



Town of Stratham, New Hampshire Focused Site Investigation

*Request for Proposal
May 29, 2019*



ITEMS:	REFERENCE	TYPE	CASING	SAMPLER
WATER DEPTH	ground surface	Steel	AL	2-inch
6 ft		4-inch		

INSTRUCTION	DEPTH (ft)	NO.	RECOVERY (%)	BLOWS PER 0.5 FOOT	FALL SAMPLE
Concrete	1				0-0.5 ft: Asphalt;
Filter Sand (3-0.5 ft. bags)	2		3.75/5		0.5-5.0 ft: Brown, very fine
2 inch PVC Filter (3-5 ft)	3				
Bentonite (4-3 ft. bags)	4				
	5				
2 inch PVC Screen (15-9 ft. bags)	6				5.0-9.0 ft: Gray, GRAVEL with very fine SAND
Apparent Groundwater	7				
Filter Sand (15-4 ft. bags)	8		3.0/5		
	9				9.0-10.0 ft: Brown, very coarse SAND
	10				10.0-13.0 ft: Tanish gray, very fine
	11				
	12				
	13		4.0/5		
	14				
	15				
	16				Boring terminated Well set as per

Wilcox & Barton INC.

CIVIL • ENVIRONMENTAL • GEOTECHNICAL

May 29, 2019

Mr. David Moore, Town Administrator
Town of Stratham
10 Bunker Hill Road
Stratham, New Hampshire 03885

**RE: Request for Proposal – Focused Site Investigation
4 Winnicutt Road Area
Stratham, New Hampshire (NHDES Site No. 199507007)**

Dear Mr. Moore:

In response to the Request for Proposal (RFP) received from the Town of Stratham (the Town) on May 20, 2019, Wilcox & Barton, Inc. is pleased to submit the attached qualifications statement and proposal for your review and consideration.

Wilcox & Barton, Inc. has read and fully understands the technical aspects and investigative requirements summarized in the letter to the Town by the New Hampshire Department of Environmental Services (NHDES) on April 26, 2019. Wilcox & Barton, Inc. is uniquely qualified for this type of investigation, as we are currently leading a Supplemental Site Investigation (SSI) into the release of per- and polyfluoroalkyl substances (PFAS) to the subsurface from the former and current Fire Department facilities for the Town of Windham, New Hampshire. The investigation includes an evaluation of the storage, handling, and use of Class B firefighting foams, including the mechanisms and practices that can result in incidental impacts to soil, groundwater, surface water, and private drinking water supply wells.

Mr. James Ricker, P.G. would serve as your primary point of contact for this project. He can be reached by phone at (603) 369-4190 x508 and by email at jricker@wilcoxandbarton.com. Mr. Ricker is Wilcox & Barton, Inc.'s PFAS technical lead and the Project Manager for the Town of Windham PFAS SSI. He is also a member of the Environmental Business Council (EBC) New Hampshire Chapter's Leadership Team, and will be serving as a Co-Chair and Program Moderator for the EBC New Hampshire Program: *The Future of PFAS Regulation and Cleanup in New Hampshire* in June 2019.

Mr. Ricker's experience also includes approximately 17 years managing Site Investigation projects under an on-call Site Investigation-Remediation Contract with the NHDES, including approximately 10 years serving as the Contract Program Manager. Mr. Ricker and his team of environmental professionals have developed close working relationships with the staff at the NHDES Hazardous Waste Remediation Bureau and its Emerging Contaminants Group, and they remain steadfastly committed to the core values of integrity, trust, technical excellence, and the ability to communicate effectively with project stakeholders and members of the public.

Wilcox & Barton, Inc. truly appreciates your consideration of our firm for this important investigation. We very much look forward to the opportunity to serve as your technical experts and trusted team partner. If you have any questions or need additional information, please do not hesitate to contact me directly.

Very truly yours,

WILCOX & BARTON, INC.



James P. Ricker, P.G.
Vice President – Manager, NH-VT-ME Environmental

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1.0 INTRODUCTION

Wilcox & Barton, Inc. is pleased to present this Statement of Qualifications (SOQ) and cost proposal to the Town of Stratham, New Hampshire (the Town). The proposed work includes a Focused Site Investigation into the presence of per- and polyfluoroalkyl substances (PFAS) that have been detected in groundwater in the Town Center area. The objective is to assess and understand past management practices and identify potential sources of PFAS release in the area.

This document is organized in accordance with the criteria set forth in the Request for Proposal (RFP) received by Wilcox & Barton, Inc. on May 20, 2019. We are confident that your selection of Wilcox & Barton, Inc. will be highly advantageous, as our exceptional qualifications, experience, and responsiveness will result in the successful completion of the project on time, on budget, and at the highest level of technical quality.

2.0 COMPANY OVERVIEW

Wilcox & Barton, Inc. is a New Hampshire-based company that has maintained a strong presence in the state since our founding in 2000. We are currently experiencing a tremendous period of growth as an organization, both in terms of financial health and the attraction of top industry talent. Over the past 18+ years, Wilcox & Barton, Inc. has grown into a full service civil, environmental, and geotechnical engineering consulting company that currently includes over 30 full-time professionals.

By its steady growth, Wilcox & Barton, Inc. has become a full-service provider that our clients have come to rely upon for responsiveness, innovation, communication, and respect - the cornerstones of our success. Our clients include municipalities, state and public agencies, law firms, developers, insurance companies, and business owners. Each customer relies upon us as ardent guardians of their interests and counts on us to deliver innovative services - better, faster, and more efficiently. Our success comes from putting client interests first - from discovery to closure and from project concept to completion. In addition to our corporate headquarters in Londonderry, Wilcox & Barton, Inc. employees also work from project offices in Massachusetts, Connecticut, Vermont, and Hawaii.

This engagement will be led by our New Hampshire-based team under the direction of Mr. James Ricker, P.G. Mr. Ricker serves as a Vice President of Wilcox & Barton, Inc. and manages the firm's environmental practice throughout New Hampshire, Vermont, and Maine. He has nearly 30 years of experience leading environmental site investigations under contracts with the New Hampshire Department of Environmental Services (NHDES), the New Hampshire Department of Transportation, the United States Environmental Protection Agency, and the United States Army Corps of Engineers. Mr. Ricker is also the firm's technical lead for the investigations of sites impacted by PFAS.

This engagement will be led by our New Hampshire-based team of professionals under the direction of Mr. James Ricker, P.G.



Wilcox & Barton, Inc. employs a diverse array of senior professionals with expertise in earth sciences, hydrogeology, building-related hazardous materials, risk assessment, remedial design, and civil, environmental, and geotechnical engineering. Our core service offerings in these fields include:

- NHDES site investigations in accordance with Env-Or 606;
- Investigation and analysis of soil and groundwater impacted by PFAS;
- Environmental site assessments, monitoring, remediation, and closure;
- Community outreach;
- Construction documents and bid & contract administration;
- Water line design and connection;
- Remedial system design, construction, and operation and maintenance;
- Geotechnical testing, evaluation, and engineering services;
- Construction support, health and safety planning, soil management planning and oversight;
- Underground storage tank removal and closure assessment; and
- Local, state, and federal land use permitting.

3.0 WILCOX & BARTON, INC. PROJECT TEAM

Our project team has been formed to ensure that the Town will receive highly responsive service from knowledgeable and reliable experts. The Wilcox & Barton, Inc. leadership team puts extraordinary care into ensuring that we maintain open lines of communication with our clients and that we're developing partnerships that establish genuine levels of trust and respect between our respective organizations. Brief summaries of staff anticipated to have direct involvement with this engagement are presented below, and additional information is provided in the resumes of key personnel presented in Appendix A. A Wilcox & Barton, Inc. team organization chart is featured as Figure 1.

Bill Wilcox - President, Principal-in-Charge: Bill is co-founder, partner, and principal of Wilcox & Barton, Inc. He solves customers' regulatory, technical, budgeting, and scheduling challenges. As a hands-on business leader, he has been the Project Director/Manager for hundreds of environmental assessments, investigations, remediation, and compliance projects throughout New England.

Russ Barton – Sr. Vice President, Operations and Health & Safety: Russ is a co-founder, partner, and Senior Vice President of Wilcox & Barton, Inc. He manages company resources and oversees the day-to-day operations and corporate health and safety protocols to ensure client needs and objectives are met in a safe and timely manner.

Jim Ricker, P.G. - Vice President, Project Leader: Jim has nearly 30 years of experience as an Operations Manager, State Agency Contract Manager, Client Services Manager, Project Manager, Project Geologist, and business development professional in the environmental consulting,



engineering, and construction industry. He is a member of the Leadership Team for the New Hampshire Chapter of the Environmental Business Council (EBC) and will be a Co-Chair and Moderator for an upcoming EBC Program event on PFAS in June 2019. Jim is proficient in all phases of site investigation under Env-Or 600 and specializes in private, municipal, and commercial properties impacted by PFAS. Currently, he is the Project Director and technical lead for the Town of Windham, New Hampshire, during the investigation of incidental PFAS contamination related to the historical use of Class B firefighting foams by the Windham Fire Department. He is a Registered Professional Geologist in the State of New Hampshire (#00075). During his career, Jim has participated in numerous public presentations for Federal, State, and municipal clients, including speaking roles in front of Select Boards, at Restoration Advisory Board meetings, and at town meetings. He will lead public presentations and discussions for the Town of Stratham on behalf of Wilcox & Barton, Inc.

Bob Rooks, P.E. - Sr. Vice President, QA/QC and Lead Engineer: Bob applies his 28 years of civil and environmental engineering experience to ensure that all deliverables produced by the company are technically defensible, well presented and of superior quality. Bob maintains technical expertise in the areas of site assessment, remedial design and risk-based closure, hazardous materials assessments and mitigation, environmental construction and safety planning and monitoring, underground and above ground storage tanks, system operation, auditing, and regulatory compliance. He oversees all engineering and design work performed by the company and is a Registered Professional Engineer in the State of New Hampshire (#10583).

Chelsea Smith - Project Manager/PFAS Field Lead: In addition to the role of Project Manager with Wilcox & Barton, Inc., Chelsea has earned the distinction of serving as the company's field leader for the collection and analysis of multi-media samples for analysis of PFAS. Chelsea is extremely well-versed in the unique sampling protocols required in the collection of samples for PFAS to mitigate cross-contamination by PFAS-containing clothing, materials, and personal care products. Chelsea currently serves as the field lead for the Supplemental Site Investigation of PFAS contamination being led by Wilcox & Barton, Inc. for the Town of Windham.

Cody Whelan - Project Manager: Cody is experienced in the management of site assessments, subsurface investigations, PFAS investigations, and soil and groundwater sampling efforts for sites in New Hampshire and Massachusetts. Having begun his career as a Site Manager working for global petroleum manufacturing companies, Cody brings extensive knowledge of site investigation and regulatory compliance in New Hampshire. Cody has also managed numerous subsurface investigations for construction and redevelopment projects as well as soil and groundwater remediation projects in coordination with state environmental regulatory agencies. Cody would serve as the primary Project Manager for this project, under the direction of Jim Ricker.

Erin Lambert, P.E., LEED AP - Senior Engineer: In addition to managing our talented New Hampshire Civil team, Erin navigates projects from conceptual planning to final design and construction. She delivers site design plans, inclusive of site layout, grading, utility connections/extensions, stormwater controls and construction details. Her 20+ years of experience includes the design, permitting and construction oversight of municipal water line extensions and service connections, as well as distribution systems for private community water systems. She has experience obtaining funding for these types of projects through the NHDES Drinking Water State



Revolving Loan Fund and the United States Department of Agriculture Rural Development program. Erin understands the complexities of obtaining land use permits and the importance of the permitting timeline. She maintains excellent relationships with regulators and has a wealth of experience appearing before planning boards, zoning boards and conservation commissions, and is a Registered Professional Engineer in the State of New Hampshire (#11057).

