OBG

FINAL PLAN

Remedial Investigation/Feasibility Study Work Plan
Taconic Site
NYSDEC Site No. 442047

Taconic
Petersburgh, New York

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Remedial Investigation/Feasibility Study Work Plan Taconic Site NYSDEC Site No. 442047

Prepared for:

Taconic
Petersburgh, New York

DOUGLAS M. CRAWFORD, VICE PRESIDENT
O'BRIEN & GERE ENGINEERS, INC.

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1. INTRODUCTION

1.1. GENERAL

This Remedial Investigation/Feasibility Study (RI/FS) Work Plan has been developed by O'Brien & Gere Engineers, Inc. (OBG) on behalf of Tonoga, Inc. d/b/a Taconic (Taconic is referred to herein as the Respondent) for the Taconic Site (Site) located in the Town of Petersburgh (Town), Rensselaer County, New York (see **Figure 1**). The RI/FS Work Plan was prepared in accordance with the requirements of the Administrative Settlement Agreement and Order on Consent (Index No. CO 4-20160519-01) (Settlement Agreement) executed between the New York State Department of Environmental Conservation (NYSDEC) and the Respondent, with an effective date of November 20, 2016. The Site is listed on the New York State Registry of Inactive Hazardous Waste Disposal Sites as a Class 2 site (Site No. 442047).

1.2. PROJECT OBJECTIVE AND SCOPE

This RI/FS Work Plan presents the activities proposed to complete the Remedial Investigation (RI) for the Site and then perform a Feasibility Study (FS). This work plan has been prepared in accordance with NYSDEC's DER-10 guidance, entitled Technical Guidance for Site Investigation and Remediation in New York State (May 2010).

The purpose of an RI is to identify constituents of potential concern (COPCs), evaluate the nature and extent of COPC impacts in various environmental media (e.g., groundwater, soil, and surface water) as a result of the contamination at and/or from the Site, assess the fate and transport of the COPCs, develop a conceptual site model (CSM) and evaluate potential exposure pathways. The information collected during the investigation will be summarized in an RI Report, which will include a summary of the exposure assessment.

The fundamental purpose of an FS is to develop and evaluate remedial alternatives that might be used to address potential exposure pathways and achieve regulatory objectives. During an FS, the results of the RI are utilized to identify the standards, criteria, and guidelines (SCGs) that are relevant for the impacted environmental media and establish appropriate remedial action objectives (RAOs). Applicable technologies are then screened and evaluated, after which remedial alternatives are developed and evaluated. This evaluation includes a comparison of the various remedial alternatives against several criteria established by NYSDEC. The entire process is summarized in an FS Report, which typically recommends a remedial program.

This RI/FS Work Plan contains eight sections. **Section 1** presents a discussion of background information for the Site. **Section 2** presents the proposed RI activities and descriptions of the specific tasks that will be undertaken to gather Site information to meet the project objectives. **Section 3** presents the Qualitative Human Health Exposure Assessment (QHHEA) process. **Section 4** presents the Fish and Wildlife Resources Impact Analysis (FWRIA) process. **Section 5** provides a description of the FS process. **Section 6** presents a summary of the planned reporting activities, including the RI and FS Reports. **Section 7** summarizes the citizen participation activities that are planned during the RI/FS and remedy selection process, and references the separate Citizen Participation Plan (CPP) that was developed pursuant to the Settlement Agreement. **Section 8** presents the project schedule, and references are provided at the end.

This RI/FS Work Plan is augmented by several other plans, as follows:

- A Field Sampling and Analysis Plan (FSAP) for the RI is provided in **Appendix A**. The FSAP presents the procedures for execution of field activities to be conducted as part of the RI/FS identified in **Section 2**. The FSAP also provides rationale and detailed procedures for collecting environmental samples including equipment and personnel requirements, drilling and well installation techniques, sampling techniques, and equipment decontamination procedures.
- A Quality Assurance Project Plan (QAPP) is provided in **Appendix B** and provides quality assurance/quality control (QA/QC) criteria for work efforts associated with the sampling and laboratory analyses of environmental media as part of the RI. The QAPP assists in generating data of a known and acceptable level of precision and accuracy. The QAPP also provides information regarding personnel responsibilities, and sets forth specific procedures to be used during sampling of relevant environmental media. The procedures in the

QAPP will be followed by personnel participating in the field investigation and by the laboratory(ies) performing analyses of environmental samples. The environmental samples will be submitted to laboratories certified by the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) for the analyses performed during the RI, where available. Any amendments to the QAPP will be prepared and submitted to NYSDEC for its approval.

- A Health and Safety Plan (HASP) is provided in **Appendix C** and provides guidance for the protection of field staff and subcontractors during implementation of the RI. The HASP was developed in accordance the current applicable general industry standards in 29 Code of Federal Regulations (CFR) 1910 and 1926, and the United States Environmental Protection Agency's (USEPA's) Health and Safety Plan Users Guide (USEPA 1993) to address site hazards. Contractors and subcontractors working at the Site to implement the RI/FS Work Plan will be responsible for developing task-specific job safety analyses (JSAs) prior to the start of field activities.

  The HASP includes a Community Air Monitoring Plan (CAMP) and identifies the measures and/or actions to protect workers at the facility and the public from exposure to Site-related COPCs during intrusive activities (e.g., soil borings, well drilling). The CAMP addresses the monitoring and, if necessary, control of fugitive dust during intrusive activities, as well as the use of a hand-held photoionization detector (PID) that monitors for organic vapors[1].

- Pursuant to the Settlement Agreement, a separate CPP has also been prepared to support implementation of the RI/FS. This plan is referenced and summarized in **Section 7**.

1.3. BACKGROUND INFORMATION

1.3.1. Site Description

Taconic owns a facility in Petersburgh, New York where it manufactures polytetrafluoroethylene (PTFE) coated fabrics. The Site is located in a rural area, at the northernmost intersection of Coonbrook Road and State Route 22. The Site is a 23.54-acre area that features nine structures related to manufacturing and three parking lots (see **Figure 2**). There is an unnamed stream that runs through the Site. The Site is currently an operating manufacturing facility and currently employs over 200 people, most of whom reside in the Petersburgh community. The surrounding parcels (some of which are owned by Taconic) are residential or undeveloped.

1.3.2. Site History

Historically, the PTFE dispersions purchased by Taconic from manufacturers including E.I. du Pont de Nemours and Company contained approximately 0.1 to <0.5 percent perfluorooctanoic acid (PFOA). In 2006, Taconic began purchasing PTFE dispersions with the lowest available concentration of PFOA estimated to contain approximately 0.01 percent PFOA. Based on Taconic's current understanding and research, the PTFE dispersions containing PFOA may have also contained other PFCs, for example, trace amounts of impurities from the electrochemical fluorination process used by 3M to manufacture PFOA. Since 2013, Taconic has purchased PTFE dispersions that do not contain PFOA added as an ingredient by the PTFE dispersion manufacturers. However, sampling and analysis of PTFE dispersions conducted by Taconic in 2017 detected trace levels of PFOA. The source of the trace levels of PFOA in these PTFE dispersions is not known to Taconic.

The PTFE coating industry also uses small quantities of surfactants to resolve PTFE processing problems, like non-wetting, that can occur during normal production. In the past, the glass-cloth coating industry, including Taconic, used small quantities of PFOA containing surfactants for this purpose. This would include 3M's FC-143, a solid powder form of the ammonium salt of PFOA that would have been diluted in water, and FC-118, a 20% solution of the ammonium salt of PFOA in water that may also have been further diluted in water. Both of

[1] PFOA is not a volatile organic compound (VOC), and is therefore not detected by PIDs. However, PIDs can screen air for many constituents, such as solvents (e.g., tetrachloroethene, which was commonly used in dry cleaning) and gasoline constituents (e.g., benzene, ethylbenzene, toluene and xylenes). No VOCs were reported in groundwater samples collected from the production wells at the Site.

these materials may also have included other PFC impurities like those formed during the electrochemical fluorination process used by 3M to manufacture PFOA. Taconic's research suggests that Taconic phased out the use of these surfactants around 1997.

Taconic has purchased PTFE dispersions manufactured with alternatives to PFOA, including, Hexafluoropropylene Oxide-Dimer Acid (HFPO-DA), also known as GenX. Alternatives to PFOA are used by fluoropolymer manufacturers (Taconic's suppliers) to manufacture PTFE dispersions (Taconic's raw materials), and are ingredients in the raw material when Taconic receives it. While the GenX alternative discussed above has been publicly published as a commercially used alternative to PFOA, it is Taconic's understanding that the specific ingredients used in the other alternatives are held by the manufacturers as confidential information. To the extent that Taconic has information not in the public domain regarding the ingredients for PTFE made with alternatives, such information is subject to confidentiality agreements between Taconic and its suppliers.

Additional Site history information previously submitted to NYSDEC, USEPA and the New York State Senate, has been included in Exhibit A on seven compact discs (CDs).

Because the Site is located in a rural area not serviced by a public sewer system, Taconic applied for and was issued by NYSDEC a State Pollutant Discharge Elimination System (SPDES) Permit which was renewed by NYSDEC on at least two occasions, for periods beginning in 1989 (or possibly earlier) through 2003. The SPDES Permit authorized Taconic to discharge process water at the Site. The discharged process water contained residual material which may have included PFOA. In approximately 1999, Taconic stopped discharging process water at the Site.

In 2001, it came to Taconic's attention that USEPA was having discussions regarding PFOA. At that time, USEPA did not regulate PFOA, and NYSDEC only regulated PFOA insofar as it regulates unspecified organic compounds.

In the absence of any regulatory guidance or action, Taconic decided in 2004 to voluntarily test the groundwater for the presence of PFOA because process water had been discharged at the Site in accordance with the SPDES Permit issued by NYSDEC. The tests were performed by an independent qualified laboratory, and the analytical results indicated that PFOA was present in the groundwater at the Site. Taconic submitted the analytical results to NYSDEC and NYSDOH. Taconic, as a precaution, elected to install granular activated carbon (GAC) filtration on its Site production wells and provide bottled water to employees and Taconic-owned residences in the vicinity of the Site.

On September 30, 2005, Taconic submitted to the Rensselaer County Department of Health (RCDOH) a well modification application citing the presence of PFOA in groundwater. The application was approved on January 4, 2006.

From 2005 to the present, NYSDEC conducted at least twelve detailed air inspections at the Site, and RCDOH conducted at least six water inspections at the Site. USEPA conducted a multi-media inspection at the Site on December 1, 2005.

On January 27, 2016, NYSDEC, by emergency regulation, added PFOA to the list of hazardous substances in 6 New York Codes, Rules and Regulations (NYCRR) 597.3. This action made PFOA a hazardous substance as defined by Environmental Conservation Law (ECL) 27-1301.1 and 6 NYCRR 375-1.2(w) for the period of the temporary emergency regulation. The temporary emergency regulation expired, but has been re-adopted three times. The third, and most recent re-adoption of the temporary emergency regulation became effective November 14, 2016.

On January 28, 2016, USEPA Region 2 issued a recommended exposure guidance level for PFOA which was 100 parts per trillion (ppt). On February 10, 2016, Taconic hosted a meeting at its facility which was attended by Taconic and representatives from NYSDEC, NYSDOH, RCDOH and the Rensselaer County Executive's office.

On February 13, 2016, NYSDEC and NYSDOH began sampling and testing for PFOA. The tests confirmed the presence of PFOA at the Site and in the drinking water of the Town's public water supply.

Since that time, Taconic has worked with the Town, RCDOH and NYSDOH to implement several interim measures, including:

- Installed and maintained over 89 point of entry treatment (POET) systems on private wells in Town.
- Designed a customized GAC water treatment system which was delivered to the Town on November 21, 2016. The installation is in process with the goal of completing before the end of 2016.
- Designed a building to house the Town's GAC water treatment system. Construction was completed on November 3, 2016.
- Provided residents of the Town with bottled water at multiple locations, free of charge, including home delivery to residents with special needs.
- Provided a climate-controlled bottled water headquarters at the Town Hall where Taconic continues to distribute free water to Town residents.
- Provided a recycling center for Town residents' empty water bottles.

