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CARROLL COUNTY

Water System Improvement Study
Ossipee, New Hampshire

PROPOSAL AND STATEMENT OF QUALIFICATIONS

PROJECT NO. 21139

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Proposal No. 21139
June 9, 2021

Carroll County
Office of Commissioners
95 Water Village Road
Ossipee, NH 03864
Attn: Mellisa Seamans

Subject: Proposal and Statement of Qualifications for Water System Improvement Study

Dear Board of Commissioners:

Horizons Engineering, Inc. (Horizons) appreciates the opportunity to provide this proposal and statement of qualifications for a Preliminary Engineering Report for the Carroll County Water System which serves the County Complex and Ossipee Village. Our Statement of Qualifications and Proposal includes a proposed scope of services, fee estimate, a firm profile, project team, related experience, and project references.

Horizons' team of civil engineers, hydrogeologists, land surveyors, environmental professionals, and technicians has worked together with many municipal and private clients to plan, design, and construct a wide variety of water projects. We have extensive experience assisting Clients in evaluating their infrastructure, prioritizing improvements, developing timely, cost-effective implementation strategies, and obtaining favorable funding for project implementation.

You can reach either of us at 603-444-4111, or by email at jwarzocha@horizonsengineering.com or cconway@horizonsengineering.com.

Respectfully,

Cathy Furtek Conway, P.E.
Vice President Municipal Operations

Jon Warzocha, P.G.,
CEO

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SCOPE OF SERVICES

Horizons proposes to complete a Preliminary Engineering Report for the Carroll County Water System. We propose to complete the work using entirely in-house staff. We propose to complete the project as follows:

Task 1: Information Review and Site Visit.
Horizons will review existing reports, studies, plans and available information on the Carroll County water system. We will complete a site visit to view the system and discuss goals for the project and other pertinent details of the water system with the Client representative.

We will review the most recent inspections by Underwater Solutions for the 200,000-gallon storage tank.

Horizons will complete one day of fire flow tests.

Task 2. Inventory, Hydraulic Model and Condition Assessment
Based on the information gathered in Task 1, Horizons will complete a system map using LiDAR, tax maps and other readily available data. The map will be utilized to complete a computerized hydraulic model of the system utilizing Water CAD. The Water CAD model will be used to assess system pressures, fire flow conditions and the potential need for additional storage.

A review of the existing 200,000-gallon storage tank will be completed without dewatering and will only be a visual external inspection to determine the general condition. Any visible upgrades required will be noted.

Based on the results of the WaterCAD model, the distribution system will be analyzed to determine required fire flow at the County complex and in Ossipee Village and the ability of the system to deliver the needed fire flow will be reviewed. The model will be used to evaluate both current available fire flow at any location and recommend water main improvements to achieve the needed fire flow

Task 3. Preliminary Source Evaluation
In order to assess system capacity, monitoring water levels in the existing wells is important. As such, Horizons proposes to attempt to collect water level data from the system wells as part of the source evaluation scope. We have also included an alternate scope that features one week of data collection from the existing system wells. Horizons has found that this approach, while slightly more costly, typically yields useful data that can often save additional test efforts.

Horizons staff will begin by compiling information on the existing well field, including a map showing source locations, and available information on the existing sources including type, depth, estimated yield, construction details, water quality, etc. In addition, Horizons will also confirm the available land holdings to identify if there is adequate land area for future sources,

if needed, and review public domain USGS mapping to identify hydrogeologic characteristics of the area in the vicinity of the well field.

Horizons water resource group team members will then complete a preliminary visit to meet with the operator, view the system sources, and identify monitoring constraints. This effort includes assessing the two bedrock wells for the presence of stilling tubes and water level monitoring infrastructure including transducers. Horizons will also attempt to obtain water levels in the wells using an acoustical water level meter. Horizons will report our findings to the Client regarding the presence of stilling tubes and/or water level monitoring instrumentation, and if merited propose proceeding with the alternate scope outlined at the end of this task item description.

Following completion of the data collection, Horizons will review and tabulate all collected data and summarize water quality information. If data are adequate and the alternate scope outlined below is included, Horizons will complete a data analysis and prepare an opinion of well drawdown and estimated well source capacity. If data are incomplete, Horizons will make recommendations for additional evaluation efforts, possibly including a formal pumping test program as referenced in the RFQ. Horizons will also prepare an opinion of water quality criteria, including proposed treatment (if merited) to address either current or projected future water quality compliance issues based on present or anticipated near-future drinking water standards.