Mark Yiatras, P.G. - Project Manager/Senior Geologist: Mark has more than 25 years of experience in environmental consulting. Mark has extensive knowledge of New Hampshire environmental regulations pertaining to site investigations, remedial actions, and state-assisted environmental cleanup programs. He has managed numerous subsurface investigations as well as soil and groundwater remediation projects in coordination with state environmental protection agencies. Mark provides expertise and consulting services to ensure compliance with all state and federal environmental regulations and has considerable experience with various remedial approaches including groundwater pump and treat, soil vapor extraction, sub-slab ventilation systems, soil excavation and disposal, in-situ chemical oxidation, soil stabilization and natural attenuation monitoring. He is a Registered Professional Geologist in the State of New Hampshire (#00611).

Navpreet Broloski, P.E., LSP - Project Engineer: Navpreet is a Senior Engineer and Project Manager who manages environmental cleanup and compliance projects for the firm. These projects include planning and implementing subsurface investigations and evaluating and selecting remedial alternatives for petroleum release sites, chlorinated solvent sites, brownfields and emergency response situations. She has extensive experience with risk characterization and helps industrial clients meet state and federal compliance requirements. Her attention to detail and strong engineering skills make her an ideal team member.

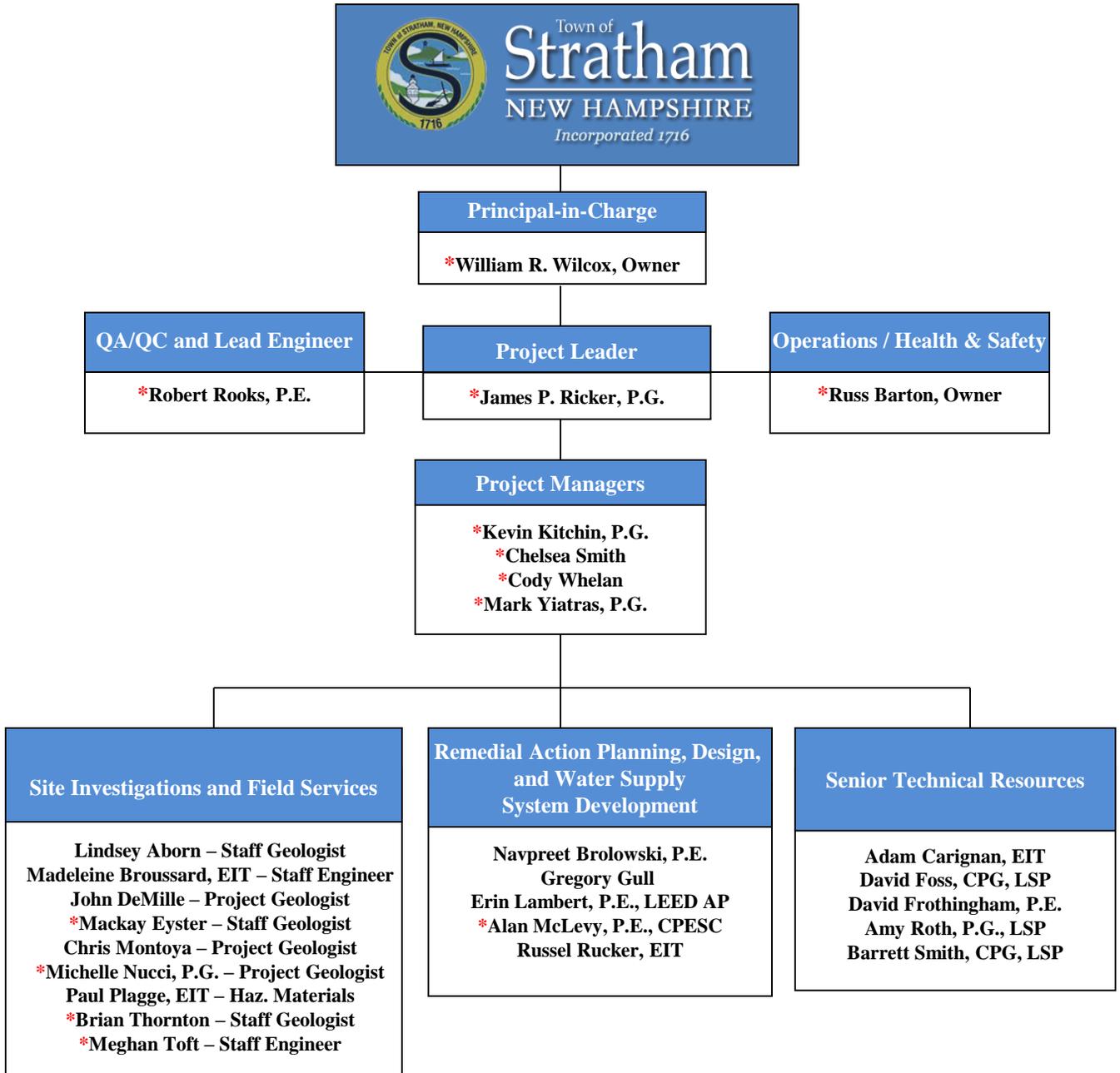
Mackay Eyster - Staff Geologist: Mackay joined Wilcox & Barton, Inc. in 2019 and has proven to be a dependable and trustworthy member of the team while leading field sampling and oversight projects. Her experience includes the collection and analysis of soil and groundwater samples for PFAS analysis, and she is well-versed in the selection of field equipment, clothing, and products that are acceptable for PFAS sample collection.

Proposed Subcontractors:

- **Con-Test Analytical Laboratory:** Laboratory analysis of soil, groundwater, drinking water, sediment, and surface water samples. Certified in the State of New Hampshire to conduct laboratory analytical services, including PFAS.
- **Geosearch, Inc.:** Drilling and monitoring well installations by hollow-stem auger, Geoprobe, and air-hammer drilling techniques. NH-licensed driller with more than 20 years of experience conducting subsurface investigations for the NHDES.
- **Cyn Environmental Services:** Spill response, UST removal; soil excavation, transportation, and disposal; transportation and disposal of contaminated water and groundwater; hazardous materials shipping. A long-standing history of successful remedial services throughout New England, and currently serving as one of three NHDES Remedial Subcontractors.



Figure 1
Wilcox & Barton, Inc. Team Organization Chart



***Experience with PFAS Site Investigation**

4.0 PROJECT QUALIFICATIONS

4.1 Site Investigations and Focused Site Investigations

Site Investigations (SIs) have been a staple of the Wilcox & Barton, Inc. geoscience experience over the past 18+ years. Our direct and substantial experience with these types of investigations include all the elements outlined in Env-Or 606.03 through Env-Or 606.09. In a broader context, our experience and expertise lies in multiple phases of investigative work, including hydrogeological investigations, Groundwater Quality Assessments, monitoring and reporting under Groundwater Management Permits, the development of conceptual site models, sensitive receptor surveys, vapor intrusion, aquifer testing and analysis, and the collection of environmental samples to support the cleanup and closure of contaminated properties. These skills can be called upon during the site investigation process.

The Wilcox & Barton, Inc. staff specializes in the collection and reporting of PFAS data in accordance with NHDES guidelines and laboratory analytical requirements.

In many cases, the deliverables produced have included submittal to NHDES via the NHDES OneStop site and the Electronic Monitoring Database (EMD). This includes the recent reporting of Station IDs and laboratory Electronic Data Deliverables (EDD) of PFAS data via the PFAS EMD.

PFAS contamination has emerged as an important focus for the state and its residents over the past several years, and members of the Wilcox & Barton, Inc. team have been at the forefront of the issue. We have completed numerous sampling events at landfills, commercial properties,

petroleum and hazardous substance release sites, municipal properties, and private residences across the state. We have also directed the investigation of properties impacted by perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) following the deployment use of Class-B firefighting foams, including Aqueous Film-Forming Foam (AFFF), by fire departments during firefighting activities.

A summary of similar site investigations conducted by Wilcox & Barton, Inc. team members in accordance with Env-Or 606 in the last five years is presented in Table 1. To highlight some of our most relevant project experience, examples of recent investigations (including those involving PFAS contamination) are provided below:

4.1.1 PFAS Site Investigation – Town of Windham, New Hampshire

Prior to his employment with Wilcox & Barton, Inc., Mr. Ricker served as the Project Manager and PFAS technical lead for the PFAS SI for the Town of Windham, New Hampshire. The SI was requested by NHDES following the detection of elevated levels of PFAS in private and public water supply wells in the vicinity of the former and current Fire Department facilities. Mr. Ricker developed the scope of work, submitted the Work Plan to NHDES, and led all subsequent phases of environmental data collection. The analytical results of the investigation, which was conducted in late 2017 and early 2018, showed that PFAS was present in groundwater at both the former and current Fire Department buildings, but with slightly different chemistries

– one possibly representative of the “older” brand of Class B firefighting foams and the other representative of the “newer” product currently being used by the Town. The investigation also discovered a large, unpaved area adjacent to the current Fire Department where elevated concentrations of PFAS in soil were discovered and may be acting as a continual source of PFAS to groundwater through surface water infiltration and leaching processes.

4.1.2 PFAS Supplemental Site Investigation – Town of Windham, New Hampshire

In January 2019, NHDES requested that the Town of Windham conduct a Supplemental Site Investigation (SSI) of the PFAS present in soil, groundwater, and residential drinking water wells. The SSI included additional investigation of the use, handling, and storage of Class B firefighting foam by the Fire Department; evaluation of additional downgradient receptors based on the results of the SI; an update to the hydrogeologic Conceptual Site Model; and completion of additional investigation of the unpaved area where elevated concentrations of PFAS were detected in soil.

Our team’s experience includes Site Investigations of PFAS associated with municipal fire departments.

Due, in part, to Mr. Ricker’s familiarity with the project, his relationship with the Town of Windham, his understanding of Fire Department processes and protocols, and his expertise with PFAS-impacted sites, the Town of Windham selected Wilcox & Barton, Inc. for the SSI phase of the project in March 2019. Following development of the proposed Work Plan and meetings with Town officials, the field investigation commenced in April 2019 with the installation of additional groundwater monitoring wells and completion of a Geoprobe soil boring program. Analytical data for soil in the unpaved area have been received, and we will be collecting additional groundwater, surface water, and drinking water data at the end of May 2019. Wilcox & Barton, Inc. will be submitting the SSI Report with our findings, conclusions, and recommendations to the Town of Windham in the summer of 2019.

4.1.3 PFAS Sensitive Receptor Survey – Town of Goshen Municipal Landfill

Wilcox & Barton, Inc. was selected by the Town of Goshen to lead a Sensitive Receptor Survey following the detection of elevated concentrations of PFAS at the town landfill. The presence of PFAS in groundwater at concentrations exceeding Ambient Groundwater Quality Standards (AGQS) prompted NHDES to request the investigation and an evaluation of potential downgradient receptors of impacted drinking water. Wilcox & Barton, Inc. identified potential receptors within a 1,000-foot radius from the landfill, developed a door-to-door residential drinking water sampling program, and performed a groundwater and residential drinking water sampling event in the spring of 2019. The analytical results will be used to determine if a temporary water supply and/or the installation of point-of-entry (POE) water filtration systems will be necessary for impacted residents.