With approval from NYSDEC, and to expedite data collection associated with the RI, the three production wells at the Site were sampled on September 1, 2016 for PFCs (including PFOA, PFOS and 15 other compounds). The production wells were also sampled for a full suite of constituents (i.e., the Target Compound List/Target Analyte List [TCL/TAL]) and cyanide (CN).[2] The validated results have been reported to NYSDEC and NYSDOH and are provided in **Appendix D**. Although additional sampling will be performed during the RI, the initial groundwater results show that PFOA is a COPC in groundwater at the Site; volatile organics, semi-volatile organics, pesticides, PCBs and cyanide were reported as not being present in the samples, and the concentrations of metals in the groundwater samples appear to be representative of background.

Taconic is currently conducting annual sampling of the three production wells (raw water) and quarterly mid-GAC and post-GAC water sampling of the treatment system associated with each production well. Analysis of these samples was for the six PFCs included in USEPA's third Unregulated Contaminant Monitoring Rule (UCMR3).[3] On January 12, 2017, NYSDEC asked Taconic to sample and analyze its production wells for the same 17 PFCs as used for the RI using the same analytical method and reporting limits. Taconic agreed to this request on January 26, 2017 and has tested for those 17 PFCs since that date. Taconic will request approval to reduce the number of PFCs being analyzed from 17 to six once more data is available (e.g., after the Phase 1 field activities have been completed). NYSDEC also approved the expedited RI sampling of surface water at and near the Site for laboratory analysis. This sampling was delayed due to the drought, but was completed on December 9, 2016. Samples were collected from three ponds[4] and two streams and analyzed for PFCs, total organic carbon (TOC), anions (chloride, sulfate and alkalinity as carbonate/bicarbonate) and cations (calcium, magnesium, sodium and potassium). The stream that flows through the Site immediately south of Buildings 2, 4 and 5 was also sampled for the TCL/TAL constituents and CN. The validated results have been reported to NYSDEC and NYSDOH and are provided in **Appendix D**. Although additional sampling will be performed during the RI, the initial surface water results show that PFOA is a COPC in surface water at the Site. Volatile organics and cyanide were reported as not being present in the surface water samples; there were detections of semi-volatile organics, pesticides, PCBs, and the concentrations of metals in the surface water samples appear to be representative of background.

1.3.3. Previous Environmental Results, Reports and Investigations

Environmental assessments, investigations, sampling, and analyses have been previously performed at the Site and are summarized below. The summary below in Sections 1.3.3.1 through 1.3.3.4 is excerpted from the data

[2] The TCL/TAL constituents include VOCs, semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and metals.
[3] UCMR3 was issued by USEPA in May 2012. In addition to PFOA and PFOS, this included perfluorononanoic acid (PFNA), perfluorohexanesulfonic acid (PFHxS), perfluoroheptanoic acid (PFHpA) and, perfluorobutanesulfonic acid (PFBS).
[4] Unnamed Pond 3 (see **Figure 4**) is ephemeral based on storm water runoff.

and reports previously provided to NYSDEC, USEPA and the New York State Senate, as contained in Exhibit A (Historical Site Information) of this RI/FS Work Plan.

- Engineering Report of Wastewater Operations, January 2001, was prepared by Clough, Harbour & Associates, LLP (CHA) to review the facilities wastewater operations and SPDES permits
- Supplemental Environmental Investigation Report (SEIR), prepared by CHA and submitted to NYSDEC on April 12, 2001 (CHA, 2001)
- Miscellaneous sampling and analysis for PFOA conducted by Taconic since November 2004
- Sampling and analysis for a PFOA substitute (GenX) in plant water supply wells and pond conducted by Taconic in August 2017, included in Appendix E.

As discussed in Section 1.3.4 (Groundwater Uses), Taconic is maintaining and monitoring over 89 POET systems on residential wells. Data from this program is transmitted to NYSDEC separately and is not included in this work plan.

1.3.3.1 Engineering Report of Wastewater Operations

The Engineering Report of Wastewater Operations, dated January 2001, was prepared by CHA to review the facilities wastewater operations and SPDES permits (BATES numbers 000069-000083 of Exhibit A).

As described in this report, a SPDES permit was first issued by NYSDEC on May 8, 1989, which became effective on May 15, 1989. This permit was renewed on May 15, 1994, and then modified on December 15, 1997. On November 1, 1998, a renewed SPDES permit became effective and expired on November 1, 2003.

As described in the report, various dry wells, septic tanks, leach fields and outfall were permitted to manage sanitary and process wastewaters generated at the Site through 1999. After 1999, only sanitary wastewaters have been discharged on-site.

1.3.3.2 Supplemental Environmental Investigation Report

The SEIR was prepared by CHA and submitted to NYSDEC on April 12, 2001 (CHA, 2001). This report, Bates numbers 000001-000050 within Exhibit A, contains a summary of the following:

- Summary of findings of a Third-Party Preliminary Site Investigation conducted by CHA in October 2000 (CHA, 2000)
- Summary of findings of investigation completed by Fuss & O'Neill, Inc. (Fuss & O'Neill) in March 2001
- Results of the Supplemental Environmental Investigation implemented by CHA in 2001.

Third-Party Preliminary Investigation (CHA, 2000)

The 2001 SEIR references and summarizes the findings of a Third-Party Preliminary Site Investigation conducted by CHA in October 2000. In 2000, CHA collected several groundwater and soil samples from select locations across the Site to assess the subsurface conditions of the Site. Soil/sediment samples were collected from two dry wells located in Buildings 1 and 2, and the drainage ditch located west of Building 1. In addition, shallow groundwater samples were collected from several locations across the Site to evaluate the potential impacts to groundwater. The location of each sample point is presented on the Sample Location Plan included as Figure 1 of the SEIR.

Soil sample results obtained during the 2000 Preliminary Site Investigation from the samples collected from both dry well locations contained elevated concentrations of toluene, total xylenes, and copper above the guidance values for soil concentrations as listed in the NYSDEC's Technical and Administrative Guidance Memorandum (TAGM) 4046. In addition, the sample collected from the dry well located in Building 2 contained tetrachloroethene and ethylbenzene at levels above the guidance values listed in TAGM 4046. There were no parameters detected in the samples collected from the drainage ditch located west of Building 1 at the specified

method detection limits. A summary of the detected parameters and respective concentrations is presented in Table 1 of the SEIR.

As described in the SEIR, a Geoprobe© was utilized during the 2000 Preliminary Site Investigation to collect five groundwater samples from select locations illustrated on Figure 1 of the SEIR. Toluene was detected at location W-4 (west of Building 5) at a concentration of 15 micrograms per liter (ug/L) which exceeded the groundwater standard of 5 ug/L as specified in 6 NYCRR Part 703 (Surface Water and Groundwater Quality Standards and Groundwater Effluent Standards). No other volatile organic compounds (VOCs) were detected in any of the groundwater samples. Surfactants (methyl blue active substances) were detected in each of the five groundwater samples at concentrations ranging from 0.03 to 0.2 milligrams per liter (mg/L), which was well below the allowable discharge limit of 1.0 mg/L.

Preliminary Investigation (Fuss & O'Neill, 2001)

In 2001, Fuss & O'Neill completed an investigation of two areas at the Site. These areas included the area east of the leach field, located north of Building 2, and the area adjacent to a hydraulic pit for the small press, also in Building 2. The results from this investigation were reported to NYSDEC in CHA's letter dated April 2, 2001. As part of this investigation, Fuss & O'Neill collected five groundwater samples from five temporary well points installed north of Building 2. Only the sample collected from location B-4 detected toluene and xylene above the method detection limit at a concentration of 0.76 and 0.56 ug/L respectively. However, these concentrations are below groundwater standards.

Soil samples were collected from three boring locations adjacent to the hydraulic pit for the small press in Building 2. Analytical results from each of these boring locations indicated elevated concentrations of total petroleum hydrocarbons (TPH).

Supplemental Environmental Investigation

Based on the results of the preliminary investigations described above, CHA developed a work plan to further investigate the environmental areas of concern at the Site, close the existing dry well and associated tank in Building 2, and close the existing dry well in Building 1. The investigations included the installation and sampling of three monitoring wells. Two monitoring wells were installed in the alleyway on the south side of Building 2 (MW-1 and MW-2), and one adjacent to the unnamed stream to the south of Building 5 (MW-3).

In the SEIR, CHA reported the investigation activities associated with the dry well located in Building 1 revealed that the septic system associated with this dry well remained in operation for sanitary waste. This dry well was cleaned and placed back in service. All process wastewater generated in Building 1 was collected in totes for appropriate disposal. Based on the results of this investigation, CHA recommended that the dry well located in Building 1 remain in service and be permitted for sanitary discharge only.

Elevated levels of TPH were observed in the soil samples collected from boring locations adjacent to the hydraulic pit in Building 2. However, the impact to the surrounding soils and groundwater appeared to be localized based on the groundwater samples collected from monitoring well MW-1, which was located in the downgradient direction from the hydraulic pit and dry well. CHA reported that groundwater sample results obtained from downgradient monitoring well MW-1 did not appear to indicate a significant impact to groundwater at this location. There were no parameters detected at levels exceeding groundwater standards in this well.

Following the closure of the dry well and cleanout/inspection of the hydraulic pit, CHA recommended the installation of one additional groundwater monitoring well located directly downgradient of Building 2. This proposed monitoring well (MW-4) and the existing monitoring well MW-1 were monitored on a semi-annual basis for water elevations, VOCs and TPH.

By letter dated May 15, 2001, NYSDEC approved closure of the dry well and the clean out of a hydraulic pit associated with Building 2, along with the installation of monitoring well MW-4 to monitor VOCs and TPH on a semi-annual basis.

1.3.3.3 Annual Groundwater Monitoring Report

An Annual Groundwater Monitoring Report, was prepared by CHA and submitted to NYSDEC dated June 4, 2007. This report, Bates numbers 000052-000069 in Exhibit A, summarized the previous seven rounds of semi-annual and annual monitoring conducted on-site in MW-1 and MW-4, installed as part of the Supplemental Site Investigation of 2001.

On June 27, 2007, after four years of monitoring without detecting VOCs and TPH's, NYSDEC accepted the recommendation to discontinue sampling at MW-1 and MW-4 (Bates numbers 00051 in Exhibit A).

1.3.3.4 Miscellaneous PFOA Analyses

Since 2004, Taconic has sampled an analyzed various media for PFOA. The analytical results are included in Exhibit A and are summarized below.

November 2004 (Bates numbers 000643-000759 of Exhibit A)

Samples of production well water collected in November 2004 detected PFOA as follows:

- Production Well #2 117 nanograms per milliliter (ng/mL)
- Production Well #1 152 ng/mL
- Production Well #3 2.30 ng/mL

January 2005 (Bates numbers 000542-000642 of Exhibit A)

Samples of well and pond water collected in January 2005 detected PFOA as follows:

- 147 Coonbrook Road 4.20 ng/mL
- 6 Russel Road 2.28 ng/mL
- Taconic Building #1 (via Pond) 0.562 ng/mL

August 2005 (Bates numbers 000421-000541 of Exhibit A)

Samples of water and soil collected in August 2005 detected PFOA as follows:

- MW#1 8,820 ng/mL
- MW#2 703 ng/mL
- MW#3 61.8 ng/mL
- MW#4 15.6 ng/mL
- FE5 172,000,000 ng/mL (Fume Eliminator 5 Wastewater)
- RSS-SW-1 0.584 ng/mL (Russel Road Pond Water)
- SS-1 4.71 nanograms per gram (ng/g), wet-weight (soil near Production Well 3)
- CG-DW-1 0.691 ng/mL, (Campground well)
- 46CB Non-detect (46 Coonbrook Road well)
- 85CB 0.349 ng/mL (85 Coonbrook Road well)
- 66CB Non-detect (66 Coonbrook Road well)

January 2006 (Bates numbers 000366-000420 of Exhibit A)

Samples of water collected in January 2006 detected PFOA as follows:

- Production Well #1 18.8 ng/mL (prior to carbon filtration)
- Production Well #1 0.725 ng/mL (after carbon filtration)
- Production Well #3 1.48 ng/mL (prior to carbon filtration)
- Production Well #3 0.074 ng/mL (after carbon filtration)

February 2006 (Bates numbers 000300-000365 of Exhibit A)

Samples collected in February 2006 detected PFOA as follows:

- Production Well #2 25.0 ng/mL (prior to carbon filtration)
- Production Well #2 2.19 ng/mL (after carbon filtration)
- B Water-Proc Non-detect (unknow sample location)
- B Water-Spr Non-detect (unknown sample location)

November 2012 (Bates numbers 000132-000288 of Exhibit A)

Samples collected in November 2012 detected PFOA as follows:

- Sample #1 7.5 ng/mL (Well #1 prior to carbon filtration)
- Sample #2 0.42 ng/mL (Well #1 after to carbon filtration)
- Sample #3 0.15 ng/mL (before reverse osmosis filtration)
- Sample #4 0.038 ng/mL (after reverse osmosis filtration)

1.3.3.5 2017 Sampling of Production Water for a PFOA Substitute

As noted previously in Section 1.3.2, some of the dispersion suppliers have confirmed PTFE does contain GenX (hexafluoropropylene oxide-dimer acid [HFPO-DA]). During the December 2016 stack testing conducted by Taconic under NYSDEC oversight, HFPO-DA was not detected in the stack emissions. As a follow-up to the stack emission testing, Taconic collected raw water samples from the three plant water supply wells and the Russell Road pond on August 29, 2017 and analyzed them for HFPO-DA. HFPO-DA was not detected in the water samples. The analytical results of the samples of production water supplies are contained in Appendix E.

