

Town of Boiling Springs

NCDEQ Asset Inventory and Assessment –
Water System





Table of Contents

	Cover Letter	1
01	Firm Information	2
02	Team Qualifications	3-6
03	AIA Familiarity and Approach	7-9
04	Relevant Projects	10-12
05	Past Work with the Town	13

PREPARED FOR

Mr. Justin Longino
Town Manager
Town of Boiling Springs
114 East College Avenue
Boiling Springs, NC 28152

PREPARED BY

McGill Associates, PA
1240 19th Street Lane NW
Hickory, NC 28601
828.328.2024
mcgillassociates.com

September 23, 2022

Mr. Justin Longino, Town Manager
Town of Boiling Springs
114 East College Avenue
Boiling Springs, NC 28152

RE: Statement of Qualifications
NCDEQ Asset Inventory and Assessment – Water System

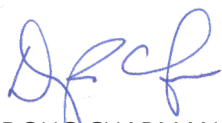
Dear Mr. Longino:

McGill has worked with utilities throughout North Carolina to provide reliable, practical, and comprehensive inventories and assessments of their water and wastewater systems. Our team is prepared to assist the Town of Boiling Springs with the development of its water system asset inventory and assessment (AIA). With our history and involvement in planning this project and submitting the funding application package, McGill has an intimate knowledge of the needs of the community. We are confident in our capabilities to perform responsive, high-quality professional services to accomplish the project scope and objectives for this project. Please consider the following relevant points demonstrated within our SOQ:

-  **Experience:** For more than 38 years, McGill has successfully completed AIAs for similar-sized communities. Since the AIA program was created by the North Carolina Department of Environmental Quality (NCDEQ) in 2015, we have been involved with 15 water AIA projects and another 12 wastewater AIA projects.
-  **Familiarity:** We have worked with the Town of Boiling Springs for the past six years, primarily on land planning and recreation projects, including obtaining grant funding for and providing design, bidding, and construction administration services for Town Park. Most recently, our team is assisting with a streetscape project, including replacing water and sewer lines.
-  **Practical Approach:** We are highly invested in this AIA project, as we have been involved in the earliest project stage with acquisition of funding. McGill will create practical deliverables and a system that works specifically for Boiling Springs — one that is tailor-made for the Town, not a one-size-fits-all solution. Our team is focused on providing the greatest benefits to the Town from the funding allocated by NCDEQ, while meeting all program requirements.

We are truly excited about working with you and Town staff on this essential project. We would be pleased to have the opportunity to discuss our team's qualifications with you further. If you have any questions, please contact me at doug.chapman@mcgillassociates.com or 828.328.2024.

Sincerely,
MCGILL ASSOCIATES, PA

A handwritten signature in blue ink, appearing to read "Doug Chapman".

DOUG CHAPMAN, PE
Principal / Vice President / Regional Manager

01 | Firm Information

Contact



Doug Chapman, PE
Principal / Vice President /
Regional Manager
doug.chapman@mcgillassociates.com

How We're Different

McGill serves public and private clients throughout the Southeast. The range and depth of McGill's expertise includes a wide spectrum of engineering services, land planning and recreation, as well as consulting services.

Our foundation is built on creating comprehensive solutions in a personal way. Collaboration is the key to our success and clients are an integral part of every project at McGill. By building lasting relationships with communities, we understand our clients' visions and project goals. Our dedicated project team focuses on delivering a customized solution for each unique community.

We help our clients identify challenges, formulate responsive solutions, and manage successful project completion. Through partnership, we shape the best results for each client and community.