Horizons staff will also review projected demands identified in Task 4, and prepare preliminary recommendations for future source needs, including anticipated required source capacity and conceptual locations (if mapping is sufficient). Findings will be summarized in a section of the Preliminary Engineering Report, and data collected during the monitoring period will be included as a report appendix.

Alternate Scope: If stilling tubes have been installed, we will propose an alternate scope item to install temporary pressure transducers in the wells and schedule a monitoring period with the water system operator during which water meter and pumping water level data can be collected. If stilling tubes are not present Horizons will attempt to collect water level data using a non-invasive acoustic water level sounder at several times during the day of the initial and second site visit. Horizons will report our findings to the Client, and modify the scope of the proposed monitoring period as appropriate.

Our staff will then complete the site visit and, assisted by the water system operator, install temporary data collection equipment. The scope assumes Horizons will temporarily place transducers in the two bedrock wells, and the non-gravity flow dug well, and monitor water levels during normal system operation for approximately five days. In addition to water level data, Horizons will temporarily install time-series data recorders on up to three existing system water meters in order to monitor water use data during the 5-day monitoring period. Horizons will then complete a follow-up site visit to retrieve data collection devices.

Task 4. Financial Review and Growth/Water Use Projections

The Preliminary Engineering Report will include projections for future growth at both the County complex and Ossipee Village for a 20-year planning period.

Horizons will complete a review of the existing system users, rates and connection fees and projected growth. We will also review the current and historical revenue, operating and maintenance expenses, capital expenditures, capital reserves, debt payment, etc. The evaluation will include a comparison of current rates to similar sized systems in the state and a determination of the proportional use by the County Complex and Ossipee Village users in developing an equitable rate structure.

In addition to financial revenue projections, Horizons will review existing water use and attempt to project future water use based on system growth projections for the 20-year planning period.

Task 5. Preliminary Engineering Report

Horizons will complete a preliminary engineering report (PER) to document the existing conditions with recommendations for improvements and associated costs. The existing conditions will include supply capacity, projected demand, condition of existing supply and storage infrastructure, and fire flow capability throughout the system. The capital improvement plan will include a prioritized list of system upgrades required to address the deficiencies identified from the inventory and condition assessment. The recommendations will address the following:

- Determination if additional supply is needed
- Additional source investigations such as pump tests, pumping equipment or new source development
- Required upgrades to existing supply, treatment, and storage infrastructure.
- Distribution system improvements to both modernize the system as well as provide needed fire flows.

Preliminary opinions of cost will be developed for the recommended improvements.

The final portion of the plan will include a summary of system income and expense along with a summary of available and anticipated funding options for improvements and proposed adjustments to rates to accommodate system upgrades.

SCHEDULE

We anticipate completion of the report within 90 days of notification to proceed. If we complete the report by October 1, 2021, this will allow us to meet the schedules of various funding resources. USDA Rural Development typically has application deadlines in December of each year and the Community Development Block Grant program requires the submittal of applications in January. NHDES State Revolving Fund applications are typically due in June.

This schedule is tentative and can be revised if the Client has specific deadlines.

FEE

The Scope of Services will be completed for a Lump Sum Fee of $35,600.

Task 1: Information, Site Visit & Fire Flow	Lump Sum	$ 6,000
Task 2: Inventory, Model and Condition	Lump Sum	$10,200
Task 3: Source Evaluation	Lump Sum	$ 3,800
Task 4: Financial and Growth	Lump Sum	$ 2,400
Task 5: PER	Lump Sum	$13,200
TOTAL LUMP SUM FEE		**$35,600**
Task 3 Optional Scope (water level monitoring)		$5,900

We would welcome an opportunity to meet with the Client to discuss the detailed scope items and, if cost is a concern, identify areas where cost can be reduced.

FIRM PROFILE

HORIZONS ENGINEERING



Horizons Engineering, Inc. is a multi-disciplinary civil and environmental engineering, water resource, and land surveying firm with offices in New London, Conway, Newmarket and Littleton, New Hampshire and Sharon and Newport, Vermont and Saco, Maine. With a staff of approximately 50 civil engineers, geologists, natural scientists land surveyors, field technicians, and support personnel we have the experience and capabilities to complete a wide variety of projects with in-house expertise.