1.3.4. Groundwater Use

Groundwater is used as a source of production and drinking water at and near the Site. At the facility, Taconic extracts groundwater from three production wells, two located at/near Buildings 2, 4 and 5 (referred to as PW-1 and PW-2 herein), and one located south of Buildings 6, 9, 10 and 11 (referred to as PW-3 herein). The extracted groundwater from each production well is treated using GAC filters before use in the manufacturing operations and in the sanitation facilities. Although all of the extracted groundwater is treated and regulated by NYSDOH as a public water supply, Taconic provides bottled water for consumption by employees and visitors.

Buildings 2/4; PW-1

- 362 feet deep
- Active
- Unknown when drilled
- GAC installed January 2006

- Provides supply water for manufacturing operations and in the sanitation facilities in Buildings 2, 4 and 5.

Buildings 4/5; PW-2

- 400 feet deep
- Active
- Unknown when drilled
- GAC installed January 2006
- Provides supply water for manufacturing operations and in the sanitation facilities in Buildings 5.

Buildings 6/9/10/11; PW-3

- 60 feet deep
- Active
- Drilled in 1997
- GAC installed January 2006
- Provides supply water for manufacturing operations and in the sanitation facilities in Buildings 6, 9, 10 and 11.

Taconic uses surface water from Unnamed Pond 1 (see **Figure 4**) for industrial and sanitary purposes in Building 1 and in Buildings 2, 4 and 5; this water is treated using GAC filters, but is not regulated as a public water supply. The treated water from Unnamed Pond 1, also referred to as the "Russell Road Pond," is used in Building 1 for sinks and toilets. The treated water from Unnamed Pond 1 is also used in Buildings 2, 4, and 5 as a backup to the Building 4/5 Fume Eliminator 5 water supply and for the cooling tower inside Building 2. Taconic also currently conducts annual sampling of the water from Unnamed Pond 1. Although not regulated as a public water supply system, Taconic performs post-GAC sampling on a quarterly basis. These samples are analyzed for 17 PFCs by modified USEPA Method 537. An operation and maintenance (O&M) Plan for the facility-related treatment systems (i.e., three production wells and Unnamed Pond 1) has been prepared by Taconic and submitted to NYSDEC under separate cover.

Taconic owns several residential properties surrounding the Site, each of which uses a supply well. Most of these residences are rented/occupied. Two are currently not rented/occupied. All of the rental properties are now equipped with POET systems to treat the extracted groundwater. Taconic also owns an additional parcel at 46 Coonbrook where two buildings (Buildings 7 and 8) known as the "Barn" and the "Maintenance Warehouse" are located. These buildings are unoccupied and are used for storage and maintenance purposes.

The Town has a public water supply system that serves approximately 79 residences and uses groundwater from four operational supply wells. As described previously, Taconic has designed, permitted and constructed a GAC treatment system that treats the extracted groundwater prior to distribution.

There are many other residences in the Town that are not connected to the public water supply and use groundwater. Several hundred private supply wells have been tested for PFCs[5] and, based on the results, POET systems have been installed at many of these residences. Taconic is maintaining and monitoring over 89 POET systems for the supply wells that had more than 70 ppt PFOA or are located immediately adjacent to supply

[5] The samples collected during this testing have been analyzed for the six PFCs included in UCMR3.

wells that had more than 70 ppt PFOA[6]. The O&M Plan for the residential POET systems is included in the Consent Order as Exhibit D. Taconic has made changes to Exhibit D in response to the comments received from NYSDEC on February 27, 2017, and the revised O&M Plan will be submitted to NYSDEC under separate cover.

1.3.5. Preliminary Conceptual Site Model

Geology and Hydrogeology

Very little information is available on the geologic and hydrogeologic conditions at the Site. Although unrelated to PFCs, some investigation activities were performed in 2001 by CHA, and included the installation of four monitoring wells (see **Figure 2**). The wells were subsequently abandoned, and are no longer accessible.[7] Construction logs show that these wells were shallow (e.g., less than 16 feet deep), and there is no evidence that the wells reached bedrock. Borings logs are not available; however, based on information provided by CHA for inclusion in the BCP application that was submitted by Taconic, the shallow overburden consists of 8 to 10 feet of gravel and sand underlain by silty clay. Water-level measurements collected by CHA in the four monitoring wells show that the water table at the Site is shallow (e.g., generally less than 5 feet deep).

Information on the depth to bedrock at the Site is not currently available. The depths of the three production wells are known. PW-1 and PW-2 are reported to be 362 and 400 feet deep, respectively, and are located near Buildings 2, 4 and 5 (see **Figure 2**). PW-3 is reported to be 60 feet deep, and is located immediately south of the parking area at Buildings 6, 9, 10 and 11. Construction details (including the casing depths) are not available for the production wells, but the two deep wells are expected to be open to the bedrock.

The Site is located in a north-south trending valley, to the west of the Little Hoosic River, which flows northward. This valley is believed to be glacial, and is flanked to the east and west by uplands. Within the valley, the unconsolidated materials above bedrock may vary widely, including glacial till, glacial outwash, glaciolacustrine sediments and more recent (post glacial) floodplain and terrace deposits. Although the depth to bedrock at the Site is not currently known, there are numerous outcrops along the west side of State Route 22 and in the uplands flanking the valley. One bedrock outcrop is on the west side of State Route 22 immediately north of the Site. Here the bedrock is a greenish-gray phyllite, preliminarily assumed to be the Austerlitz Phyllite of Lower Cambrian age.

Based on the shallow depth to the water table and the general hydrogeologic setting, the Little Hoosic River is believed to be the natural discharge zone for overburden and bedrock groundwater at the Site. Depending on the thickness and permeability of the overburden materials within the valley, groundwater flow at the Site may have a significant down-valley component (i.e., north, north-northeast or northeast). In addition, depending on the thickness and stratigraphy of the overburden materials, it is possible that the hydraulic head (i.e., water-level elevation) and direction of groundwater flow within the overburden varies with depth. In the absence of groundwater pumping, flow within the bedrock is expected to be toward the valley and upward into the overburden. However, groundwater extraction at and near the Site by the facility's production wells and residential supply wells has the potential to further complicate flow within the overburden and bedrock.

Additional information will be obtained about the geology and hydrogeology at the Site during the RI. This information will be compiled with regional information and presented in the RI Report.

Nature of Contamination

As approved by NYSDEC to accelerate implementation of the RI, the three production wells at the Site were sampled by OBG on September 1, 2016. The samples from all three wells were analyzed for TCL/TAL constituents and CN as well as PFCs (including PFOA, PFOS and 15 other PFCs). This represents a very broad

[6] In May 2016, a lifetime health advisory was established by USEPA for drinking water at 70 ppt PFOA and PFOS, individually and combined.

[7] Based on an observation during a site visit in April 2017, it appears that overburden well MW-3 may still exist. However, the condition of the well will be evaluated.

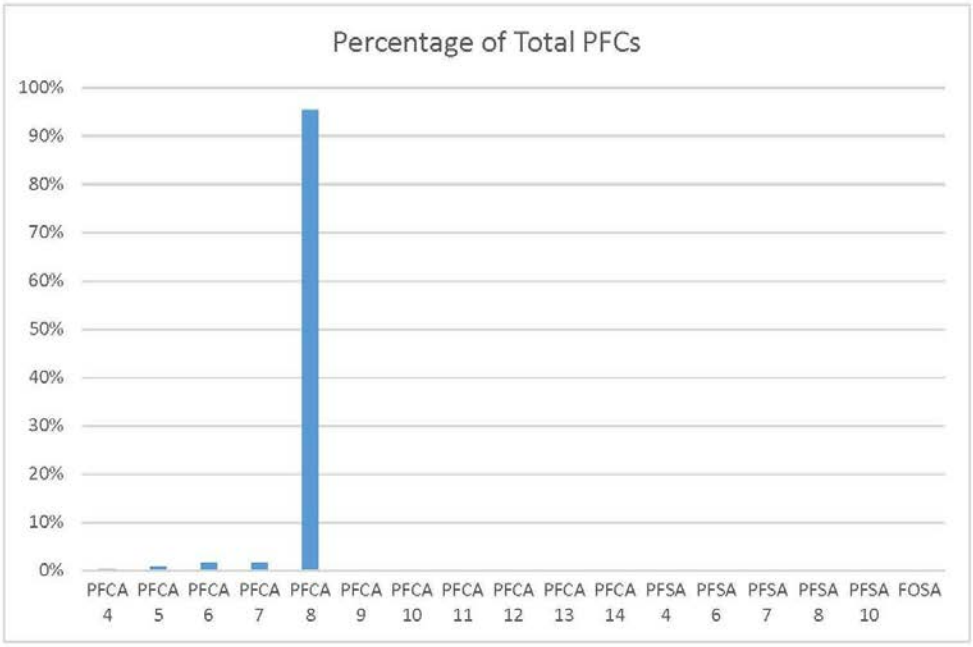
analysis of potential contaminants, from samples collected from production wells that have been in operation for many years, two of which are located at Buildings 2, 4, and 5, and one of which is located near Buildings 6, 9, 10 and 11. As shown in the validated results provided in **Appendix D**, the analytical results for all three wells were non-detect for VOCs, SVOCs, pesticides, PCBs and cyanide. As expected, some metals were reported in the samples from all three wells, but their concentrations appear to be representative of background. Although additional sampling will be performed during the RI for TCL/TAL constituents and CN, these initial groundwater results show that PFOA is a COPC in groundwater at the Site.

As discussed above, four shallow monitoring wells (designated MW-1 through MW-4 and shown approximately on **Figure 2** were installed by CHA during prior investigation activities that were performed in 2001. Three of these wells (MW-1, MW-2 and MW-3) were located at Buildings 2, 4, and 5 and one well (MW-4) was located north of Building 2 (see **Figure 2**). These wells were routinely sampled for total petroleum hydrocarbons (TPH) and VOCs for several years, but, based on the analytical results, NYSDEC approved discontinuing the sampling after the June 2007 sampling event. The wells were subsequently abandoned, and are no longer accessible.

The only VOCs that were reported during the monitoring of the three wells installed by CHA were acetone and 2-butanone (both of which are recognized as common laboratory contaminants [i.e., artifacts]), and toluene (in a sample from MW-2 at a concentration of 3 parts per billion [ppb], below the State's groundwater and drinking water standards). Although obtained more than nine years ago, these data are consistent with the results of the TCL VOC analyses for the recent production well samples.

The analytical results for the production well samples collected on September 1, 2016 show that PFOA is the dominant PFC at the Site. For example, as illustrated in the figure below, approximately 95% of the total PFCs in the samples from PW-1 and PW-2 was PFOA, which is a perfluoroalkyl carboxylic acid (PFCA) with an eight-carbon chain. The remaining PFCs were almost all PFCAs with different chain lengths; essentially none of the PFCs were perfluoroalkyl sulfonic acids (PFSAs) such as PFOS. In the sample from PW-3, approximately 90% of the total PFCs was PFOA, and no PFSAs were reported. Therefore, within the PFC constituent group, PFOA is the primary constituent present and PFOS is essentially absent.