At a Glance

Legal Name: McGill Associates, PA
Incorporated / Year: 1984
Business Type: Corporation
Number of Offices: 8
Number of Employees: 144

Proximity









Hickory Office
1240 19th Street Lane NW
Hickory, NC 28601
ph. 828.328.2024 f. 828.328.3870

47 miles



Boiling Springs Office

What We Do

-  Water and Wastewater
-  Civil Engineering
-  Water Resources
-  Solid Waste
-  Electrical Engineering
-  Mechanical, Electrical, and Plumbing
-  Construction Administration
-  Land Planning and Recreation
-  Environmental
-  Consulting Services



02 | Team Qualifications

Team Overview

Our goal in assembling the proposed team outlined below is matching the individual and team qualifications with the expertise and experience appropriate for this project. Our comprehensive project team approach is particularly appropriate for projects where coordination, scheduling, and efficiency are important considerations.





Doug Chapman, PE

Principal / Vice President / Regional Manager

Doug Chapman has practiced engineering in North Carolina for more than 31 years. His experience includes a wide range of public projects, such as streets and stormwater systems, water and wastewater systems, parks and recreation, and community facilities and planning. Doug has worked in a variety of professional environments, including both public and private sector positions, which have contributed positively toward developing his capacity to solve complex problems and understand the needs of public clients. He is an innovator and a leader in infrastructure and facility planning and design. Doug has worked on numerous projects and is well versed in public bidding requirements and project funding opportunities. He also understands the need to actively manage projects from inception throughout construction.

Education

BS, Mechanical Engineering, North Carolina State University (NCSU)

Professional Licensure

PE NC #020622

Professional Associations

- American Water Works Association (AWWA)
- Water Environment Federation (WEF)

Years of Experience

31

Years with McGill

22

Specializations

- Water engineering
- Wastewater engineering
- Project administration

Related Experience

- **Water and Sewer AIAs, City of Lenoir:** As Principal, Doug led McGill in performing an inventory and assessment of the City of Lenoir's water distribution system. This AIA project helped identify system deficiencies and prioritize capital improvement projects that will provide the most benefit.
- **Water and Sewer AIAs, City of Oxford:** As Principal, Doug led McGill staff with the performance AIAs of the City's wastewater collection and water distribution systems.
- **Water and Sewer AIA, Town of Sparta:** As Principal, Doug oversaw the preparation of AIAs for the Town's water and sewer system.
- **Water and Sewer AIA, Salisbury-Rowan Utilities:** Doug worked with Salisbury-Rowan Utilities to obtain AIA grant funding from the North Carolina Department of Quality Division of Water Infrastructure (NCDEQ-DWI) and implement an asset management software package, including inventory, assessment, and data gathers of all vertical assets within the system.
- **Water and Sewer System Asset Management Plan (AMP), Town of Pilot Mountain:** As Principal, Doug Oversaw the preparation of an asset management plan for the Town's water and sewer systems sufficient to gain funding points with the DWI.



RJ Mozeley, PE

Senior Project Manager

RJ Mozeley is a dedicated and talented designer who has demonstrated his acute skills on a wide range of projects, including utility coordination, as well as water and wastewater treatment, system design, and modeling. RJ’s experience has led him to develop valuable knowledge of the intricate details of water and sewer systems, and how they can be rehabilitated or replaced to improve the well-being of local communities. He is a valued team member, not only for his technical and strategic expertise, but also for his knowledge and attention to detail in designing and preparing construction documents. RJ possesses a vital ability to communicate effectively in conveying technical information to clients.

Education

BS, Civil Engineering,
NCSU

Professional Associations

- AWWA
- WEF

Specializations

- Water engineering
- Funding assistance

Professional Licensure

PE: NC #037937

Related Experience

- South Main Street Improvements, Town of Boiling Springs
- Water AIA, Town of Mount Olive
- Water and Sewer AIA, City of Lenoir
- Water and Sewer AIA, City of Oxford



Noah Green, PE

Project Engineer

Noah Green has extensive experience with preliminary evaluations, such as studies, preliminary engineering reports, cost estimates, utility routing, and pipe and pump calculations. He is very familiar with state regulations and the permitting process associated with water and sewer projects. Noah has also worked on detailed designs — in particular — laying out equipment, structures, and large diameter piping for treatment plant projects. He is familiar with AutoCAD, Civil 3D, Revit, PondPack, Water GEMS and WaterCAD, and SewerCAD. Several of Noah’s projects have involved North Carolina Division of Water Infrastructure funding; therefore, he is familiar with its policies and procedures.

