

June 9, 2026

Cleve Haddock, Procurement Manager
Greenville Utilities Commission
401 S. Greene Street,
Greenville, North Carolina 27834

RE: Professional Engineering Services Related to the Wastewater
Service Due Diligence Preliminary Engineering Report of the Pitt
County Megasite North Development | RFQ #26-26



919-582-5850 | freese.com
1017 Main Campus Drive,
Suite 1200
Raleigh, NC 27606

Dear Mr. Haddock and Selection Committee Members:

Greenville Utilities Commission (GUC) is dedicated to serving an important economic development opportunity, while continuing to protect the reliability and capacity of its existing wastewater system. As such, it is looking for a defensible, implementation-focused Preliminary Engineering Report (PER) that verifies existing infrastructure, evaluates current and future capacity, defines practical alternatives and recommends a phased wastewater solution capable of serving the Pitt County Megasite North Development without compromising service to existing customers. Freese and Nichols, Inc. (FNI) brings the system knowledge, megasite experience and local team continuity to help GUC make those decisions with confidence. By selecting FNI, GUC will gain a trusted partner who can move quickly, reduce uncertainty and deliver a successful project that supports reliable utility service, long-term system resilience and transformational growth.

In this proposal, we have detailed many reasons why the FNI team is the ideal choice for this project, including:

Unmatched Familiarity with GUC's Collection System: FNI developed and calibrated GUC's wastewater model, giving our team a working knowledge of existing system capacities, constraints, flow patterns and critical assets. This allows us to begin the PER with a shorter learning curve and greater confidence in the alternatives we evaluate. This familiarity translates into efficient use of schedule and budget, accurate capacity findings and recommendations grounded in our knowledge of the existing system.

Proven Megasite and Industrial Utility Planning Expertise: Our recent work supporting successful megasite and industrial utility development plans, including the Triangle Innovation Point (TIP) Megasite in Sanford and the Toyota EV Battery Plant site in Greensboro, has given us direct experience with the scale, phasing and speed required to support major advanced manufacturing prospects. We understand that GUC needs a PER that can accommodate a range of potential tenants, support grant and funding requirements and clearly define near-term improvements while preserving flexibility for future expansion. Through our experience gained on similar megasite infrastructure projects, the FNI team will help GUC make infrastructure decisions that are practical today and scalable for tomorrow's growth.

Local, Integrated Team: FNI offers a strong team of professionals that already know GUC's staff, standards and wastewater system. Multiple proposed team members for this project were also involved in GUC's Wastewater Master Plan and bring continuity from that effort into this assignment. Our team's familiarity with GUC's operations, planning priorities and regional stakeholders will support productive coordination, clear communication and recommendations that reflect both technical needs and local implementation realities.

We are excited about the opportunity to continue working with GUC. Please contact us with any questions about our qualifications.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Charles Archer'.

Charles Archer
Vice President | Principal-in-Charge
919-582-5861 | charles.archer@freese.com

A handwritten signature in blue ink, appearing to read 'Sam Beavans'.

Sam Beavans, PE, Assoc. DBIA
Associate | Project Manager
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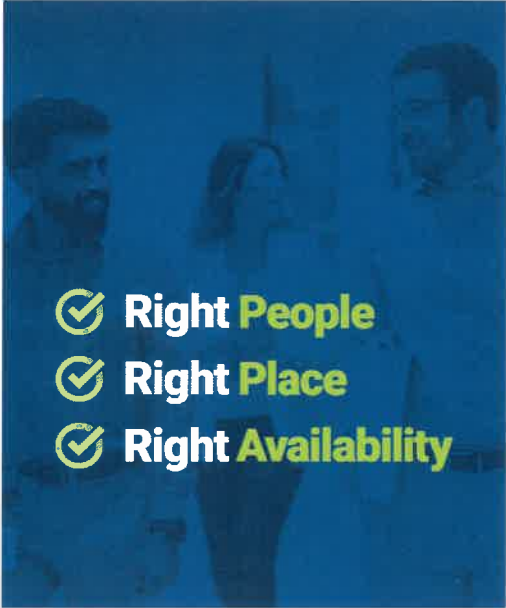
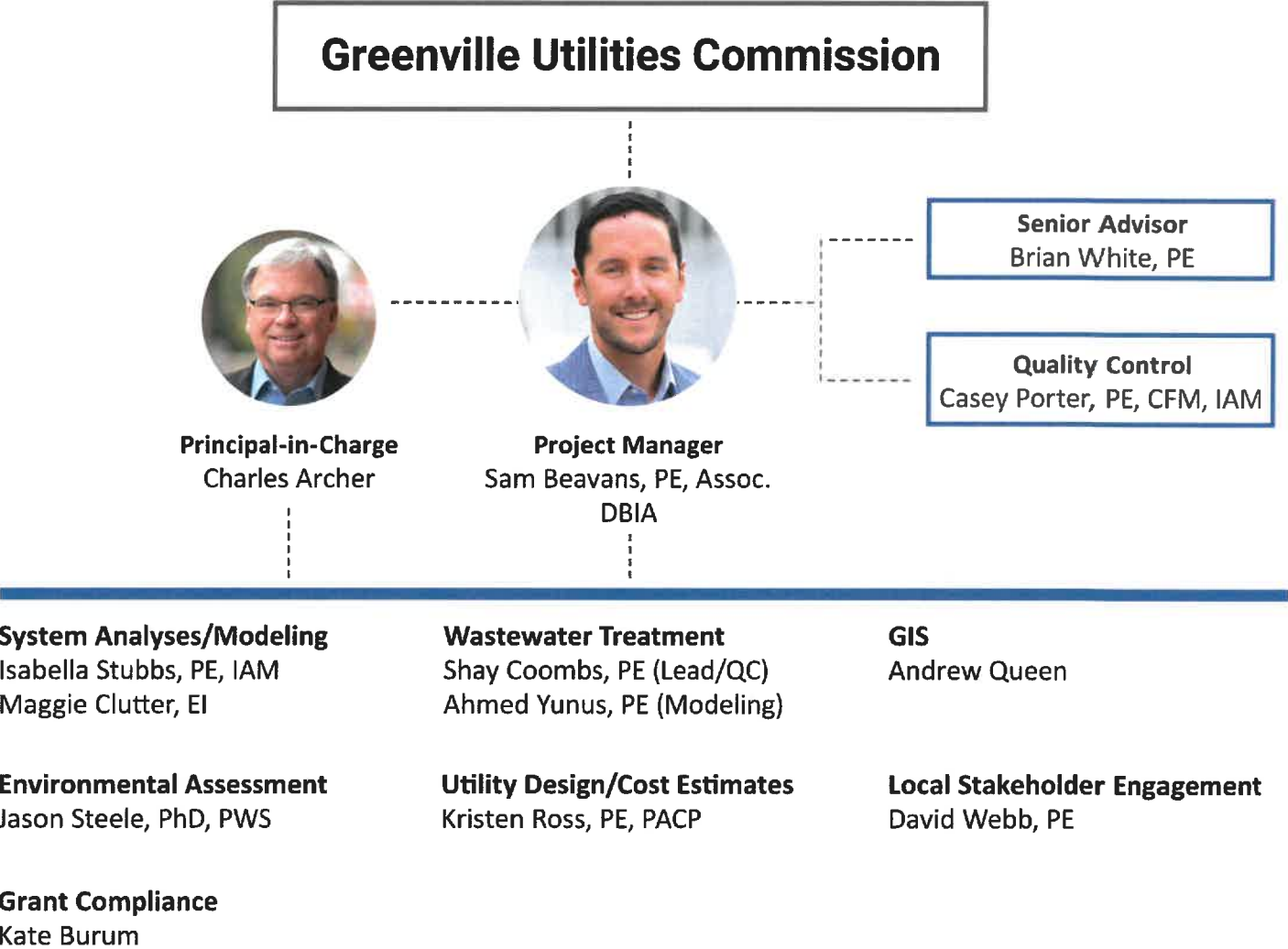
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Organizational Chart



Choosing a Project Team

We have put forth the advance-planning effort to verify we have the **right team members**, in the **right place**, with the **right availability** to meet GUC’s goals for the Pitt County Megasite North Wastewater PER. Our team was selected for direct experience with large-scale wastewater planning, collection system capacity evaluations, phased utility service strategies, environmental considerations, grant support/documentation and PER development for funding and implementation.