PW-1-09012016



As approved by NYSDEC to accelerate implementation of the RI, surface water samples were collected by OBG from streams and ponds[8] at the Site on December 9, 2016. All of the samples were submitted for PFC analysis, and the sample collected from the stream that flows through the Site immediately south of Buildings 2, 4 and 5 was also submitted for analysis of TCL/TAL constituents and CN. The validated results have been reported to NYSDEC and NYSDOH and are provided in **Appendix D**. Although additional sampling will be performed during the RI, the initial surface water results show that PFOA is a COPC in surface water at the Site. Volatile organics and cyanide were reported as not being present in the samples; there were detections of semi-volatile organics, pesticides, and PCBs, and the concentrations of metals in the surface water samples appear to be representative of background.

NYSDEC previously sampled a stream at the Site; this stream was also sampled by Taconic as one of the accelerated RI implementation activities. NYSDEC has also sampled the Little Hoosic River upstream of, adjacent to and downstream from the Site for PFC analyses on multiple occasions, with analysis of PFCs and ancillary parameters. The data provided by NYSDEC will be reviewed and included in the RI for the Site.

Potential Sources of PFOA Contamination and Other Site Features

As discussed in **Section 1.3.2**, process water was discharged at the Site until 1999. After 1999, process wastewaters were collected and shipped off-site for treatment/disposal. Beginning in 2006, most of the process wastewater has been collected, treated and recycled on-site for use in the air-pollution control fume eliminators, with the balance shipped off-site for disposal. A summary of off-site shipment of process wastewater is as follows:

Summary of Off-site Shipment of Wastewater

Year Shipped	Facility Name	Facility Address	Gallons Shipped Off-site
2012	Cycle Chem, Inc	217 South First St., Elizabeth, NJ 07206	834
2010	United Oil Recovery	136 Gracey Ave., Meriden, CT 06451	11,400
	Schenectady WWTP	300 Anthony St., Schenectady, NY 12308	4,000
2009	Schenectady WWTP	300 Anthony St., Schenectady, NY 12308	4,175
2008	United Oil Recovery	136 Gracey Ave., Meriden, CT 06451	5,019
2007	United Oil Recovery	136 Gracey Ave., Meriden, CT 06451	8,021
	Passaic Valley Sewerage	600 Wilson Ave., Newark, NJ 07105	27,344
2006	Passaic Valley Sewerage	600 Wilson Ave., Newark, NJ 07105	168,641
2004	Environmental Compliance Corp.	441 R Canton St., Stoughton, MA 02072	26,235
	Hoosick Falls WWTP	Route 22, Hoosick Falls, NY	132,008
	Washington County Sewer District II	17 Cortland St., Fort Edward, NY 12828	56,020
	Glens Falls WWTP	2 Shermantown Rd., Glens Falls, NY 12801	1,652
2003	Hoosick Falls WWTP	Route 22, Hoosick Falls, NY	226,365
	Glens Falls WWTP	2 Shermantown Rd., Glens Falls, NY 12801	1,477
2002	Hoosick Falls WWTP	Route 22, Hoosick Falls, NY	254,378
2001	Hoosick Falls WWTP	Route 22, Hoosick Falls, NY	130,216
1.	No wastewater manifests found for 1999, 2000, 2005, and 2011.		
2.	No off-site shipment of wastewater from 2013 through present.		

[8] Unnamed Pond 3 (see **Figure 4**) is ephemeral based on storm water discharge.

Buildings 1 and 3 are located on the west side of Coonbrook Road, and Building 1 is the oldest building at the Site. The supply water for these two buildings comes from Unnamed Pond 1 located on Russell Road to the north. The water from Unnamed Pond 1, also referred to as the "Russell Road Pond," is used in Building 1 for sinks and toilets, which is treated with a GAC system that was installed in Building 1 in February 2016.

Wastewater from Building 1 was discharged into a former dry well currently located under an addition (an active laboratory area) on the south side of Building 1. This dry well was closed in place in September 2010 before the addition was constructed. There were also two outfalls (003 and 004, see **Figure 2**). The former outfalls and dry well represent potential historic sources of PFOA to soil, groundwater, surface water and/or sediment before discharges of process water were discontinued in 1999.

There is a relatively new septic tank and pump lift station immediately south of Building 1 (between the building and Coonbrook Road) and an associated leach field located across Russell Road from Building 1 (on the north side of Coonbrook Road). These were installed in May 2010 to replace the former dry well located under Building 1.

The water from Unnamed Pond 1 is also used in Buildings 2, 4, and 5 as a backup to the water supply for the fume eliminator associated with the ovens in Buildings 4 and 5, and the cooling tower inside Building 2, which is treated with a GAC system that was installed in Building 2 in November 2016. The water is recycled inside the fume eliminator and cooling tower. It is not discharged to any of the outfalls.

There is a former dry well located under an addition on the south side of Building 1, which is in an active laboratory area. This dry well was closed in September 2010. There were also two outfalls (003 and 004, see **Figure 2**). The former outfalls and dry well represent historic sources of PFOA to soil, groundwater, surface water and sediment before discharges of process water were discontinued in 1999.

There is a relatively new septic tank and pump lift station immediately south of Building 1 (between the building and Coonbrook Road) and an associated leach field located across Russell Road from Building 1 (on the north side of Coonbrook Road). These were installed in May 2010.

Buildings 2, 4 and 5 are located on the east side of Coonbrook Road, and are serviced by production wells PW-1 and PW-2, which have higher concentrations of PFOA than production well PW-3 (located south of Buildings 6, 9, 10 and 11).

There are several historic sources of PFOA to soil, groundwater, surface water and sediment at Buildings 2, 4 and 5 before discharges of process water were discontinued in 1999. There is a leach field to the north of Building 2 (outfall 002). Process wastewater from Buildings 2 and 4 was discharged to the outfall 002 leach field until about 1999. There are also three septic tanks, one former and two active (see **Figure 2**). The former septic tank between Buildings 4 and 5 was used to settle solids out of the rinse-water generated in the Building 4 oven room and was removed in 2001. Another septic tank is located in the same area and is in active use. The other active septic tank is located between Buildings 2 and 4. Piping connects the two active septic tanks to the leach field located north of Building 2 (outfall 002). Sanitary wastes from Buildings 2, 4 and 5 have been, and continue to be, discharged to the outfall 002 leach field.

There is a former dry well (outfall 001) in Building 2 (see **Figure 2**). The location of this dry well is marked by a 3-feet by 3-feet patch in the concrete slab.[9] Wastewater from manufacturing operations within Buildings 2 and 4 was discharged to the outfall 001 dry well until about 1994. Rinse-water generated in the Building 4 oven room and collected in the former septic tank between Buildings 4 and 5 was also discharged to the outfall 001 dry well. This dry well was closed in December 2000.

[9] Note that the former dry well in Building 2 may actually have been a trench.

There is an old underground wastewater storage tank located in the northwest corner of Building 5. This recently-discovered tank is not currently used, and is located in an active production area that is a clean room. The concrete floors contain the building's heating system. The tank contains both liquid and sludge/sediment.

At the facility, a PTFE mixture is pumped into long shallow dip pans at the base of each surface coating oven. Raw fiberglass fabric is unrolled and pulled into the dip pan. As the PTFE mixture coats the fiberglass, the fiberglass is pulled vertically up through the surface coating oven, where it is dried, baked, and then sintered. The coated fiberglass is re-rolled back from the top of the oven and the process is repeated multiple times to place multiple coats of the PTFE mixture on the fiberglass.

After the completion of a PTFE mixture run, mixtures left over in the dip pans are pumped into drums and sent offsite as non-hazardous waste.

Wastewater from the PTFE surface coating oven process is primarily generated by the rinsing of the dip pans with spray water hoses, using treated water from the plant wells, after residual mixtures have been pumped into drums for offsite disposal. In addition, wastewater is generated from the rinsing of pails and pans with spray water hoses, using treated water from the plant wells, done in industrial and laboratory sinks. Lastly, wastewater is also generated from the mopping of the production floors in the surface coating oven manufacturing areas.

Beginning in 2006, most of the process wastewater has been collected, treated by the on-site Wastewater Treatment Plant (WWTP) and recycled on-site for use in the air-pollution control fume eliminators, with the remainder shipped off-site for disposal. Wastewater generated from Oven Rooms 4 and 5, and the laboratory sinks is pumped directly into the on-site WWTP storage tank located in Oven Room 4. Wastewater generated from Oven Room 6 is pumped into an underground storage tank inside the oven room. Wastewater generated from Oven Room 11 is pumped into an aboveground storage tank inside the oven room. The stored wastewater from Oven Rooms 6 and 11 is then pumped into a small tank truck and is transported to Building 4. Wastewater is unloaded outside of Building 4 and pumped into the WWTP storage tank located inside Oven Room 4. The wastewater treatment system is entirely above grade, within a secondary containment area, and in an active production area that is a clean room. The concrete floors contain the building's heating system.

The wastewater treatment system consists of the addition and mixing of chemical flocculation mixtures, settling, manual filtration of the settled solids, and a final polishing of wastewater using GAC treatment.

The filtered solids are collected in a roll-off container for off-site disposal as a non-hazardous waste. Waste solids are currently generated at a rate of 12 tons per month.

After GAC treatment, wastewater effluent from the on-site WWTP is pumped into a receiving tank located in Oven Room 4. Based on current operations, the monthly wastewater generation rates are approximately 30,000 gallons per month. The wastewater treatment system is entirely above grade, in an active production area that is a clean room, and the treated water is used in the fume eliminator for Buildings 4 and 5; it is not discharged to any of the outfalls.

From the receiving tank, the wastewater is pumped directly to the air pollution control device for Oven Rooms 4 and 5, Fume Eliminator 5, where it is used as the water curtain inside the fume eliminator inlet chamber. The fume eliminator is part of the emissions control system, and is located within a concrete secondary containment area at the south end of Building 5. The water is recycled inside the fume eliminator; it is not discharged to any of the outfalls.

The fume eliminator is cleaned out on a regular basis. Rainfall and snow melt that accumulates in the secondary containment area is removed and transported to the wastewater treatment system in Building 4. Liquid and solid wastes are pumped out of the fume eliminator sump by a 3rd party vacuum truck and disposed off-site as non-hazardous waste.

Buildings 6, 9, 10 and 11 are relatively new and are located south of the other manufacturing building. Buildings 9, 10 and 11 were constructed after Taconic discontinued the discharge of process water at the Site, and

Building 6 was constructed just two years before the discharge of process water was discontinued. Therefore, this area of the Site is not expected to be a significant historic source of PFOA to soil, groundwater, surface water or sediment, but this will be evaluated during the RI.

There are two fume eliminators in this area of the Site. One is located at the north end of Building 6, and the other is located at the north of Building 11. Both are located within concrete secondary containment areas. Rainfall and snow melt that accumulates in the secondary containment areas is removed and transported to the wastewater treatment system in Building 4. The secondary containment area for the newer of these two fume eliminators has a "sump" to facilitate removal of accumulated water.

Buildings 6, 9, 10 and 11 are served by production well PW-3, which is located to the south of Building 11. There is a leach field (outfall 005) for Buildings 6, 9, 10 and 11, and two active septic tanks, all of which are located on the east side of these buildings (see **Figure 2**). these buildings.

There is an underground wastewater storage tank inside Building 6 and an aboveground wastewater storage tank inside Building 11, both of which are in an active production area that is a clean room (see **Figure 2**). The concrete floors contain the building's heating system. The contents of these two tanks are periodically removed and transported to the wastewater treatment system in Building 4. There is a white, capped plastic pipe protruding from the slope to the north of Building 6; this is believed to be associated with a foundation drain, but will be determined during the RI.

Figure 3 shows the utility features at the Site, including storm water lines, catch basins, sanitary sewer lines, swales and culverts.