Education

BS, Civil and
Environmental
Engineering, University of
North Carolina – Charlotte

Professional Associations

- Engineers Without
Borders
- NC One Water

Professional Licensure

PE: NC #053056

Related Experience

- Water and Sewer AIA, City of Lenoir
- Water and Sewer AIA, City of Oxford
- Water and Sewer AIA, Salisbury-Rowan Utilities
- Water AIA, Town of Sparta





Kyle Lotier, EI

Engineering Associate

Kyle Lotier has been working in the water and wastewater field since 2006, when he began volunteering with the Peace Corps. He has over 10 years of project management experience and is passionate about improving the quality of life for communities through projects that provide safe water and improved sanitation. At McGill, Kyle has worked on projects involving water mains, drinking water pump stations, water models, gravity sewers, sewer pump stations, and force mains. His experience working internationally has given him a unique perspective — having experienced firsthand what life is like in the absence of safe and abundant water and adequate sanitation.

Education

MS, Civil and Environmental Engineering, Marquette University
BS, Civil Engineering, Virginia Polytechnic Institute and State University

Professional Licensure

EI: NC #A-30369, VA #056437

Related Experience

- Water and Sewer AIA, Sparta
- Sewer AIA, Town of Valdese
- 2022 Water and Sewer Capital Improvement Plant (CIP) and Financial Updates, Town of Valdese
- 2022 Water and Sewer CIP and Financial Updates, City of Lenoir



Nathan Treadway

Engineering Technician

Nathan Treadway is a reliable team player, who is committed to building high-performing teams. Since starting at McGill as an intern last year and joining McGill as an engineering technician, Nathan has worked on water and wastewater, civil, and land planning projects. He has spent a significant portion of this career at McGill assisting with water and sewer AIAs.

Related Experience

- Water and Sewer AIA, Sparta
- Sewer AIA, Town of Valdese
- Water Distribution System Modeling, University of North Carolina – Charlotte
- 2021 Capital Planning, Town of Blowing Rock
- Water Resource and Recovery Facility (WRRF) Expansion, City of Mebane
- Main Street Water and Sewer Line Replacements, Town of Blowing Rock
- Vantine Pump Station and Sewer Replacements, City of Bessemer City

Education

BS, Physics, Emory & Henry College

Specializations

- Asset inventory and assessment
- Water distribution
- Wastewater collection

03 | AIA Familiarity and Approach

Experience with NCDEQ Wastewater AIA Grant Program

In addition to implementing decades of water and sewer infrastructure projects throughout North Carolina, McGill has worked on many successful water and sewer AIA projects. McGill is extremely familiar with the requirements of the **water AIA grant program** administered by NCDEQ-DWI. We have been working on AIAs and coordinating with NCDEQ staff since the program began in 2016, and we have extensive knowledge and expertise with this scope of work for small- to medium-sized communities. Below is a sample of AIA projects completed by McGill

Client / Location	Water System	Sewer System
Town of Andrews (North Carolina Rural Water Association)		Sewer AIA
Town of Bryson City	Water AIA	Sewer AIA
Town of Canton	Water AIA	
Cleveland County Water	Water AIA	
Town of Clyde	Water AIA	
Town of Hot Springs	Water AIA	
City of Lenoir	Water AIA	Sewer AIA
Maggie Valley Sanitary District, Maggie Valley	Water AIA	
Town of Maxton	Water AIA	Sewer AIA
Town of Mount Olive	Water AIA	Sewer AIA
Town of Murphy (North Carolina Rural Water Association)	Water AIA	
City of Oxford	Water AIA	Sewer AIA
Town of Parkton		Sewer AIA
Town of Robbinsville	Water AIA	
Town of Roseboro		Sewer AIA
Salisbury-Rowan Utilities, Salisbury	Water AIA	Sewer AIA
Town of Shallotte	Water AIA	Sewer AIA
Town of Siler City		Sewer AIA
Town of St. Pauls		Sewer AIA
Tuckaseegee Water and Sewer Authority, Sylva	Water AIA	Sewer AIA