4.1.4 Site Investigation - Nashua Motor Express

Wilcox & Barton, Inc. completed a Phase I Environmental Site Assessment of the property, which led to a full site investigation and preparation of a Remedial Action Plan for the cleanup of both gasoline and chlorinated solvents. Following successful remediation of the site, NHDES requested that PFAS testing be included in the next groundwater sampling event. PFAS was detected in all of the samples collected; however, there was no known onsite source for PFAS in groundwater at the subject site. No fires had been extinguished with firefighting foams at the site, the property has no history of manufacturing products known to contain PFAS, and no other use of PFASs have been documented at or near the subject site. Wilcox & Barton, Inc. noted that a car wash is present on the upgradient property, and, according to files for the property available through the NHDES online database, water generated therein is discharged to the subsurface through an infiltration system. Car wash wastewater, which is mixed with car wax, has been documented to contain PFAS. This project serves as an example of one of the many ways that PFAS contamination can be introduced into groundwater and drinking water supplies, regardless of the operational history of a particular property.

4.2 Drinking Water System Extensions and Upgrades

Should such a remedial alternative become necessary, our engineering team of Professional Engineers (PEs) and Engineers-In-Training (EITs) have experience in the design, permitting, and construction oversight of municipal water line extensions and service connections, distribution systems for private community water systems, and the siting of new water supplies. Designs include appurtenances such as curb stops, gate valves, hydrants, backflow preventers, meters, and heater enclosures. The collective years of experience by our growing Site/Civil Engineering Services team affords Wilcox & Barton, Inc. the opportunity to leverage past professional experience to deliver these services to our clients.

Wilcox & Barton, Inc. also has recent and relevant experience obtaining funding for water system upgrades through the NHDES Drinking Water State Revolving Fund (DWSRF) and USDA Rural Development (RD) programs. We have prepared technical specifications, bid documents, and contract documents for construction of water line improvements and administered the bid and contract in accordance with NHDES and USDA RD regulations.

Wilcox & Barton, Inc. notes the “Additional Work Item” highlighted in the RFP, should the Town need to move forward with the identification of new or additional water supply sources for affected properties. We understand that this would not be part of the initial contracted scope of work; however, as requested, Wilcox & Barton, Inc. has prepared descriptions and approximate costs for establishing alternative water supplies in Appendix B of this deliverable.

4.3 Remedial Action Plans and Remedial Designs

The Wilcox & Barton, Inc. team of PEs and Professional Geologists have prepared numerous remedial action plans to implement a wide range of *in situ* and *ex situ* remedial technologies at various cleanup sites, including home heating oil releases, petroleum fuel releases from both aboveground and underground storage tank systems, surface spills of petroleum products, and

ongoing releases of hazardous and non-hazardous chemicals at current and former industrial sites. Remedial designs by Wilcox & Barton, Inc. have included groundwater pump and treat systems, active and passive light non-aqueous phase liquid recovery systems, bioremediation and *in situ* chemical oxidation, air-sparging and soil-vapor extraction systems, soil excavation and treatment, and both perozone and oxygen injection systems. Preparation of these plans have included initial screening, detailed evaluations, and selection of preferred alternative(s) while considering effectiveness, reliability, implementability, costs, risks, benefits, timeliness, and feasibility of achieving cleanup goals.



**Table 1
Wilcox & Barton, Inc. PFAS and Site Investigation Projects Undertaken in the Past Five Years**

							
PROJECT TITLE	CLIENT	LOCATION	APPLICABLE REGULATORY CRITERIA	WORKED ON BY MEMBERS OF THE PROJECT TEAM?	OWNER CONTACT, ADDRESS, AND PHONE	PROJECT HIGHLIGHTS	
786 Gas	786 Gas, LLC	Manchester	Env-Or 600	Yes	Chaudhary Iqbal. 245 Village Circle Way #8, Manchester, NH, 03102. 603-553-1947.	Assumed management of an existing petroleum release site upon purchase by our client. Full site investigation led to discovery of NAPL. Underground storage tank removal and assessment. Excavation and disposal of contaminated soil along piping runs. Groundwater monitoring ongoing.	
7-Eleven Store	Sered Webster, LLC	Manchester	40 CFR 312 Env-Or 400 Env-Or 600	Yes	Christopher Kiritsis. 1300 Union Street, Manchester, NH, 03104. 603-510-1777.	Phase I environmental due diligence. Environmental consulting for upgrades to an existing gas station and convenience store. Subsequent site investigation at the request of NHDES revealed a groundwater contaminant plume. Groundwater monitoring is ongoing.	
All in One Market	FMI Investments	Henniker	Env-Or 400 Env-Or 600	Yes	Fred Moreland. PO Box 448, Bradford, NH, 03773. 603-485-2295.	Underground storage tank design and permitting. Contaminated soil was encountered during removal of the old tanks in preparation for installation of the new tank, necessitating overexcavation and confirmation sampling. Subsequent site investigation at the request of NHDES revealed a groundwater contaminant plume of undetermined extent. Additional investigation was recommended.	
Canterbury Shaker Village	Canterbury Shaker Village, Inc.	Canterbury	Env-Or 600	Yes	Funi Burdick. 288 Shaker Road, Canterbury, NH, 03818. 603-783-9077.	Site investigation following a surface spill initially addressed by others. Completed multiple rounds of well installation and sampling to define the extent of a groundwater plume. Performed in-situ chemical oxidation pilot test and full application. Private water supply well sampling. Groundwater monitoring is ongoing.	
Cantin Chevrolet	Cantin Chevrolet	Laconia	Env-Or 600	Yes	Thomas Cantin. 623 Union Avenue, Laconia, NH, 03246. 603-524-0770.	Environmental consulting for investigation and remediation of a gasoline spill to soil and groundwater. Excavation of over 2,000 cubic yards of soil. Ongoing monitoring under a Groundwater Management Permit.	
Carroll County Oil Bulk Facility	Carroll County Oil, LLC	Ossipee	Env-Or 400 Env-Or 600	Yes	Daniel Drew. PO Box 536, Ossipee, NH, 03814. 603-539-8332.	Oversaw proper closure and site assessment in support of mandated spill bucket replacement. Subsequent Site Investigation. No Further Action.	
Commercial Property	KPG Realty Corp.	Manchester	40 CFR 312 Env-Or 600	Yes	Ken Gelinas. 1087 Elm St, #501, Manchester, NH, 03101. 603-493-1109.	Phase I Environmental Site Assessment during pre-acquisition due diligence, followed by Phase II subsurface investigation of this commercial property.	
Concord Courthouse	Duprey Company	Concord	40 CFR 312 Env-Or 600	Yes	Jim Duris. 2 Pillsbury Street, Concord, NH, 03302. 603-228-2151.	Phase I Environmental Site Assessment, site investigation, soil disposal characterization, identification of an off-site "similar soils facility," and construction monitoring during excavation of geotechnically unsuitable soils with low levels of contamination related to urban fill.	
705 Route 4, Danbury, NH	NHDES-Danbury General Store	Danbury	Env-Or 600	Yes	Carol Heath. PO Box 101, Danbury, NH, 03230. 603-768-3732.	Investigation of a petroleum retail site/convenience store where there was a historical release of gasoline from USTs that impacted overburden and bedrock groundwater. Oversight of tank removals and installation of a new bedrock water supply well.	
Don's Market	Don's Market, Inc.	Hampstead	Env-Or 400 Env-Or 600	Yes	Wayne Dumas. 219 Main Street, Hampstead, NH, 03841. 603-329-6621.	Underground storage tank removal and assessment. Soil excavation with dewatering. Site Investigation. Installation of off-site point of entry treatment systems. Remediation via in-situ chemical oxidation. Ongoing groundwater monitoring of contaminants in bedrock.	
Exeter Public Works Complex	Town of Exeter	Exeter	Env-Or 600	Yes	Trisha Allen. 10 Front Street, Exeter, NH, 03088. 603-773-6166.	Developed plans and specifications for MTBE-funded soil excavation following prior identification of a gasoline release by others. Coordinated management and disposal of over 13,000 tons of contaminated soil. Full Site Investigation and private drinking water well sampling. Groundwater monitoring is ongoing.	
Fluffy's Market	Sand Pond Realty Trust	Tilton	Env-Or 400	Yes	Rod Tirrell. 34 Vincent Drive, Gilford, NH, 03249. 508-737-4468.	Groundwater monitoring, bedrock evaluation, drinking water delivery and Point-of-Entry treatment systems.	
Former Concord Steam Plant	Duprey Company	Concord	40 CFR 312 Env-Or 600	Yes	Jim Duris. 2 Pillsbury Street, Concord, NH, 03302. 603-228-2151.	Phase I Environmental Site Assessment during pre-acquisition due diligence, followed by Phase II subsurface investigation of this former steam plant property. The study also included evaluation of a potential soil vapor intrusion pathway.	
Former Macy's Store	ER Bedford, LLC	Bedford	Env-Or 600	Yes	Terry Robinson. 5005 LBJ Freeway, Suite 1200, Dallas, Texas, 75244. 288-207-5839.	Emergency response for a release condition discovered during site development. Oversaw excavation of contaminated soil and removal of free phase oil. Managed dewatering, treatment, and discharge of groundwater. Coordinated offsite soil disposal. Performed test pit investigation and installed monitoring wells during comprehensive Site Investigation. Groundwater monitoring is ongoing.	
Former Pelham Fuel Company	Draghi Environmental	Pelham	Env-Or 400 Env-Or 600	Yes	Victor Draghi. PO Box 601, Londonderry, NH, 05053. 603-437-1352.	Underground storage tank removal, soil disposal, site investigation, and groundwater monitoring leading to site closure.	
Former Philip Singer Revocable Trust	Merton Alan Investments	Portsmouth	Env-Or 600	Yes	Robert Graham. 459 Lafayette Road, Hampton, NH, 03842. 603-479-3666.	Construction monitoring during redevelopment of a former railroad property as residential condos. Identified environmental conditions missed by prior consultants, identified and reported new release conditions. Designed remedial strategy and negotiated closure assessment program. Managed dewatering, treatment, and discharge. Closure report was accepted by NHDES without comment.	
Gorman Property	Discount Oil of Keene	Troy	Env-Or 600	Yes	Lou Berube. 11 Sheridan Avenue, Keene, NH, 03431. 603-352-0583.	Spill response following oil delivery to an incorrect address. Site investigation, oversight of Initial Response Action, site closure.	
Goshen Landfill	Town of Goshen	Goshen	Env-Or 600	Yes	Ms. Cindy Rouillard, Administrative Assistant. Town of Goshen, P.O. Box 68, Goshen, NH, 03752. 603-863-5655.	Conducted a Sensitive Receptor Survey of potential receptors following the detection of PFAS in groundwater samples collected at the town landfill. Included additional groundwater and residential drinking water sampling.	
Hanscom's Truck Stop - Southbound	Hanscom's Truck Stop	Portsmouth	40 CFR 312 Env-Or 600 Env-Or 400	Yes	Robert Neily. 60 West Road, Portsmouth, NH, 03801. 603-436-5171.	Phase I ESA for pre-acquisition due diligence. Follow up site investigation in response to findings. Several soil excavation projects with soil characterization and disposal. Construction oversight during UST system replacement. Ongoing groundwater monitoring.	
HD Smith Wholesale Facility	SIP Lot 3, LLC	Stratham	29 CFR 1926 Env-Or 600	Yes	Mark Stevens. 142 Portsmouth Avenue, Stratham, NH, 03885. 603-778-7637.	Environmental consulting following a vehicle fire at this secure pharmaceuticals distribution facility. Combustion byproducts were deposited throughout the interior and into a nearby wetland due to runoff of firefighting foam. Cleanup is ongoing. PFAS sampling performed for soil and groundwater.	
Heating Oil Spill - Jarmany Hill Road	Ambrose Environmental	Sharon	Env-Or 600 Env-Dw 300	Yes	Cliff Ambrose. 27 Cherry Street, Danvers, MA, 01923. 978-646-8825.	Environmental response for a residential heating oil spill that impacted bedrock and drinking water supplies. NHDES-led investigation and remediation. Design of new water supply well and pumping system.	
Hydraulic Oil Spill - Dorchester Road	Ambrose Environmental	Lyme	Env-Or 600	Yes	Cliff Ambrose. 27 Cherry Street, Danvers, MA, 01923. 978-646-8825.	Environmental response for a hydraulic oil spill during installation of a new drinking water well. Investigation and excavation oversight.	
Nashua Motor Express	Nashua Motor Express	Nashua	40 CFR 312 Env-Or 600 Env-Or 600	Yes	Mr. Brian Leahy, 25 Recreation Park Drive Suite 204, Hingham, MA 02043. 781-875-3300	Phase I environmental due diligence and follow-on Phase II investigation to evaluate recognized environmental conditions. Evaluation and remediation of chlorinated solvent plume via a combination of excavation, dewatering, and in situ techniques. Completed sampling for per- and polyfluoroalkyl substances.	
New Hampton School	New Hampton School	New Hampton	Env-Or 600	Yes	Peter Lamb. 70 Main Street, New Hampton, NH, 03256. 603-677-3401.	Site investigation. Design, installation, and operation of soil vapor extraction and air sparging system.	
O'Brien's General Store	O'Brien's General Store	Seabrook	Env-Or 400 Env-Or 600	Yes	Carmel O'Brien. 8 Batchelder Road, Seabrook, NH, 03874. 603-474-2722.	Underground storage tank removal and closure assessment, which found soil and groundwater contamination. Extensive Site Investigation, to include neighboring properties. Designed and installed Soil Vapor Extraction system. Long-term groundwater monitoring under the provisions of a Groundwater Management Permit, which has been renewed at 5-year intervals.	
Red's of Jaffrey Station and Bulk Plant	NHDES-Red's at Jaffrey	Jaffrey	Env-Or 600	Yes	John M. Peard. 12 River Road, NH, 03301. 603-532-6642.	Underground storage tank removal and closure assessment. Site investigation. Piping closure. Ongoing assessment and groundwater monitoring.	