Our team of professionals has extensive experience with rural community projects including planning, design, funding, permitting, and construction services for both municipal water and wastewater infrastructure projects. We have assisted many clients in New Hampshire, Vermont and Maine to develop improvement projects and bring them to construction. The Horizons team has assisted many community water systems with significant upgrade projects including source development and permitting, storage, treatment, and distribution. Our in-house hydrogeologists have over 20 years of experience with successfully siting and permitting and evaluating yield and quality of water sources in New Hampshire, including bedrock, overburden and dug wells, and springs.

We are well versed with federal, state, and local permitting processes, with a focus on building strong relationships with our clients, regulators, funding agencies, and the communities in which we work. We believe in good communication with stakeholders during all aspects of a project, and we work hard to be an advocate for our client's best interests. Our professionals strive to develop creative, economical, and practical solutions to site challenges that are often unique to northern New England.

PROJECT TEAM

HORIZONS ENGINEERING

We have assembled a qualified project team to complete the Preliminary Engineering Report for your water system improvement project. Our team includes a skilled group of engineers and environmental professionals whose biographies are summarized below.

Cathy Furtek Conway, P.E. VP Municipal Operations

Cathy is a professional civil engineer and Vice President of Municipal Operations and is based out of our Littleton, NH office. Cathy joined the team in 2018 and brings with her a wealth of municipal knowledge helping communities develop fundable infrastructure projects from concept to implementation. Cathy understands the challenges municipalities face having served as the Public Works Director in Littleton managing the Highway, Sewer and Solid Waste Departments. Cathy has over 25 years' experience in designing residential and commercial subsurface disposal systems. Cathy will serve as the team manager and client contact providing day to day management and client support.

Marc Burnell, P.E., Project Engineer

Marc Burnell is a licensed professional engineer in both New Hampshire and Vermont. He has gained extensive knowledge and engineering experience over the years in New Hampshire, North Carolina and Vermont. He has performed in various capacities to include the role of project engineer, field engineer and research engineer. He has experience in the design of various forms of stormwater facilities, sewer and water projects and energy projects. In addition to the above he has performed a vast array of construction services to include notes for construction services and quantities pertaining to sewer, storm and water construction. Marc will provide engineering for this project.

Mike Duffy, P.E., Construction Manger

As construction manager, Mike has worked on a wide variety of engineering projects – designing, roadways, sites, wastewater and water treatment facilities, and residential subdivisions. Before his role as construction manager, he was a resident observer responsible for overseeing project construction and ensuring it was completed in substantial conformance with plans and specifications. Mike is well-qualified to provide contract administration services. Mike's role in this project will be to provide cost estimating and review of recommendations from a constructability perspective.

Jon Warzocha, P.G.

With experience in a wide variety of water supply development, contaminated site cleanup, and environmental due diligence projects, Jon approaches each project with a strong focus on the client's needs. Before joining Horizons Engineering, Jon served as an environmental department manager and regional office manager. He has successfully worked to develop and permit overburden and bedrock groundwater supplies and has completed numerous contaminated site investigation and cleanup programs at sites impacted with petroleum products, solvents, heavy metals, and solid waste. His technical abilities related to water supply development and permitting include fracture trace analysis, exploratory drilling programs, aquifer evaluation, and groundwater flow modeling. His abilities related to contaminated sites include contaminant fate and transport modeling, contaminant plume delineation, and remediation system planning and design. In addition to his technical expertise, Jon has the experience and background to provide a practical, no-nonsense approach to his projects. Jon will be the principal in charge and also provide support for the supply issues.

Joel F. Banaszak, P.G., Project Manager

Joel is a Professional Geologist with 7+ years of experience in geologic consulting. His experience includes groundwater source permitting and design, water quality assessments, long-term groundwater quality monitoring, dye trace studies, due diligence environmental site assessments, emergency response, remedial investigation/feasibility studies, and petroleum and chlorinated-solvent site characterization and remediation. Joel has experience as the project manager on several groundwater supply projects, wastewater projects and environmental projects. Additionally, Joel has extensive experience as the field lead on shallow subsurface geophysical investigations including UST identifications and archeological investigations.

Joshua Davis, P.E., Project Manager

Josh is a registered professional engineer, as well as a licensed Grade II Water Treatment and Distribution Operator in the state of New Hampshire. He earned a master's degree in Environmental Engineering from UNC-Charlotte. Josh spent the first four years of his career as a project manager for a water utility in Indiana working on capital improvements projects for both water and wastewater systems. Josh moved back to New Hampshire in 2020 where he gained experience operating several small water systems throughout the state and provided engineering support for a capital improvement project at a wastewater facility in Salem, MA. Josh's background includes project management, design, cost estimating, permitting, construction oversight, system operations, and submittal review. Josh joined Horizons Engineering in March 2021.

