
PREPARED BY

EnviroForensics, LLC
825 North Capitol Avenue
Indianapolis, Indiana 46204
866.888.7911



September 28, 2023

Josie Schultz
Wisconsin Department of Natural Resources
2984 Shawano Avenue
Green Bay, WI 54313-672

Subject: Further Site Investigation Work Plan & Request for DERF Assistance
Former Barb & Ron's Cleaners
1700 South Lawe Street
Appleton, Wisconsin 54915
WDNR BRRTS#: 02-45-297744

Dear Ms. Schultz,

On behalf of Glass Vault, LLC, EnviroForensics LLC (EnviroForensics) is pleased to present this Further Site Investigation Work Plan & Request for DERF Assistance to conduct further site investigation (FSI) activities for the Former Barb and Ron's Cleaners facility located at 1700 South Lawe Street in Appleton, Wisconsin (Site). The FSI work plan was prepared in response to demands for achieving closure as stated in the Wisconsin Department of Natural Resources (WDNR) letter, dated October 15, 2021, and subsequent teleconference with the WDNR on March 20, 2023. Additionally, this letter presents a formal request for funding assistance to perform the necessary work through the WDNR Dry Cleaner Environmental Response Program (DERP) along with an attached variance request letter for performing the consultant bidding procedure.

According to the WDNR letter and meeting outcome, EnviroForensics understands that the WDNR demands the following actions be performed before considering a request for closure:

1. Additional vertical delineation for groundwater impacted with chlorinated volatile organic compounds (VOCs) near PZ-1 at the Site.
2. Additional rounds of groundwater monitoring activities for the Site's well network, including the sampling and laboratory analysis for VOCs, specific dissolved gases (methane, ethane, ethene), and per- and polyfluoroalkyl substances (PFAS).

3. Additional vapor intrusion (VI) assessments during summer and winter seasons at three (3) offsite residential properties to the east and west of the Site to complete the exposure pathway evaluation.

The proposed actions to meet these WDNR demands along with the anticipated implementation schedule and estimated costs for DERF reimbursement are discussed herein.

1.0 PIEZOMETER INSTALLATION

EnviroForensics will complete soil boring advancement activities and the installation of one (1) deep piezometer (that will be identified as “PZ-1D”) at a location adjacent to PZ-1. The deep piezometer, PZ-1D, will be installed and constructed to screen the interval of 40 to 45 feet below ground surface (bgs) in accordance with the procedures and requirements detailed in WAC Chapter NR 141. The existing well network and proposed piezometer location are depicted on **Figure 1**. The new piezometer is located at the Site and EnviroForensics has already obtained an access agreement with the property owner.

1.2 Soil Boring Advancement

In accordance with safe work practices and as required by state law, EnviroForensics will contact Wisconsin Digger’s Hotline subsurface utility protection service at least 72 hours prior to the anticipated onset of subsurface work at the Site. As a result, subsurface utilities and structures owned or managed by member companies and municipalities will be located by an independent contractor service. EnviroForensics will also contract with a private underground utility locating service to provide additional confidence regarding the position of potential underground hazards at the drilling locations. The private locating service will use geophysical and electromagnetic equipment to locate underground utilities across the entire Site. Utility information will be added to the Site plan.

Soil boring advancement for PZ-1D will be completed via direct-push methods. Additionally, the boring location will be placed south of PZ-1 to avoid advancing through the residual soil contamination that was left in place during previous remedial excavation activities; thus, preventing the potential for cross-contamination to the deeper intervals. Soil cores will be continuously collected in 4-foot long by 1.5-inch diameter vinyl acetate plastic sample sleeves. Field screening at each 2-foot interval will be conducted using a photoionization detector (PID) meter, the results of which will be recorded. Soil lithology will be continuously described in accordance with the Unified Soil Classification System (USCS) and recorded on boring logs.

EnviroForensics will collect up to two (2) soil samples for the purpose of characterizing the investigation-derived media (IDM) drum(s) containing soil. Sample intervals will be based on

physical observations and PID readings. The samples will be collected in laboratory-supplied containers, labeled, logged on a chain-of-custody form, and submitted to a state-certified laboratory for analysis of VOCs by United States Environmental Protection Agency (USEPA) SW-846 Test Method 8260.

1.2 Piezometer Construction

The piezometer will be constructed of 2-inch diameter ID, 0.010-inch slotted PVC well screen, with polyvinyl chloride (PVC) riser extending to the ground surface. Sand pack materials will be placed from the bottom of the screen up to two feet above the well screen. A hydrated bentonite pellet seal will extend 2-feet upward from the top of the sand pack. This will be followed by bentonite/cement grout to approximately 1 foot below ground surface. Expandable locking caps and locks will be placed on each well. A traffic-rated flush-mount well box set in concrete will be installed to protect the piezometer.

Upon completion of the installation of the new monitoring well, a licensed surveyor will record the elevation and location of this monitoring well by standard surveying methods. A vertical elevation survey will be conducted to establish the elevation of the monitoring well relative to above mean sea level (amsl). The horizontal and vertical grid coordinates of the monitoring well will be recorded to within 0.5-foot and 0.01-foot, respectively. Horizontal coordinates will be referenced to the State Plane Coordinate System.

1.3 Piezometer Development

The newly installed piezometer will be developed via surging and purging methods to remove fines from the sand pack until the water runs clear or 10 well volumes are removed. If the piezometer can be purged dry, the piezometer will be surged and then slowly purged dry using a disposable bailer(s). Non-dedicated development equipment will be decontaminated between each monitoring well.

2.0 GROUNDWATER MONITORING

EnviroForensics will conduct two (2) groundwater monitoring events that include depth to water measurements and sample collection from all existing monitoring wells. Once the new piezometer is installed, the monitoring network will consist of 14 water table wells (MW-800, MW-1100, MW-1300, MW-1600, MW-1700, MW-1900, MW-2300 through MW-2700, MW-4100R, SB-5R) and four (4) piezometers (PZ-1, PZ-1D, PZ-800, and PZ-3400).

Well caps will be removed at least 15 minutes prior to collecting water level measurements to allow groundwater in the monitoring well to equilibrate with the atmospheric pressure. The depth to water in each well will be measured to the nearest 0.01 of a foot using an electronic sounding device and recorded on sampling forms prior to sample collection activities. EnviroForensics anticipates that groundwater purging and sampling will be performed using new, disposable bailers. Field parameters including pH, specific conductivity, temperature, oxidation-reduction potential (ORP), and dissolved oxygen (DO) will be measured during purging and recorded on a field sampling form. Wells that purge dry will be allowed to recharge for a minimum of four (4) hours prior to sample collection.

Groundwater samples will be collected from each well and transferred directly into laboratory-provided containers containing hydrochloric acid preservative and placed into a cooler with ice. Samples will be submitted under appropriate chain-of-custody procedures to a state-certified laboratory for analysis of VOCs according to USEPA SW-846 Method 8260. For quality assurance/quality control (QA/QC) purposes, duplicate and equipment blank samples will be collected at a frequency of one (1) sample per ten (10) investigative samples during each monitoring event. Purge water will be temporarily stored in 55-gallon drums.

In addition to VOCs, samples will be collected from select wells for the following analytical parameters:

- Groundwater samples collected from MW-1600, MW-1900, MW-2600, and MW-4100R, will be submitted for laboratory analysis of dissolved gases (methane, ethane, ethene).
- MW-1600, MW-2600, and MW-4100R will be sampled for PFAS in accordance with the protocol outlined in EnviroForensics' standard operating procedures for PFAS sampling (**Attachment 1**). These groundwater samples will be submitted for laboratory analysis for the 36 compounds identified in the WDNR *Wisconsin Laboratory Accreditation Program PFAS Certification Offerings – 5.1.19* and includes: 13 carboxylic acids; 12 sulfonic acids; 7 sulfonamides, sulfomidoacetic acids, and sulfonamidoethanols; and 4 replacement chemicals.