Our Approach

McGill’s approach to assessing the Town of Boiling Springs’ water system infrastructure is similar to other comparable projects, requiring data collection to evaluate the water distribution system for efficiencies, water loss, and service effectiveness. As part of this assessment, the Town’s water tank, interconnections, and master meters, as well as distribution lines will also be evaluated within a new hydraulic model for any needed improvements. This information will then be used to identify elements for repair or replacement, preparing opinions of probable costs, and developing a comprehensive CIP to address these needs. Once a capital plan is completed, the McGill team will prepare a financial analysis of the Town’s enterprise fund to determine the revenue requirements needed to support the system operations, maintenance, and capital costs. Finally, an AMP will be developed to provide Town staff with a guidance document in proactive maintenance activities and a standard operating procedure (SOP) in addition to the benefits of a prioritized CIP.

To accomplish this scope of work, McGill will follow a methodical set of tasks to meet the Town’s needs and expectations. Those tasks are outlined as follows:

- Review previous reports and studies pertinent to the system
- Visit the facilities and interview operations staff and related management staff to determine past and current issues with operations, processes, and equipment
- Discuss anticipated rules and regulations and how they may affect the system
- Review inventory of water system horizontal and vertical system components
- Review water system mapping, considering pipe sizing, materials, age, condition, and importance
- Prepare a hydraulic model of the water distribution system, considering water lines two inches and larger (the model will be utilized to best predict the flow patterns of water throughout the various hydraulic zones of the system, considering regular, full water supply from the water authority)

- Assess each identified infrastructure asset to determine a proposed condition, critical nature to the overall system operations, and need for replacement
- Evaluate the criticality of infrastructure using a scoring matrix that incorporates a predetermined factoring system to determine the need and schedule for implementation
- Prepare replacement cost estimates for identified improvements
- Review costs with staff, along with priority scoring
- Incorporate planned projects and replacements into a ten-year CIP
- Analyze past three years of enterprise fund audits and establish a historical pattern for revenues and expenditures, along with the current budget year
- Prepare a financial model — building on the historical data — to predict changes in the existing customer revenue and growth in existing operations and maintenance costs (this model will then utilize the planned capital improvements and assumed debt versus cash funding of improvements to predict needed rate adjustments to maintain a positive cash flow and fund balance)
- Assemble the full asset inventory and asset assessment into a complete AMP document with the CIP and revenue analysis and operations and maintenance plan
- Provide a report summary of findings and recommendations

Project Management

Our experience has led us to develop and embrace a standardized approach to project management. Your project manager stays in tune with every aspect of the project, as well as in touch with each person or team involved. McGill has standardized systems in place and tools to keep each aspect of the project on track.



Financial

Our highly trained managers use Deltek Vision software to track progress relative to scope and schedule.



Communication

Microsoft Teams unifies communication and collaboration among our staff.