FIRM'S RELATED EXPERIENCE

Horizons Engineering has provided assistance to numerous New England municipalities, precincts and mobile home parks with infrastructure improvements. We work with our Clients to develop the right engineering solution for their infrastructure needs and then continue to work with them to find the right funding package. Oftentimes, it is not that the Client does not want to make the needed improvements, but that they need assistance with setting priorities, defining the project, seeking funding and working with a professional through the engineering design and construction phases to meet the myriad of permitting and funding requirements.

Within the last several years we have successfully completed several Asset Management Plans, Preliminary Engineering Reports and Source Evaluation projects including recent work for the following communities.

Preliminary Engineering Reports

- Town of Lisbon
- Ossipee Mountain Estates
- Town of Enfield
- Sanbornville Water Precinct
- Grafton County Water System
- Fox Park
- Town of Errol
- Town of Whitefield

Asset Management Plans

- Eastman Village District
- Sanbornville Water Precinct
- Town of Enfield
- Gunstock Acres (underway)
- Lower Bartlett Water Precinct
- Town of Errol

Source Evaluation and Well Development

- Gunstock Acres
- Eastman Village District
- Town of Errol
- Ossipee Mountain Estates
- Whipple O Will
- Town of Enfield
- Town of Lisbon
- Sanbornville Water Precinct
- South Main Street Water District - Warren

Please see the appendix for detailed project profiles for a few projects.

REFERENCES

Horizons Engineering, Inc. was founded with the intent to provide high quality, cost effective engineering services. Horizons will gladly provide references upon request that have direct and recent experience with our project team, our approach to funding applications, and our capabilities to handle the challenges that often arise during the course of a project.

APPENDIX A: PROJECT PROFILES

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SANBORNVILLE WATER PRECINCT
Sanbornville, NH



Project Type: Water Systems Improvements

Project Funding Sources: USDA Planning Grant, USDA Infrastructure Grant/Loan, Drinking Water and Groundwater Trust Fund, NHDES SRF

Project Amount: $700,000 spent to date, $3.6M SRF package

In 2018, the Sanbornville Water Precinct serving 400 customers was nearing financial and operational failure, and the New Hampshire Department of Environmental Services was preparing to take over operation and management of the system. Fortunately, three community-minded citizens stepped up to serve as Commissioners and guide the fledgling system to sustainability. Horizons Engineering was hired as their engineer. During an 18-month period we worked with the Commissioners to obtain funding from USDA for a Preliminary Engineering Report to prioritize the numerous improvements – the Community has 7 miles of 1939 steel pipe that is so badly corroded, repairs are made on top of repairs to keep the system in water. We are also working on an Asset Management Program to help them plan for future sustainability – we helped them receive $30,000 in NHDES SRF funds for this project.

In addition, due to the critical nature of their system, we received emergency funding from both the NHDES Drinking Water Trust Fund and Community Development Block Grant for a $600,000 project to create a loop and alleviate water outages due to pipe breaks. The funding was approved in July 2019 and this project is now under construction. We helped the Precinct with a $3,600,000 NHDES SRF application that has been approved and is ranked second on the project priority list. With the completion of the Preliminary Engineering Report, we assisted the community in applying for funds to the USDA Rural Development Water and Environmental Program. Most recently, Sanbornville was recommended for funding by the Drinking Water and Groundwater Trust Fund for $100,000 in order to proceed with a hydrogeological investigation to develop a new water source.

This type of project is successful because of Horizons technical knowledge but also because of our ability to build the partnerships and trust with the funder, NHDES and the Client.

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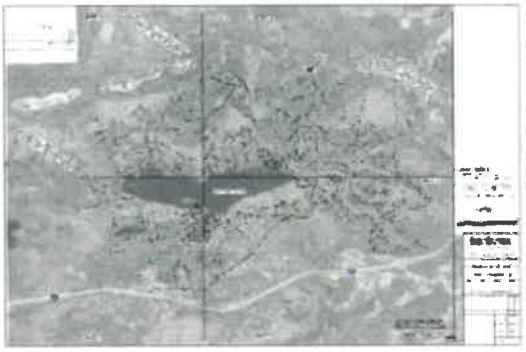
VILLAGE DISTRICT OF EASTMAN
Grantham/Enfield/Springfield, NH


Project Type: Asset Management Plan and Groundwater Exploration

The Village District of Eastman (VDE) is a public water system with 1350 service connections providing water to customers around Eastman Pond in the communities of Grantham, Enfield and Springfield New Hampshire. The system has historically relied on water supply from a single well field with multiple shallow gravel wells and a bedrock well, all of which have been declining in yield and quality (manganese and iron) all while the system has seen an increase in demand due to many homes being converted from vacation to year-round residences. In 2020, Horizons was hired to complete groundwater exploration to locate a second well field.