Beyond the proposed team, FNI has access to **1,300+ employees firmwide** to assist, as necessary. As a firm focused on client service, we will commit the resources necessary to help GUC develop a practical, fundable and sustainable wastewater service strategy for the Pitt County Megasite North development.

Team Member Resumes



Sam Beavans PE, Assoc. DBIA

Project Manager

As Project Manager, Sam will provide day-to-day leadership to keep the project team coordinated, responsive and focused on GUC's goals.

His experience includes planning, design and construction oversight of water and sewer lines, pump stations and lift stations, and various components of water and wastewater treatment. Sam's diverse experience includes the planning and design of water and wastewater infrastructure for multiple economic and industrial development projects. Sam will support clear communication, efficient project delivery and practical, phased recommendations that address existing system impacts, future industrial demands, permitting needs and long-term reliability for the Megasite and surrounding development area.

EXPERIENCE

13 years

EDUCATION

BS, Biological and Agricultural Engineering (Concentration: Environmental Engineering), North Carolina State University

BS, Agricultural Environmental Technology, North Carolina State University

REGISTRATION

Professional Engineer, NC #053289

Associate Design-Build Professional #AS-5275

FAA 107 Commercial Drone Remote Pilot #3935519

RELEVANT PROJECT EXPERIENCE

Triangle Innovation Point Water and Sewer Improvements | City of Sanford/ TriRiver Water | Project Manager

Sam led the preliminary and final design services, bidding and construction assistance for additional water and sewer capacity required to serve the incoming industry at the TIP megasite. FNI developed a comprehensive program to expand the existing water and wastewater system and treatment capacity, which included multiple lift station upgrades ranging from 4 to 33 MGD, approximately 55,000 LF of 16-, 24- and 36-inch water line, approximately 80,000 LF of 18-, 24- and 36-inch force main and approximately 1,800 LF of 36-inch gravity sewer.

Northwest Sewer Extension | City of Hickory | Project Manager

Sam led the planning, environmental and design services for 3,850 LF of 8-inch gravity sewer, 1,350 LF of 6-inch force main and a 0.36-MGD lift station to provide sewer service for a new greenfield industrial park. The project includes preliminary site evaluation, downstream sewer analysis and coordination with various stakeholders so that sufficient capacity is provided to support future industrial developments.

Anderson Creek Gravity Sewer Outfall Study | Harnett County | Project Manager

FNI assessed the existing capacity of the Anderson Creek sewer outfall and evaluated potential improvements to convey flows anticipated from future growth. Sam oversaw the determination of future basin flows, coordination with developers to identify planned future growth and the development of phased improvement options for increasing capacity within the Anderson Creek outfall infrastructure. Sam also led the team in delivering the overall Anderson Creek basin analysis, which will now serve as the roadmap for increased capacity in the rapidly growing Anderson Creek area of Harnett County.



Charles Archer

Principal-in-Charge

Charles' in-depth knowledge of the state and local governments is a crucial component to the strength of our team. As Principal-in-Charge, he will provide executive oversight for this project. Prior to joining FNI, Charles spent 12 years with the North Carolina League of Municipalities, as well as an additional 19 years serving North Carolina local governments as a County Manager and a Municipal Planning Director.

Experience: 44 years | **Education:** MPA, East Carolina University; BS, Political Science, East Carolina University

Relevant Project Experience

- Moncure Megasite Sanitary Sewer Extension | City of Sanford | Funding Assistance/Stakeholder Engagement
- TIP Water and Sewer Improvements | City of Sanford/TriRiver Water | Funding Assistance/Stakeholder Engagement
- Camp Burton Water and Sewer Extension | City of Greensboro | Stakeholder Engagement



Brian White PE

Senior Advisor

Brian will provide guidance to our project team at all critical project milestones, helping to define the overall project plan and providing direction to the team throughout the life cycle of the project. Brian leads FNI's Southeast U.S. master planning team, which specializes in water, wastewater and reclaimed water system planning, asset management and modeling. His experience includes hydraulic modeling, planning, design and project management.

Experience: 24 years | **Education:** BS, Civil Engineering (Water Resources), North Carolina State University

Registration: Professional Engineer, NC #037633

Relevant Project Experience

- Wastewater Master Plan | Greenville Utilities Commission | Project Manager
- TIP Water and Sewer Improvements | City of Sanford/TriRiver Water | Modeling
- Regional Water and Wastewater Utility Master Plan | City of Sanford/TriRiver Water | Project Manager



Casey Porter PE, CFM, IAM

Quality Control

Casey will leverage his extensive wastewater engineering experience to confirm quality is being met at each project milestone. His experience includes a wide range of water, wastewater and related environmental engineering projects. He is an expert at developing representative collection and distribution models in several software environments and managing their use for optimal master planning.

Experience: 20 years | **Education:** MS, Civil Engineering, Georgia Institute of Technology; BS, Civil and Environmental Engineering, Georgia Institute of Technology; **Registration:** Professional Engineer, NC #055589; Certified Floodplain Manager #US-14-07563; Certificate in Asset Management #6148730

Relevant Project Experience

- Wastewater Master Plan | Greenville Utilities Commission | Quality Control
- Regional Water and Wastewater Utility Master Plan | City of Sanford/TriRiver Water | Modeling
- Big Alamance Sewershed Study | City of Greensboro | Quality Control



Isabella Stubbs PE, IAM

System Analysis/Modeling

Isabella will support system analysis and modeling efforts, helping GUC understand existing wastewater system capacity, forecast future demands and evaluate practical infrastructure solutions.

Isabella's experience includes water distribution system and wastewater collection system modeling, growth projections, system analyses, infill and infiltration (I/I) studies, dashboard development and CIP project planning.

Experience: 5 years | **Education:** BS, Environmental Engineering, Georgia Institute of Technology |

Registration: Professional Engineer, NC #059954; Certificate in Asset Management #6142688

Relevant Project Experience

- Wastewater Master Plan | Greenville Utilities Commission | Lead Engineer/Modeler
- Regional Water and Wastewater Utility Master Plan | City of Sanford/TriRiver Water | Dashboard Development
- Belmont Pump Station PER | Roanoke Rapids Sanitary District | Engineering Support



Maggie Clutter EI

System Analysis/Modeling

Maggie's background in environmental engineering and systems modeling equips her to bring analytical rigor and forward-thinking insight to GUC's wastewater service PER. With specialized experience in hydraulic modeling and master planning, Maggie supports municipal clients with comprehensive system analyses that integrate current data with long-range planning objectives.