2. REMEDIAL INVESTIGATION

2.1. GENERAL APPROACH

The RI will be implemented in a sequenced and phased approach, and involve sampling of relevant media (e.g., surface water, sediment, groundwater, surface soil, subsurface soil, wastewater and sludge) to define the nature of the COPCs and evaluate their extent. To define the COPCs, the scope of the RI involves the sampling of surface water, sediment, groundwater (overburden and bedrock), and soil (surface and subsurface) for PFC analysis[10]. Representative samples collected for each medium (i.e., at least 20 percent of each medium) will also be submitted for the full suite of TCL/TAL constituents and CN.[11,12,13] All water samples, excluding the discrete-interval groundwater samples collected during the direct-push investigation and during the installation of the exploratory boreholes, will also be analyzed for major cations (calcium, magnesium, sodium, and potassium) and anions (chloride, sulfate and alkalinity). To evaluate the extent of COPCs, the initial phase of the RI will focus on evaluating potential source areas (e.g., dry wells, septic tanks, leach fields, pipe outfalls, fume eliminators) located at the Site and the downgradient boundary of the Site. In addition, the analytical results obtained from

[10] Unless otherwise specified, PFC analysis will be performed for the 21 analytes included in NYSDEC's Full PFAS Target Analyte List, as defined in the QAPP.
[11] The TCL/TAL constituents include VOCs, SVOCs, pesticides, PCBs, and metals.
[12] For surface soils, 20 percent of the off-site atmospheric deposition sample locations will not be analyzed for TCL/TAL constituents as there is no indication TCL/TAL constituents have been released by air deposition mechanisms. A minimum of 20 percent of the on-site sample locations will be analyzed for TCL/TAL constituents and CN rather than 20 percent of the samples because two surface soil samples are to be collected at each location (one at 0 to 2 inches and one at 2 to 12 inches), and the sampling interval for TCL/TAL constituents and CN of 0 to 6 inches overlaps both surface soil sampling intervals, as prescribed in the FSAP.
[13] One subsurface soil sample at each subsurface boring location will be analyzed for TCL/TAL constituents and CN. If no evidence of impacted soils is observed (i.e., visual, olfactory or other field screening observations), subsurface soil samples for TCL/TAL constituents, CN, and pH analyses will be collected from immediately above the water table at each of the ten locations. Additional subsurface soil samples (of at least 20 percent of all subsurface soil samples) will be collected and analyzed for TCL/TAL constituents and CN, if necessary.

groundwater samples collected from several hundred private and public supply wells will be included in the RI; data will be available for multiple sampling events for many of these wells.

This work plan provides the detailed approach to the first phase of the RI, and in general involves the following components:

- Compile and evaluate information for public and private water supply wells that have been sampled for PFC analysis and the existing analytical laboratory reports/data.
- Perform subsurface utility location (origin and path) and mark out to evaluate potential preferential pathways for contaminant migration. Methods to locate and mark out subsurface utilities may include: ground penetrating radar, electromagnetic sensing, traceable rodder, and/or video pipe inspection.
- Evaluate surface water quality from five locations at the facility (ponds and streams) by submitting samples for PFC, TOC, major cation and major anion analyses. One of the streams running through the facility will also be sampled for analysis of TCL/TAL constituents and CN.[14] These results will be augmented by the results of sampling performed by NYSDEC in the Little Hoosic River upstream of, adjacent to and downstream from the Site.
- Collect sediment samples at the previously-collected and new surface water sampling locations for PFC and TOC analysis. Two sediment samples will also be analyzed for TCL/TAL constituents and CN.
- Evaluate bedrock groundwater quality at the facility by collecting samples from the three production wells at the Taconic facility for analysis of PFCs and TCL/TAL constituents and CN.[15]
- Evaluate the depth and nature of the overburden material at the facility to refine the CSM by completing boreholes through the overburden and approximately 25 feet into bedrock.
- Perform hydrogeologic testing in bedrock wells to aid in refining the CSM.
- Collect discrete-interval groundwater samples using direct-push technology (DPT) for PFC and TOC analysis to evaluate the extent of PFOA in the overburden groundwater at the Site, including within the identified source areas and along the downgradient boundary of the Site, which is presumed to be the northern end (down valley) and/or eastern side (along the Little Hoosic River).
- Perform continuous coring (for visual characterization and subsurface soil sampling) at ten DPT locations; and perform a direct sensing survey at five DPT locations (two of which will be co-located with continuous coring locations). Collect surface and subsurface soil samples from identified source areas and the downgradient boundary of the Site for PFC and TOC analysis. One subsurface soil sample from each DPT location will also be collected for analysis of TCL/TAL constituents, CN, and pH.
- After assessing the extent of PFCs in overburden groundwater using the results of the DPT sampling, install overburden monitoring wells in source areas and along the downgradient boundary of the Site to collect

[14] With NYSDEC approval, this surface water sampling was completed on December 9, 2016 to accelerate implementation of the RI.
[15] With NYSDEC approval, the production well sampling was completed on September 1, 2016. In addition, beginning in January 2017, the raw water is now collected from the production wells for the 17 PFCs on an annual basis.

groundwater samples for analysis of PFCs, TOC, major cations and major anions. Overburden monitoring wells will also be sampled for analysis of TCL/TAL constituents and CN.

- Collect approximately five soil and five groundwater samples for GenX analysis. GenX sample locations, and other appropriate analyses, will be selected in consultation with NYSDEC following review of data collected from the first phase of the RI.
- Evaluate potential historic atmospheric deposition by collecting surface soil samples at six locations at the Site and 11 locations on Taconic-owned properties for analysis of PFCs and TOC. Select on-site surface soil locations will also be sampled for analysis of TCL/TAL constituents and CN.
- Evaluate potential impacts to soil below drip lines associated with the roofs of buildings by collecting surface soil samples at seven locations at the Site for analysis of PFCs and TOC. Select on-site surface soil locations will also be sampled for analysis of TCL/TAL constituents and CN.
- Evaluate the nature of contaminants in the active underground wastewater storage tank inside Building 6 by collecting liquid and sludge (if any) samples for PFC, GenX, TCL VOCs and SVOCs, TAL metals (which includes major cations), CN, TOC, and pH analyses. The wastewater sample will also be submitted for the analysis of major anions. This tank is located close to the downgradient edge of Building 6, where discrete interval groundwater and subsurface soil samples will also be collected outside the building in this area of Building 6. Discrete interval groundwater and subsurface soil samples will also be collected outside of Building 6 (northeast of the wastewater storage tank location) for analysis of PFCs and TOC; one subsurface soil sample will also be analyzed for TCL/TAL constituents, CN, and pH.
- Evaluate the nature of contaminants inside an old, unused underground wastewater storage tank in Building 5 by collecting liquid and sludge samples for PFC, GenX, TCL VOCs and SVOCs, TAL metals (which includes major cations), CN, TOC, and pH analyses. The wastewater sample will also be submitted for the analysis of major anions. Discrete interval groundwater and subsurface soil samples will also be collected immediately outside the building in this area of Building 5 for analysis of PFCs and TOC. One subsurface soil sample will also be analyzed for TCL/TAL constituents, CN, and pH.
- Evaluate the nature of contaminants in the liquid (if any) inside the white, capped plastic pipe protruding from the slope to the north of Building 6. This pipe is believed to be associated with a foundation drain, but will be determined during the RI. The cap will be removed to determine if any liquid is present. To prevent a release of liquid (if present), a secondary containment receptacle (i.e., 5-gallon bucket or equivalent) will be deployed below the cap. If liquid is present, a sample will be collected for the analysis of PFCs, TOC, major cations and major anions. The pipe will then be re-capped. In addition, surface soil samples will be collected at two locations at/near the base of the slope.
- Evaluate the nature of contamination at the former dry well inside Building 2 by collecting discrete interval groundwater and subsurface soil samples for analysis of PFCs and TOC. One subsurface soil sample will also be analyzed for TCL/TAL constituents, CN, and pH.
- Evaluate the nature of contamination immediately downgradient of the former dry well under Building 1 by collecting discrete interval groundwater and subsurface soil samples immediately outside the building in this area for the analysis of PFCs and TOC. One subsurface soil sample will also be analyzed for TCL/TAL constituents, CN, and pH.

Unexpected conditions may require modification of the scope. In that event, the modification(s) will be made in consultation with NYSDEC.

There may still be data gaps after the first phase of the RI is completed. Therefore, an interim investigation deliverable that includes summary tables and figures will be submitted to and discussed with NYSDEC. Potential data gaps will also be discussed during the meeting with NYSDEC, and a scope for the contingent second phase will be developed to address those data gaps.

2.2. SURFACE WATER SAMPLING

As approved by NYDEC, surface water samples were collected on December 9, 2016 from the five sampling locations shown on **Figure 4** as an accelerated RI task. Surface water samples were collected from the subsurface of the water body. Samples of small streams were collected as near the center of the stream channel as practicable. Samples of ponds were collected near the outlets (if present and accessible). Surface water samples were collected facing upstream in flowing surface water systems. Surface water sample locations were documented by a recognizable landmark, with a handheld GPS unit and/or marked in the field using survey flagging. Samples were collected and managed in accordance with the QAPP. Surface water samples were submitted for laboratory analysis of PFCs, TOC and cations/anions. Field parameters (i.e., temperature, specific conductivity, dissolved oxygen [DO], oxidation reduction potential [ORP], turbidity, and pH) were also measured at each location. In addition, one location (Unnamed Stream 1) was sampled for analysis of TCL/TAL constituents and CN. The validated results are provided in **Appendix D**.

An additional 12 surface water samples will be collected from 11 locations across the Site and submitted for laboratory analysis of PFCs, TOC, and cations/anions. The additional sampling locations are shown on **Figure 4**. Eight of the surface water samples will be collected from storm water catch basins and drainage swales located on-site. The remaining four surface water samples will be collected from streams, seeps and ponds at the site, as well as the Little Hoosic River. In addition, stream samples will be collected from two locations (Unnamed Stream 1, adjacent to Route 22, and the Little Hoosic River) on four occasions over a one-year time frame. Further, Unnamed Pond 3 will be sampled during these events if water is present. The schedule of the four sampling events will be based on evaluation of high and low stream flows in the vicinity of the Site, rather than using a rigid quarterly schedule. Surface water samples will be collected using the procedures presented in the FSAP. Surface water samples will be collected for PFC, TOC, and cation/anion analysis and managed in accordance with the QAPP. In addition, two surface water samples will also be analyzed for TCL/TAL constituents and CN.

2.3. SEDIMENT SAMPLING

Sediment samples will be collected at 12 locations in conjunction with surface water samples, either previously collected or additional as discussed above. At three of the 12 locations, surface water samples were previously collected and analyzed (Unnamed Stream1, Unnamed Stream 2 and Unnamed Pond 3). The remaining nine sediment samples will be collected with the surface water samples discussed in **Section 2.2** above, with seven of the samples collected from storm water catch basins and drainage swales located on-site and the remaining five samples collected from streams, seeps and ponds at the site. Each sample will be collected from the 0 to 6-inch interval for PFC and TOC analysis. In addition, two sediment samples (one from Unnamed Pond 3 and the other from the drainage swale located parallel to Route 22 and east of Building 4 [on the south side of the earthen overpass]) will also be analyzed for TCL/TAL constituents and CN. Sediment sample locations are shown on **Figure 4**.

2.4. GROUNDWATER EVALUATION

2.4.1. Production Well Sampling

As approved by NYSDEC, groundwater samples were collected from the three production wells on September 1, 2016, as an accelerated RI task. For the purposes of the RI, groundwater samples from Taconic's production wells were collected directly from an influent sample tap, prior to the water treatment systems installed. The locations of the three production wells are shown on **Figure 2**.

The Site production wells were purged of approximately five gallons before the sample was collected. Samples were managed in accordance with the QAPP and submitted for laboratory analysis of PFCs. In addition, all three production wells were sampled for analysis of TCL/TAL constituents and CN. The validated analytical results are provided in **Appendix D**.

2.4.2. Borehole Geophysical Testing

Select open bedrock boreholes (e.g., one production well and two residential supply wells) at the Site will be logged using a suite of downhole geophysical methods (see **Figure 5**). Geophysical logging of changes in borehole diameter, fluid characteristics, rock type and vertical flow (including direction [i.e., upward or downward] and magnitude) may assist with identifying potential water-transmitting fractures within an open borehole and in refining the CSM.

The potential suite of geophysical methods to be performed include:

- Borehole caliper – Measures the diameter of the borehole wall and is used to potentially identify the location and thickness of fractured zones within the borehole.
- Fluid resistivity (conductivity) – Records the electrical conductivity (EC) of groundwater and is used to potentially identify different water-bearing zones based on the total dissolved solid or ionic content of the water.
- Fluid temperature – Records water temperature and is used to potentially determine the movement of groundwater into and/or out of the borehole based on temperature gradients.
- Natural gamma radioactivity – Records radioactivity of the formation(s), and is used to infer rock type based on the known concentration of radioactive elements in certain rock types.
- Borehole video – Records a digital, color video of the borehole wall, with 0-90° tilt and 360° rotation capability and is used to potentially identify fracture locations, orientations and/or thickness.
- Optical televiewer – Records an accurately-scaled image of the borehole walls and is used to potentially identify features such as fractures and solution openings using visible light. The optical televiewer can be used in either dry or clear fluid-filled wells.
- Acoustic televiewer – Records an accurately-scaled image of the borehole walls and is used to potentially identify features such as fractures and solution openings using sonar pulses. The acoustic televiewer can only be used in fluid-filled wells, however they can be clear or turbid.
- Heat pulse flowmeter testing – Records the rate, as well as the magnitude and direction, of vertical water flow at discrete depth intervals in the borehole and is used to potentially determine which fractures may be water-bearing as their relative water production rates. The heat pulse flowmeter testing will be performed under both ambient and pumping conditions.