Technical

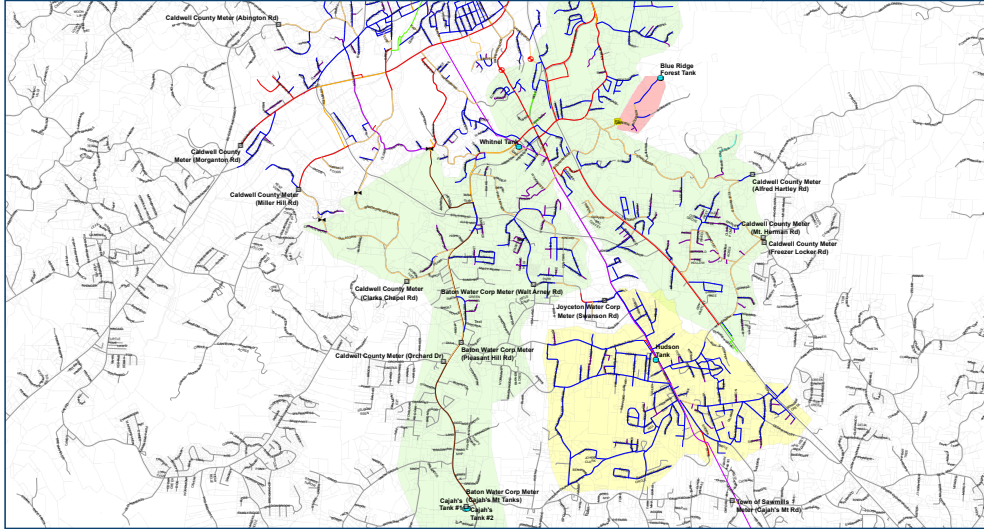
McGill staff use cloud storage for all files, as well as the latest software programs for design.



Internal Expertise

Practice areas across the firm keep our projects running smoothly. We have in-house resources to address the majority of issues we may encounter during the life of a project.