Experience: 2 years | **Education:** BS, Environmental Engineering, Georgia Institute of Technology |

Registration: Engineering Intern, NC #A-31537

Relevant Project Experience

- Regional Water and Wastewater Utility Master Plan | City of Sanford/TriRiver Water | Project Engineer (Modeling)
- Research Triangle Park Utility Infrastructure Master Plan | City of Durham | Modeler
- Wastewater Hydraulic Modeling | Town of Cary | Lead Modeler



Shay Coombs PE

Wastewater Treatment (Lead/Quality Control)

Shay's background in wastewater treatment and large site development infrastructure will help the team evaluate treatment impacts, confirm the feasibility of proposed wastewater service alternatives and develop recommendations that are practical, constructible and technically sound. Shay's experience also includes water and wastewater treatment process design, modeling and construction management for water and sewer systems on large site development projects.

Experience: 12 years | **Education:** MS, Environmental Engineering, Johns Hopkins University; BS, Civil Engineering, Georgia Institute of Technology | **Registration:** Professional Engineer, NC #048419

Relevant Project Experience

- Regional Water and Wastewater Utility Master Plan | City of Sanford/TriRiver Water | Treatment Lead
- Triangle Wastewater Treatment Plant (WWTP) Expansion Study | Durham County | Project Manager
- South River Water Reclamation Center Compliance and Reliability | City of Atlanta, GA | Project Manager



Ahmed Yunus PE

Wastewater Treatment (Modeling)

Ahmed's background in both process engineering and applied research strengthens his work designing water and wastewater treatment solutions. His experience includes feasibility studies, system optimization and full-scale design support for projects involving advanced, membrane and biological treatment processes as well as construction oversight and regulatory coordination for municipal and industrial clients.

Experience: 4 years | **Education:** MS, Civil Engineering, Georgia Southern University; BS, Environmental Engineering, Benedict College | **Registration:** Professional Engineer, NC #062585

Relevant Project Experience

- Triangle WWTP Expansion Study | Durham County | Modeling
- PFAS Treatment Preliminary Design | Columbus Water Works, GA | Process Engineer
- Central WWTP Improvements | City of Houston, TX | Process/Mechanical Engineer



Andrew Queen

GIS

Leveraging his extensive GIS experience, Andrew will help the project team organize, analyze and present critical infrastructure and planning data. He regularly provides GIS and data management support for water and wastewater master planning studies and is experienced in SQL, data management techniques and the use of the ESRI suite of tools, including ArcMap, ArcCatalog and ArcGIS Online.

Experience: 7 years | **Education:** BS, Geographic Information Systems (GIS), Kennesaw State University; BS, Computer Science, Kennesaw State University; BS, Environmental Science, Maryville College | **Registration:** FAA 107 Commercial Drone Remote Pilot #4530009

Relevant Project Experience

- Wastewater Master Plan | Greenville Utilities Commission | GIS Analyst/Dashboard Development
- TIP Water and Sewer Improvements | City of Sanford/TriRiver Water | GIS Analyst
- Research Triangle Park Utility Infrastructure Master Plan | City of Durham | GIS Analyst



Jason Steele PhD, PWS

Environmental Assessment

Jason will lead environmental assessments, helping the project team identify environmental constraints, permitting requirements and mitigation considerations for proposed wastewater infrastructure improvements. He brings deep familiarity with state regulatory programs, providing clients with clear permitting pathways, defensible documentation and practical solutions to environmental constraints.

Experience: 19 years | **Education:** PhD, Forestry (Ecosystem Restoration), Virginia Tech; MS, Forestry (Dendroclimatology), Virginia Tech; BS, Biology, West Virginia University | **Registration:** Professional Wetland Scientist #2357

Relevant Project Experience

- TIP Water and Sewer Improvements | City of Sanford/TriRiver Water | Environmental Scientist
- Camp Burton Water and Sewer Extension | City of Greensboro | Environmental Scientist
- Northwest Sewer Extension | City of Hickory | Environmental Lead



Kristen Ross PE, PACP

Utility Design/Cost Estimates

Kristen will draw from her utility design and engineering experience to help translate planning-level recommendations into practical, constructible infrastructure concepts. She has hands-on experience delivering water and wastewater infrastructure projects for municipal clients across the state. She has contributed to the design of new lift stations, force mains and sewer extensions by preparing PERs, performing field investigations and developing construction documents.

Experience: 4 years | **Education:** MEng., Engineering Management, University at Buffalo; BS, Industrial and Systems Engineering, The State University of New York at Buffalo | **Registration:** Professional Engineer, NC #062489; Pipeline, Lateral and Manhole Assessment Certification #P0053034-032025

Relevant Project Experience

- TIP Water and Sewer Improvements | City of Sanford/TriRiver Water | Design Engineer
- Camp Burton Water and Sewer Extension | City of Greensboro | Design Engineer
- Bynum WWTP Condition Assessment | Chatham County | Design Engineer



Kate Burum JD

Grant Compliance

Kate has considerable experience assisting communities to secure funding for water, wastewater, stormwater and non-traditional infrastructure projects. She monitors funding opportunities and helps clients meet financing needs with available resources. Prior to working at FNI, Kate gained experience from the Oklahoma Water Resources Board as their Assistant General Counsel and Funds Manager.

Experience: 19 years | **Education:** Juris Doctor, Law, University of Oklahoma; Bachelor of Business Administration, International Business, University of Oklahoma | **Registration:** Licensed Attorney, OK #21122

Relevant Project Experience

- John Street Grant Support | North Carolina Department of Transportation | Funding Assistance
- Beauty Street and Toria Drive Culvert Replacements | City of Statesville | Funding Assistance
- Comprehensive State Flood Plan | Oklahoma Water Resources Board | Funding Assistance



David Webb PE

Local Stakeholder Engagement

David's experience in infrastructure planning, permitting, drainage studies, construction oversight and CIP prioritization gives him a practical understanding of how utility improvements affect surrounding communities and long-term growth. He is an experienced engineer and project manager who offers clients practical infrastructure solutions while considering the complexity of all issues.

Experience: 27 years | **Education:** BS, Civil Engineering, North Carolina State University | **Registration:** Professional Engineer, NC #029474; Level III Design of Erosion and Sediment Control Plans, NCDOT #3244

Relevant Project Experience

- Utilities Accommodation Manual Update | North Carolina Department of Transportation | Project Manager
- Facility Capital Program Management | City of Fayetteville | Task Manager
- Watershed Program Management | City of Fayetteville | Stormwater Engineer

Firm Overview

FNI is a client-focused, regionally based firm with national expertise. We meet client needs with responsiveness and flexibility. Dating back to our firm's founding in 1894, we put relationships first — clients, teaming partners and staff — and seek long-term relationships, many of which are counted in decades, not years.

1894

Year company was founded

1,300

Multi-discipline professionals

30+

Offices nationwide

FNI provides a broad range of services to plan, design and manage public infrastructure projects. We help our clients through every stage of the project life cycle: planning, design, program management, funding procurement, regulatory compliance, construction management, and operations and maintenance. Our project teams are known for exceeding client expectations through innovative concepts and high-performing designs.