If PFAS is detected at concentrations exceeding the proposed regulatory standards, then additional sampling from these four (4) wells and other site wells may be necessary.

3.0 VAPOR INTRUSION ASSESSMENTS

EnviroForensics will perform two (2) VI sampling events, one (1) summer and one (1) winter, at the two (2) residential properties of 1713 South Lawe Street and 613 East Dennison Street and one (1) round of VI sampling during winter season at 1631 South Lawe Street. Each VI sampling

event will include indoor air sampling paired with sub-slab vapor (SSV) sampling. The properties identified by WDNR for the additional VI sampling are shown on **Figure 2**. The sampling plans for each property during one (1) summer event (C103d1) and one (1) winter event (C103d2) are outlined in the tables below.

Summer Vapor Intrusion Assessment

Address	Passive Indoor Air Samples				Paired SSV	Passive Outdoor Air	Total
	Crawl	Basement	1 st Floor	2 nd Floor			
613 Dennison Street	NA	1	1	NA	1	1	4
1713 Lawe Street	NA	1	1	1	1	1	5
Total Air Samples							9

Winter Vapor Intrusion Assessment

Address	Passive Indoor Air Samples				Paired SSV	Passive Outdoor Air	Total
	Crawl	Basement	1 st Floor	2 nd Floor			
613 Dennison Street	NA	1	1	NA	1	1	4
1631 Lawe Street	NA	1	1	NA	1	1	4
1713 Lawe Street	NA	1	1	1	1	1	5
Total Air Samples							13

The scope of work details for performing the VI sampling activities are summarized below.

3.1 Access Coordination

EnviroForensics will request access with the new owners for each of the residences listed above for the purpose of collecting sub-slab vapor and indoor air samples.

3.2 Indoor Air Sampling

To meet WDNR demands, indoor air samples will be collected via passive vapor sampling methods. The samplers will be of the absorbent tube type and supplied by Beacon Environmental of Forest Hill, Maryland. The type of absorbent will be selected based on site contaminants previously detected and will be placed at a level of 3-5 feet above the floor surfaces coinciding with the average breathing zone for adults and children. The passive

samplers will be left in place for between 7-10 days to gain a time-weighted average over that period.

Prior to sampling, an inspection will be conducted to identify and inventory materials that could potentially contribute to indoor air conditions, unrelated to VI issues. Suspect items identified during the inspection will be listed on a pre-sampling inspection form for later reference or potential removal. The results of all pre-sampling inspection activities will be recorded on an Indoor Air Building Survey Form. Additionally, there is an active mitigation system operating at the 1631 South Lawe Street residence, and the system will be deactivated at least 24-hours before commencement of indoor air sampling activities at this property.

Samples will be identified by project number, address, and sample type “IA” for indoor air samples or “OA” for outside air samples (e.g., 6403-613 Dennison-IA-1). Samples will be submitted to Beacon Environmental under chain-of-custody for analysis of select VOCs related to dry cleaning solvent according to EPA Test Method TO-17. The analytical results of the air samples will be compared to Vapor Action Levels (VALs) established by WDNR.

3.3 Sub-Slab Vapor Port Installation

Stainless-steel Vapor Pin® sub-slab vapor sampling ports were previously installed at the residence of 1631 South Lawe Street by EnviroForensics in 2016. EnviroForensics will inspect the condition of this port to confirm its integrity for sampling or will replace the port, if warranted. EnviroForensics will install Vapor Pin® sub-slab vapor sampling ports at the 631 Denison and 1713 South Lawe Street to facilitate vapor sample collection. Installation will consist of initially drilling a 1 ½-inch diameter hole approximately 1 ¼-inch deep into the concrete slab using an electric impact-drill. Subsequently, a 5/8-inch diameter hole will be drilled in the center of the previously drilled hole and through the concrete slab. The Vapor Pin® sub-slab vapor sampling port, which is constructed with a silicon sleeve to provide a mechanical seal between the sample port and the slab, will be inserted in the 5/8-inch diameter hole using a dead blow hammer. The sampling ports will be capped during installation until the sampling activities are initiated. Vapor Pin™ stainless steel secure flush mount covers will be placed over the sampling ports following sampling activities to facilitate future activities as additional sampling may be necessary.

3.4 Sub-Slab Vapor Sampling

Sub-slab vapor samples will be collected immediately following the conclusion of indoor air sampling to avoid the incorporation of possible sub-slab vapors within indoor air during the sub-slab sampling process. To ensure that the sub-slab vapor samples are representative of subsurface conditions, water dam leak testing will be performed at each sample port. The

integrity of the sample tubing and fittings will be verified prior to sample collection by conducting a negative pressure test.

All samples will be collected through dedicated polyethylene tubing connected to the sub-slab vapor sampling port. Ambient air will be purged from the tubing prior to initiating sample collection. Vapor beneath the concrete slab will then be drawn into a 1-liter vacuum canister fitted with a laboratory supplied regulator that limits the flow rate to approximately 200 milliliters per minute (mL/min). Samples will be identified by project number, address, and unique ID (e.g., 6403-613 Dennison-SSV-1). Following the completion of sampling activities, the canisters will be submitted to an environmental laboratory for analysis of select VOCs related to dry cleaning solvent according to U.S. EPA Method TO-15. The analytical results of the sub-slab vapor samples will be compared to Vapor Risk Screening Levels (VRSLs) established by WDNR.

4.0 IDM MANAGEMENT & DISPOSAL

IDM will consist of soil cuttings generated during the piezometer installation and groundwater generated during piezometer development and well purging prior to sample collection. The IDM will be placed in 55-gallon steel drums and staged at the Site. Soil IDM will be characterized via the soil samples collected during drilling and the water IDM will be characterized via the individual well samples. Based on the concentrations of contaminants detected in previous soil and monitoring well samples, EnviroForensics anticipates that all IDM will be characterized as non-hazardous. A licensed contractor will be retained to transfer the IDM off-site for proper disposal.

5.0 DATA EVALUATION & REPORTING

The groundwater and VI assessment data will be evaluated and summarized with comparison to regulatory standards as laboratory results are received. Data summary tables and preliminary figures will be generated for the purposes of data visualization and discussion with project stakeholders. Further data analysis and interpretation may be incorporated into future work plans, as needed, and into a comprehensive report to be prepared at the conclusion of these further investigations.

Additionally, following each VI sampling event, EnviroForensics will prepare a sample results notification for the property owners in accordance with WDNR regulations. The letter-format notifications will include a description of the sampling procedures, a figure depicting the sample locations, and a results summary table with comparisons to WDNR screening/action levels.

6.0 SCHEDULE

Upon receiving WDNR approval for the above work plan, access coordination with offsite residences will begin immediately along with contracting and scheduling for private utility clearance, drilling, surveying, and IDM management. The deep piezometer installation can be completed within 6 weeks of receiving WDNR approval. The investigative activities will be combined as much as possible to minimize the number of mobilizations. The off-site vapor intrusion sampling event will be performed during the summer and winter months as recommended by WDNR and noted above. The groundwater monitoring events will be conducted on quarterly basis, following the installation of the new piezometer. IDM will be removed from the Site on three (3) occasions: after piezometer installation and development, and after each groundwater monitoring event.

The projected work schedule for FSI completion is summarized in the table below:

Task	Description	Estimated Time of Completion
1	WDNR Review/Acceptance of FSI Work Plan/DERF Request	TBD
2	Piezometer Installation	August/September 2023
3	Offsite Access/Summer VI Assessment	August/September 2023
4	Groundwater Monitoring	3Q 2023 & 4Q 2023
5	Winter VI Assessment	January/February 2024
6	Report for WDNR review	2Q 2024

7.0 COST ESTIMATE

To accommodate our budget tracking and invoicing procedures, the overall FSI discussed above will be identified as Phase C103, with the individual work elements designated as sub-phases. This tracking system allows us to effectively manage all work tasks to meet schedule and budget and allows us to fashion detailed invoices.