Table 1
Wilcox and Barton, Inc. PFAS and Site Investigation Projects Undertaken in the Past Five Years

						
PROJECT TITLE	CLIENT	LOCATION	APPLICABLE REGULATORY CRITERIA	WORKED ON BY MEMBERS OF THE PROJECT TEAM?	OWNER CONTACT, ADDRESS, AND PHONE	PROJECT HIGHLIGHTS
River Hill Market	River Hill Market	Concord	Env-Or 400 Env-Or 600	Yes	Thomas Thorne. 189 Carter Hill Road, Concord, NH, 03303. 603-753-9900.	Underground storage tank removal and closure assessment under the NHDES MTBE program. Significant contamination was identified. Completed several rounds of site investigation and prepared an evaluation of remedial alternative, which included Soil Vapor Extraction, Soil Excavation, and Electrical Resistance Heating at the request of NHDES. Soil vapor screening performed through holes cored in the building floor. Prepared plans and specification for soil excavation and application of bioremedial additives.
Rymes Bulk Facility	Rymes Heating and Oils	Laconia	Env-Or 600 40 CFR 112	Yes	James T. Rymes. 257 Sheep Davis Road, Concord, NH, 03431. 603-228-2224.	Assumed responsibility for long-term monitoring of a chlorinated solvent release to groundwater. Prepared Spill Prevention, Control, and Countermeasure Plan. Collected groundwater samples for PFAS analysis.
Salem High School	Salem School District	Salem	Env-Or 400 Env-Or 600	Yes	Jack Messenheimer. 38 Geremonty Drive, Salem, NH, 03264. 603-893-7040.	Underground storage tank closure assessment. Performed Initial Site Characterization in response to findings. Supplemental Site Investigation revealed groundwater contamination in suspected bedrock. Proposed remediation at that time was cost-prohibitive for the school. In conjunction with new building construction, NAPL was encountered in replacement wells and bailed by hand during the monitoring program. Groundwater monitoring is ongoing.
Seabrook Commons	DDR Seabrook, LLC	Seabrook	40 CFR 312 Env-A 1800 Env-Or 400 Env-Or 600 Env-Or 800	Yes	John Gorman. 1 Worcester Road, Framingham, MA, 03595. 508-532-5382.	Multi-year services to support a major retail development from pre-acquisition through completion. Identified, investigated, and remediated numerous sites related to former use of the property for automotive parts manufacturing. Oversaw groundwater extraction, treatment, and discharge. Filled all regulatory submittals related to building demolition and beneficial reuse of recycled concrete aggregate. Performed hazardous materials surveys and oversaw abatement. Ongoing groundwater monitoring. Site closure achieved under the NHDES Brownfields Program.
Vacant Residential Parcel	Zaremba Program Development	North Conway	40 CFR 312 Env-A 1800 Env-Or 600 Env-Or 800	Yes	Carrie Offermatt. 14600 Detroit Avenue Suite 1500, Lakewood, Ohio, 44107.	One of over 40 sites in New England where Wilcox & Barton, Inc. has performed pre-acquisition environmental due diligence, geotechnical studies, hazardous materials assessments (with abatement oversight), site investigation, and remediation. Work scopes have recently expanded to include site civil design.
West Lebanon Sunoco	AR Sandri, Inc.	West Lebanon	Env-Or 400 Env-Or 600	Yes	Sharon Abbot. PO Box 1578, Greenfield, MA, 01302. 413-772-2121.	Underground storage tank design and permitting. Site Investigation, to include access to numerous neighboring parcels. Groundwater monitoring is ongoing.
PFAS Site Investigation (with Nobis Engineering)	Town of Windham, NH	Windham	Env-Or 600	Yes	Mr. David Sullivan, Town Administrator. 3 No. Lowell Road, Windham, NH, 03087. 603-432-7732	Site Investigation into the presence of PFAS in drinking water supply wells near the former and current Windham Fire Department facilities. Included the installation of overburden groundwater monitoring wells; the collection of soil, groundwater, surface water, sediment, and drinking water samples for PFAS; and a study on the historic use, storage, and handling of Class B firefighting foams by the fire department.
PFAS Supplemental Site Investigation	Town of Windham, NH	Windham	Env-Or 600	Yes	Mr. David Sullivan, Town Administrator. 3 No. Lowell Road, Windham, NH, 03087. 603-432-7732	Supplemental investigation to further investigate potential source areas of the PFAS contamination, including a soil boring program; additional monitoring well installations; soil, groundwater, surface water, and drinking water sample collection, and reporting.
Winnisquam Trading Post Market	Winnisquam Market and Deli, LLC	Tilton	Env-Or 600	Yes	Ed Crawford. 96 Channel Lane, Laconia, NH, 03246. 603-366-4801.	Environmental consulting in response to a heating oil spill. Completed site investigation, NAPL bailing. Site closure achieved in 2017.

5.0 PROJECT UNDERSTANDING AND APPROACH

5.1 Project Understanding

PFAS are a large group of man-made chemicals that were first developed in the 1930s and have been used since the early 1940s for a wide variety of applications, such as the production of non-stick cookware, waterproof and stain-resistant fabrics, protective coatings, personal care products such as shampoo and cosmetics, takeout food containers, electrical wiring, ski and car wax, petroleum products, and Class B firefighting foams (including AFFF). Studies show that PFAS are becoming ubiquitous in the environment and they have been found in the blood of human and animals worldwide.

Given the low detection limits and regulatory standards associated with PFAS (parts per trillion, or ppt), it is critical that strict sample collection and handling protocols are followed by the field sampling teams to avoid the likelihood of biasing a sample result due to the cross-contamination from an outside source. The Wilcox & Barton, Inc. field team takes these protocols very seriously, and the company has developed its own Standard Operating Procedure (SOP) to further support guidance produced by NHDES and US EPA to further ensure that proper sampling procedures and sampling handling processes are followed on our sites.

NHDES has established AGQS for PFOA and PFOS and has established rulemaking to establish AGQS for perfluorohexane sulfonic acid (PFHxS) and perfluorononanoic acid (PFNA).

- The current AGQS for PFOA and PFOS is 70 ppt, either individually or as a sum of the two.
- The proposed AGQS for PFHxS and PFNA are 85 ppt and 23 ppt, respectively.
- The AGQS for PFOA is proposed to be reduced from 70 ppt to 38 ppt.

Wilcox & Barton, Inc. will leverage our experience working with municipal Fire Departments to develop a streamlined and cost-efficient approach that addresses the requests made by NHDES.

Our understanding of the project is that PFOA and PFOS were detected in a sample collected from the water supply well at 4 Winnicutt Road (the Stratham Fire Department) on March 22, 2019, at concentrations of 33.4 ppt and 149 ppt, respectively. The sample was collected at the request of NHDES following the detection of PFOA and PFOS in the water supply for an adjacent, downgradient property on March 5, 2019, at a combined concentration of 71.2 ppt.

As a result, NHDES issued a letter to the Stratham Select Board Chair on April 26, 2019, requiring that the Town, as a potentially responsible party, “...conduct a Focused Site Investigation to evaluate the source of PFAS contamination in groundwater at the Fire Station.” The letter goes on to say that information regarding the water supply well that services the 4 Winnicutt Road property, the location of on-site utilities, and the “historical and current storage and use of any PFAS containing materials, hazardous materials

and/or petroleum products, and the location of any storage areas of such onsite” by the Fire Department should be used “to identify and guide any additional investigation actions under Env-Or 600 Contaminated Site Management rules that may be warranted”.

5.2 Project Approach

We have carefully reviewed the RFP and understand the types of services that NHDES has requested in their April 26, 2019 letter to the Town. In our experience, the approach to these types of investigations can vary widely, from large, complicated, and expensive academic studies at one extreme, to minimal, limited investigations that do not generate usable data at the other.

Because the objectives of this study are well-defined, we are proposing a reasonable approach that will generate the necessary data and allow cost-effective response to the NHDES request. Regulations found in Env-Or 606 *Comprehensive Response Actions* stipulate the size and scope of subsurface investigations in New Hampshire, with flexibility to adapt to site-specific situations and data needs. Our goal is to smartly and efficiently meet the project objective at the least expense and without conducting unnecessary studies or generating non-actionable data.

As an example, it is our opinion that the project can be completed with installation of a relatively small number of overburden (shallow groundwater) monitoring wells. We know from existing data that groundwater occurs at about 5 feet below ground surface in the overburden and at 29 feet below ground surface in the underlying bedrock, suggesting a strong downward vertical gradient. In addition, there is not a proven in-situ remedy for the remediation of PFAS in bedrock groundwater, so bedrock monitoring wells are not needed for remedial design purposes. For these reasons, and because it is already known that PFAS exists in the bedrock, deep wells are not needed for this phase of the investigation.

Further, when working to identify a suspected surface or near-surface source, shallow groundwater is generally the best media for investigation. Soil samples must be collected from the precise location of contaminant deposition, and bedrock wells must precisely intersect the fracture where contamination exists. Conversely, contaminants tend to disperse and migrate in shallow groundwater in predictable directions and plume patterns that can be used to identify source areas.

6.0 SCOPE OF WORK AND COST PROPOSAL

6.1 Proposed Scope of Work

A summary of the proposed Scope of Work is as follows:

6.1.1 Task 1.1 – Work Plan Preparation

The RFP notes that a Work Plan is due to NHDES for review by June 7, 2019; Wilcox & Barton, Inc. will prepare and submit the Work Plan to NHDES at no cost to the Town. Wilcox & Barton, Inc. will also attend one meeting or conference call with NHDES to discuss the proposed approach and adjust the Work Plan as needed at no additional cost.

