Grants Foster Better Planning & Mutual Aid: Tuckaseigee Water and Sewer Authority

A series of case studies on small water and wastewater utilities

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NC Water Infrastructure ENVIRONMENTAL QUALITY

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Acknowledgments

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Cover image provided courtesy of the Tuckaseigee Water & Sewer Authority

Background on Utility—Tuckaseigee Water & Sewer Authority

In 1992, the Tuckaseigee Water and Sewer Authority (TWSA) was established by consolidating the water and wastewater utilities of Jackson County and the towns of Dillsboro, Sylva, and Webster. The sewer system for the town of Whittier was recently added to the TWSA administration. Over the next few years, TWSA constructed several water storage tanks and booster pump stations and built a surface water treatment plant (WTP) on the Tuckasegee River. Currently, TWSA's WTP has the capacity to treat 1.5 million gallons per day (MGD) and provides water service to 2,263 metered residential customers and 601 commercial, industrial, institutional, and wholesale clients in their service region. On the wastewater side, TWSA has 2,018 residential customers and 763 commercial, industrial, institutional, and wholesale ones. TWSA's wastewater system currently includes four wastewater treatment plants and twenty-four lift stations. One of the main issues facing TWSA is anticipated growth in the region, requiring ongoing enhancements in storage and treatment capacity.

The objective of conducting the Asset Inventory and Assessment (AIA) was to create a comprehensive record of TWSA's water and wastewater infrastructure assets. The North Carolina Division of Water Infrastructure's Asset Inventory and Assessment (AIA) and Merger/Regionalization Feasibility (MRF) grants are designed to encourage water and wastewater utilities to become viable and more proactive in the management and financing of their systems. This case study highlights how TWSA used AIA and MRF grants to improve long-term system management.

For TWSA, the Asset Inventory and Assessment (AIA) reports for both water and wastewater operations funded through the AIA grant program have been instrumental in instituting a new level of strategic focus and a schedule of planned capital improvements. The MRF grant helped TWSA evaluate collaborative opportunities with the water system for Western Carolina University (WCU), with which it shares a water source and other strategic objectives. TWSA officials report that the MRF grant has helped identify future opportunities for collaboration with WCU and opened the doors to ongoing discussions between the two systems.

Asset Inventory and Assessment Report Findings

The objective of conducting the Asset Inventory and Assessment (AIA) was to create a comprehensive record of TWSA's water and wastewater infrastructure assets. For the AIA, TWSA collaborated with engineering consultant McGill Associates to identify critical system assets and prioritize future upgrades via an asset conditions index and criteria matrix. The priority ranking matrix was based on factors such as equipment and system lifespan, remaining service life estimation, and identification of necessary repairs or replacements. Additionally, a GIS database of TWSA's system assets was developed through the AIA process. This database includes asset identification codes, selected attributes, conditions data, O&M manuals, and record drawings. The GIS database is now maintained and updated by TWSA after its initial implementation.

This information was used in the development of ten-year Capital Improvement Plans (CIP) for both the water and wastewater systems, with appraised cost estimates for recommended improvements and

upgrades. These CIPs now serve as planning tools for TWSA to proactively manage, finance, and provide high-quality services to both current and future customers. Although cost estimates generated for the CIPs will increase in the future due to inflation and other factors, TWSA staff has been diligent about updating the cost estimates and projected timing with each budget cycle. TWSA officials report this cycle of reviewing their CIPs forces the organization to adjust prioritizations and projections on a regular basis, leading to more responsive management. It also enables the utility to adjust to current trends and needs.

TWSA's water system CIP outlined sixteen priority projects totaling $17.7 million (based on 2021 cost estimates). The CIP prioritized upgrades to TWSA's current water storage tank system and its water treatment plant (WTP) on the Tuckasegee River. Although the existing WTP was evaluated to be in good operating condition, it is estimated to exceed its 1.5 MGD capacity within the next fifteen years. The CIP also recommended improvements to TWSA's high-service pump station, which struggles to maintain adequate pressure due to increased consumer demand. Improvements and relocations for water lines and other pump-station infrastructure were additional recommendations for the first three years. Lower-priority projects were recommended for years four through ten of the CIP.

For the wastewater CIP, an identical ten-year prioritization schedule was developed, with total improvements and upgrades estimated at $9.1 million in 2021 cost estimates. Prioritized for the wastewater CIP are upgrades of several of TWSA's lift stations, as well as replacement and/or expansion to several sewer lines.