Upon approval of DERP funding for the continuation of this project, we will complete WDNR Form 4400-214D as required to allow accurate tracking of DERP expenditures. Subcontracted service expenses including drilling, laboratory, surveying, IDM disposal are actual charges with no markup. Detailed cost breakdown sheets showing DERP rates are provided in **Attachment 2**. The following table outlines the tasks and cost summary:

TASK	TOTAL COST
Phase C103a - Work Plan Development	
· Prepare and submit work plan to WDNR for groundwater delineation and monitoring and VI assessment demands for closure.	\$2,500.25
Phase C103b - Peizometer Installation	
· Mobilize 1 field personnel for up to 2 days to perform utility locating and installation of 1 peizometer to screen 40 to 45 feet.	\$9,706.25
Phase C103c - 2023 Groundwater Monitoring and Data Analysis (2 Events)	
· PER EVENT: Mobilize 2 field personnel for up to 4 days to perform groundwater monitoring well gauging and sampling at 17 wells. Laboratory analysis includes 17 samples for VOCs, 4 samples for Dissolved Gases, and 3 samples for PFAS.	\$19,186.30
TOTAL COST FOR TWO EVENTS	\$38,372.60
Phase C103d1 - Summer Vapor Intrusion Assessment and Data Analysis	
· Mobilize 1 field personnel to perform vapor intrusion assessments at 2 residences. Laboratory analysis includes indoor air, sub-slab vapor, and outdoor air samples for VOCs. Time included for two (2) 1-day mobilizations for passive indoor air sampling over 7-10 day period and preparation of results letters for each owner.	\$11,064.61
Phase C103d2 - Winter Vapor Intrusion Assessment and Data Analysis	
· Mobilize 1 field personnel to perform vapor intrusion assessments at 3 residences. Laboratory analysis includes indoor air, sub-slab vapor, and outdoor air samples for VOCs. Time included for two (2) 2-day mobilizations for passive indoor air sampling over 7-10 day period and preparation of results letters for each owner.	\$14,588.04
Phase C103e - Closure Request Reporting & Regulatory Coordination	
· Prepare and submit report to WDNR for reporting and requesting closure	\$11,670.00
Phase C103f - IDM Management & Disposal	
· Perform and complete management of IDM for disposal	\$6,040.00
TOTAL	\$93,942

All services provided in support of this proposal will be billed on a time-and-basis.

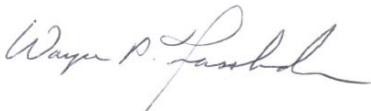
Assumptions and Limitations

There are inherent limitations in the evaluation of subsurface conditions and that certain conditions may not be detected. The proposed cost assumes that permission will be granted by all property owners and/or tenants to conduct investigation activities; that normal conditions will be encountered; and that any delays, obstructions, or other limitations outside the control of EnviroForensics may result in additional cost to the Project. In these situations, EnviroForensics will contact you via telephone to discuss the issue or to leave a voicemail with a summary. A written Change Order summarizing the additional required work activities and/or estimated costs will then be issued, if warranted, and submitted via email.

We trust the information presented above addresses the WDNR demands for the project. We respectfully request the WDNRs approval for the proposed FSI activities and assistance from DERF. If you have any questions or require additional information, please do not hesitate to contact either of the undersigned.

Sincerely,

EnviroForensics, LLC



Wayne Fassbender, LPG
Senior Project Manager
wfassbender@enviroforensics.com



Nicholas Hill, LPG
Senior Project Manager
nhill@enviroforensics.com

FIGURES

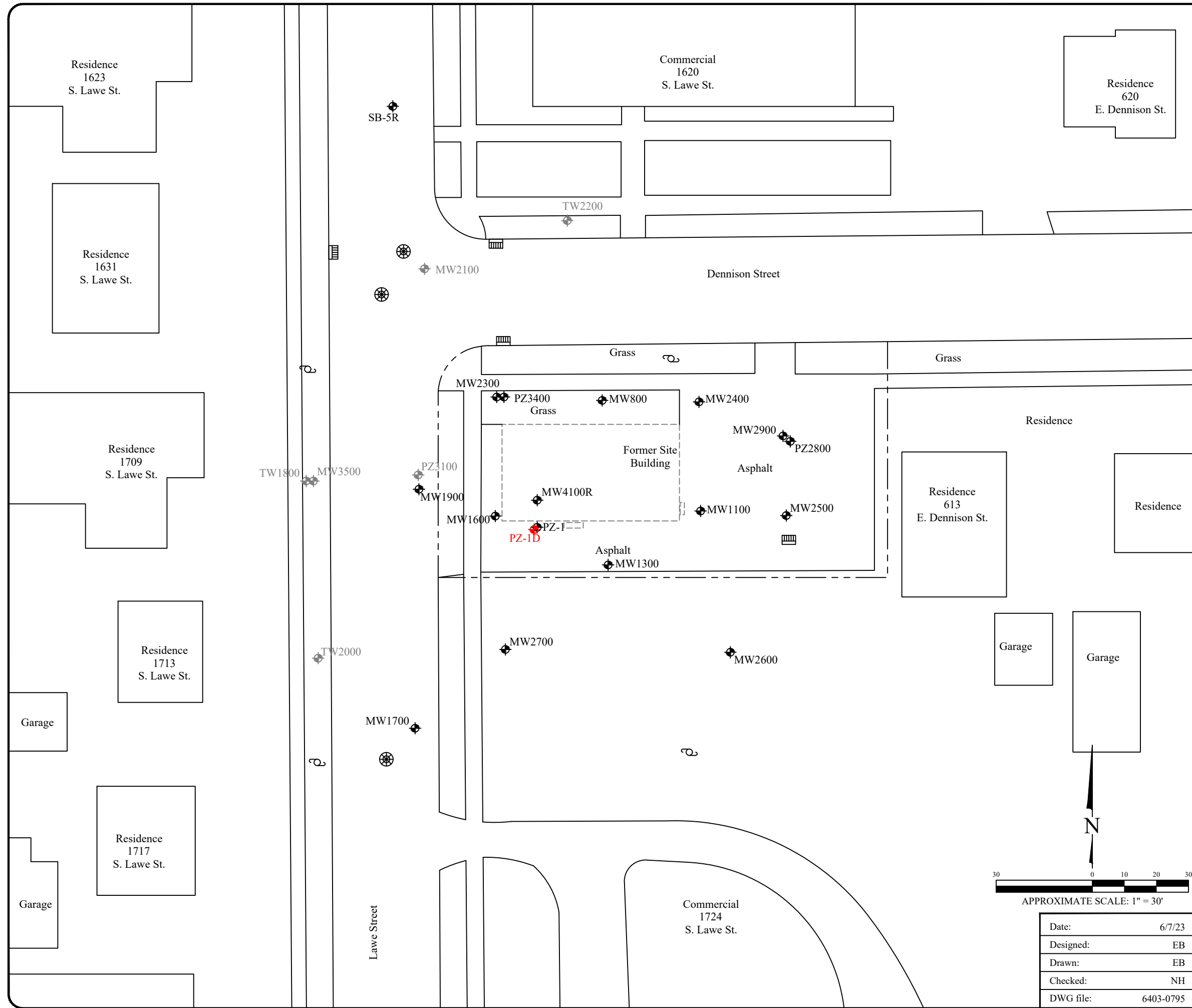
- 1 Proposed Piezometer Location
- 2 Vapor Intrusion Conditions and Proposed Sampling Locations