2.4.3. Depth-Discrete Groundwater Profiling

To obtain a profile of the groundwater quality with depth, depth-discrete groundwater samples will be collected from the open bedrock boreholes at the end of the dynamic heat pulse flow meter testing (which is performed under pumping conditions, as discussed in **Section 2.4.2** above).

Depth-discrete groundwater samples for PFC and TOC analysis will be collected at select depths contingent on the results of the heat pulse flow meter testing under ambient and dynamic conditions and the total depth of the well (e.g., one groundwater sample every 40 to 60 feet in the deep production well that will be tested at the Site),

2.4.4. High Resolution Transmissivity Profiling

To obtain a detailed profile of the variability of hydraulic conductivity with depth, Flexible Liner Underground Technologies, LLC (FLUTe™) will be performed on one open bedrock boreholes (e.g., a production well, or residential supply well) at the Site (see **Figure 5**) using its Hydraulic Conductivity Profiler method. During this process, a blank liner is installed into the borehole while monitoring the rate of decent, or velocity, that the liner everts down the borehole. Those data are then used to prepare a detailed vertical profile of hydraulic conductivity in the borehole.

Completing hydraulic conductivity profiling along the full length of the borehole is contingent on the surrounding bedrock formation having adequate transmissivity. As the liner descends the upper portion of the

borehole is sealed off, thereby decreasing the transmissivity of the remainder of the borehole. It is not uncommon to have the liner descent rate decrease until the liner is moving so slowly that its rate of descent reaches the measurement error. For this reason, the test in a given borehole will be considered complete when the descent rate of the everting liner is between approximately 0.004 and 0.005 feet per second or less.

2.4.5. Exploratory Boreholes

To assess the thickness of overburden materials and bedrock lithology at the Site, two exploratory boreholes will be advanced, one in the vicinity of production well PW-1, and the other on the northern portion of the former campground parcel (located between State Route 22 and the Little Hoosic River) (see **Figure 6**). The exploratory boreholes will be advanced using sonic drilling techniques,[16] which provides a continuous soil core while generating minimal cuttings. In addition, discrete-interval groundwater samples will be collected every 5 feet, beginning at 10 feet below grade, using a push-ahead sampling system advanced ahead of the overburden casing installed during sonic drilling. A subset of the discrete-interval groundwater samples collected will be selected for laboratory analysis of the six UCMR3 PFCs and TOC, based on a review of the soil core recovered during drilling and the criteria detailed in Section 7.3 in the FSAP. The exploratory boreholes will be advanced 25 feet into bedrock. Rather than grouting up the exploratory boreholes, they will be completed as open, shallow bedrock monitoring wells.

2.4.6. Direct-Push Investigation

DPT drilling techniques will be used to collect discrete-interval groundwater samples, continuous soil cores and subsurface soil samples, and hydrogeologic information using sensors (i.e., hydraulic profiling tool [HPT], EC), at the facility within the potential source areas (e.g., dry wells, septic tanks, leach fields, pipe outfalls, fume eliminators) and along the downgradient boundary of the Site, which is presumed to be the northern end (down valley) and/or eastern side (along the Little Hoosic River). Preliminary locations are shown on **Figure 7**. Considering the limited access to the boring location planned at former Outfall 004, access by a track-mounted DPT rig will be reviewed with the subcontractor and attempted if feasible and safe. If this area cannot be reasonably and safely accessed, alternate sampling approaches will be discussed with NYSDEC.

2.4.6.1. Discrete-Interval Groundwater Sampling

Collection of depth-discrete groundwater samples using DPT for PFC analysis will be performed at 17 locations to evaluate the extent of PFOA in the overburden groundwater at the facility. An additional location for depth-discrete groundwater samples using DPT is included near PW-1, and will only be performed if depth-discrete samples are not obtained using push-ahead sampling techniques during the installation of the exploratory borehole at this location as described in Section 2.4.5 (see **Figure 7**). Discrete-interval groundwater samples will be collected using a dual-tube groundwater sampling system. At the target depths (see Section 7.3 in the FSAP), the outer drilling rods will be retracted to expose a small-diameter screen to the overburden groundwater. Groundwater samples will be collected for laboratory analysis of the six UCMR3 PFCs and TOC. Although these data will not be validated, QC samples will be collected and full analytical data packages will be obtained from the laboratory to allow validation in the future, as determined in consultation with NYSDEC. In addition, a qualitative shake test[17] will be performed in the field during the sampling, and any foaming that is observed will be reported to the laboratory prior to the PFC analyses.

[16] The sonic drilling system employs simultaneous high frequency vibration and low speed rotational motion along with down pressure to advance the cutting shoes of the drill string.

[17] This testing will be performed by half filling a separate container, capping, and then shaking the container a set number of times. The presence and height of any foaming will be recorded in the field notes and will be used to alert the laboratory of the potential for elevated PFC concentrations.

2.4.6.2. Subsurface Soil Screening

Subsurface soil borings will be performed at ten of the discrete-interval groundwater locations for visual characterization and subsurface soil sampling. Subsurface soil characterization and sampling details are presented in **Section 2.5**.

2.4.6.3. Direct Sensing

A direct-sensing survey will be also performed at five of the discrete-interval groundwater locations (two of which are co-located with subsurface soil borings) to develop a three-dimensional (3D), semi-quantitative characterization of subsurface conditions in real time. The direct-sensing survey will be continuous from ground surface to bedrock or refusal, whichever is encountered first. Data generated as part of the direct-sensing investigation will be used to augment the information collected during the discrete-interval groundwater sampling, subsurface soil screening, and exploratory boreholes. The direct sensing will involve use of the HPT, which is also equipped with an EC sensor. The HPT is used to estimate horizontal hydraulic conductivity (which in turn can be used to infer lithology) and to estimate the water-table depth. The EC is also used to infer the lithology.

2.4.7. Overburden Monitoring Wells

Based on the results of the exploratory borehole(s), discrete-interval groundwater sampling and direct sensing survey, overburden monitoring wells will be installed at select locations in source areas and along the downgradient boundary of the Site. Locations and depths of the monitoring wells will be discussed with NYSDEC prior to mobilizing for well installation. Overburden drilling and monitoring well installation activities will be accomplished utilizing hollow-stem auger and/or sonic drilling techniques. The monitoring wells will be used to water-level measurements, perform hydraulic conductivity testing, and collect overburden groundwater samples for analysis of PFCs and TOC. Select wells will also be sampled for analysis of TCL/TAL constituents and CN.

2.4.7.1. Monitoring Well Installation

Under the oversight of an OBG geologist or hydrogeologist, overburden monitoring wells will be installed at select locations in source areas and along the downgradient boundary. Soil samples/soil cores will be obtained at each location and will be logged in accordance with the procedures presented in the FSAP. In addition, rather than grouting up the exploratory boreholes, they will be completed as open, shallow bedrock monitoring wells.

2.4.7.2. Monitoring Well Development

Following installation of the monitoring wells and prior to collection of groundwater samples, monitoring wells will be developed to remove the fine material which may have settled within the wells, to remove introduced drilling fluids, and to provide better hydraulic communication with the surrounding formation. Development will consist of surging and purging the well until water is clear, when field measured turbidity values are below 5 NTUs and/or turbidity values have stabilized, or when ten volumes are removed. In the event low yielding wells are present, development of those wells will consist of purging dry three times over three consecutive days or less. During well development, pH, temperature, dissolved oxygen, oxidation-reduction potential (ORP), turbidity and specific conductance will be measured and recorded after each well volume.

2.4.7.3. Hydraulic Conductivity Testing

Subsequent to well development, hydraulic conductivity testing will be performed in each of the newly-installed monitoring wells to estimate the hydraulic conductivity of the geologic materials immediately surrounding each well. Hydraulic conductivity tests will be performed using either conventional or pneumatic testing methods as described in the FSAP.

2.4.7.4. Groundwater Sampling

The newly-installed overburden monitoring wells will be sampled using low-flow sampling techniques as described in the FSAP. In addition, the open, shallow bedrock monitoring wells completed from the exploratory boreholes, the unused residential supply well at parcel 108.-1-6, overburden well MW-3 and unused

campground supply well at parcel 97.-1-58 (see **Figure 5**) will also be sampled.[18] Water quality parameters will be measured using a flow-through cell during the low-flow sampling. Measurements of DO, ORP, temperature, pH, specific conductivity and turbidity will be obtained. Groundwater samples will be collected for PFC and TOC analyses and managed in accordance with the QAPP. In addition, based on the results of the discrete-interval groundwater sampling and direct sensing survey, groundwater samples at select overburden monitoring wells will be collected for TCL/TAL constituents and CN analysis. Further, groundwater samples collected from wells (existing or new) will include analysis of the major cations/anions. The groundwater samples will be collected in accordance with the QAPP.

2.4.8. Water Level Monitoring

Manual water-level measurements will be collected from the newly-installed monitoring wells and accessible/usable Taconic-owned supply wells (i.e., production wells, residential wells) on a quarterly basis over a one-year period. The resulting data will be used to estimate horizontal and vertical hydraulic gradients, assist in assessing contaminant fate and transport, and to help refine the CSM.

2.5. SOIL EVALUATION

In conjunction with assessing the extent of PFCs in overburden groundwater, surface and subsurface soil samples will be collected at select locations in potential source areas and the downgradient boundary (see **Figure 7** and **Figure 8**). Surface soil samples will be collected in unpaved areas, and subsurface soil samples will be collected from soil cores obtained using DPT methods.

To evaluate potential historic atmospheric deposition, surface soil samples will be collected at the Site for PFC and TOC analyses, and also on selected properties owned by Taconic. Surface soils will be collected from six locations at the Site, as shown on **Figure 8**. As shown in **Figure 8**, the other 11 locations are on seven Taconic-owned parcels that were selected by NYSDEC. At each location where samples are collected to evaluate potential atmospheric deposition, surface soil will be collected at two depths for PFC and TOC analyses, one sample from the 0 to 2-inch horizon (including the root zone, but without gravel/stone) and the other sample from the 2 to 12-inch horizon.

To evaluate potential impacts from rain water conveyance off building roofs, surface soil samples will be collected at seven locations below roof drip lines at the Site. Two of these locations are located along the west side of Building 1, and the other five locations are located along Buildings 2, 4 and 5. At each location, surface soil will be collected at two depths for PFC and TOC analyses, one sample from the 0 to 2-inch horizon (including the root zone, but without gravel/stone) and the other sample from the 2 to 12-inch horizon. The locations of these sample may be adjusted in the field in consultation with the NYSDEC based on a review of site conditions.

Surface soil samples will also be collected from six other locations, former outfalls 003 and 004, between Buildings 2 and 5, between Buildings 4 and 5, at the base of the slope below the plastic pipe (located north of Building 6), and near the base of the slope to the northeast of the plastic pipe. At each location, surface soil will be collected at two depths for PFC and TOC analyses, one sample from the 0 to 2-inch horizon (including the root zone, but without gravel/stone) and the other sample from the 2 to 12-inch horizon.

In addition to the PFC and TOC analyses, surface soil samples will be collected for TCL/TAL constituents and CN analyses from four on-site locations, one located at former outfall 003 at the sound end of Building 1, one in the field north of Building 4 (see **Figure 8**), and two additional on-site locations to be determined in consultation with NYSDEC. At each location, surface soil will be collected from the 0 to 6-inch horizon (excluding the root zone, and without gravel/stone).

As stated above, subsurface soil borings will be performed at ten of the discrete-interval groundwater locations for visual characterization and subsurface soil sampling (see **Figure 7**). Soil cores will be collected continuously from the ground surface to bedrock or refusal, whichever is encountered first. Soil cores will be logged in

[18] Prior to sampling, these wells may be redeveloped based on the condition of the well.

accordance with the procedures presented in the FSAP. Samples for PFC and TOC analyses will be collected from the top of each major stratigraphic layer (e.g., surficial sand aquifer, glaciolacustrine aquitard, buried sand aquifer) encountered below the surficial layer. For the surficial layer, a sample will be collected from 2 to 12-inches below the ground surface or sub-base (unless a surface soil sample for PFCs and TOC is being performed at the location, in which case 0 to 2-inch and 2 to 12-inch soil samples would already be included). In addition, samples will be collected from the following subsurface zones (if encountered): immediately above the water table, from the top of the native soil at the fill/native soil interface, mottled zones (encompassing the total thickness of the observed mottling), and subjectively impacted soils (based on visual, olfactory, or other field screening observations).