For TWSA Executive Director Daniel Manring, who assumed management of TWSA in 2020 after the AIA process was already underway, the AIA reports have been invaluable road maps for organizational management and strategy. "Every day I use the reports we got out of the AIA. From the time we got them until today, I'm constantly referring to them," he said. Although the CIPs have been useful for subsequent grant and loan applications, TWSA also has used the CIPs to budget for reserves earmarked for future projects. Other primary benefits of the AIA aside from the CIPs, according to Manring, were the GIS system maps provided by the engineering consultant and the electronic scanning of organizational documents. "We had cabinets and cabinets of rolled-up drawings and they digitized all of it. And that's something else I use daily. That's a resource that puts us ahead, just having those records at our fingertips."

The MRF Process: Exploring Collaboration with WCU

In 2019, the TWSA and Western Carolina University (WCU) received a $50,000 MRF grant from DWI to explore merger and collaboration opportunities. Although both entities operate independent water treatment plants and distribution systems, TWSA and WCU are geographically contiguous and have a long history of cooperation. The water intake sources for the two systems are within five hundred feet of one another on the Tuckasegee River in Cullowhee, North Carolina, and their respective water treatment plants are within one thousand feet of one another. The Merger and Consolidation Feasibility Study was also conducted by McGill Associates and completed in 2022. The report inventoried the relative

Photo of the Tuckasegee River Courtesy of Bryson City

assets of both systems and provided recommendations for merger and collaboration options.

The MRF study also evaluated opportunities for mutual aid between the two utilities. Previously, TWSA and WCU had an informal arrangement for small issues such as lending staff or connectors. However, the MRF study identified several specific ways the two systems could help each other in emergency situations. “That, to me, was a huge benefit of the MRF study,” notes Manring. “Spelling out how we can help each other in emergency situations has proven invaluable.” TWSA and WCU have now signed a formal memorandum of understanding (MOU) providing standards and guidelines for collaboration on larger issues such as disaster preparedness. The MOU outlines the specific assistance that each organization can expect from the other in the event of an emergency and ensures that their mutual emergency response plans do not conflict with each other, among other provisions.

Lessons from TWSA

Maintain interlocal partnerships through open communication

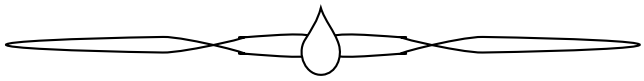
For towns with a small customer base, interlocal partnerships can provide valuable support, especially in times of crisis. The TWSA/WCU MRF study has led to a more formalized collaboration in emergency situations, but it has also helped open the door for discussion of other types of collaboration. Don’t assume a formal merger is the only potential avenue that will be outlined in an MRF assessment. These grants can also be important catalysts for less formal partnerships that can create trust and collaborative capacity over time.

Use the AIA grant to launch long-term planning and modernize system management

Manring calls the AIA grant a “no-brainer” for systems that want to launch long-term planning. “We needed to have a way of prioritizing what to attack,” he said. The CIP has proven a valuable tool for launching that “attack,” but other outcomes of the AIA grant have also been instrumental in TWSA’s planning approach. AIA funds were also used to modernize TWSA’s mapping and record-keeping system, improvements that Manring and his staff use both for asset management and in day-to-day operations.

Increased efficiency

The benefits of investing in infrastructure and exploring opportunities are highlighted by the improvements made in the water and sewer system through the AIA program and the merger study. The TWSA system has become more efficient, and the AIA program has created a living document that can be used for future planning. The merger study has emphasized the advantages of mutual aid and has provided potential avenues for future collaborations. The lessons learned from both programs are critical for future infrastructure enhancements and exploring opportunities for collaboration.



If your town is thinking about upgrading existing water capacity or studying partnership and regionalization options: Apply for Asset Inventory and Assessment or Merger/Regionalization Feasibility grants

An *AIA grant* gives towns the opportunity to identify real infrastructural needs.

An *MRF grant* encourages towns to become more proactive in the management of their systems.

AIA grant information hyperlink: *https://www.deq.nc.gov/about/divisions/water-infrastructure/i-need-funding/asset-inventory-and-assessment-grants*

MRF grant information hyperlink: *https://www.deq.nc.gov/about/divisions/water-infrastructure/i-need-funding/mergerregionalization-feasibility-grants*