ATTACHMENTS

- 1 Standard Operating Procedures for PFAS Sampling
- 2 Cost Backup Details

Figures

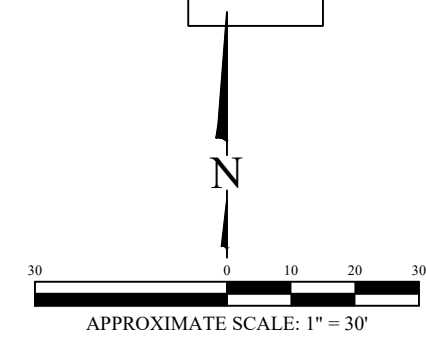




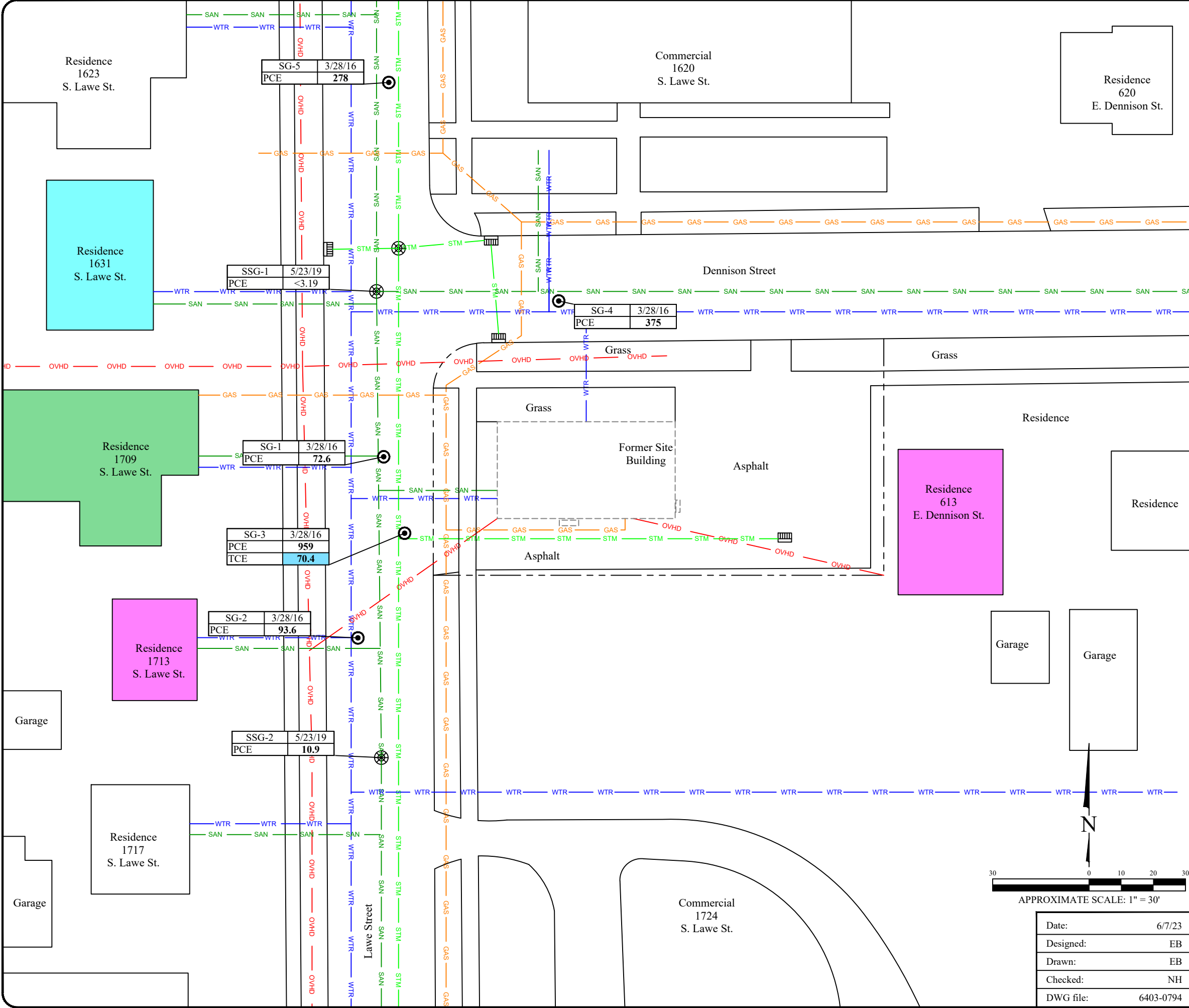
Legend

- Property boundary
- ⊕ Utility Pole
- ⊞ Catch Basin
- ⊗ Manhole
- MW4100R ⊕ Monitoring well location
- MW4100R ⊕ Monitoring well location is abandoned or destroyed

- Notes:
- MW4100 was abandoned during 2018 excavation and replaced with MW4100R
- PZ-1D ⊕ Proposed piezometer location



PROPOSED GROUNDWATER PIEZOMETER LOCATION	
Former Barb and Ron's Cleaners 1700 South Lawe Street Appleton, Wisconsin	
	Figure
825 North Capitol Avenue • Indianapolis, IN 46204 EnviroForensics.com	1
Date: 6/7/23 Designed: EB Drawn: EB Checked: NH DWG file: 6403-0795	Project 6403



Legend

- Property boundary
- SG-1 Soil gas sample
- SSG-1 Sanitary sewer gas sample collected from manhole

Analytes	Small Commercial Vapor Risk Screening Level and Sanitary Sewer Gas Screening Level	Residential Vapor Risk Screening Level and Sanitary Sewer Gas Screening Level
PCE	5,800	1,400
TCE	290	70

- Note:
- All results reported in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)
 - PCE = Tetrachloroethene
 - TCE = Trichloroethene
 - Active vapor mitigation system was installed at 1631 S. Lawe Street and was last known to be operating in March 2016.

- Vapor Intrusion Assessment completed in building
- Proposed Winter paired indoor air/sub-slab vapor sampling Event
- Proposed Summer and Winter paired indoor air/sub-slab vapor sampling Event

SG-3	3/28/16
PCE	959
TCE	70.4

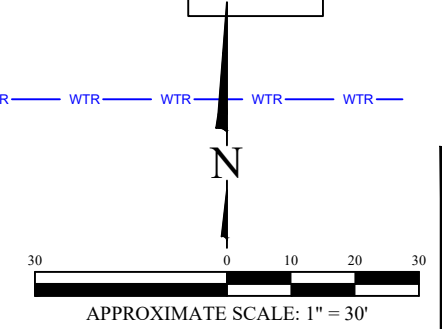
SG-2	3/28/16
PCE	93.6

SSG-2	5/23/19
PCE	10.9

SG-5	3/28/16
PCE	278

SSG-1	5/23/19
PCE	<3.19

SG-4	3/28/16
PCE	375



VAPOR INTRUSION CONDITIONS AND PROPOSED SAMPLING LOCATIONS

Former Barb and Ron's Cleaners
1700 South Lawe Street
Appleton, Wisconsin

<p>Date: 6/7/23</p> <p>Designed: EB</p> <p>Drawn: EB</p> <p>Checked: NH</p> <p>DWG file: 6403-0794</p>	<p>Figure</p> <p>2</p> <p>Project</p> <p>6403</p>
--	---

825 North Capitol Avenue • Indianapolis, IN 46204
EnviroForensics.com

ATTACHMENT 1

Standard Operating Procedures for PFAS Sampling

STANDARD OPERATING PROCEDURE

Sampling Protocol for Per-and Polyfluoroalkyl Substances (PFAS)

INTRODUCTION

State regulatory agencies are currently developing sampling guidance, soil and groundwater standards, and other procedures aimed at the regulation of per- and polyfluoroalkyl substances (PFAS). Along with the developing regulatory procedures, there exist several sampling guidance resources from various agencies such as the State of Michigan, the U.S. Department of Defense, the U.S. Environmental Protection Agency, the Interstate Technology & Regulatory Council, and a few analytical laboratories such as Pace Analytical and Test America. This Standard Operating Procedure (SOP) was based on the procedures and guidance developed to date by these agencies. Since regulations and standards regarding PFAS are evolving, it is anticipated that this SOP will require periodic modifications.

When sampling for PFAS, this SOP should be used as a supplement to modify existing EnviroForensics SOP's related to standard groundwater and soil sampling procedures.