6.1.2 Task 1.2 – Client/NHDES Meetings and Research

NHDES identified several areas that will require additional investigation and data gathering as part of the Focused SI. These include the following tasks, which will be completed through a combination of research and in-person interviews:

- Confirmation that the Fire Department has historically used and stored Class B firefighting foam as part of their operations and procedures;
- Documentation of releases of foam concentrate during storage, transfer, or equipment calibration;
- Documentation of discharges of foam solution for apparatus testing and/or cleaning (i.e., washing/drying of hoses);
- Discharges of foam solution for fire training;
- Leaks from foam distribution equipment between storage and pumping locations;
- The presence of floor drains or dry wells where discharges of interior truck/hose wash water potentially containing PFAS may have entered the subsurface;
- The location and specification of the on-site drinking water well (construction information, pump intake depth, any recent pump repairs/installations, etc. if known);
- The physical location of site utilities, septic system, storm water management systems, and other pertinent site features etc.;
- A summary of the history of site operations, historical and current storage and use of any PFAS containing materials, hazardous materials and/or petroleum products, and the location of any storage areas of such onsite; and
- Information on Fire Department practices and designated areas for storage, handling and use of PFAS-containing products and any historical knowledge of releases / spills of Class B Foam concentrate or solutions.

The results of this task will inform the refinement and siting of a monitoring well network to assess shallow groundwater.

Wilcox & Barton, Inc. has an existing relationship with the construction firm that built the Fire Department building in 2007 (Crow Construction). We have already contacted Mr. Dan Crow to inquire about the availability of existing site plans, as-buils, and other construction-related documents that would help us to investigate the subsurface features that NHDES inquired about in their April 2019 letter (floor drains, septic system, storm water management systems, utility corridors, etc.). Mr. Crow confirmed that he will make these plans available to Wilcox & Barton, Inc. to assist us in addressing the data gaps for the purposes of completing our investigation in a timely and efficient manner.

6.1.3 Task 1.3 – Site Visit and Digsafe Clearance

Wilcox & Barton, Inc. will hold a project kick-off meeting at the Fire Department site to inspect the property, document the locations of subsurface infrastructure, finalize the proposed drilling locations, meet with Town officials (as available and as desired by the Town), and pre-mark the drilling locations for utility clearance by the Dig Safe member utilities. By law, no intrusive activities will be conducted for at least 72 business hours after calling in the Dig Safe ticket.

6.1.4 Task 1.4 – Soil Borings and Monitoring Well Installations

Wilcox & Barton, Inc. will coordinate and oversee subcontracted drilling services by Geosearch, Inc. (Geosearch) during the advancement and installation of six soil borings to be completed as overburden groundwater monitoring wells during two days of drilling. The exact soil boring/monitoring well locations will be finalized during the site visit; however, they are anticipated to be installed at the approximate locations shown on Figure 2 and constructed as shown on Table 2.

Information obtained from the NHDES OneStop database for the existing bedrock water supply well at 4 Winnicutt Road indicates that bedrock was encountered at approximately 17 feet below ground surface during installation in 2007. The depth-to-water readings in overburden monitoring wells across the street at the Stratham Village Market property (157 Portsmouth Ave.) indicate that overburden groundwater will be encountered at the Fire Department at depths between approximately 5 and 10 feet below ground surface. Therefore, Wilcox & Barton, Inc. estimates that the proposed monitoring wells will extend to maximum depths near 20 feet and will produce in adequate volumes of groundwater for future sampling purposes.

The borings will be advanced using hollow-stem auger drilling techniques, and soil samples will be field screened continuously from the ground surface to the bottom of the borehole. No soil samples for laboratory analysis of PFAS are proposed at this time. Upon reaching the termination depth of the borehole and completing the soil screening, an overburden monitoring well will be constructed. Wells will be constructed using 10 feet of 2-inch-diameter polyvinyl chloride (PVC) well screen and up to 10 feet of PVC riser. Clean filter sand will be installed to a depth of at least 2 feet above the top of the well screen and topped with a 2-foot-thick bentonite seal. The remainder of the borehole will be filled with a cement-bentonite grout. The wells will be completed at the surface with a flush-mounted steel protective road box set in a concrete pad.

Well development will be performed immediately following the completion of well installation. Additionally, the locations and top-of-casing elevations for each well will be surveyed and tied to a permanent, recoverable benchmark on the Fire Department property. In addition, Wilcox & Barton, Inc. will request permission from the owner of the 157 Portsmouth Ave. property to access the site and use the monitoring wells as part of the Focused SI. If access is granted, the new monitoring well elevations will also be tied to the established top of casing elevation of one of the monitoring wells on that site. This approach will provide an expanded network of groundwater gradient monitoring points at little to no additional cost.

6.1.5 Task 1.5 – Groundwater and Surface Water Sampling

Two rounds of groundwater samples will be collected from the six newly installed monitoring wells and four existing monitoring wells (MW-1, MW-3, MW-4, and MW-5) located downgradient of the Fire Department at the 157 Portsmouth Ave. property (assuming access is allowed). The first sampling event will be conducted no sooner than two weeks after well installation to allow for stabilization of groundwater conditions.

Samples will be collected using disposable high-density polyethylene (HDPE) bailers and in strict accordance with NHDES PFAS sampling protocols and the Wilcox & Barton, Inc. SOP. In accordance with Env-Or 606.05, the second groundwater sampling event will be performed no sooner than two weeks after the first event.

Wilcox & Barton, Inc. proposes that two surface water samples be collected from Mill Brook, which is located approximately 1,000 feet downgradient of two drinking water wells where PFAS were detected at concentrations as high as 290.1 ppt. The two sample locations will be selected in the field but are proposed to be on the west side of Route 108 and upstream from the confluence of Mill Brook and the Squamscott River. Characterization of the surface water quality in Mill Brook will help identify potential human and ecological receptors downgradient of known groundwater impacts.

The 20 groundwater samples and 2 surface water samples will be submitted to Con-Test Analytical Laboratory (Con-Test) for analysis of PFAS by modified EPA Method 537.1. The laboratory analytical report will include up to 18 compounds, including PFOA, PFOS, PFHxS, PFNA, and precursor compounds that can break down into regulated substances. For quality control/quality assurance (QA/QC) purposes, Wilcox & Barton, Inc. will also include one trip blank sample with each round for a total of 24 samples. The samples will be packed in ice and submitted to Con-Test under standard chain-of-custody procedures. We estimate that analytical results will be available no sooner than 15 business days from the receipt of the samples by the laboratory.

6.1.6 Task 1.5 - Drinking Water Sampling

Exhibits A and B of the RFP included a list of 37 private drinking water wells that exist within 1,000 feet of at least one known exceedance of a PFAS standard in groundwater near the site. Of those, as of April 29, 2019, ten of the wells had already been sampled and the sampling six additional wells had been scheduled. Invitations for the remaining 21 wells have been issued by NHDES; so, in time, additional drinking water results should become available.

Rather than duplicate any efforts currently underway by NHDES, and to avoid the costly re-sampling of wells that may have since been determined to not be impacted, Wilcox & Barton, Inc. is not proposing an area-wide drinking water well sampling program at this time. It does make sense, however, to resample the four water supply wells where PFAS has been detected near or above the AGQS (4 Winnicutt Road, 157 Portsmouth Ave., 142 Portsmouth Ave., and 149/151 Portsmouth Ave.).



For cost estimating purposes, Wilcox & Barton, Inc. has included costs for the collection of samples from these four locations, plus one additional well to be determined during the investigation. As a cost saving measure, the samples will be collected during one of the site mobilizations for groundwater and surface water sampling. The five drinking water samples will be submitted with the groundwater and surface water samples to Con-Test for PFAS analysis by Method 537.1.

6.1.7 Task 1.7 – Preparation of Focused Site Investigation Report

Wilcox & Barton, Inc. will prepare a Focused SI Report to summarize the field investigations described above and include site figures; tabulated summaries of groundwater, drinking water, and surface water analytical results; a hydrogeological conceptual site model; evaluations of the site history and operational practices; data gaps, if any; a potentiometric surface map; soil boring/well installation logs; and conclusions and recommendations for additional investigative activities that may be required. The PFAS groundwater data and new monitoring well Station IDs will also be uploaded to the PFAS Environmental Monitoring Database.

The task also includes labor effort for Wilcox & Barton, Inc. to hold periodic (monthly) progress meetings and/or phone calls with the Town and one meeting with NHDES at the completion of the SI activities.

6.1.8 Task 1.8 – Public Meetings

Wilcox & Barton, Inc. will allocate time for client meetings with your team in Stratham and for conference calls and/or meetings with NHDES to facilitate coordination and open lines of communication between all parties and associated project stakeholders. Wilcox & Barton, Inc. will also participate in two Public Meetings, as needed, on dates scheduled by the Town. Please note that Jim Ricker of Wilcox & Barton, Inc. will attend and present at these meetings at no cost to the Town.

Wilcox & Barton, Inc. will prepare the Work Plan for NHDES and present at two Public Meetings for the Town at no charge.

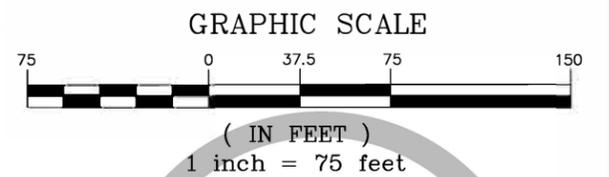


LEGEND

- ◆ MW-101 PROPOSED MONITORING WELL LOCATION
- ◆ MW-1 APPROXIMATE LOCATION OF EXISTING MONITORING WELLS AT 157 PORTSMOUTH AVENUE PROPERTY
- ← GROUNDWATER FLOW DIRECTION
- PID PARCEL IDENTIFICATION

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. PLAN BASED ON GOOGLE EARTH IMAGERY AND TOWN OF STRATHAM ASSESSOR'S OFFICE GIS MAP.



Wilcox & Barton INC.
CIVIL • ENVIRONMENTAL • GEOTECHNICAL

TITLE
PROPOSED MONITORING WELL LOCATION PLAN

DATE May 24, 2019	SCALE GRAPHIC	FILE Site Plan
APPROVED BY JPR	DRAWN BY CMM	REVISED
CLIENT Town of Stratham		JOB NUMBER
LOCATION Fire Department 4 Winnicutt Road Stratham, New Hampshire		DRAWING NUMBER FIGURE 2

**Table 2
Details and Justification of Proposed Monitoring Wells**

Monitoring Well ID	Type of Well	Anticipated Maximum Depth (ft bgs)	Justification for Well Installation
MW-101	2-inch Overburden	20	To evaluate groundwater conditions upgradient of the Fire Station building. Based on potentiometric surface elevations at the 157 Portsmouth Ave. property, the direction of overburden groundwater flow is to the west towards the Squamscott River. Depth based on the depth to water recorded in the existing monitoring well network.
MW-102	2-inch Overburden	20	To evaluate groundwater quality immediately down slope (and downgradient) of the paved area in front of the Fire Department bay doors. Surface runoff from drained hose lines prior to docking the fire trucks would collect here and flow to the west towards the grassy area between the Fire Department and Winnicutt Road. This well would also evaluate potential impacts of other PFAS-related substances that might have migrated through cracks in the asphalt and into the subsurface.
MW-103	2-inch Overburden	20	Well MW-103 is proposed for the northwest corner of the Fire Department property, downgradient of well location MW-102. In addition to providing potentiometric surface data, samples collected from this well would help determine if PFAS is migrating off the property and towards the commercial property and businesses at 159 Portsmouth Ave.
MW-104	2-inch Overburden	20	Similar to well MW-103, monitoring well MW-104 is proposed for the western property margin to establish concentrations of PFAS exiting the property and prior to their migration onto the 157 Portsmouth Ave. property. Well MW-104 is also downgradient of the Fire Station building and a floor drain/dry well system that has reportedly been used to discharge interior truck and hose wash water.
MW-105	2-inch Overburden	20	To evaluate overburden groundwater quality on the southern side of the building and in the direction of impacts to a water supply well located approximately 1,500 feet southwest of the Fire Department at 142 Portsmouth Ave. Well location MW-105 is also downgradient of what appears to be an abandoned car and/or waste disposal area noted in air photos at the southeastern corner of the 4 Winnicutt Road property (see Figure 1).
MW-106	2-inch Overburden	20	To evaluate overburden groundwater quality immediately downgradient of the waste disposal area located behind the church at the southeastern corner of the 4 Winnicutt Road property (see Figure 1). The well will also assess the possibility of PFAS coming onto the property from upgradient sources.