One subsurface soil sample at each subsurface boring location will be analyzed for TCL/TAL constituents and CN. If no evidence of impacted soils is observed (i.e., visual, olfactory or other field screening observations), subsurface soil samples for TCL/TAL constituents, CN, and pH analyses will be collected from immediately above the water table at each of the ten locations (see Figure 7). Additional subsurface soil samples (up to approximately 20 percent of all subsurface soil samples), will be collected and analyzed for TCL/TAL constituents and CN, if necessary. Zones for soil sample collection may occur within close proximity of each other within the subsurface (e.g., a mottled zone immediately above the water table). As a result, soil sampling depths may be adjusted in the field, in consultation with NYSDEC.

The surface and subsurface soil samples will be collected in accordance with the FSAP, and managed in accordance with the QAPP.

2.6. WASTEWATER AND SLUDGE SAMPLING

As shown on **Figure 9**, samples of wastewater and sludge (if present) will be collected for PFC, GenX, TCL VOCs and SVOCs, TAL metals (which includes major cations), TOC, and pH analyses from the active underground wastewater storage tank inside Building 6 and the old, unused underground wastewater storage tank in Building 5. The wastewater samples will also be submitted for the analysis of major anions. Prior to sample collection, electrical conductivity, pH and total dissolved solids will be measured and recorded using an Oakton® multiparameter meter, or equivalent. Wastewater and sludge samples will be collected from the wastewater storage tanks directly into laboratory provided containers or by a Coliwasa, thief pump, sediment grab sampler, sediment core sampler or equivalent methods. Both depth-integrated and discrete interval samples will be collected in consultation with NYSDEC.

2.7. SITE SURVEY

During field investigation activities, relevant sample locations (e.g., soil borings, surface soil locations, surface water locations) will be documented with a handheld GPS unit by field personnel.

Following the completion of field investigation activities, the location of surface soil samples, soil borings, and monitoring wells will be surveyed for placement onto a Site base map. Surveying of surface soil sample, soil boring, and monitoring well locations will be performed by a New York State-licensed surveyor in accordance with the FSAP.

2.8. EQUIPMENT DECONTAMINATION PROCEDURES

Dedicated or disposable sampling equipment will not require decontamination. Non-dedicated and non-disposable equipment will require decontamination, and the decontamination procedures are provided in Section 11 of the FSAP included in **Appendix A** of this work plan.

2.9. INVESTIGATION DERIVED MATERIAL MANAGEMENT

Investigation derived material (IDM) expected to be generated during the RI and the associated management procedures are provided in Section 11 of the FSAP included in **Appendix A**.

2.10. LABORATORY ANALYSES

The analysis of PFCs in the environmental and QC samples will be performed by either TestAmerica's laboratory in Sacramento, California or Eurofins Lancaster Laboratories Environmental, LLC (ELLE) in Lancaster, Pennsylvania using USEPA Method 537 (modified).[19] Analyses for TCL/TAL constituents, CN, major cations, anions, grain size, pH and TOC will be performed by either TestAmerica's laboratories in Buffalo, New York and Savannah, Georgia or ELLE. The groundwater, surface water, sediment, wastewater, surface soil and subsurface soil samples will be submitted to laboratories certified by NYSDOH ELAP for these analyses, where available. Additional information pertaining to the analytical methods, method detection limits (MDLs), reporting limits (RLs) and associated QA/QC requirements are provided in the QAPP included as **Appendix B**. Taconic may propose the use of other laboratories, and will amend the QAPP as needed. Any amendments to the QAPP will be prepared and submitted to NYSDEC for its approval.

2.11. DATA MANAGEMENT AND VALIDATION

Each analytical data package and electronic data deliverable (EDD) received from the laboratory for each sampling event will be reviewed for completeness. Each analytical data package associated with an RI sampling event will also be validated (unless otherwise noted in the QAPP), and a Data Usability Summary Report (DUSR) will subsequently be prepared to document the usability of the data. Additional information pertaining to data validation is provided in the QAPP included as **Appendix B** of this work plan. Data qualifiers provided in the DUSR will be manually input into the database once provided by the validator. Data generated as part of the RI/FS will be submitted to NYSDEC in an EDD format that conforms with its Environmental Information Management System (EIMS) database.

3. QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT

A QHHEA will be conducted in accordance with Appendix 3B of NYSDEC's DER-10 guidance, and will be documented in an Exposure Pathway Analysis Report (EPAR) and qualitative discussion of risk within the RI Report. The assessment will consist of an evaluation of potential exposures of humans to Site COPCs based on current and reasonably expected future uses of the Site. The QHHEA will include the following components:

- Identification of the COPCs and description of the distribution of COPCs in impacted environmental media, from the source(s) to the point(s) of potential exposure
- An explanation of the transport mechanism(s) of the COPCs to the potential exposure points
- Identification of potential exposure point(s) where actual or potential human contact with an impacted environmental medium may occur
- Description(s) of the route(s) of exposure (i.e., ingestion, inhalation, dermal absorption)
- Characterization of the receptor populations who may be exposed to COPCs at a point(s) of exposure.

The discussion in the EPAR within the RI Report will summarize potential exposure pathways related to the Site and identify whether each pathway is complete or incomplete.

4. FISH AND WILDLIFE RESOURCES IMPACT ANALYSIS

A FWRIA will be conducted to meet the requirements of DER-10, Section 3.10.1. In accordance with the FWRIA guidance, a qualitative evaluation of actual or potential impacts to fish and wildlife resources from Site-related constituents will be performed.[20] The evaluation will include the identification and description of the ecological

[19] This method was promulgated for the analysis of certain PFCs in drinking water. It has been modified by laboratories for the analysis of additional PFCs and other environmental media (e.g., groundwater, soil) and to achieve lower detection and reporting limits.
[20] This qualitative evaluation is Part 1 (Resource Characterization) of the FWRIA.

resources located on and within 0.5-miles of the Site. Available information and the resource descriptions developed from the office review and Site evaluation will be used to characterize the exposure setting, identify the constituents of potential ecological concern, constituent migration pathways, and evaluate potential Site-related effects to local fish and wildlife resources. The findings of the Part 1 FWRIA will be presented within the RI Report and used to evaluate the need to advance to Part 2 (Ecological Impact Assessment).

5. FEASIBILITY STUDY

The objective of the FS is to develop, screen, and evaluate remedial alternatives for the Site in sufficient detail to compare the various alternatives and select an appropriate remedial program. The FS is conducted based on the results of the RI. Completion of the FS will be in accordance with the provisions of the Comprehensive Environmental Response, Compensation and Recovery Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), the National Contingency Plan (NCP), USEPA's Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (USEPA 1988), and NYSDEC's DER-10 guidance.

The process of performing a FS consists of a number of steps, which are discussed below and organized into three phases. Remedial alternatives are developed for the Site during the first phase of the FS (**Section 5.1**), and, as appropriate, are screened during a contingent second phase (**Section 5.2**). During the final phase, the alternatives are evaluated in detail against specific criteria, and are then compared to each other based on those same criteria (**Section 5.3**). An FS Report is prepared at the end of the detailed evaluation (**Section 6.3**), which often recommends an appropriate remedial alternative for the Site (**Section 5.4**). Two other criteria are evaluated after the FS Report is prepared, namely regulatory and community acceptance. The former is performed by NYSDEC and NYSDOH while preparing the proposed remedial action plan (PRAP) for release to the public, and the latter is evaluated during and following the public meeting and comment period and is documented in the Responsiveness Summary that is included with the final remedy decision.

5.1. DEVELOPMENT OF REMEDIAL ALTERNATIVES

The first phase of the FS is the development of a range of remedial alternatives that reflect different management options that are protective of public health and the environment. The alternatives range from the "no action" alternative, which must be included at least for comparison purposes, to an alternative that achieves, if practicable, the unrestricted use soil cleanup objectives (SCOs) promulgated by NYSDEC in 6 NYCRR Part 375, even if the current and reasonably anticipated future use of the Site is industrial. The steps used to develop the remedial alternatives are described below.

5.1.1. Remedial Action Objectives

RAOs are medium-specific goals for protecting human health and the environment. RAOs form the basis for the FS by providing overall goals for the remedial program. The RAOs are considered during the identification of applicable remedial technologies, the development of general response actions (GRAs) and process options, the formulation of remedial alternatives for the Site, and during the evaluation and comparison of those remedial alternatives. The development of RAOs is often performed during or after comparing the analytical data for various environmental media (e.g., surface water, groundwater, soils) to applicable SCGs established by NYSDEC and USEPA. There are three categories of SCGs: a chemical-specific, location-specific, or action-specific. Chemical-specific SCGs are usually health-or risk-based numerical values, or methodologies that result in the establishment of numerical values when applied to conditions at a specific site. These values establish the acceptable amount or concentration of a constituent that may be found in, or discharged to the ambient environment. Location-specific SCGs set restrictions on activities based on the characteristics of the Site or immediate environs. Action-specific SCGs set controls or restrictions on particular types of activities related to management of hazardous substances, pollutants, or contaminants.

5.1.2. General Response Actions

GRAs are types of actions which may, either alone or in combination, form alternatives to address the RAOs. These are based on the RAOs and are also medium specific (e.g., soils, groundwater, surface water).

5.1.3. Areas and/or Volumes of Media

The areas and/or volumes of environmental media (e.g., surface water, groundwater, soils) that are above SCGs are estimated for the FS based on the nature and extent of contamination as a result of the contamination at and/or from the Site.

5.1.4. Screening of Remedial Technologies and Process Options

For each GRA, technologies and process options that are potentially applicable to the impacted environmental media at and/or from the Site are identified and then screened on the basis of technical implementability. Information on the physical characteristics and constituents at the Site will be used to evaluate the technical feasibility and implementability of identified process options. Technology types and process options that are not technically implementable will be screened out at this stage of the FS. Technologies and process options that are considered technically implementable will be evaluated further based on the following three criteria:

- **Effectiveness** – The evaluation of effectiveness addresses the potential effectiveness of process options in handling the estimated areas or volumes of contaminated media and meeting the pertinent RAOs; the effectiveness of the process options in protecting human health and the environment during construction and implementation; and how proven and reliable the process options are relative to Site conditions.
- **Implementability** – The evaluation of implementability includes the technical and administrative feasibility of implementing a process option under such institutional constraints as the availability of treatment, storage, and disposal services, special permitting requirements, and the need for and availability of equipment and skilled workers.
- **Cost** – Capital costs and O&M costs of each process option will be evaluated relative to other process options for each technology type.

Once the process options have been evaluated with respect to these three criteria, at least one representative process option will be selected for each technology type.

5.1.5. Assembly of Remedial Alternatives

The final step during this phase of the FS involves the formulation of remedial alternatives for detailed evaluation, ranging from the "no action" alternative, which must be considered for at least comparison purposes, to at least one alternative that achieves, if practicable, the unrestricted use SCOs in 6 NYCRR Part 375, even if the current and reasonably anticipated future use of the Site is industrial. Other remedial alternatives will involve treatment and containment combinations. For source control actions, a range of alternatives will be developed that utilize, as their principal element, treatment technologies that reduce the toxicity, mobility, or volume of materials. Alternatives that primarily involve containment with little or no treatment will also be developed. For groundwater and surface water response actions, a range of alternatives will be developed that attain site-specific remediation levels within varying time frames using one or more technologies.

5.2. SCREENING OF REMEDIAL ALTERNATIVES AND EVALUATION OF ADDITIONAL DATA NEEDS

This contingent phase of the FS includes the screening of alternatives, which will be conducted if there are numerous feasible remedial alternatives remaining for detailed analysis. If performed, this screening of remedial alternatives will be based on short- and long-term effectiveness, implementability and relative cost, with the objective being to reduce the number of remedial alternatives that are evaluated in detail during the next phase of the FS. The screening of remedial alternatives will be conducted to retain those alternatives with the most favorable composite evaluation of the following three factors, while preserving the range of treatment and containment alternatives that were initially developed:

- **Effectiveness** – this criterion relates to the protectiveness that an alternative will provide for human health and the environment, both in the short-term and long-term. Alternatives which achieve reductions in toxicity, mobility or volume of hazardous constituents shall be considered more effective than those that do not accomplish permanent reductions. Alternatives that would result in an increase in the toxicity, mobility, or volume of hazardous constituents will not be considered further.