Our Southeastern Master Planning group is dedicated to hydraulic modeling and developing capital improvement plans full-time. We engage expertise from our other practices, such as treatment, transmission, utilities and construction, during the capital planning phases of our work to advise on the feasibility of recommendations (e.g., pipe alignments).

For this project, we will focus our work on the specific infrastructure decisions facing GUC, including potential wastewater delivery points, collection system and treatment capacity impacts gravity sewer and force main routing, lift station capacity and location, environmental constraints and phased improvements to serve the Megasite and future surrounding development.



The City of Sanford has worked with Freese and Nichols on numerous water/wastewater projects associated with collection and distribution. We have always been satisfied with the excellent quality of service and attention to detail they have provided.

—Victor Czar | Assistant City Manager | City of Sanford



Integrated Planning for Implementable Wastewater Solutions

Our Southeastern Master Planning group focuses on hydraulic modeling, utility planning and capital improvement planning. We regularly integrate specialists from our wastewater treatment, transmission, utilities, environmental, funding and construction practices during the planning phase to test the feasibility, constructability and cost effectiveness of recommendations before they advance into design. This integrated approach is particularly important for GUC's PER, where Phase I improvements, including a major sanitary sewer lift station with future upgrade capability, must be evaluated in the context of long-term industrial growth, existing GUC customers and future regional development.



Project Relevance

- ✓ Megasite Experience
- ✓ Wastewater Modeling
- ✓ Funding
- ✓ Environmental
- ✓ GIS
- ✓ Project Phasing

Triangle Innovation Point Water and Sewer Improvements

City of Sanford/TriRiver Water

TIP is one of the largest economic development projects in North Carolina's history and paved the way for the area to compete on the global stage to recruit substantial projects.

FNI provided preliminary and final design services, environmental permitting, bidding and construction assistance for additional water and sewer capacity required to serve the incoming industry at TIP. The project was completed in multiple phases and funded by federal and state grants. FNI developed a comprehensive program to expand the existing wastewater system and treatment capacity to meet growth demands. This complex system includes 25 miles of redundant lines, upgraded lift stations and an infrastructure loop for future development. The City set an accelerated schedule to implement the project, and the CMAR delivery method facilitated that schedule.

FNI evaluated three regional alternatives to avoid and minimize environmental impacts. The evaluation included delineation of Waters of the United States (WOTUS), habitat and presence/absence surveys for federally protected species, cultural resources evaluation and coordination and comprehensive impact analysis and mitigation. FNI completed the Section 404/401 Individual Permit, along with erosion control plans, and is providing compliance for all environmental permits issued for the project.

REFERENCE

Paul Weeks, Jr., PE
Executive Director of
Utilities
919-777-1119
paul.weeks@
tririverwater.com

TEAM MEMBERS

- Sam Beavans - Project Manager
- Brian White - Modeling
- Kristen Ross - Design Engineer
- Jason Steele - Environmental Scientist
- Charles Archer - Funding
- Andrew Queen - GIS



Project Relevance

- ✓ Megasite Experience
- ✓ Environmental
- ✓ Wastewater System Planning and Modeling
- ✓ Project Phasing
- ✓ Stakeholder Engagement

Camp Burton Water and Sewer Extension

City of Greensboro

FNI helped the City of Greensboro plan and design major sewer infrastructure that balanced immediate service needs with long-term growth, replacing vulnerable lift stations and opening more than 2,100 acres for future development.

FNI worked with the City to provide sewer service to a rapidly growing area in Northeast Greensboro and the new Camp Burton National Guard Army Reserve Center. This project eliminated the need for the City's Corbin Road Lift Station, which frequently floods, and a nearby privately owned lift station by redirecting their flow to a new downstream pump station. The project was designed to facilitate the elimination of up to three more upstream lift stations while expanding the City's service area by 2,107 acres.

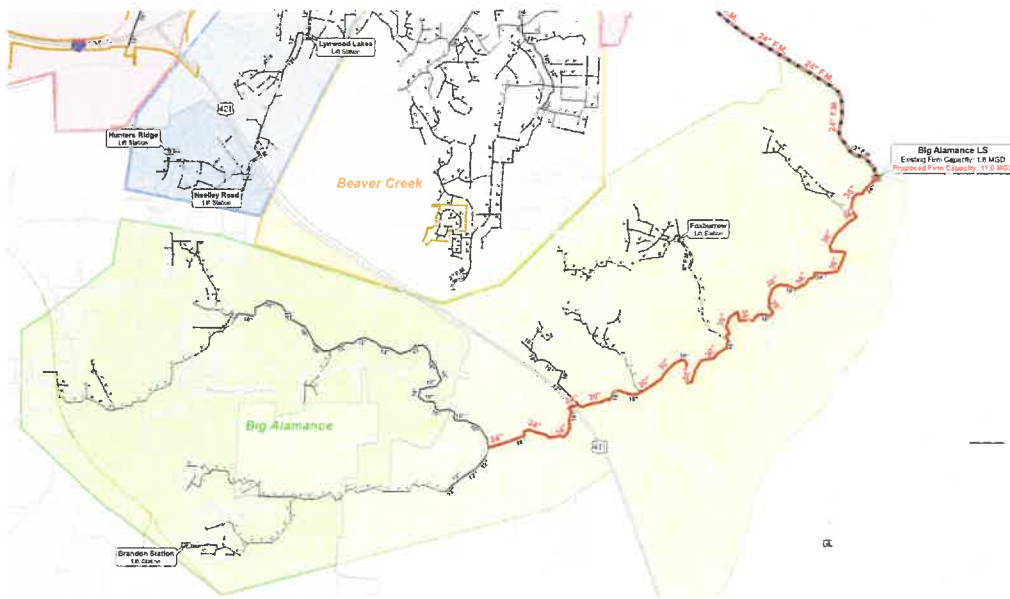
FNI provided the final design and permitting for approximately 20,000 LF of gravity sewer, ranging in size from 36 inches to 8 inches. The gravity sewer outfall runs parallel and in proximity to North Buffalo Creek in Greensboro, crossing the creek and several of its tributaries. FNI worked with a subconsultant to permit these stream crossings to be open-cut with permanent crossing access. The outfall also crosses the I-840, several other DOT roads and a major overhead power transmission line.

REFERENCE

Jay Guffey, PE
CIP Manager
336-373-7779
jay.guffey@greensboro-nc.gov

TEAM MEMBERS

- Sam Beavans - Design Engineer
- Brian White - Hydraulic Modeling
- Jason Steele - Environmental Scientist
- Kristen Ross - Design Engineer
- Charles Archer - Client Representative



Project Relevance

- ✓ Megasite Planning
- ✓ Wastewater Modeling
- ✓ GIS

Big Alamance Sewershed Study

City of Greensboro

In preparation of a new megasite development and anticipated growth along the adjacent corridor, FNI partnered with the City of Greensboro in a sewershed study to evaluate system capacity and determine if the collection system could accommodate projected growth.

FNI partnered with the City in a sewershed study to evaluate existing and future system capacity in the Big Alamance sewer basin and the potential impacts on the downstream infrastructure to determine if the collection system capacity was adequate to facilitate the projected growth. The project included developing growth projections for the sewershed, evaluating the impacts of the future megasite flows and projected growth on the City's infrastructure and developing alternatives for the City to accommodate the future flows. FNI explored two alternatives, including upsizing the gravity interceptor and associated wet well, pump station and force main in the Big Alamance Basin, and construction of a new lift station and force main to convey flows from the megasite to the South Buffalo interceptor, which delivers flow to the T.Z. Osborne WWTP.