Although similar to standard sampling methods for other chemical compounds, special precautions are necessary when sampling for PFAS due to the laboratory detection limits that are in the parts per trillion range, and the proliferation of PFAS in common consumer products. This greatly raises the potential for these compounds to be inadvertently introduced to the samples, resulting in false-positive detections.

The sampling precautions and protocol for PFAS are rigorous and there are many potential opportunities for mistakes in the field that can result in cross-contamination, or the inadvertent introduction of PFAS into the sample media. **It is required that any field investigations for PFAS be conducted by a two (2) person team.** One (1) person is assigned the actual sample collection protocol and the other person is assigned to maintaining the integrity of the sample throughout the sampling process.

PRE-SAMPLING CONSIDERATIONS

As mentioned, PFAS have been detected in many everyday products including cosmetics, soaps, sun-screen, insect repellent, and many products having water repellents and/or stain-resistant coatings to include carpeting, car upholstery, some Tyvek suits, water proof leather boots, garments, and rain-wear. Several agencies have prepared a list of acceptable materials that have

been tested free of PFAS; however, there is a long list of items that have not been tested. This SOP provides some acceptable materials that can be safely used before and during sampling for PFAS, along with comments regarding materials that should not be used and various recommendations to improve sample integrity.

A limited number of readily available and recognizable products are presented below instead of listing all options. For example, there are numerous sun-screen and insect repellent products that have been determined to be PFAS-free (and the list will likely grow over time); however, only a few readily available and recognizable products are listed or recommended here to reduce the number of product decisions that project staff may need to make. If any other product is proposed for use, but is not identified in this SOP as PFAS-free, then that product or substance will need to be analyzed or otherwise determined to be PFAS-free before it can be used.

Personal Hygiene and Care Products

Many personal care products may contain PFAS. These products include soaps, shampoos, cosmetics, deodorants, and dental products including floss. By following this SOP it is not likely that these types of products will come into direct contact with a sample. However, it is **highly recommended that the use of personal care products be curtailed the day of sampling** until more information is available for personal care products that do not contain PFAS.

Personal Protective Equipment

Many common types of protective equipment including clothes, jackets, boots, gloves, Tyvek products, sunscreen, and insect repellents contain PFAS. For common clothing, jackets, boots, and gloves, the PFAS occurs in water repellent and stain repellent treatments that have been applied to the clothing and outer wear. The use of fabric softeners during laundering may also impart PFAS to clothing. Rain suits made of breathable, yet water repellent, materials typically have PFAS in them. Items made of rubber or PVC do not contain PFAS.

Items that may be worn and are known to be free of PFAS include:

- Powderless nitrile gloves;
- Clothing made of natural and synthetic fibers (preferably cotton) and that have been **washed at least six (6) times and without using fabric softeners or dryer sheets;**
- Polyvinyl chloride (PVC) or wax-coated fabrics, including rain gear;
- Any boots or over-boots made of polyurethane or PVC;
- Neoprene;
- Un-coated Tyvek® coveralls;

- Sunscreen: Banana Boat Sport Performance Sunscreen Lotion Broad Spectrum SPF 30; or Coppertone Sunscreen Lotion Ultra Guard Broad Spectrum SPF 50; and
- Insect repellent: Off Deep Woods.

Items that **may not** be worn due to the potential for containing PFAS:

- Coated Tyvek® materials as they do contain PFAS;
- Leather or other steel-toed work boots unless polyurethane or PVC over-boots are used;
- Clothing treated with stain or water repellents;
- Clothing and outerwear that has been dry cleaned; and
- Any rain gear having Gore-Tex™ or other water-proof, or water-repellent fabrics or coatings.

Field Sampling Equipment

Carefully select sampling equipment that directly contacts the sample to ensure it is free from PFAS. Submersible pumps, down-hole instruments, and tubing used for groundwater sampling could have external or internal parts that are not PFAS-free. Check with the manufacturer to evaluate whether there are PFAS-containing components in the equipment. If unsure collect an equipment blank and have it analyzed for PFAS.

Some materials that are known to be PFAS-free include:

- Metals (metal components used for groundwater sampling are typically either stainless steel or brass);
- Nylon;
- PVC (bailers and pump parts);
- High-density polyethylene (HDPE);
- Polypropylene and polyurethane (bailer rope and tubing);
- Silicone (tubing); and
- Acetate (drill core sleeves).

Materials that may contain PFAS and **are not** to be used include:

- Low-density polyethylene (LDPE) tubing. LDPE does not inherently contain PFAS, but may have acquired it through materials used in the manufacturing process. LDPE Zip-loc® sample bags can be used if they do not contact the sample media directly;
- Aluminum foil;

- Teflon-lined tubing or equipment having Teflon components;
- Any product or equipment having any “fluoro” prefix;
- “Rite in the Rain” or other all-weather field books; and
- Sharpie markers, post-it notes, or other adhesive paper products.

In addition, **do not** transport field equipment in direct contact with vehicle carpet or seats. These materials typically contain PFAS in stain and water repellent applications. If equipment must be set on seats or carpet, then transport it in a closed container.

Sample Collection Recommendations:

1. If the depth to water is shallow, use disposable PVC bailers with polypropylene or polyurethane rope.
2. Collect an equipment blank from or through any sampling equipment before its use in the field, unless all equipment materials are inherently PFAS-free, or the manufacturer can guarantee that all components are PFAS-free.
3. Determine if the measuring tape on the water level meter contains PFAS, see #2 above.
4. If using a peristaltic pump to collect shallow water table samples, use only new, unused, tubing that is inherently PFAS-free at each sample location (HDPE, nylon, polyurethane, silicone).
5. If using any other submersible pump in deeper water table conditions, see #2 above.
6. If using any other down-hole data collection probe, see #2 above.
7. For longer-term monitoring of confirmed PFAS in groundwater, consider using dedicated and PFAS-free equipment such as dedicated pumps. Passive Diffusion Bags may be used if equipped with HDPE hydrasleeves and the de-ionized water is PFAS-free.
8. If setting temporary wells, collecting soil samples, or using any other drilling method, ensure that the core sleeves are either acetate, PVC, or HDPE (see #2 above).
9. Use only stainless steel tools or wooden disposable tongue depressors to collect soil sub-samples from drill cores.
10. Use only aluminum or Masonite clipboards with loose paper (non-water resistant) to record field notes.
11. Use only ball-point pens to record field data, prepare sample labels, etc.

Decontamination

It is extremely important that any **water** used for decontamination of equipment or hand washing before, between, and after sampling be free of PFAS. Commercially available distilled water sources should be analyzed for PFAS before its use in the field and should come in an HDPE container. If using municipal water, check with the municipality to determine if the source is

PFAS-free. If that cannot be readily determined, then sample the water for PFAS before its use.

All rental equipment and in-house equipment previously used at other sites needs to be decontaminated before its use. Use only Alconox®, Liquinox®, or Citranox® to decontaminate equipment or wash hands, and use only PVC or HDPE brushes for scrubbing equipment.

Decontaminate equipment before collecting samples, between samples, and at the end of the day. Triple-rinse equipment after cleaning, and change nitrile gloves after decontaminating equipment between sample locations.

FIELD SAMPLING PROCEDURES

Sample Handling

Sample handling procedures are implemented to ensure that sample integrity is maintained throughout the sample collection process. Therefore, the procedures for collecting PFAS samples are not unlike typical sample handling procedures already employed by EnviroForensics personnel. However, due to the pervasiveness of PFAS in the environment, low laboratory detection limits, and possibility of cross-sample contamination, the sample handling procedures for PFAS are more rigorous. EnviroForensics uses a clean hands/dirty hands approach during sample handling activities. One person handles all of the sampling equipment and the other person handles only the sample containers. Specific sample handling procedures with respect to PFAS include:

1. Label sample containers and zip-lock bags in the office before visiting the Site, or in a staging area, and keep the containers in a PFAS-free cooler for use on site. Wash hands and don new powderless nitrile gloves before sample collection.
2. The person designated “dirty hands” handles the sampling equipment only. The person designated “clean hands” holds the sample container and seals the container lid after collecting the sample.
3. **Do not** touch anything other than decontaminated field sampling equipment or sample containers after donning clean nitrile gloves. If you do by accident, change gloves before proceeding further.
4. **Do not** touch the sample or let the outside of the sampling equipment (tubing, bailer, etc.) touch the sample container during sample collection.
5. **Do not** set the sample container on the ground or other surfaces while collecting the sample. That is why there are two people involved.

