



Office of the Town Manager

Christopher E. Martino

STAFF REPORT

Warrenton Town Council

Carter Nevill, Mayor

Heather Sutphin, Ward 1

William Semple, Ward 2

Brett Hamby, Ward 3

James Hartman, Ward 4 Vice Mayor

Jay Heroux, Ward 5

Sean Polster, At Large

Renard Carlos, At Large

Council Meeting Date:	December 13, 2022
Agenda Title:	Water and Sewer System Growth and Capacity Evaluation
Requested Action:	No action necessary- this is informational
Department / Agency Lead:	Public Works and Utilities
Staff Lead:	Frank Cassidy

EXECUTIVE SUMMARY

The Town operates a water plant (WTP) and wastewater treatment plant (WWTP) delivering water and processing wastewater. These plants serve an essential service to all who live, visit, and enjoy the Town. Without a well operating water and wastewater system, the Town would not be thriving.

As the Town grows and explores additional options for growth and development, it is essential both these plants operate at levels both mandated by regulations and laws, as well as the expectations of customers. As these plants age and additional demands are expected from them, we need to encourage a healthy discussion on their capacities while acknowledging their limitations.

The purpose of this presentation is to provide a holistic overview of status for better planning, outline challenges moving forward, and provide an outline of projects as we move forward. Discussion will include review of the 2015 Capacity Study and the current Capacity Study completed in November 2022.

BACKGROUND

The Town's Public Utilities Department owns and operates an advanced wastewater treatment plant, 8 wastewater pump stations, almost 68 miles of sanitary sewer mains, a freshwater reservoir, 3 active wells, a water treatment and filtration plant and 88 miles of water distribution system including 743 fire hydrants.

Utilities also provides oversight and control of the Town's water and wastewater treatment facilities; delivery systems; maintenance of the systems; and billing. A high-level breakdown of services is included later in this document.

WATER PLANT OPERATIONS:

The Source of Supply Division is responsible for the safe and efficient operation of the Town's municipal water supply assets, which consist of the water treatment plant, three remote wells, two surface water reservoirs, booster station, re-chlorination station, two water storage tanks and the collection of all state and federally regulated water samples. The operation strives to provide safe, aesthetically pleasing, and pleasant tasting water to meet the demands of the Town's over 4,944 residential and commercial customers.

The treatment plant on Blackwell Road is permitted to treat 3.2 million gallons per day but is restricted by the safe yield of the reservoirs, which is 2.27 million gallons per day. Currently the plant produces an average of 1.2 million gallons of water a day.

TRANSMISSION & DISTRIBUTION:

The T&D Division is responsible for the overall maintenance, repair, and servicing of over 87 miles of water line and 69 miles of sewer. Activities include repairing main breaks, replacing old and deteriorated water/sewer lines, maintaining water and sewer line rights of way, unstopping clogged sewage lines, collecting data with flow meters to identify high areas of infiltration/inflow in the gravity sewage system, maintenance of over 734 fire hydrants and responding to over 2,527 calls annually for Miss Utility field locations of water and sewage lines as mandated by law.

The Meter Section works under T&D and is responsible for the reading of 4,944 water meters and providing the data to the Finance Department for billing and revenue collection. In addition, the section provides routine maintenance to all customer meters, to include the thawing of frozen meters due to extreme cold weather, the inspections required under the State's cross connection and backflow prevention programs, periodic calibration, and replacement of unserviceable meters. The meter calibration testing frequency depends upon their annual usage, wear and tear and potential for revenue loss or generation. Staff also responds to customer concerns relative to unusually high or low water bills and often assists customers in identifying leaks in their service lines or homes and businesses. Unaccounted water loss has averaged less than 10% for the past several years, which is below the American Waterworks Standard of 13%.

WASTEWATER PLANT OPERATIONS:

Operation and maintenance of the Town's 2.5 million gallons per day (mgd) sewage treatment plant and the 8 sewage pump stations. The plant currently treats on average 1.8-2.0 mgd. With the operation responsible for the protection of downstream waters by plant operations and monitoring for compliance with state and federal regulations.