We have also assisted the community in applying for funding through the NHDES State Revolving Fund and the Drinking Water and Groundwater Trust Fund.

Horizons completed an Asset Management Plan for the District. We provided a condition assessment and capital improvement plan for the system's six wells, 38 miles of distribution main, two pump stations and treatment systems and the 420,000 gallons of storage. We compiled a computerized hydraulic model of the system utilizing WaterCAD to assess backflow issues, system pressures and the need for additional storage. The Plan also included a financial management segment which included a review of existing system users, rates and connection fees, expenses and a discussion of projected growth. A summary of system income and expense along with a summary of available and anticipated funding options for improvements and proposed adjustments to rates to accommodate system upgrade was included in the plan.

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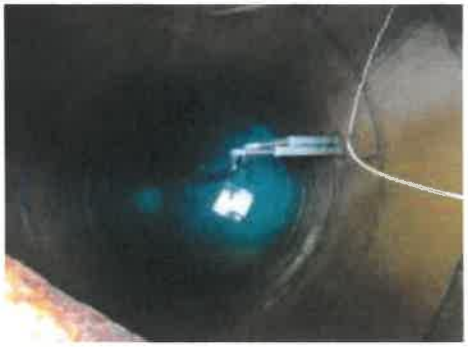
GUNSTOCK ACRES VILLAGE WATER DISTRICT
Gilford, NH



Project Type: Source Water Evaluation

The Gunstock Acres Village District provides water to approximately 1440 customers in Gilford, New Hampshire through 576 connections. The system has 10 wells and springs, hydropneumatics tanks and atmospheric storage, pump stations, treatment and 2-inch to 6-inch distribution main. Recently the system experienced deficiencies with its major producing well source. Horizons was retained to review potential options for addressing the deficiencies including discontinuing use of the source and replacing it with one at an alternative location, and upgrading the source to provide better sanitary protection and pump operation.

In order to determine the viability of the well and assess its value as a source to the overall system Horizons completed a hydrogeologic review of the well area, a well field yield assessment and a review of potential alternate well sites with the goal of identifying

- if well No. 5 is needed and if so what total capacity at the site is required;
- is it cost effective and practical to upgrade and maintain the source, and if so what would be included in a potential suite of upgrades and what would the budget be for the proposed upgrades; and
- what is the potential feasibility, cost, and regulatory requirements for locating an alternate water source to serve the District if Well No. 5 were decommissioned.

The result of the review and analysis was to recommend removal of the problematic source because it was found to have chronic bacteria issues and there was adequate source capacity without this source. However, upgrades to existing equipment will be necessary before the well is decommissioned.

Horizons continues to work with the District on the design of the pump station improvements and also assisted with the completion of an NHDES State Revolving Fund application.

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Project Type: Water System Improvements

Project Funding Sources: USDA Rural Development Water, Community Development Block Grant and the NH Drinking Water Trust Fund, NHDES Clean Water SRF

Project Amount: $2,120,000 with a Town contribution of only $400,000

TOWN OF ERROL
Errol, NH

Errol is a small town in northern New Hampshire with a total population of less than 400. Horizons Engineering began working with the community in 2013 when they learned that their water system had deficiencies and violations. In 2019, we completed the final construction project of a $2.12 million dollar water system improvement project. Horizons Engineering assisted the community with the design and permitting for a new well, new pump station, 35,000 gallon atmospheric storage tank and 8500 linear feet of distribution main improvements.

We have also provided construction services to oversee the construction and provide administrative support during the construction. In addition to this engineering design work, Horizons assisted the Town with obtaining funding from USDA Rural Development Water and Environmental program, Community Development Block Grant and the NH Drinking Water Trust Fund. Of the $2.12 million project, $1.72 million was in the form of grants with the Town only needing to contribute 20% for the repayment of a $400,000 loan. The entire watermain replacement project was within the NHDOT Right of Way.