6.2 Cost

The total estimated cost for the SOW outlined in Section 6.1 above is **\$29,925.94**, which is broken out by task in the Budget Spreadsheet included as Table 3. A copy of the Wilcox & Barton, Inc. 2019 Schedule of Fees is provided in Appendix C. An Insurance Certificate providing proof of coverage for Wilcox & Barton, Inc. is provided in Appendix D.

6.3 Schedule

Wilcox & Barton, Inc. notes that the Work Plan is due to NHDES by June 7, 2019. Using this date as a starting point for the Focused SI, Wilcox & Barton, Inc. estimates the following schedule for completion of the scope of work prepared herein:

June 7, 2019:	Submittal of the PFAS Work Plan to NHDES.
Week of June 17, 2019:	Interviews with Town and Fire Department leadership regarding the use, storage, and practices associated with Class B firefighting foam, and continued research the on-site drinking water well and on-site utilities. Completion of Work Plan review by NHDES and agreement of the scope of investigative services between the Town, NHDES, and Wilcox & Barton, Inc. by Friday, June 21, 2019.
June 28, 2019:	Completion of the drilling, monitoring well installation, and monitoring well development tasks.
Week of July 15, 2019:	Collection of the first round of groundwater, surface water, and residential drinking water samples.
Week of August 5, 2019:	Receive analytical results of the first round of groundwater, drinking water, and surface water monitoring; discuss with the Town and conduct second round of groundwater sample collection (adjust as necessary to maximize the Town's available funding).
Week of August 26, 2019:	Receive analytical results of the second round of groundwater monitoring and schedule meeting with the Town to discuss.
September 20, 2019:	Delivery of the Focused SI Report to the Town for review and discussion prior to release to NHDES.
September 30, 2019:	Submit final Focused SI Report to NHDES.
As requested by the Town:	Attendance and presentation at two Public Meetings in Stratham (at no additional cost to the Town).

TABLE 3 - COST ESTIMATE

**Wilcox & Barton, Inc.
#1B Commons Drive, Unit 12B
Londonderry, New Hampshire 03053**

Project: Town of Stratham FSI

May 29, 2019

TASK	STAFF	UNIT	TYPE	RATE	COST
Task 1.1 - Preparation and Submittal of Work Plan to NHDES					
	Principal Geologist/Engineer/Scientist				<i>No Cost</i>
Subtotal					\$0.00
Task 1.2 - Client/NHDES Meetings and Research					
	Project Geologist/Engineer/Scientist	8	Hour	\$ 95.00	\$ 760.00
	Senior Geologist/Engineer/Scientist	2	Hour	\$ 125.00	\$ 250.00
	Principal Geologist/Engineer/Scientist	10	Hour	\$ 155.00	\$ 1,550.00
Subtotal					\$ 2,560.00
Task 1.3 - Site Visit and Digsafe Clearance					
	Project Geologist/Engineer/Scientist	5	Hour	\$ 95.00	\$ 475.00
	Sr. Geologist/Engineer/Scientist	3	Hour	\$ 125.00	\$ 375.00
	Principal Geologist/Engineer/Scientist	3	Hour	\$ 155.00	\$ 465.00
	Travel	50	Mile	\$ 0.580	\$ 29.00
Subtotal					\$ 1,344.00
Task 1.4 - Drilling and Monitoring Well Installations					
	Project Geologist/Engineer/Scientist - Field	20	Hour	\$ 95.00	\$ 1,900.00
	Project Geologist/Engineer/Scientist - Logs	4	Hour	\$ 95.00	\$ 380.00
	Sr. Geologist/Engineer/Scientist	3	Hour	\$ 125.00	\$ 375.00
	Travel	100	Mile	\$ 0.580	\$ 58.00
	Water level meter	2	day	\$ 17.25	\$ 34.50
	Field supplies	2	day	\$ 28.75	\$ 57.50
	Survey Equipment	1	1/2 day	\$ 43.89	\$ 43.89
	Bailers	6	Each	\$ 13.80	\$ 82.80
	Geosearch, Inc. (drilling)	1	LS	\$ 6,795.00	\$ 6,795.00
	Markup (15%)	1			\$ 1,019.25
Subtotal					\$ 10,745.94

TABLE 3 - COST ESTIMATE

Wilcox & Barton, Inc.
#1B Commons Drive, Unit 12B
Londonderry, New Hampshire 03053

Project: Town of Stratham FSI

May 29, 2019

TASK	STAFF	UNIT	TYPE	RATE	COST
Tasks 1.5 and 1.6 - Groundwater, PDW, and Surface Water Sampling					
	Project Geologist/Engineer/Scientist	24	Hour	\$ 95.00	\$ 2,280.00
	Sr. Geologist/Engineer/Scientist	3	Hour	\$ 125.00	\$ 375.00
	Travel	100	Mile	\$ 0.580	\$ 58.00
	Field supplies	2	day	\$ 28.75	\$ 57.50
	Water level meter	2	day	\$ 17.25	\$ 34.50
	Bailers	20	Each	\$ 13.80	\$ 276.00
	PFAS - Groundwater (includes trip blank)	22	Each	\$ 225.00	\$ 4,950.00
	PFAS - Surface Water	2	Each	\$ 225.00	\$ 450.00
	PFAS - Drinking Water	5	Each	\$ 225.00	\$ 1,125.00
	Markup (15%)	1			\$ 810.00
Subtotal					\$ 10,416.00
Task 1.7 - Focused SI Report					
	Project Geologist/Engineer/Scientist	32	Hour	\$ 95.00	\$ 3,040.00
	Senior Geologist/Engineer/Scientist	4	Hour	\$ 125.00	\$ 500.00
	Principal Geologist/Engineer/Scientist	4	Hour	\$ 155.00	\$ 620.00
	Administrative	2	Hour	\$ 65.00	\$ 130.00
	EMD Upload	1	Each	\$ 570.00	\$ 570.00
Subtotal					\$ 4,860.00
Task 1.8 - Attendance at Two Public Meetings					
	Principal Geologist/Engineer/Scientist				<i>No Cost</i>
Subtotal					\$0.00
Total					\$ 29,925.94

APPENDIX A
RESUMES FOR KEY PERSONNEL





William R Wilcox, Jr.

President

Principal Geologist

WWilcox@wilcoxandbarton.com

603-369-4190 x 501

802 272-8466

Experience

27 Years

Education

BA Natural Science

Castleton State College 1991

Registrations & Certifications

40-Hr Hazardous Waste Training OSHA

8-Hr Supervisory Training

Certified Site Health and Safety Supervisor

Certified in Hazardous Materials Shipping

Certified Supervisor in Confined Space

Entry

Professional Affiliations

National Groundwater Association

Licensed Site Professional Association

William Wilcox is co-founder, partner, and principal of Wilcox & Barton, Inc. He solves customers' regulatory, technical, budgeting and scheduling challenges. Passionate about guarding clients' resources and being accessible at all times in order to provide the highest quality and responsive service. As a hands-on business leader, he has been the Project Manager or Director for hundreds of ASTM and MCP environmental assessments, investigations, remediation, and compliance projects throughout New England. Directing, managing and personally performing when needed a diverse array of environmental consulting and engineering services.

Representative Project Experience

Expert Consulting Services under Massachusetts Contingency Plan

Multiple Facilities Statewide

Mr. Wilcox is an expert on the MCP and is adept at negotiating this potential minefield for potentially responsible parties. He has provided environmental services under the MCP at sites ranging from retail gasoline stations to former industrial facilities.

Expert Hazardous Materials Consulting, MA Highway Department,

Statewide

Managed the assessment of hazardous materials in over 150 residential and commercial structures in support of building demolition. Hazardous materials, including asbestos-containing materials (ACM), lead-based paint (LBP), and underground storage tanks (UST) were evaluated at over 200 residential and commercial properties. Contract documents including technical specifications and public bidding requirements were prepared. Provided abatement management, documentation, and reporting.

Due Diligence and Construction Support Services

Confidential Client, Retail Development, New Hampshire

As Project Director, Bill oversaw completion of ASTM Phase I and Phase II assessments, acceptance into the state Brownfields program, erosion and sediment control management, hazardous materials removal, and other environmental matters related to redevelopment of a former industrial site. Despite numerous challenges, he successfully interfaced with the client, state regulators, local officials, attorneys, and the community to allow the redevelopment project to move forward.



**James P. Ricker, PG
Vice President
Manager, NH-VT-ME
Environmental**

JRicker@wilcoxandbarton.com
603-369-4190 x 508

Experience

28 Years

Education

BS Geology

University of New Hampshire 1994
AS Architectural Engineering Technology
NH Technical Institute 1987

Registrations & Certifications

Professional Geologist NH 0075
OSHA 40-Hour HAZWOPER

NGWA Certificates of Completion:

- NGWA Conference on MtBE: Assessment, Remediation and Public Policy
- Assessment and Management of MtBE Impacted Sites
- Natural Attenuation for Remediation of Contaminated Sites

Professional Affiliations

NGWA
NHBIA
EBC- New Hampshire (Leadership Team)
ACEC- NH CQI Committee

James Ricker has nearly 30 years of experience as an Operations Manager, State Agency Contract Manager, Client Services Manager, Project Manager, Project Geologist, and business development professional in the environmental consulting, engineering, and construction industry. This includes more than 18 years of experience managing projects under an on-call environmental services contract with the New Hampshire Department of Environmental Services (NHDES), including nine years as the Contract Program Manager. He has also led environmental site investigation and remediation projects for the United States Environmental Protection Agency and the United States Army Corps of Engineers. He is proficient in the investigations of sites impacted by methyl tert-butyl ether (MtBE) and per- and polyfluoroalkyl substances (PFAS).

Representative Project Experience

PFAS Site Investigation and Supplemental Site Investigation, Town of Windham, New Hampshire

Jim is currently leading a Supplemental Site Investigation (SSI) into the release of PFAS to the subsurface from the former and current Fire Department facilities for the Town of Windham, New Hampshire. The investigation includes an evaluation of the storage, handling, and use of Class B firefighting foams, including the mechanisms and practices that can result in incidental impacts to soil, groundwater, surface water, and private drinking water supply wells.

Site Investigation-Remediation Design-Remedial Action Oversight Contract, NH Department of Environmental Services (NHDES)

Jim has served as the Program Manager on a 4-year, on-call environmental services contract that was first won in 1998 and then successfully re-bid four consecutive times. Included is the daily responsibility for the direction and management of the contract, including regular interaction with the NHDES Contract Manager, managing Site Investigation projects, ensuring that projects are completed on time and within budget, and a continual assessment of the team's performance and demonstration of our commitment to exceeding client expectations.

PFAS Investigations – Multiple New Hampshire Sites

Jim has served as the technical lead, Sr. Project Manager, and Client Manager on multiple New Hampshire project sites impacted by Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonic Acid (PFOS) contamination in soil, groundwater, and surface water. These investigations were conducted for municipal, commercial/industrial, and redevelopment clients and included research into the historical use, storage, and handling of Class B firefighting foams.