The modeling work completed was built upon the City's existing InfoWorks ICM wastewater collection system model. FNI updated and enhanced the existing model to improve its performance and reliability for future modeling efforts. The project also included detailed project cost estimates for the various improvement scenarios. The City is currently moving forward with the recommendation for a new lift station along Highway 421 to transfer flow north.

REFERENCE

Jana Stewart, PE
Engineering Manager
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greensboro-nc.gov

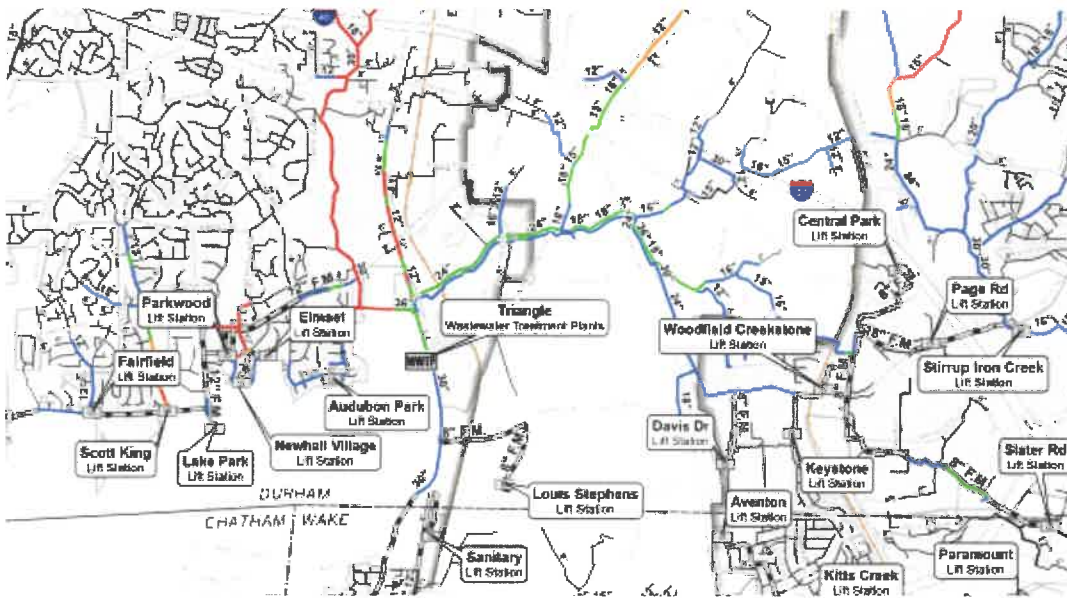
TEAM MEMBERS

- Brian White - Project Manager
- Andrew Queen - GIS
- Casey Porter - QA/QC
- Isabella Stubbs - Engineering Support



We had a very good project with Freese and were pleased with staffing and deliverables."

-Jana Stewart, City of Greensboro



Project Relevance

- ✓ Megasite Experience
- ✓ Wastewater Modeling
- ✓ GIS
- ✓ Projections
- ✓ Stakeholder Engagement

Research Triangle Park Utility Infrastructure Master Plan

City of Durham

The Research Triangle Foundation (RTF) is seeking to evaluate potential long-term growth patterns within Research Triangle Park (RTP) and understand the infrastructure investments needed to support future development.

RTP is a nearly 7,000-acre research park located in the heart of North Carolina's Triangle region, and it is home to more than 385 companies and an estimated 55,000 jobs. Although nearly all land within RTP has been sold and is now owned by private companies, investors and other entities, the RTF retains stewardship and administrative responsibilities through established land covenants. RTP companies also hold certain rights and responsibilities through the RTP Owners & Tenants Association.

As agent for the Durham-Wake Counties Research & Production Service District, RTF initiated this project to evaluate RTP's long-term growth and infrastructure needs. FNI is assisting with the development of three future development scenarios that could occur over the next 50 years. These scenarios will be used to assess infrastructure capacity needs, including water, wastewater and energy, required to support potential build-out conditions across RTP.

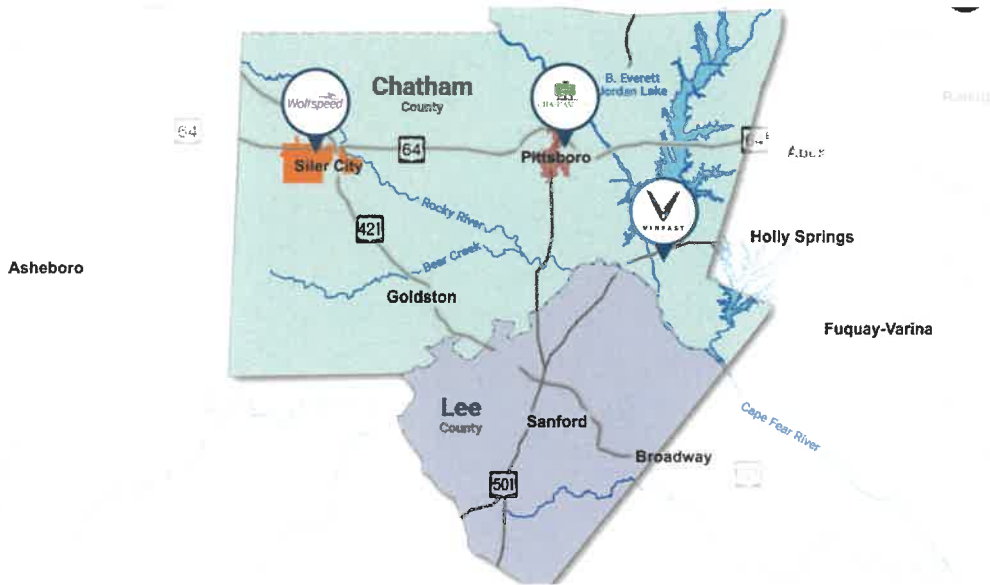
The project includes engaging with key stakeholders including owners, tenants, economic development and utility providers to assess growth opportunities and infrastructure needs. The FNI team is modeling all the water and wastewater systems serving the area to identify utility projects needed to facilitate system growth for three different scenarios.

REFERENCE

Travis Crayton, AICP
Vice President, Planning
and Public Policy
919-433-1679
crayton@rtp.org

TEAM MEMBERS

- Brian White - Project Manager
- Maggie Clutter - Modeling
- Andrew Queen - GIS
- Casey Porter - Quality Control
- Kristen Ross - Cost Estimates



Project Relevance

- ✓ Hydraulic Modeling
- ✓ System Planning and Phasing
- ✓ Wastewater Treatment
- ✓ GIS
- ✓ Megaproject Planning
- ✓ Stakeholder Engagement

Regional Water and Wastewater Utility Master Plan

City of Sanford/TriRiver Water

As communities in central North Carolina experience rapid residential and industrial growth, including regional megaprojects, water and wastewater demand is steadily increasing.