6. Hands must be washed and new powderless nitrile gloves donned after any decontamination procedure, or (if using all disposable materials) before collecting another groundwater or soil sample;
7. Double bag individual soil or groundwater samples in zip-loc bags and immediately place samples on ice in the cooler.

Additional Considerations

1. Wash hands and change gloves frequently during a long decontamination procedure.
2. Set up a staging area away from the sample collection area for logging field notes, labeling samples containers before sampling, and for taking breaks.
3. **Do not bring any fast food to the site or go off site for lunch.** Fast food wrappers typically contain PFAS. Instead, prepare a lunch and bring it in a plain paper bag to consume in the staging area.
4. Wash hands thoroughly and don clean nitrile gloves following lunch and other breaks.

Laboratory

Many states are currently developing PFAS regulatory standards and laboratory certification programs. There are many compounds of concern contained in the overall PFAS family of chemicals. If State standards have not yet been developed, check with the State regulatory agency to determine the particular compounds to analyze for. Some analytical laboratories have been certified by various agencies such as: State regulatory agencies; Department of Defense; Department of Energy; National Environmental Laboratory Accreditation Program; and International Organization for Standardization. That does not mean that they are set up to analyze for all PFAS chemicals of concern to a particular State agency. Check with the laboratory after determining the State requirements.

Do not use glass sampling containers, as glass tends to adsorb PFAS. Instead, use HDPE or polypropylene containers. Container caps should be of the same material with no Teflon™ seal. Confirm that coolers used to store and ship laboratory samples are PFAS-free. A qualified laboratory will provide the appropriate media for these protocols.

For groundwater samples, do not filter or use a chemical preservative. For samples of municipal drinking water (also possibly used for equipment decontamination) the analytical methods call for preservation with Trizma® to buffer and remove chlorine. Check with the laboratory regarding how many sample containers are needed per sample and appropriate preservatives. Place samples separately in double zip-loc® bags and place immediately on ice. Maintain temperature of the samples below 50° F (10° C). Use regular ice. **Do not use “blue ice” or**

chemical ice packs.

Seal Chain-of-Custody forms and other forms in a zip-loc® bag and tape to the inside lid of the cooler. Tape the cooler closed with a custody seal and ship to the analytical laboratory. Hold time is 14 days to the laboratory with extraction within 28 days.

The current U.S. Environmental Protection Agency (USEPA) developed, and validated analytical methods for PFAS are USEPA Method 533, and USEPA Method 537.1. USEPA Method 533 is focused on the detection of short-chained PFAS (4-12 carbon chain lengths), while Method 537.1 is more focused on detecting longer chain PFAS. Using both methods, up to 29 PFAS chemicals can be detected. These methods were developed for drinking water, but would also apply to groundwater. Soil samples are currently being analyzed for PFAS using a modified Method 537M. New sampling methods are evolving, so these methods may change in the future. Check with State agencies and the analytical laboratories to determine if the above stated methods are still valid or if other methods have been developed and approved by the USEPA and State.

ADDITIONAL FIELD QUALITY CONTROL (BLANKS)

Several different blanks will need to be collected during and possibly before field sampling operations. As previously mentioned, equipment blanks should be collected and analyzed before site work if any materials to be used in field sampling cannot be determined to be PFAS-free. There are additional blanks that will need to be collected during the actual sample collection process to ensure that quality control has been maintained and samples have not been contaminated by outside sources.

Equipment Blanks

Equipment blanks are collected to determine the adequacy of the decontamination process. Equipment blanks are not needed if using dedicated or disposable sampling equipment that has been determined to be PFAS-free.

- Collect an equipment blank by passing PFAS-free water through/over field sampling equipment before use; and
- Collect an additional equipment blank for every five (5) samples collected.

Have the analytical laboratory hold the equipment blanks for possible analysis. Some of the equipment blanks may be analyzed if one or more samples contain PFAS detections.

Field Reagent Blanks

Field reagent blanks (FRBs) are collected to determine if PFAS have entered the samples through the ambient environment, the sampling process in general, and the analytical laboratory sample handling processes. The analytical laboratory will supply a vial of PFAS-free water and an empty sample container for collecting the FRB. The analytical laboratory should be consulted regarding the number of FRBs that should be collected per sampling event.

The FRB will be opened during the collection of one (1) site sample and handled in the same way as that of the site sample. The laboratory provided PFAS-free water will be poured into the provided clean sample vial to mimic field sample collection procedures. As with equipment blanks, reserve the FRBs for possible laboratory analysis if PFAS is detected in any given sample.

Field Duplicates

Collect duplicate samples to measure both field and laboratory precision. The State regulatory agency should be contacted to determine the number of duplicate samples to collect. The State may require more duplicate samples than would be typical for other types of contaminants. For example, the Wisconsin Department of Natural Resources typically requires that one (1) duplicate sample be collected for every 10 groundwater samples that are collected. However, this is guidance (refer to *Groundwater Sampling Desk Reference*, PUBL-DG-037, September 1996) and they may require more when sampling for PFAS.

Trip Blanks

Typically, trip blanks are utilized to determine cross-contamination during shipment of samples and the possible introduction of contaminants in the laboratory environment due to volatile organic compounds. However, the analytical laboratory should be consulted regarding the need for a trip blank during PFAS sampling.

If requested by the laboratory, the laboratory will prepare the trip blanks using PFAS-free water and will ship them with the cooler. If required, include one (1) trip blank in each sample cooler. Do not remove the trip blank from the cooler during sampling, or transport to and from the site. The laboratory will decide whether to run the trip blank if one (1) or more site samples contain PFAS.

REFERENCES

California State Water Quality Control Board, Division of Water Quality, 2019, *Per- and Polyfluoroalkyl Substances (PFAS) Sampling Guidelines*, 9 pp.

Interstate Technology Regulatory Council, 2018, *Site Characterization Considerations, Sampling Precautions, and Laboratory Analytical Methods for Per- and Polyfluoroalkyl Substances (PFAS)*, 9 pp.

Michigan Department of Environmental Quality, 2018, *General PFAS Sampling Guidance*, 24 pp.

Pace Analytical Webpage, *PFAS Field Sampling Guide*: <https://www.pacelabs.com/assets/2020-01-14-pfas-field-sampling-guide.pdf>.

United States Department of Defense Webpage, *Bottle Selection and Other Sampling Considerations When Sampling for Per- and Poly-Fluoroalkyl Substances (PFAS)*: <https://www.denix.osd.mil/edqw/home/what-s-new/unassigned/edqw-pfas-sampling-factsheet-rev-1-2-july-2017/>.

United States Environmental Protection Agency Webpage, *EPA Drinking Water Laboratory Method 537 Q&A*: <https://www.epa.gov/pfas/epa-drinking-water-laboratory-method-537-qa>.