Robert W. Rooks, PE

Sr. Vice President

Principal Engineer

RRooks@wilcoxandbarton.com

603 369-4190 x503

808 620-0800

Experience

28 Years

Education

MS Environmental Engineering

Duke University 1989

BS Civil Engineering

Duke University 1984

Registrations & Certifications

Civil Engineer VT 6361

Civil Engineer NH 10583

Civil Engineer ME 11603

Civil Engineer NY 089222

Civil Engineer RI 11329

Civil Engineer CT 26622

Civil Engineer FL 67892

Civil Engineer MA 51258

Civil Engineer HI 8146-C

OSHA 40 Hour HAZWOPER

Professional Affiliations

American Society of Civil Engineers

Bob Rooks applies 28 years of civil and environmental engineering experience to ensure that all deliverables are technically defensible, well presented, and of the highest quality. Bob maintains technical expertise in the areas of site assessment, remedial design and risk-based closure, hazardous materials assessment and mitigation, environmental construction and safety planning and monitoring, underground and aboveground storage tanks, auditing, and regulatory compliance.

Bob brings the same level of technical excellence to projects both large and small, for clients of all types and in regulatory settings. He authors the company Standard Operating Procedures supporting field work, data quality review, and report production and quality control. He oversees the company document production process to ensure attainment of client objectives and the highest standards for quality.

Areas of Responsibility

Environmental Site Assessment and Remediation

Bob oversees assessment strategy and remedial design for petroleum and hazardous waste sites in Massachusetts, Rhode Island, Vermont, New Hampshire, Maine, Connecticut, New York, and Florida. He maintains expertise in state-of-the-art methods for soil, groundwater, and soil vapor investigations as well as project quality assurance planning and assessment.

Environmental Due Diligence

As qualified Environmental Professional, Bob oversees the completion of Phase I and II Environmental Site Assessments on behalf of land owners, buyers, developers, and attorneys. He developed the report templates and field methods and participates in the evaluation of all recognized environmental conditions identified during these studies.

Petroleum Facility Design

Bob reviews and stamps underground and aboveground storage tank design work and oversees the work of other Professional Engineers. Design work incorporates customer business needs, state environmental and fire marshal requirements, NFPA guidance, other industry standards, and contractor capabilities. Bob is responsible for overall quality assurance of the design process and work product.

Environmental Compliance and Auditing

Bob oversees the company's audit services, providing comprehensive review of RCRA waste management, hazardous materials distribution and storage, waste site cleanup, indoor air quality, laboratories, air discharges, asbestos, USTs, stormwater, wetlands, and underground injection control.

Environmental Construction Management

When client construction projects have environmental aspects, Bob performs or oversees the development of sequencing, soil management, safety, and environmental sampling plans so that work can proceed with minimal impacts to construction schedules. This often includes planning and cost estimates for contingencies when unforeseen conditions are encountered.



Chelsea Smith

Project Geologist

csmith@wilcoxandbarton.com

603 369-4190 x 534

Experience

2 Years

Education

BS Geological Sciences

Salem State University 2017

Cum Laude

Licenses and Certifications

OSHA 40-Hour HAZWOPER

OSHA 8-Hour HAZWOPER Refresher

ICC UST Decommissioning – 8881459

Basic First Aid

Adult CPR

Chelsea Smith is a Project Manager and Project Geologist responsible for conducting Phase I Environmental Site Assessments, subsurface investigations, hazardous materials inspections, soil excavation oversight, underground storage tank closure, soil and groundwater remediation, data analysis, and report writing. She is also the Wilcox & Barton field lead for the sampling of soil and groundwater at sites impacted by per- and polyfluorinated substances (PFAS). Ms. Smith is committed to providing high quality and accurate work products for clients.

Representative Project Experience

Supplemental Site Investigation, Town of Windham, NH

Chelsea led subsurface investigation activities, including drilling oversight, soil sampling, monitoring well installations, groundwater sampling, and drinking water sampling at municipal and commercial properties, to address impacts by PFAS associated with the use of Class B firefighting foam. The collection of soil and groundwater samples were conducted in strict adherence to NHDES PFAS Sampling Guidance protocols. She also performed data compilation and assisted in the completion of written reports.

Phase I Environmental Site Assessment and Phase II Subsurface Investigation, Commercial Client, Concord, New Hampshire

Chelsea completed an environmental assessment to assist with a real estate transaction involving multiple commercial properties with complex commercial and industrial histories. She reviewed municipal files, inspected the properties, and interviewed the property owner and tenants. She conducted soil and groundwater sampling to identify potential hazards and determine compliance. Data compilation, written reports, and recommendations were also provided to assist with the transaction decisions and planning.

Site Remediation, Commercial Client, Old Orchard Beach, ME

Chelsea conducted subsurface investigation activities including soil boring advancement, monitoring well installation, soil excavation, dewatering and groundwater treatment, and soil and groundwater sampling and analysis, to determine the nature and extent of volatile organic compound contamination in environmental media the commercial property. Chelsea also performed data compilation and has assisted in the completion of written reports.



Cody Whelan

Project Geologist

cwhelan@wilcoxandbarton.com

603 369-4190 x 527

Experience

3 Years

Education

BS Geology

University of New Hampshire 2015

Licenses and Certifications

OSHA 40-Hour HAZWOPER

OSHA 8-Hour HAZWOPER Refresher

TWIC Certified

First Aid CPR

Cody Whelan is a Project Manager and Project Geologist who manages implementation of Site Assessments, subsurface investigations, and remedial actions for sites with impacted soil and groundwater. Cody directed field services for top petroleum companies to maintain facility compliance and execute remedial strategies at bulk oil storage facilities and retail sites across NH, MA, and RI. Additionally, he provides management of Sites impacted by per- and polyfluorinated substances (PFAS) and has demonstrated strict adherence to state and federal guidelines when working with homeowners, towns, and private businesses seeking navigating through management of PFAS impacts.

Representative Project Experience

PFAS Site Investigation, Town of Goshen, NH

Cody led investigation activities, including groundwater and drinking water sampling and completion of a Sensitive Receptor Survey, at a municipal landfill to address potential impacts by PFAS associated with historic operations at the facility. He collected drinking water samples from private residences and helped educate homeowners on PFAS impacts to drinking water sources. Cody also performed data compilation and assisted in the completion of written reports.

Subsurface Investigation, Petroleum Client, Everett, MA

Cody designed, developed, and implemented subsurface investigation activities for identification of historic petroleum impacts to soil and groundwater at a bulk oil storage facility in Everett, MA. He investigated historic facility operations dating back to the early 1900's and subsequently implemented a drilling and excavation plan to remove petroleum impacted material. As Site Manager, Cody oversaw collection of petroleum, soil, and groundwater samples to determine real-time extent of the impacted area and logged geologic features to assist with creation of complex groundwater maps. He compiled data, wrote reports, and made recommendations to assist with future remedial design.

RAM Implementation, Commercial Client, Boston, MA

Cody managed implantation of a RAM for a developer in South Boston, MA, which included remediation of a PCB-impacted petroleum recovery system at a historic industrial site with lead-impacted soils requiring on-site stabilization. Cody assisted with management of on-site lead stabilization in soil, hazardous material disposal, field sampling efforts, and decontamination of heavy equipment and machinery per state and federal regulations. Cody also provided support for data tabulation and written status reports to environmental agencies.



Erin Lambert, PE, LEED AP
Associate Vice President
Civil Engineering- NH
elambert@wilcoxandbarton.com
603-369-4190 x 527

Experience
21 Years

Education
BS Civil Engineering
Lehigh University 1997

Registrations & Certifications
Professional Engineer NH 2003
Leadership in Energy & Environmental
Design (LEED) Accredited Professional
40-Hour Hazardous Waste Operations and
Emergency Response (HAZWOPER)
8-Hour HAZWOPER Annual Refresher
10-Hour OSHA Construction

Professional Affiliations
Plan NH, former board member
Capital Region Food Program, Holiday
Food Basket Committee and former
board member

Erin Lambert is an Associate Vice President of NH Civil Engineering and Senior Project Manager who delivers high-quality, individually-tailored solutions for clients including K-12 and higher education facilities, continuing care communities, residential and commercial developers, resident-owned communities, utility companies and municipalities. In addition to managing our talented NH Civil team, Erin navigates projects from conceptual planning to final design and construction. She delivers site design plans, inclusive of site layout, grading, utility connections/extensions, stormwater controls and construction details. She is known for managing projects with precision, partly because of her extensive experience obtaining local, state and federal permits, including NHDES Alteration of Terrain, Shoreland Protection, Wetlands, and Sewer Connection permits.

Representative Project Experience

New Sanel/NAPA Distribution and Retail Facility, Concord, NH

Erin is the Project Manager for the site engineering design and permitting for construction of a new 36,000 sf wholesale distribution and retail facility. She provided support to obtain zoning variances. She oversaw development of design drawings, drainage modeling, sewer main extension, technical specifications and submittal of a NHDES Alteration of Terrain permit application. She designed stormwater infiltration galleries and bioretention swales for stormwater treatment and control.

Banks Chevrolet Expanded Vehicle Storage, Concord, NH

Erin is the Project Manager for the site engineering design and permitting for construction of 130,000+ sf of additional vehicle storage. She is responsible for site layout, grading, drainage controls and treatment to meet local and NHDES AOT permit requirements. She is developing demolition plans for the 100,000 sf commercial building on-site, working in close collaboration with Wilcox & Barton Inc.' environmental professionals performing a hazardous building materials assessment.

Wentworth Home, Dover, NH

Erin is the Project Manager for the site engineering design and permitting for construction of a 15,000 sf memory care addition to the Wentworth Home Assisted Living facility. She is overseeing site layout, including drop-off and fire lanes, driveway relocation on Central Avenue, grading and design of drainage controls. Erin is working closely with the Construction Manager and design team to expedite and coordinate design plans to minimize construction delays and rework.

Projects for Prior Consulting Firm

Merrimack County Superior Courthouse – Civil Project Manager
NH Distributors, Distribution Center Expansion – Civil Project Manager
NHTI Grappone Health Education Building – Civil Project Manager
NHTI Water Main Extension – Civil Project Manager
Concord Elementary School and Maintenance Facility – Civil Project Manager
New London Patrol Shed – Civil Project Engineer



Mark A. Yiatras, PG
Director- Retail Petroleum
MYiatras@wilcoxandbarton.com
603-369-4190 x 530

Experience

25 Years

Education

B.A. Geology and Geography 1992
Western Michigan University

Licenses & Registrations

Certified Professional Geologist- NH
Certified Professional Geologist- TN
UST A/B Operator Training
API Worksafe Certified
LPS & Smith-System Certified
First Aid/CPR, DOT Certified
OSHA HAZWOPER
RCRA
DOT
Lockout/Tag Out Training

Professional Affiliations

LSPA
NESCEMA
New Hampshire Geological Society

Mark Yiatras has more than 25 years of experience in environmental consulting, Mark focuses on the New England oil and gas sector, managing due diligence projects and remediation liabilities for clients in the petroleum, government, industrial, and healthcare businesses. Mark combines organizational skills with the ability to develop, plan, and manage diverse relationships. He has a proven ability to consistently develop people and lead teams to achieve organizational objectives. He is proficient in regulatory advocacy, permitting, and Health, Safety, Security, and Environment (HSSE) implementation for midsize and major oil brands.

Representative Project Experience

Former Amoco Terminal, East Providence, RI

Mark was the Project Manager responsible for investigation and maintenance of a two-acre former bulk terminal impacted with gasoline, No. 6, and kerosene free product. The site bordered both the Providence River and a cove and involved sediment removal activities. Mark used remedial technologies including phytoremediation, pump and treat, and LNAPL Conceptual Site Modeling. Strategy involved the implementation of risk assessment and environmental deed restrictions.

Harcross Chemical, Merrimack, NH

As Project Manager, Mark supervised the field operations of multiple leaking underground storage tanks containing gasoline. His primary responsibilities included preliminary data evaluation and interpretation, monitoring well abandonment and installation, groundwater sampling, and water-quality data analysis. Other responsibilities included preparation of geologic cross-sections and groundwater modeling.