The regional utility master plan will assist TriRiver Water in evaluating how to efficiently merge infrastructure and services to the customers in Lee and Chatham Counties. TriRiver Water's Regional Utility Master Plan integrates four core workstreams: water supply planning, demand forecasting, reliability and redundancy and operational optimization.

A regional hydraulic model was developed by integrating four legacy distribution models (Sanford, Pittsboro/Chatham Park, Chatham County and Siler City). Model integration included harmonizing coordinate systems and asset naming, defining boundary conditions at interconnection points, standardizing demand patterns and checking consistency of tanks, pumps, controls and pressure zone boundaries.

Existing physical connections evaluated in modeling included a booster pump station transfer from Sanford to Chatham County and an existing transmission main between Chatham and Siler City with two-way meter that can provide water bidirectionally. Existing hydraulic models were developed in Autodesk's InfoWorks WS, InfoWater and Bentley's WaterGEMS software programs. The integrated regional model for TriRiver was aggregated into a single Bentley WaterGEMS model.

REFERENCE

Nick Fortune
Director of Business Management
919-777-1114
nick.fortune@tririverwater.com

TEAM MEMBERS

- Brian White - Project Manager
- Andrew Queen - GIS
- Maggie Clutter - Modeling
- Shay Coombs - Treatment Engineer
- Casey Porter - Lead Modeler
- Isabella Stubbs - Dashboard Development

Project Understanding

The Pitt County Megasite represents a transformational economic development initiative for Eastern North Carolina, designed to attract large-scale advanced manufacturing and industrial investment. The site includes approximately 3,300 acres of developable land within a larger 10,000-acre tract, positioned north of Greenville with access to major transportation corridors and regional infrastructure.

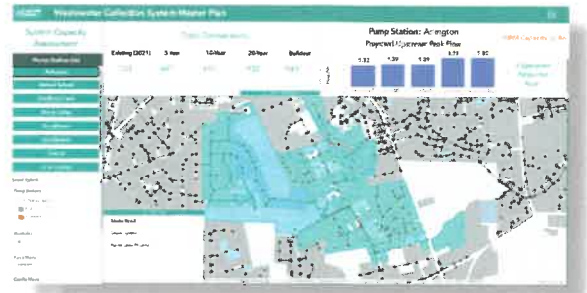
The megasite has been identified through the North Carolina Megasite Readiness Program, which was created to prepare large industrial sites capable of supporting major employers across sectors such as advanced manufacturing, life sciences and logistics.

At full buildout, the site is expected to:

- Drive regional job creation and economic growth
- Require significant utility expansion, including wastewater infrastructure
- Be developed over a 5- to 15-year horizon with phased infrastructure delivery

For GUC, this creates a critical need to:

- Confirm system capacity and limitations
- Serve large industrial flows without impacting existing customers
- Define a phased, fundable and constructible infrastructure plan



Built-In Insight for GUC's Wastewater Future

GUC's wastewater system planning for the Pitt County Megasite can begin from a strong foundation of existing system knowledge. FNI's recent collection system master planning evaluated GUC's gravity sewer, force main and pump station network; developed future flow projections; assessed inflow and infiltration considerations; reviewed pump station and collection system risk; and used hydraulic modeling to identify capacity needs and prioritized capital improvements.

That familiarity is directly relevant to this PER. The prior planning effort provides context for how new industrial wastewater demands could affect existing customers, key pump stations, major conveyance routes, treatment capacity and future service areas. It supports a more efficient review of feasible delivery points, phased infrastructure options and long-term upgrade needs.

The planning work also produced a GIS-based dashboard that allows GUC staff to view projected flows, model results, capacity constraints and CIP projects in a dynamic format. This existing planning framework can help GUC evaluate megasite alternatives with clear, data-supported decisions that balance reliability, cost, constructability, environmental considerations and future growth.

Project Approach

Our approach builds on the methodology successfully applied in GUC's wastewater master plan and is tailored to the unique demands of the Pitt County Megasite. For the GUC wastewater master plan, we implemented a comprehensive monitoring program, developed high resolution system data and calibrated a fully GIS integrated hydraulic model for both dry and wet weather conditions. We combined parcel level growth projections with future land use and transportation planning data to support defensible phasing decisions. Using those results, we identified capacity constraints and prioritized improvements through a transparent, data-driven framework that considered hydraulic performance, severity of inflow and infiltration, asset risk and operational input. That same disciplined approach will help GUC evaluate megasite demands with confidence and define a phased, fundable and constructible infrastructure strategy. We have identified the following considerations to approach this project:

System Verification and Risk Reduction

Challenge

GUC must confidently understand existing infrastructure performance before committing to large capital investments. It is also critical to understand the existing system level of service to customers to maintain consistency as the system grows.

FNI Approach

We will leverage our familiarity with GUC's system and existing models to:

- Verify system configuration, capacities and constraints
- Validate model assumptions with available field data and system records
- Identify bottlenecks under existing and future flow conditions

FNI has previously supported GUC modeling and master planning efforts, providing a strong foundation for efficient system validation. Our experience and the outcome of the modeling reduces planning uncertainty so that all downstream decisions are grounded in defensible, system-specific data.

Scenario-Based Demand Forecasting

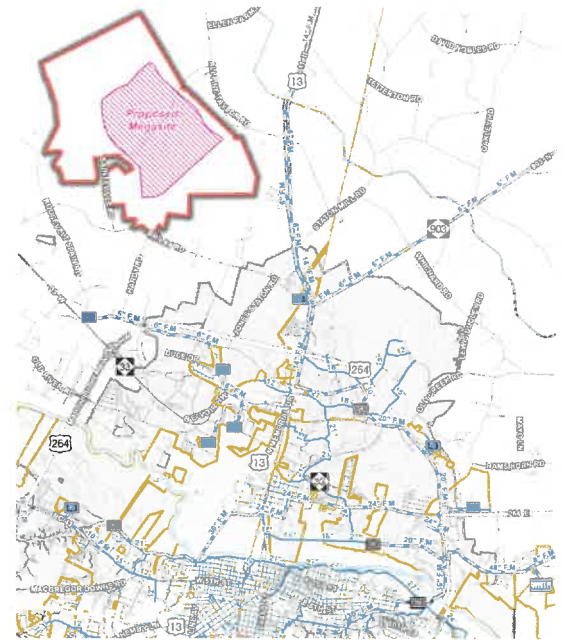
Challenge

Megasite tenants (advanced manufacturing, pharmaceuticals, etc.) can generate high-volume, variable wastewater demands, requiring scenario-based planning and phasing rather than a single forecast. Megasite demands come with uncertainty and are highly dependent on tenant type and development phasing.

FNI Approach

We will develop multiple demand scenarios reflecting:

- Likely industry types (advanced manufacturing, pharmaceuticals, logistics, etc.)
- Phase I versus full buildout conditions
- Peak and average loading profiles



From the recent master plan, our team knows the existing system capacity to serve the site.

We will also evaluate regional impacts, including nearby service areas such as Bethel, as required by the RFQ. FNI has applied scenario-based demand forecasting for large-scale industrial and regional planning efforts such as the Triangle Innovation Point in Chatham County, the Greensboro-Randolph Megasite that houses the Toyota Battery Factory, and other large industrial sites like Camp Burton in Greensboro and the Research Triangle Park. A phased approach allows GUC to size infrastructure appropriately and avoid costly overdesign while preventing reduced level of service (LOS) to existing customers.