04 | Project Experience



Client Reference

Radford Thomas
Public Utilities
Director
828.757.2200

Project Highlights

- Mapping
- Capital improvements plan
- Water modeling
- Flow testing

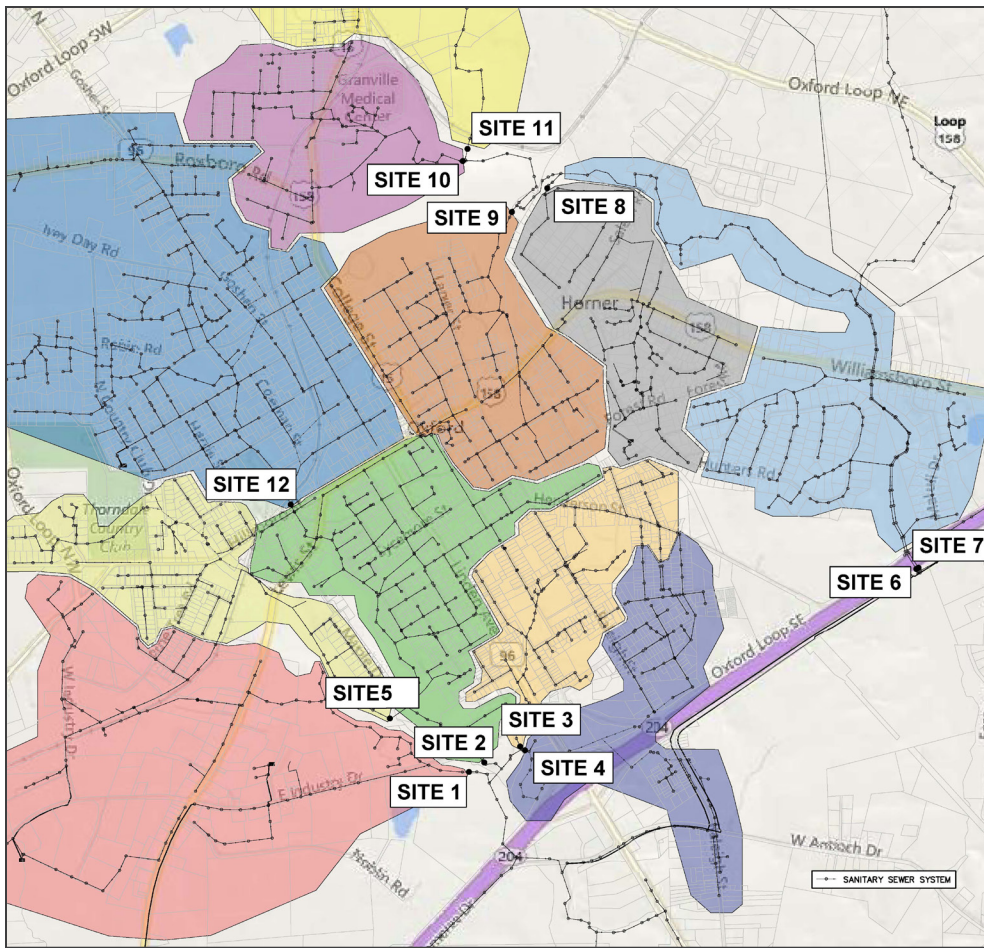
Water and Sewer AIAs

City of Lenoir

McGill performed an inventory and assessment of the City of Lenoir’s water distribution system. This AIA project helped identify system deficiencies and prioritize capital improvement projects that will provide the most benefit.

Water AIA: This effort addressed two main areas of concern with the condition of aging pipes and facilities. First, the conditions of water lines were evaluated through mapping, physical inventory updates, and hydraulic modeling. Hydraulic distribution network modeling is necessary in urban areas where limited mapping is available, aged infrastructure exists, and physical inspection of lines is cost prohibitive. The model calibration allowed line sizes and pipe hydraulic conditions to be approximated, digitally, based on strategic static and dynamic flow testing. Second, the mapping and hydraulic modeling updates helped to identify water transfers between pressure zones to reduce inefficiencies. This system mapping and hydraulic model was used to identify system deficiencies and develop improvements projects, as needed. The improvements projects and budget costs were subsequently programmed into the ten-year CIP.

Sewer AIA: This effort involved identifying areas with excessive I/I and addressing the condition of aging and failing sewers. As with older sewer systems, I/I was problematic in the City’s system over the years, particularly in times of higher rainfall. The wastewater treatment plants experienced large peak flows, due to wet weather events, that resulted in past treatment issues. The project included an inventory of the City’s existing sewer system by updating the current GIS mapping and assessing the condition of the sewer system, pump stations, and critical manholes. McGill aided in evaluating, identifying, and prioritizing sewer replacements and upgrades, and updating the ten-year CIP.

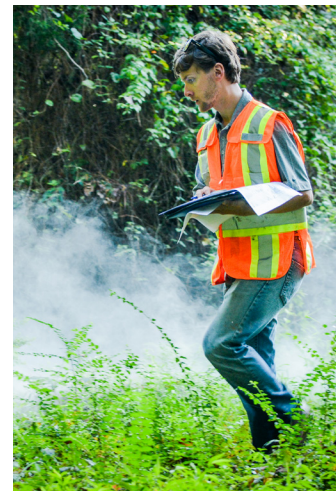


Client Reference

Amy Ratliff, PE
 City Engineer
 919.603.1113

Project Highlights

- Inspections
- Water modeling
- Smoke testing



Water and Sewer AIAs

City of Oxford

McGill performed AIAs of the City of Oxford’s wastewater collection and water distribution systems.

Water AIA: As a part of the study, McGill updated the water system hydraulic model (along with field testing and calibration) to reflect existing conditions, as well as model proposed system improvements that are being recommended as a part of the study. The study also developed a unidirectional flushing program for system maintenance. An AWWA-format water audit was prepared to evaluate water loss in the system. Our team identified water system improvements and incorporated them into the water system CIP.

Sewer AIA: The project included evaluating Oxford’s existing sewer system, including flow monitoring, smoke testing, video evaluations, assessment of suspect manholes and pump stations, and prioritization of needed system improvements. We incorporated opinions of probable costs for identified improvements into the sewer system CIP. This project was funded by a grant administered through NCDEQ Division of Water Infrastructure.