GE Aviation Engine Manufacturing Plant, Lynn, MA

As Project Geologist, Mark oversaw the remediation and containment of 5,600 gallons of PCB hydraulic oil released to the subsurface. Radiation techniques utilized included belt skimmers, pump and treat, and excavations.

Home Depot USA, N. Providence, RI

Mark was Project Manager for the continuous operation and assessment of a site that was impacted by chlorinated solvent and adjacent to a river. Mark simultaneously maintained pump and treat, sub-slab ventilation, and soil vapor extraction systems under applicable RI permits. Through advocacy with RIDEM, Mark was able to reduce costs by successfully combining status reports and obtaining permission from the air quality division to allow SVE operation without carbon.

APPENDIX B
ADDITIONAL WORK ITEM



ADDITIONAL WORK ITEM

In response to Section E, Part 4 (“Additional Work Item”) of the Request for Proposal (RFP) received from the Town of Stratham (the Town) on May 20, 2019, Wilcox & Barton, Inc. has prepared the following to address possible approaches and associated costs for identifying or providing additional water sources for properties impacted by the presence of per- and polyfluoroalkyl substances (PFAS).

The RFP specifically requests that the Respondent provide “*a description and cost breakdown for the performance of a geological structure analysis in the event the Town needs to move forward with identifying additional water sources for the affected properties.*” Based on use of the phrase “geological structural analysis,” we have assumed that the Town is inquiring about the steps required to conduct a hydrogeological evaluation of the regional bedrock and/or overburden aquifers in the event that it is deemed necessary to develop a stand-alone water supply. While this is a viable course of action, Wilcox & Barton, Inc. notes that there are other options to be considered as well, each of which is discussed in more detail below.

1.0 HYDROGEOLOGICAL EVALUATION (GEOLOGICAL STRUCTURAL ANALYSIS)

A hydrogeological study for the purposes of developing a water supply that can meet the volumetric needs of its users, while also providing drinking water of suitable quality, is generally conducted in a phased approach, with each phase being dependent upon the success of the step(s) that preceded it. The New Hampshire Department of Environmental Services (NHDES) has identified approximately 40 properties within 1,000 feet of the Stratham Fire Station that have an active water supply well, including one community supply well (Jewett Hill Homeowners Association) and two non-transient, non-community wells on Winnicutt Road. As such, it is well documented that the regional water-bearing zone is sufficiently capable of providing drinking water to regional users. The process of identifying the appropriate location of a water supply well for public distribution depends on several factors, including (but not limited to) the local geologic setting, the type of well desired (i.e., bedrock vs. gravel-packed overburden well), property ownership, likelihood of complying with NHDES well siting rules; property and septic system setbacks, the sanitary protective radius, the documented distribution of PFAS, and, of course, cost. Based on our familiarity with the Stratham area and the type of water supply wells there, we will assume that a well drilled in the bedrock water-bearing zone would be appropriate. Once such a water supply well is drilled, produces clean water, and is determined to have the sustainable yield required, the cost of distributing that water to the affected properties is a key factor in the process.

The proposed approach would include the following series of “phases,” each with checkpoints to assess results after each phase and to use the information gathered to agree on the next steps. Those phases would be as follows:

1.1 Phase I – Identification of Favorable Zones

The objective of this phase is to establish a study area and identify possible drilling sites within that area. While a bedrock water supply well for a private, single-family home can be installed at a convenient spot on a property and still produce enough water to suit that the needs of that home, the likelihood of randomly finding a water-bearing fracture that is adequate for a public water supply well is very low; therefore, a list of possible sites would be developed and refined based on factors such as property ownership, drill rig accessibility, distance from known impacted wells, and proximity to other known or possible sources of contamination. The tasks involved in establishing Favorable Zones for additional study include the following:

- Review of regional geologic and wetlands maps;
- Bedrock lineament analysis;
- Strike and dip measurements of local bedrock outcrop fractures;
- Aerial photo reviews;
- Reviews of stereographic image pairs; and
- Site visits.

If one or more Favorable Zones can be established, they are marked for additional study during Phase II of the process.

1.2 Phase II – Geophysical Survey

Magnetic and very low frequency electromagnetic geophysical surveys of potential bedrock drilling sites would be conducted in the Favorable Zones identified in Phase I. The geophysical surveys would be designed to cross photo lineaments or other suspected bedrock fracture zones that were identified in Phase I. The output would then be used to select targets for bedrock drilling and testing.

1.3 Phase III and Phase IV – Bedrock Test Well Installation and Pumping Tests

If suitable bedrock drilling targets are identified during Phase II, Wilcox & Barton, Inc. would contract with a licensed well driller to install 6-inch-diameter test wells for the purpose of evaluating well yield and water quality. The sustainable well yield and water quality would be evaluated during the performance of long-term (approximately 72-hour) pumping tests, which would also assess drawdown in other nearby water supply wells to investigate bedrock fracture connectivity and potential disruptions to the performance of those wells.

1.4 Phase V and VI – Well System Design and Distribution

The objectives of Phases V and VI include selecting the proper pump for the new well; permitting the new supply; designing the required controls, pipeline, and service connections to the system; evaluation of treatment requirements, and purchase of materials to connect the users to the new community water system.

The cost to complete a phased approach like that described above is widely variable from site to site; however, for planning purposes, a range of between approximately \$250,000 and \$3350,000 can be expected for Phases I through IV. The design and construction of a water line and its service connections (Phases V and VI) can run in the range of approximately \$150-\$200 per linear foot of pipeline.

2.0 CONNECTION TO AN EXISTING WATER SUPPLY

As referenced above, an existing Community Water Supply system, owned by the Jewett Hill Homeowners Association, is located approximately one-quarter mile cross-gradient from the Stratham Fire Department. Built in approximately 1990, it currently has 19 service connections at single-family residences on Chase Lane, Jewett Lane, Iris Drive, and Tansy Avenue. The system is operated by the Hampstead Area Water Company (HAWC) of Atkinson, New Hampshire.

Wilcox & Barton, Inc. recommends meeting with the HAWC to evaluate the design and capacity of that system and whether an expansion of it would be feasible for the purposes of tying in the properties affected by the presence of PFAS in groundwater. The design and construction costs would be like those outlined in Phases V and VI above; therefore, assuming 4,000 linear feet of new pipeline were required, the estimated total cost of tying into the HAWC system would range between approximately \$600,000 and \$800,000.

Wilcox & Barton, Inc. has the in-house hydrogeology and engineering talent and trusted partnerships with water system design specialists to assist the Town with either of the scenarios presented herein. We also have experience assisting our clients with identifying available sources of funding, like the NHDES Drinking Water State Revolving Loan Fund, the Drinking Water Groundwater Trust Fund, and the United States Department of Agriculture Rural Development program. We'd be available to meet with you to discuss these options, refine the cost estimate, and establish and approximate construction timeline, when and as needed.

APPENDIX C

WILCOX & BARTON, INC. 2019 SCHEDULE OF FEES



Wilcox & Barton, Inc. Billing Rates 2019

Category	Rate
Principal Geologist/Engineer	\$155 / hour
Senior Geologist/Engineer/Scientist	\$125 / hour
Project Geologist/Engineer/Scientist	\$95 / hour
Administration	\$65 / hour
Mileage	\$0.58/mile (IRS Rate)
Direct Expenses	Cost + 15%/10%

APPENDIX D
CERTIFICATE OF INSURANCE





CERTIFICATE OF LIABILITY INSURANCE

WILCO-1

OP ID: BD

DATE (MM/DD/YYYY)

05/24/2019

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Paige & Campbell, Inc. P.O. Box 469 Barre, VT 05641 Jonathon P. Shea, CPCU	CONTACT NAME: Jonathon P. Shea, CPCU	
	PHONE (A/C, No, Ext): 802-476-6631	FAX (A/C, No): 802-476-5917
E-MAIL ADDRESS:		
INSURER(S) AFFORDING COVERAGE		NAIC #
INSURER A : Admiral Insurance Co.		44318
INSURED Wilcox & Barton, Inc. Coleen Kearns 12 Perley Road, Unit 15 Derry, NH 03038	INSURER B : Liberty Mutual Insurance	
	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES**CERTIFICATE NUMBER:****REVISION NUMBER:**

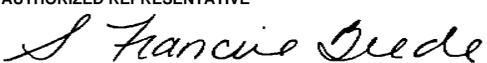
THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY			ECC12514-06	01/17/2019	01/17/2020	EACH OCCURRENCE \$ 2,000,000
	<input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 50,000
	<input checked="" type="checkbox"/> Prof Liab Incl						MED EXP (Any one person) \$ 5,000
	<input checked="" type="checkbox"/> Contr Poll Liab						PERSONAL & ADV INJURY \$ 2,000,000
GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC OTHER:							GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$
AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS							COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
A	<input checked="" type="checkbox"/> UMBRELLA LIAB			EXS-21422-06	01/17/2019	01/17/2020	EACH OCCURRENCE \$ 2,000,000
	<input checked="" type="checkbox"/> EXCESS LIAB						AGGREGATE \$
<input checked="" type="checkbox"/> DED <input type="checkbox"/> RETENTION \$ 10,000							\$
WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below							<input type="checkbox"/> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> N/A PER STATUTE OTH-ER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$
B	Valuable Papers			IM5062488	03/26/2019	03/26/2020	Limit 15,000 Ded 1,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

For completion of a Focused Site Investigation into PFAS contamination in Stratham, New Hampshire.

CERTIFICATE HOLDER**CANCELLATION**

STRATHT Town of Stratham Attn: David Moore Town Administrator 10 Bunker Hill Avenue Stratham, NH 03885	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE 
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CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

5/24/2019

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Foy Insurance Group - Pembroke 570 Pembroke St. Pembroke NH 03275	CONTACT NAME: Barbara Breen PHONE (A/C, No, Ext): (603)224-1121 E-MAIL ADDRESS: CLPembroke@foyinsurance.com	FAX (A/C, No): (603)224-4827
	INSURER(S) AFFORDING COVERAGE	
INSURED Wilcox & Barton Inc 12 Perley Road, Unit 15 Derry NH 03038	INSURER A: Hartford Ins Co of the Midwest NAIC # 54133	
	INSURER B: Union Insurance Co NAIC # 25844	
	INSURER C:	
	INSURER D:	
	INSURER E:	

COVERAGES

CERTIFICATE NUMBER: Master 01/2019 to 2020

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:						EACH OCCURRENCE	\$
							DAMAGE TO RENTED PREMISES (Ea occurrence)	\$
							MED EXP (Any one person)	\$
							PERSONAL & ADV INJURY	\$
							GENERAL AGGREGATE	\$
							PRODUCTS - COMP/OP AGG	\$
								\$
B	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS			CAA0380163-18 Form# AI CA 59 Auto Expansion End't	1/10/2019	1/10/2020	COMBINED SINGLE LIMIT (Ea accident)	\$ 1,000,000
							BODILY INJURY (Per person)	\$
							BODILY INJURY (Per accident)	\$
							PROPERTY DAMAGE (Per accident)	\$
								\$
	UMBRELLA LIAB <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$						EACH OCCURRENCE	\$
							AGGREGATE	\$
								\$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N N	N/A	3A States: CT,MA,NH,RI,VT 04WECLI2318	1/10/2019	1/10/2020	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER	
							E.L. EACH ACCIDENT	\$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	\$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	\$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Any Person or Organization including Certificate Holder is additional insured if written signed contract, agreement, or permit to such exists prior to loss subject to form indicated above in Business Auto section.

CERTIFICATE HOLDER**CANCELLATION**

Town of Stratham Attention: David Moore Town Administrator 10 Bunker Hill Avenue Stratham, NH 03885	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE Michael Foy/PBARB
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ACORD 25 (2014/01)

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