Phased Alternatives Analysis Focused on Flexibility and Cost

Challenge

Multiple infrastructure strategies exist, and GUC must balance cost, reliability, environmental constraints and long-term adaptability.

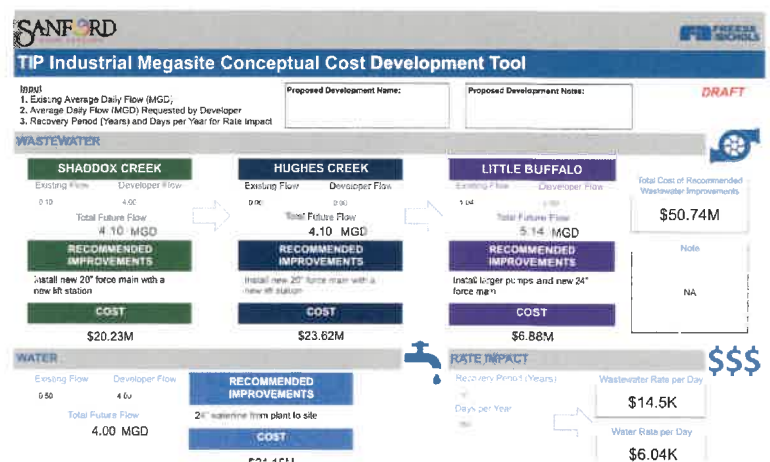
FNI Approach

We will evaluate multiple feasible alternatives, including:

- Gravity versus pumped conveyance systems
- Alternative delivery points into the existing network
- Lift station configurations (up to ~10 MGD)
- Treatment capacity considerations

Each alternative will be evaluated using consistent criteria:

- Hydraulic performance
- Capital and lifecycle cost
- Environmental and permitting impacts
- Constructability and phasing flexibility



FNI has a history of routinely delivering alternatives analyses supporting regulatory approval and capital planning decisions for utilities through partnerships with our clients and internally with our utility design and planning teams. Evaluating alternatives provides a data-driven, defensible recommendation that balances near-term cost with long-term system resiliency. This helps develop an infrastructure implementation plan to align with development timing, funding and regulatory approvals.

Phased Implementation Plan Aligned with Megasite Development

Challenge

Infrastructure must align with uncertain development timelines and phased tenant buildout. Infrastructure must be phased to meet interim needs but not over-sized to create operational issues.

FNI Approach

We will develop a trigger-based, phased implementation strategy that:

- Identifies Phase I infrastructure required to serve initial development
- Defines logical expansion pathways for future phases
- Links infrastructure delivery to demand thresholds

We will also provide:

- Preliminary routing layouts
- Planning-level cost estimates
- Implementation schedule aligned with funding milestones

FNI has been involved in the TIP Megasite since its early planning and funding stages. Our team understands the changing needs for megasite infrastructure and continues to support the phased utility implementation for TriRiver Water. Understanding phasing and being prepared to adapt positions GUC to invest at the right time, accelerating readiness while minimizing financial risk.

Funding, Regulatory, and Megasite Readiness Alignment

Challenge

The PER must support grant funding, regulatory approvals and Economic Development Partnership of North Carolina (EDPNC) megasite readiness requirements.

FNI Approach

We understand ARK Consulting Group (ARK) has supported prior funding applications for the site, and our team has successfully partnered with ARK on past efforts. If beneficial, we can coordinate with ARK or incorporate them into the team to provide continuity, local knowledge and funding strategy support. Our goal is to deliver a PER that is immediately actionable for funding, permitting and implementation through the following:

- Identify all regulatory and permitting pathways early
- Align deliverables with EDPNC and funding agency expectations
- Prepare documentation to support grant compliance and reimbursement

Environmental Assessment

Challenge

The site is sensitive to public scrutiny related to environmental impacts associated with wetlands, flooding and habitats. The community has concerns regarding growth and infrastructure expansion.

FNI Approach

We will complete a desktop environmental constraints and permitting screening for the alternatives under consideration. We use available GIS data, public databases, prior planning documents and readily available regulatory information to identify environmental constraints that may affect route selection, lift station siting, phasing, permitting, cost and schedule.

Focus will include:

- Wetlands, streams, floodplains and hydric soils
- Threatened/endangered species and cultural/historic resource indicators
- Known contamination risk indicators
- Sensitive receptors and easement/route constraints
- Likely regulatory triggers, including NCDEQ, 404/401, floodplain, erosion control, stormwater, SEPA/NEPA screening and funding compliance
- Comparative environmental/permitting risk by wastewater alternative

Expected deliverables:

- Desktop constraints mapping
- Regulatory compliance/permitting risk matrix for alternatives
- Environmental summary memo

Wastewater Treatment Plant Evaluation

Challenge

The existing WWTP is permitted at 17.5 MGD with a hydraulic capacity of approximately 30.0 MGD. Current average daily flows are in the 11.0 MGD range with a peak wet weather flow of up to 25.5 MGD. The proposed Megasite flows for build out range up to 10.0 MGD in additional flow, which exceeds the current WWTP capacity.

FNI Approach

We will evaluate treatment capacity using a data-driven, defensible approach grounded in existing plant performance and projected loading conditions. Our evaluation will:

- Develop a Basis of Design
 - Statistically evaluate historical influent flow and strength data
 - Establish representative average and peak flows, influent concentrations and seasonal peaking factors
 - Define design parameters for Phase I and full buildout conditions
 - Evaluate Hydraulic and Treatment Capacity
 - Assess the capacity of existing treatment processes to reliably handle projected flows
 - Identify hydraulic constraints and process bottlenecks
 - Compare existing performance to regulatory design criteria and industry standards
 - Assess Process Performance and Reliability
 - Review major unit processes for compliance with design and regulatory expectations
 - Evaluate redundancy and operational flexibility
 - Identify risks to maintaining permit compliance under future conditions
 - Identify Capacity Constraints and Triggers
 - Define where and when capacity limitations occur under projected growth
 - Establish planning thresholds tied to flow and loading conditions
 - Identify risks associated with peak wet weather performance
 - Recommend Improvements and Implementation Strategy
 - Identify required improvements to maintain compliance and reliable operations
 - Support phased implementation aligned with Megasite development
 - Provide input to overall PER alternatives, cost estimates, and phasing strategy
- 