Client Reference

Charles Brown
Town Manager
919.658.9539

Project Highlights

- Winning over \$250,000 in AIA grants
- Grant application assistance
- CIP development
- AMP development
- Smoke testing
- Mapping
- Water modeling



Water and Sewer AIAs

Town of Mount Olive

McGill assisted the Town of Mount Olive with grant applications, resulting in the award of \$254,000 in AIA grants to the Town. McGill was subsequently retained to perform the assessments, which included:

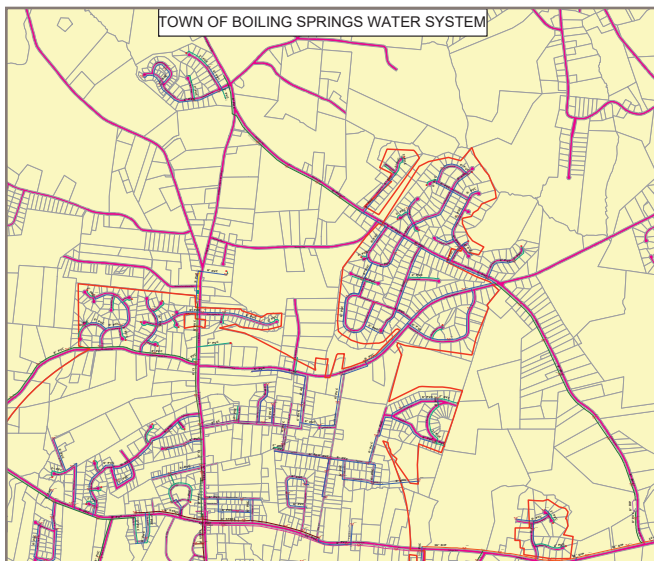
- Selecting and purchasing asset management software
- Developing base mapping for the Town's water and sewer systems
- Populating the mapping with attributes, based on field inventories of the existing assets
- Installing temporary flow meters within select drainage basins that have the highest levels of inflow and infiltration
- Performing a condition assessment of the sewer system using video inspections, smoke testing, manhole assessments, and lift station inspections
- Performing hydrant testing with Town staff to quantify existing flows and low-pressure areas
- Generating a hydraulic model of the system using WaterCAD software
- Performing a risk analysis to determine which components of the system were close to failure
- Utilizing the information to update the Town's CIP and develop an AMP

These projects are critical to the Town's ability to provide safe and reliable water and sewer service to its customers for the future.

05 | Past Work with the Town

Water System Familiarity

McGill has a full understanding of the scope of this project as the preparers of the Town’s NCDEQ grant applications. The Town of Boiling Springs currently has an inadequate mapping system for both its water and sewer systems. McGill has reviewed the existing maps and will build upon the current mapping information to increase system knowledge and enhance infrastructure attribute information to a GIS dataset to make the information more readily available to Town staff. The Town also struggles with maintenance and cataloging the existing condition assessment of the system. Outside of known problem areas or replacement projects identified in the CIP, the general condition of the water system is not cataloged. This AIA project will improve documented knowledge of the water system. Finally, the CIP does not integrate or benefit the Town’s asset management software (Brightly). McGill has imported asset information into this software in the past and can train staff to get the greatest benefit out of the program.



Boiling Springs Water System Map



Community Park Site Plan, Town of Boiling Springs

Past Work with the Town

McGill has a history of obtaining grant funding for the Town and following through to completion of the proposed projects. McGill’s land planning and recreation team has worked with the Town since 2016, including developing a site-specific master plan; preparing a PARTF grant application; and providing design engineering, bidding phase services, and construction administration for improvements to Community Park.

Currently, the land planning team and recreation team — along with McGill’s water and wastewater team — is working on streetscape improvements for South Main Street from College Avenue to Branch Avenue. This project includes the redesign of the street to create 11-foot drive aisles, parallel parking on the East side, a 12-foot multiuse path, and water and sanitary sewer pipe replacement. McGill is providing surveying, design engineering, and bidding phase services for this project.





McGill Associates, PA

1240 19th Street Lane NW, Hickory, NC 28601

828.328.2024 | mcgillassociates.com

