punch list items. The Design-Build team is working to resolve warranty issues associated with air entrainment in the backwash piping and HVAC issues. Final completion is expected to be granted after completion of the punch list.

Supply Chain: There are no supply chain issues at this stage in the project.

Project Delays: The original substantial completion date at the onset of this project was February 2023. Due to several factors, including changes in design scope, pipe delivery delays, electrical equipment delays, and startup issues with the domestic water system, a partial substantial completion was granted dated October 13, 2023, with full substantial completion granted April 10, 2024.

Operational Issues: This project continues to require regular coordination between the contractor and the Commission relating to ongoing warranty issues relating to air entrainment in the backwash supply water.

Schedule: Final completion is expected to be granted after completion of the major warranty items.

DBP Compliance

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Cobble Mountain Hydroelectric Station Improvements for Primary Raw Water Conveyance

Project Purpose: The Cobble Mountain Hydroelectric Station (CMHS) is an essential component of the Commission's raw water conveyance system. As part of the primary raw water conveyance route, the CMHS delivers water from the Broome Gate Intake down to the Intake Reservoir while generating power by using the 450-foot elevation difference between the two reservoirs. This project will identify alternatives for upgrades to hydropower generation in response to failing infrastructure at the facility. The existing 1930 turbines are mostly beyond the end of their operational lives, with only one out of the original three turbines currently operational on a limited schedule to limit wear and reduce the risk of failure.

When the CMHS is offline for maintenance, the remaining routes for raw water conveyance are the 42-inch bypass (currently out of service) and the low-level Diversion Gates, which are not designed for regular operation. Restoring the CMHS conveyance route is vital to establishing reliable raw water conveyance for the Commission.

Delivery Approach: Design-Bid-Build with some Design-Build improvements being considered.

Progress: Kleinschmidt completed a peer review of Stantec/Kleinfelder's conceptual design in mid-August and presented the findings to the Commission. The Commission is currently working with Holyoke Gas & Electric, the contracted plant operator, to schedule the final design of selected improvements. Improvements to the power plant and raw water transmission system are projected to be completed in 2027 but the schedule may change as design progresses and more specifics are known about the project.

Supply Chain: Supply chain impacts on this project are currently unknown but are a concern.

Schedule: This project is currently projected to be completed in 2027, but this date is subject to change as design progresses.

Powerhouse Generator Room in 1931 (left), Powerhouse Generator Room in 2022 (right)

Engineering Capital Projects Schedule

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