ATTACHMENT 2

Cost Backup Details

Project Title:
 Project Number/Name:
 Date:

2023 Closure GW Delineation and VI Assessments
 6403 - Barb & Rons
 6/9/2023



Phase C103a - Work Plan Development						
Labor - Office/Reporting		Price	Unit	# Units	Subtotal	Task Total
	Principal	\$ 210.00	hr	1.0	\$210.00	
	Sr Professional	\$ 195.00	hr	4.0	\$780.00	
	Project Professional	\$ 160.00	hr	8.0	\$1,280.00	
	Drafting	\$ 110.00	hr	2.0	\$220.00	
			hr		\$0.00	
					\$2,490.00	\$2,490.00

Direct Costs - Chargeable Equipment Expense		Rate (hr/unit)	# Hrs/Units	Rate (day/use)	# days/use	Subtotal	
	Color Copies	\$ 0.40	10			\$ 4.00	
Production	B/W Copies	\$ 0.25	25			\$ 6.25	
	Report CD Copy	\$ 5.00				\$ -	
						\$ 10.25	\$10.25
PHASE TOTAL							\$2,500.25

Project Title:
 Project Number/Name:
 Date:

2023 Closure GW Delineation and VI Assessments
 6403 - Barb & Rons
 6/9/2023



Phase C103b - Peizometer Installation								
Labor - Field		Price	Unit	# Units		Subtotal	Task Total	
	Staff Professional FS-II	\$ 125.00	hr	13.0		\$1,625.00		
			hr			\$0.00		
						\$1,625.00	\$1,625.00	
Labor - Office/Reporting		Price	Unit	# Units		Subtotal	Task Total	
	Sr Professional	\$ 195.00	hr	4.0		\$780.00		
	Project Professional	\$ 160.00	hr	7.0		\$1,120.00		
	Field Professional	\$ 115.00	hr	2.0		\$230.00		
			hr			\$0.00		
						\$2,130.00	\$2,130.00	
Contractors/Consultants		Price	Unit	# Units	Markup	Subtotal	Task Total	
	Utility Locate	\$ 750.00	LS	1.0	1.00	\$750.00		
	Driller	\$ 4,135.00	LS	1.0	1.00	\$4,135.00		
	Surveyor	\$ 600.00	LS	1.0	1.00	\$600.00		
						\$5,485.00	\$5,485.00	
Contractor/Consultant - Laboratory		Price	Unit	# Units	Markup	Subtotal	Task Total	
	Soil VOC 8260 dry wt (IDM)	\$ 70.00	ea	2.0	1.00	\$140.00		
						\$140.00	\$140.00	
Direct Costs - Expenses		Price	Unit	# Units	Markup	Subtotal	Task Total	
	Hotel	\$ 120.00	day	0.0	1.10	\$0.00		
	Meals	\$ 67.00	LS	0.0	1.10	\$0.00		
						\$0.00	\$0.00	
	Direct Costs - Chargeable Equipment Expense		Rate (hr/unit)	# Hrs/Units	Rate (day/use)	# days/use	Subtotal	
Vehicles	Field Vehicle - Full Day	\$ 30.00			\$ 150.00	1	\$ 150.00	
Meters	Elec. Well Sounder (Probe)				\$ 35.00	1	\$ 35.00	
Safety	Nitrile Sampling Gloves (Disposable)	\$ 0.22	50				\$ 11.00	
	Routine Field and Safety Equipment				\$ 60.00	2	\$ 120.00	
Production	Color Copies	\$ 0.40	10				\$ 4.00	
	B/W Copies	\$ 0.25	25				\$ 6.25	
	Report CD Copy	\$ 5.00					\$ -	
							\$ 326.25	\$326.25
PHASE TOTAL							\$9,706.25	

Project Title:
 Project Number/Name:
 Date:

2023 Closure GW Delineation and VI Assessments
 6403 - Barb & Rons
 6/9/2023



Phase C103c - 2023 Groundwater Monitoring and Data Analysis (2 Events)							
Labor - Field		Price	Unit	# Units		Subtotal	Task Total
Staff Professional FS-II		\$ 125.00	hr	43.0		\$5,375.00	
Field Professional FS-II		\$ 115.00	hr	43.0		\$4,945.00	
						\$10,320.00	\$10,320.00
Labor - Office Oversight / Reporting		Price	Unit	# Units		Subtotal	Task Total
Principal		\$ 210.00	hr	1.0		\$210.00	
Sr Professional		\$ 195.00	hr	4.0		\$780.00	
Project Professional		\$ 160.00	hr	8.0		\$1,280.00	
Field Professional		\$ 115.00	hr	5.0		\$575.00	
Drafting		\$ 110.00	hr	2.0		\$220.00	
						\$3,065.00	\$3,065.00
Contractor/Consultant - Laboratory		Price	Unit	# Units	Markup	Subtotal	
GW VOC 8260		\$ 60.00	ea	17.0	1.00	\$1,020.00	
GW VOC 8260 QA/QC		\$ 60.00	ea	6.0	1.00	\$360.00	
GW Methane,Ethane, Ethene		\$ 125.00	ea	4.0	1.00	\$500.00	
GW PFAS		\$ 290.00	ea	3.0	1.00	\$870.00	
GW PFAS QA/QC		\$ 290.00	ea	3.0	1.00	\$870.00	
Trip Blank VOCs 8260		\$ 60.00	ea	1.0	1.00	\$60.00	
Trip Blank PFAS		\$ 290.00	ea	1.0	1.00	\$290.00	
Level IV QA/QC (15%)						\$0.00	
						\$3,970.00	\$3,970.00
Direct Costs - Expenses		Price	Unit	# Units	Markup	Subtotal	
Hotel		\$ 120.00	day	0.0	1.10	\$0.00	
Meals		\$ 67.00	LS	0.0	1.10	\$0.00	
Sample Shipment		\$ 500.00	Event	1.0	1.00	\$500.00	
						\$500.00	\$500.00
Direct Costs - Chargeable Equipment Expense		Rate (hr/unit)	# Hrs/Units	Rate (day/use)	# days/use	Subtotal	
Vehicles	Field Vehicle - Full Day	\$ 30.00		\$ 150.00	4	\$ 600.00	
Meters	Elec. Well Sounder (Probe)			\$ 35.00	4	\$ 140.00	
Sampling	Bailers (Disposable)	\$ 12.00	17			\$ 204.00	
Other	55-Gallon Drum	\$ 100.00	1			\$ 100.00	
Safety	Nitrile Sampling Gloves (Disposable)	\$ 0.22	140			\$ 30.80	
	Routine Field and Safety Equipment			\$ 60.00	4	\$ 240.00	
Production	Color Copies	\$ 0.40	10			\$ 4.00	
	B/W Copies	\$ 0.25	50			\$ 12.50	
						\$ 1,331.30	\$1,331.30
PHASE SUB-TOTAL (One Event)							\$19,186.30
PHASE TOTAL (Two Events)							\$38,372.60

Project Title:
 Project Number/Name:
 Date:

2023 Closure GW Delineation and VI Assessments
 6403 - Barb & Rons
 6/9/2023



Phase C103d1 - Summer Vapor Intrusion Assessment and Data Analysis							
Labor - Field		Price	Unit	# Units		Subtotal	Task Total
Staff Professional FS-II		\$ 125.00	hr	30.0		\$3,750.00	
						\$3,750.00	\$3,750.00
Labor - Office Oversight / OMM Plan		Price	Unit	# Units		Subtotal	Task Total
Principal		\$ 210.00	hr	1.0		\$210.00	
Sr Professional		\$ 195.00	hr	5.0		\$975.00	
Project Professional		\$ 160.00	hr	15.0		\$2,400.00	
Field Professional		\$ 115.00	hr	2.0		\$230.00	
Drafting		\$ 110.00	hr	1.0		\$110.00	
			hr			\$0.00	
						\$3,925.00	\$3,925.00
Contractor/Consultant - Laboratory		Price	Unit	# Units	Markup	Subtotal	
Air TO-15 -- Sub-Slab		\$ 200.00	ea	2.0	1.00	\$400.00	
Air TO-17 -- Passive Indoor/Outdoor Air		\$ 195.00	ea	7.0	1.00	\$1,365.00	
Air - Batch Certification		\$ 50.00	LS	2.0	1.00	\$100.00	
Level IV QA/QC (15%)						\$0.00	
						\$1,865.00	\$1,865.00
Direct Costs - Expenses		Price	Unit	# Units	Markup	Subtotal	
Hotel		\$ 120.00	day	0.0	1.10	\$0.00	
Meals		\$ 67.00	LS	0.0	1.10	\$0.00	
Sample Shipment		\$ 500.00	Event	1.0	1.00	\$500.00	
						\$500.00	\$500.00
	Direct Costs - Chargeable Equipment Expense		Rate (hr/unit)	# Hrs/Units	Rate (day/use)	# days/use	Subtotal
Vehicles	Field Vehicle - Full Day		\$ 30.00		\$ 150.00	2	\$ 300.00
Meters	Manometers		\$ 115.00	1			\$ 115.00
Power Tools	Rotary Hammer Drill				\$ 180.00	1	\$ 180.00
Sampling	Tubing - Master Flex: 3/8" STD (per foot)		\$ 6.90	4			\$ 27.60
Vapor	Vapor Pin Sub-Slab Cover (Stainless Steel)		\$ 40.00	2			\$ 80.00
	Vapor Pin Sub-Slab Sampling Port		\$ 95.00	2			\$ 190.00
Safety	Nitrile Sampling Gloves (Disposable)		\$ 0.22	8			\$ 1.76
	Routine Field and Safety Equipment				\$ 60.00	2	\$ 120.00
Production	Color Copies		\$ 0.40	10			\$ 4.00
	B/W Copies		\$ 0.25	25			\$ 6.25
						\$ 1,024.61	\$1,024.61
PHASE TOTAL							\$11,064.61