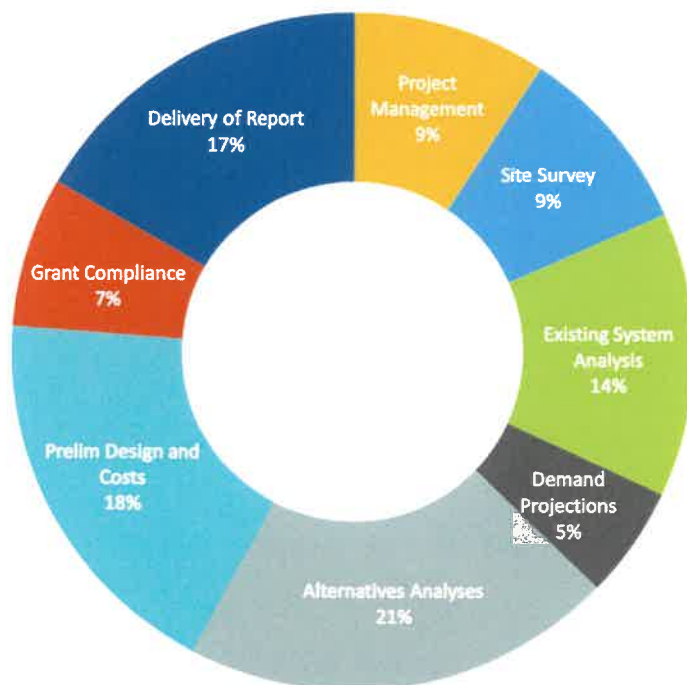


Project Schedule

	TASK	2026					2027									
		A	S	O	N	D	J	F	M	A	M	J	J	A	S	O
	Project Kickoff	★														
Site Survey	Site Walk and Desktop Evaluation															
Analysis of Existing Infrastructure	Review Existing Mapping															
	Evaluate Models															
	Determine Impacts															
Projected Utility Demands	Estimate Intermediate Demands															
	Demand Projections															
Alternative Analysis	Identify Alternatives															
	Desktop Environmental Impacts															
Preliminary Engineering Report	Develop Routes & OPCC															
	Draft PER										★					
	Final PER															★

Man Hours

FNI estimates a total of approximately 937 hours to complete the PER for the Wastewater Service Due Diligence. Note, this is a preliminary estimate that is subject to change based on the final scope and budget discussions with GUC. A breakdown of the estimate of hours by task is as follows:



TASK	HOURS
Project Management	87
Site Survey	85
Existing System Analysis	127
Demand Projections	50
Alternatives Analysis	192
Prelim Design and Costs	173
Grant Compliance	67
Delivery of Report	156
TOTAL	937

References

1 CITY OF SANFORD/TRIRIVER WATER

Paul Weeks, Jr., PE
Executive Director of
Utilities
919 -777-1119
paul.weeks@tririverwater.
com

Dates of Services
5/2022-Present

Triangle Innovation Point Water and Sewer Improvements

FNI is providing preliminary and final design services, bidding and construction assistance for additional water and sewer capacity required to serve the incoming industry at TIP. The project has been completed in multiple phases and is funded by federal and state grants. Construction has recently been completed.



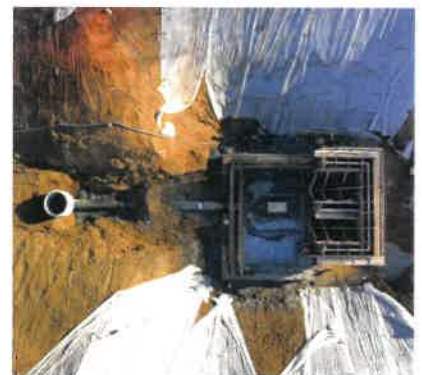
2 CITY OF GREENSBORO

Jay Guffey, PE
CIP Manager
336-373-7779
jay.guffey@greensboro-nc.
gov

Dates of Services
3/2020-Present

Camp Burton Water and Sewer Extension

FNI is providing design and construction phase services for the new Camp Burton National Guard Site. The project includes a new 10-MGD regional lift station and approximately 4,200 LF of 20-inch force main, 11,300 LF of 16-inch water transmission main and 20,900 LF of 8- to 36-inch gravity sewer on a fast-track schedule.



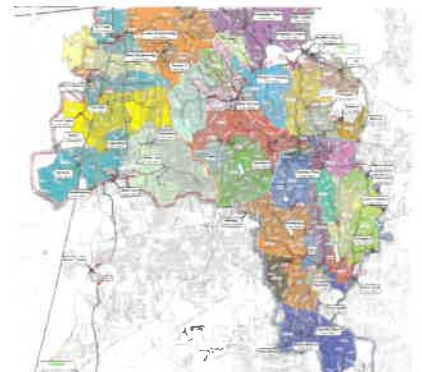
3 TOWN OF CARY

Corrie Bondar, PE, GISP
Assistant Utilities Director
919-460-4933
corrie.bondar@carync.gov

Dates of Services
5/2024-Present

Wastewater Hydraulic Modeling

FNI is building and calibrating a wastewater collection system hydraulic model to reflect the latest system data and integrate with the Town's Long Range Water Resources Plan and Water Master Plan. The calibrated model will analyze the existing and future systems and provide recommendations for a wastewater CIP.



ATTACHMENT #1

RFQ Acknowledgement and Signature Form

RFQ No.: 26-26, Professional Engineering Services Related to the Wastewater Service Due Diligence Preliminary Engineering Report of the Pitt County Megasite North Development

The undersigned having carefully examined the location of the proposed work, the local conditions of the place where the work is to be done, the Invitation, the General Conditions, the Specifications and all of the documents for this project, proposes to enter into a contract with Greenville Utilities Commission in Greenville North Carolina perform the work listed in this RFQ, including all of its component parts, and to furnish any and all required labor, materials, equipment, insurance, bonding, taxes, transportation and services required for this project in strict conformity with the plans and specifications prepared, including any Addenda, within the time specified.

Addendum Acknowledgement:

The following addendum (addenda) is (are) acknowledged in this RFQ: 1-2

Acknowledgement and Signature:

1. No submittal is valid unless signed in ink by the person authorized to make the submittal.
2. I have carefully read, understand and agree to the terms and conditions on all pages of this RFQ. The undersigned agrees to furnish the services stipulated in this RFQ.

Respondent's Name and Title:

Company Name: Freese and Nichols, Inc.

Address: 1017 Main Campus Drive, Suite 1200, Raleigh, NC 27606 Telephone: 919-582-5861

Email: charles.archer@freese.com

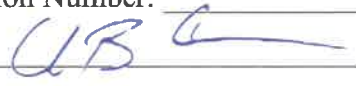
Contractor License # (if applicable): N/A

Fax: N/A

Cell Number: 919-637-3438

Expiration Date: N/A

Federal Tax Identification Number: #75-1531935

Authorized Signature:  Date: June 9, 2026

ATTACHMENT #3

Letter of Compliance to E-Verify for Greenville Utilities Commission

1. I have submitted a RFQ for contract or desire to enter into a contract with the Greenville Utilities Commission;
2. As part of my duties and responsibilities pursuant to said RFQ and/or contract, I affirm that I am aware of and in compliance with the requirements of E-Verify, Article 2 of Chapter 64 of the North Carolina General Statutes, to include (mark which applies):
3. ☒ After hiring an employee to work in the United States I verify the work authorization of said employee through E-Verify and retain the record of the verification of work authorization while the employee is employed and for one year thereafter; or
4. ☐ I employ less than twenty-five (25) employees in the State of North Carolina.
5. As part of my duties and responsibilities pursuant to said RFQ and/or contract, I affirm that to the best of my knowledge and subcontractors employed as a part of this RFQ and/or contract, are in compliance with the requirements of E-Verify, Article 2 of Chapter 64 of the North Carolina General Statutes, to include (mark which applies):
6. ☐ After hiring an employee to work in the United States the subcontractor verifies the work authorization of said employee through E-Verify and retains the record of the verification of work authorization while the employee is employed and for one year thereafter; or
7. ☐ Employ less than twenty-five (25) employees in the State of North Carolina. Specify subcontractor: _____

Freese and Nichols, Inc. (Company Name)

By: Charles Archer (Typed Name)

 (Authorized Signatory)

Vice President | Principal-in-Charge (Title)

June 9, 2026 (Date)