Treatment begins at the head works with screening and grit removal, followed by primary sedimentation. The second process involves biological treatment with the newly constructed Moving Bed Biofilm Reactor (MBBR). The third phase employs chemical coagulation and flocculation followed by secondary sedimentation. The final stage of treatment includes nutrient removal via deep bed filtration, disinfection with ultraviolet lamps, and post-aeration before discharge into the unnamed tributary to Great Run. Sludge that is generated by the treatment process is anaerobically digested, dewatered by a 2-meter belt press, hauled away by an outside contractor and land applied. Annual nutrient limits for nitrogen and phosphorus are in effect to comply with actions to clean up the Chesapeake Bay.

Both plants are currently going through upgrades and maintenance operations to ensure the consistent and proper operational aspects required by regulations and laws as well as ensuring the quality of water resources. The WWTP is manifesting the age of equipment and is continually needing creative ways to repair, work around, or manufacture systems as the equipment is aging and outdated. Plans for upgrades

and replacement have been presented in the past and have been part of operational planning for a few years now. Given the recent need to offset budget costs by pushing out CIP expenditures, these repairs and upgrades are becoming failure points.

STAFF RECOMMENDATION

WRA completed a Capacity Study in November of 2022. This study provided an overall assessment of water and wastewater operations moving forward considering all potential future developments within Town and incorporated with discussion on BLA, Tri-Party Agreements, and other requests for the Town to provide utility services. Based on this study, we are looking at the Water and Wastewater Plant reaching their maximum capacities in the year 2040. The Wastewater Plant will reach the 2.5 MGD limit by the year 2030.

Given the results of the study, staff recommends moving forward with the outlined projects for maintenance and upgrades as discussed and identified in the CIP. We want to make Council aware the order of the projects may change as we continue to move forward because of unexpected maintenance issues or other challenges. We highly encourage Council to stay the course with the future improvements and maintenance of both these plants to ensure proper functioning while keeping in mind the challenges of adding more accounts to these systems.

Will require a resolution to clarify funding sources.

Service Level / Policy Impact

These projects are in line with the Plan Warrenton 2040, Goals as follows:

- **CF-4: Ensure healthy, safe, adequate water and wastewater services.**
 - **CF-4.1:** Maintain a reliable and sufficient quantity of wastewater treatment capacity and a sufficient quantity and quality of public water supply to meet the needs of expected long term residential and commercial growth.
 - **CF-4.2:** Meet the future infrastructure needs through careful planning and acquisition of required permits.
 - **CF-4.3:** Reduce Infiltration and Inflow (I&I) and promote sustainability within the wastewater infrastructure system.
 - **CF-4.5:** Evaluate and update the Town of Warrenton – Fauquier County Master Water and Sewer Plan's Tri-Party Agreement as needed, creating a regional strategy for future needs, and reevaluating the Town boundaries in relationship to its service areas.
 - **CF-4.8:** Explore resources to help property owners and promote connection to public
- **CF-5: To provide a fiscally responsible infrastructure that maintains a high quality of life for residents, supports current businesses, and attracts new employers with a stable tax structure.**

- **CF-5.1:** Implement robust maintenance schedules on community facilities to extend the life of investments.
- **CF-5.2:** Support the Town's current and future population through the provision of timely and comprehensive community facilities.

Fiscal Impact

At the September 13, 2022, Council meeting, the Town Council passed a resolution to appropriate \$4,500,000 for Water and Sewer projects. The Town Council also authorized the issuance of \$5,000,000 in bonds to finance Water and Sewer projects. The \$5,000,000 was not appropriated at that time. Now that the projects have been prioritized and reviewed with Council, staff will advertise a public hearing for the January 13, 2023, Council meeting to appropriate the bond funding for use on these projects.

As the funding has already been identified and the bonds issued, there is no financial impact. Only the advertising of the public hearing to appropriate the funding is required.

Legal Impact

Town Attorneys are working with staff.

ATTACHMENTS

2022 Capacity Study report from WRA
CIP and CARP Items for Outlined Projects
2015 WRA 2015 Report and Power Point presentation to Council
I&I memo and documents, March 2022