Project Title:
 Project Number/Name:
 Date:

2023 Closure GW Delineation and VI Assessments
 6403 - Barb & Rons
 6/9/2023



Phase C103d2 - Winter Vapor Intrusion Assessment and Data Analysis

Labor - Field		Price	Unit	# Units		Subtotal	Task Total
Principal		\$ 210.00	hr			\$0.00	
Chief Technical Officer		\$ -	hr			\$0.00	
Director		\$ 210.00	hr			\$0.00	
Sr Project Manager		\$ 195.00	hr			\$0.00	
Sr Professional		\$ 195.00	hr			\$0.00	
Project Manager		\$ 160.00	hr			\$0.00	
Project Professional		\$ 160.00	hr			\$0.00	
Staff Professional FS-II		\$ 125.00	hr	40.0		\$5,000.00	
Staff Professional FS-I		\$ -	hr			\$0.00	
Field Professional FS-II		\$ 115.00	hr			\$0.00	
Field Professional FS-I		\$ -	hr			\$0.00	
Field Technician		\$ 105.00	hr			\$0.00	
Compliance Specialist		\$ -	hr			\$0.00	
Vapor Intrusion Specialist		\$ -	hr			\$0.00	
Health and Safety Specialist		\$ -	hr			\$0.00	
			hr			\$0.00	
						\$5,000.00	\$5,000.00

Labor - Office Oversight / OMM Plan		Price	Unit	# Units		Subtotal	Task Total
Principal		\$ 210.00	hr	2.0		\$420.00	
Sr Professional		\$ 195.00	hr	5.0		\$975.00	
Project Professional		\$ 160.00	hr	19.0		\$3,040.00	
Field Professional		\$ 115.00	hr	3.0		\$345.00	
Drafting		\$ 110.00	hr	3.0		\$330.00	
			hr			\$0.00	
						\$5,110.00	\$5,110.00

Contractor/Consultant - Laboratory		Price	Unit	# Units	Markup	Subtotal	Task Total
Air TO-15 -- Sub-Slab		\$ 200.00	ea	3.0	1.00	\$600.00	
Air TO-17 -- Passive Indoor/Outdoor Air		\$ 195.00	ea	10.0	1.00	\$1,950.00	
Air - Batch Certification		\$ 50.00	LS	2.0	1.00	\$100.00	
Level IV QA/QC (15%)						\$0.00	
						\$2,650.00	\$2,650.00

Direct Costs - Expenses		Price	Unit	# Units	Markup	Subtotal	Task Total
Hotel		\$ 120.00	day	0.0	1.10	\$0.00	
Meals		\$ 67.00	LS	0.0	1.10	\$0.00	
Sample Shipment		\$ 500.00	Event	1.0	1.00	\$500.00	
						\$500.00	\$500.00

Direct Costs - Chargeable Equipment Expense		Rate (hr/unit)	# Hrs/Units	Rate (day/use)	# days/use	Subtotal	Task Total
Vehicles	Field Vehicle - Full Day	\$ 30.00		\$ 150.00	4	\$ 600.00	
Meters	Manometers	\$ 115.00	1			\$ 115.00	
Power Tools	Rotary Hammer Drill			\$ 180.00	1	\$ 180.00	
Sampling	Tubing - Master Flex: 3/8" STD (per foot)	\$ 6.90	6			\$ 41.40	
Vapor	Vapor Pin Sub-Slab Cover (Stainless Steel)	\$ 40.00	1			\$ 40.00	
	Vapor Pin Sub-Slab Sampling Port	\$ 95.00	1			\$ 95.00	
Safety	Nitrile Sampling Gloves (Disposable)	\$ 0.22	12			\$ 2.64	
	Routine Field and Safety Equipment			\$ 60.00	4	\$ 240.00	
Production	Color Copies	\$ 0.40	10			\$ 4.00	
	B/W Copies	\$ 0.25	40			\$ 10.00	
	Report CD Copy	\$ 5.00				\$ -	
						\$ 1,328.04	\$1,328.04
PHASE TOTAL							\$14,588.04

Project Title:
 Project Number/Name:
 Date:

2023 Closure GW Delineation and VI Assessments
 6403 - Barb & Rons
 6/9/2023



Phase C103e - Closure Request Reporting & Regulatory Coordination							
	Labor - Office Oversight / Bi-Annual Reporting	Price	Unit	# Units		Subtotal	Task Total
	Principal	\$ 210.00	hr	6.0		\$1,260.00	
	Sr Professional	\$ 195.00	hr	13.0		\$2,535.00	
	Project Manager	\$ 160.00	hr	32.0		\$5,120.00	
	Staff Professional-Office	\$ 145.00	hr	12.0		\$1,740.00	
	Drafting	\$ 110.00	hr	8.0		\$880.00	
			hr			\$0.00	
						\$11,535.00	\$11,535.00

	Direct Costs - Chargeable Equipment Expense	Rate (hr/unit)	# Hrs/Units	Rate (day/use)	# days/use	Subtotal	
Production	Color Copies	\$ 0.40	25			\$ 10.00	
	B/W Copies	\$ 0.25	500			\$ 125.00	
						\$ 135.00	\$135.00
PHASE TOTAL							\$11,670.00

Project Title:
 Project Number/Name:
 Date:

2023 Closure GW Delineation and VI Assessments
 6403 - Barb & Rons
 6/9/2023



Phase C103f - IDM Management & Disposal							
Labor - Field		Price	Unit	# Units		Subtotal	Task Total
Staff Professional FS-I		\$ -	hr	14.0		\$0.00	
			hr			\$0.00	
						\$0.00	\$0.00
Labor - Office Oversight / Reporting		Price	Unit	# Units		Subtotal	Task Total
Principal		\$ 210.00	hr	2.0		\$420.00	
Sr Professional		\$ 195.00	hr	4.0		\$780.00	
Project Professional		\$ 160.00	hr	6.0		\$960.00	
Field Professional		\$ 115.00	hr	2.0		\$230.00	
						\$0.00	
						\$2,390.00	\$2,390.00
Contractors/Consultants		Price	Unit	# Units	Markup	Subtotal	Task Total
Waste Disposal (2 soil drums and 2 water)		\$ 800.00	LS	4.0	1.00	\$3,200.00	
						\$3,200.00	\$3,200.00
Direct Costs - Chargeable Equipment Expense		Rate (hr/unit)	# Hrs/Units	Rate (day/use)	# days/use	Subtotal	
Vehicles	Field Vehicle - Full Day	\$ 30.00		\$ 150.00	3	\$ 450.00	
						\$ 450.00	\$450.00
PHASE TOTAL							\$6,040.00