- **Implementability** – this criterion relates to the technical and administrative feasibility of implementing the remedial alternative. Technical feasibility involves the ability to construct, operate, and maintain the alternative, as well as monitoring of technical components of an alternative. Administrative feasibility refers to the ability to obtain approvals; the availability of treatment, storage, and disposal services; and the requirements for and availability of equipment and specialists.
- **Cost** – estimates will be developed for each of the alternatives. The cost estimates will include capital, O&M, and present worth costs. An alternative that provides a similar level of protection at a significantly higher cost would be eliminated from further consideration. Cost will not be used as the sole deciding factor when comparing alternatives that provide different degrees of public health or environmental protection.

In addition to the screening of remedial alternatives to a manageable number, the alternatives will also be reviewed to assess the need for additional Site-related data to perform the detailed evaluation. Often no additional Site-related data is needed to complete the FS. However, in some cases it is prudent to collect additional Site-related information during the FS, before the remedial program is selected. This often involves treatability testing at the lab- and/or field-scale. The need for additional Site-related information will be discussed with NYSDEC and, as agreed, a work plan will be submitted to NYSDEC for review and approval within 60 days.

5.3. DETAILED ANALYSIS AND COMPARISON OF REMEDIAL ALTERNATIVES

During this phase of the FS, the remedial alternatives are evaluated in detail to provide the basis for selection of a remedy. As part of this evaluation, a detailed description of each alternative will be prepared, including any refinements to the alternatives resulting from the review of additional information.

The detailed evaluation will include a technical and statutory assessment and a cost analysis. This evaluation will consist of an assessment of each alternative against eight criteria, two of which are threshold criteria (i.e., overall protection of human health and the environment, and compliance with SCGs), and six of which are balancing criteria (i.e., land use, long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment, short-term effectiveness, implementability, and cost). These eight criteria as described more fully below. The evaluation of alternatives will also include a comparative analysis, identifying the relative performance of each alternative against each of the criteria.

As discussed previously, two additional criteria are considered after the FS is performed and during remedy selection: regulatory and community acceptance. Regulatory acceptance is addressed by NYSDEC and NYSDOH during their review of the FS Report and preparation of the PRAP for release to the public. Community acceptance is addressed after release of the PRAP, and includes a 30-day public comment period within which written comments can be submitted to NYSDEC on the PRAP, a public meeting held during the comment period to receive oral comments on the PRAP, and preparation of a Responsiveness Summary to respond to the comments. The Responsiveness Summary is issued by NYSDEC with the final remedy decision.

5.3.1. Overall Protection of Human Health and the Environment

The analysis of each alternative with respect to overall protection of human health and the environment will provide an evaluation of whether each alternative achieves and maintains adequate protection of human health and the environment, and a description of how Site risks are eliminated, reduced, or controlled through treatment, engineering and/or institutional controls.

5.3.2. Compliance with Standards, Criteria, and Guidelines

Each alternative will be evaluated to determine whether it will attain the SCGs identified for the impacted media.

5.3.3. Land Use

The current, intended and reasonably anticipated future use of the Site and its surroundings, when unrestricted levels would not be achieved, will be evaluated. The following factors will be considered:

- Current use and historical and/or recent development and population growth patterns

- Geography and geology, institutional controls, land-use designations, and accessibility to existing infrastructure applicable to the Site
- Consistency of proposed use with applicable zoning laws and maps, and any applicable land-use plans that were formally adopted
- Proximity to real property currently used and other zoned areas, important cultural resources, natural resources, and floodplains
- Comments submitted by the public on the proposed use as part of citizen participation activities
- Environmental justice concerns.

5.3.4. Long-Term Effectiveness and Permanence

The evaluation of long-term effectiveness and permanence will address the magnitude of residual risk that would remain after implementation of the alternative (e.g., based on untreated media, treatment residuals, etc.) and the adequacy and reliability of controls used to manage the residual risk. The magnitude of residual risks remaining after the implementation of a remedial alternative will be assessed in terms of the amounts and concentrations of the remaining hazardous substances, considering their persistence, toxicity and mobility. Long-term management controls include engineering controls (e.g., containment technologies), institutional controls (e.g., deed restrictions, environmental easements, local ordinances), O&M, and monitoring. The potential need for replacing elements of the remedy will also be evaluated.

5.3.5. Reduction of Toxicity, Mobility or Volume

The degree to which the alternatives employ treatment that reduces toxicity, mobility, or volume of the hazardous substances and/or impacted media will be evaluated. The factors that will be considered include:

- The treatment technologies utilized and the materials they would treat
- The amount of hazardous constituents that would be destroyed or treated
- The expected degree of reduction in toxicity, mobility, or volume of the hazardous substances
- The degree to which treatment is irreversible
- The type and quantity of residuals that would remain following treatment of hazardous substances, and the persistence, toxicity, and mobility of those residuals.

5.3.6. Short-Term Effectiveness

The short-term effectiveness of each alternative will be evaluated with respect to the protection of workers and the community during construction and implementation of the alternative, potential environmental impacts of the remedial action and effectiveness and reliability of mitigative measures during implementation, the time until protection would be achieved, and the short-term sustainability of the remedy.

5.3.7. Implementability

The ease or difficulty of implementing each remedial alternative will be evaluated. The following factors will be considered:

- The degree of difficulty in constructing the technologies associated with the alternative
- The expected reliability of the technologies associated with the alternative
- The need to coordinate with or obtain permits and approvals from government agencies in order to implement the alternative
- The availability of necessary equipment and specialists
- The available capacity and location of treatment, storage, and disposal services necessary for implementation
- The availability of the prospective technologies that are under consideration

- The ability to monitor the effectiveness of the alternative
- The ease of undertaking additional remedial action(s), if required.

5.3.8. Cost

The costs that will be evaluated include:

- Estimated capital costs (including design and construction)
- Estimated annual operation, maintenance and monitoring costs
- Calculated present worth of the capital costs and operation, maintenance and monitoring costs.

5.4. RECOMMENDED REMEDIAL PROGRAM

Based on the comparison of remedial alternatives conducted during the FS, in conjunction with the results of the RI, the FS Report will include and describe the recommended remedial program for the Site. The recommended alternative(s) must be protective of human health and the environment, utilize permanent solutions to the maximum extent practicable, be cost effective, and consider "green remediation" principles. NYSDEC may or may not include the recommended remedial program in the PRAP released to the public for comment. As described in the CPP, oral and written comments will be received during a 30-day comment period, during which a public meeting will be held. NYSDEC will subsequently issue a Record of Decision (ROD) that will describe the selected remedial program and provide a Responsiveness Summary for the comments received on the PRAP.

6. REPORTING

6.1. MONTHLY PROGRESS REPORTS

As required under the Settlement Agreement, Monthly Progress Reports (MPRs) will be prepared and submitted to NYSDEC throughout implementation of the RI/FS. With prior approval from NYSDEC, some RI field tasks have been expedited, and MPRs have already been prepared and submitted to NYSDEC. MPRs will continue to be submitted under the Settlement Agreement, and will cover the following:

- Actions taken during the month
- Analytical and other results obtained during the month
- Deliverables submitted or approved during the month
- Actions planned for the following month
- Anticipated delays and mitigative measures
- Proposed or approved modifications
- Citizen participation activities.

6.2. INTERIM INVESTIGATION DELIVERABLE

Upon completion of the first phase of the RI, an interim submittal that includes summary tables and figures will be prepared and submitted to NYSDEC within 60 days of receiving the final analytical data package and/or the final DUSR, whichever is later.[21] Analytical data presented in the report text, tables and figures will include values for constituents reported by the lab, including those below the reporting limit but above the method detection limit, with appropriate qualifiers.[22] The interim investigation deliverable will be discussed with

[21] Data validation will be completed within 30 days of receiving the final analytical data package.
[22] There may be some figures prepared to convey information visually, without providing the underlying numeric values and qualifiers (notably, estimated values [J flagged]). Similarly, tables may be prepared that summarize data,

NYSDEC; potential data gaps will also be discussed during the meeting with NYSDEC. If there are no data gaps, then the RI Report will be prepared and submitted to NYSDEC within 90 days of the determination that no additional investigation activities are needed to complete the RI. If data gaps are identified, a scope for the contingent second phase of the RI will be developed and submitted to NYSDEC within 45 days of reaching concurrence on the additional activities needed to complete the RI. This scope will include an implementation schedule. The work scope will be implemented upon approval by NYSDEC.

6.3. REMEDIAL INVESTIGATION REPORT

The RI Report will be prepared and submitted to NYSDEC within 90 days of receiving the final analytical data package.[23,24] The RI Report will be completed in accordance with Section 3.14 of NYSDEC's DER-10 guidance. The report will summarize the data collected during the RI, as well as other relevant data collected prior to and during the RI for the Site.

The RI Report will include comparison of the soil, groundwater, surface water and sediment analytical data to relevant SCGs. Analytical data presented in the report text, tables and figures will include values for constituents reported by the lab, including those below the reporting limit but above the method detection limit, with appropriate qualifiers.[25]

The content of the RI Report will include the following:

- Facility history including an overview of the products manufactured, chemicals used and relevant waste management practices through time
- An updated Site description, if necessary
- Site maps
- Hydrogeologic interpretation
- Summary of prior investigations/sampling performed by Taconic and others
- A presentation of the available analytical data for PFCs
- Investigation approach (including any phasing, and the sequence within each phase), sampling locations, and analyses to be performed
- Field investigation observations
- Chemical analyses results
- Nature and extent characterization
- Presentation of the QHHEA and FWRIA, prepared during the RI
- A refined CSM (see **Section 1.3.4** for a preliminary CSM)

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and might not include the underlying values and qualifiers. These other formats might be used in the interim deliverable, as visual aids to help summarize large amounts of data or convey important concepts.

[23] This schedule assumes that data gaps are identified based on the interim investigation deliverable discussed in **Section 6.2**, and that additional activities are performed to fill those gaps. If it is determined that no additional activities are needed to complete the RI, then the RI Report will be prepared and submitted to NYSDEC within 90 days of that determination.

[24] Data validation will be completed within 30 days of receiving the final analytical data package.

[25] Similar to the interim deliverable, there may be some figures prepared to convey information visually, without providing the underlying numeric values and qualifiers (notably, estimated values [J flagged]). Similarly, tables may be prepared that summarize data, and might not include the underlying values and qualifiers. These other formats might be used in the RI Report, as visual aids to help summarize large amounts of data or convey important concepts.

- Assessment of existing data to evaluate whether there is the need for supplemental data collection
- Summary of the RI results, conclusions and any recommendations.

Based on the Settlement Agreement, NYSDEC's comments on the RI Report are expected within 60 days. NYSDEC's comments on the RI Report will be addressed in accordance with the standard provisions included Appendix A of the Settlement Agreement. Upon approval of the RI Report by NYSDEC, the report will be placed in the local document repository.

6.4. FEASIBILITY STUDY REPORT

The FS Report will be prepared and submitted to NYSDEC within 90 days of NYSDEC's approval of the RI Report and will document the following:

- *Development of RAOs.* RAOs consist of site-specific goals for protecting human health and the environment. RAOs will identify the contaminants and media of interest, pathways of exposure, and preliminary remediation goals.
- *Identification of SCGs.* SCGs will be identified on a chemical-, location-, and action-specific basis. [26]
- *Development of GRAs.* GRAs are medium-specific actions (e.g., containment, treatment) which satisfy the RAOs.
- *Identification of volumes or areas of impacted environmental media.* The volumes or areas of impacted media will be identified based on the nature and extent of contamination as a result of the contamination at and/or from the Site defined during the RI in conjunction with the RAOs and SCGs.
- *Identification and screening of remedial technologies and process options.* Remedial technologies and process options will be identified and screened on the basis of effectiveness and implementability. Site contaminant information and physical characteristics will be used to evaluate the technical feasibility of identified process options. Technologies and process options that are not implementable under site-specific conditions will not be retained for further evaluation.
- *Evaluation of process options.* Process options that are considered to be implementable under site-specific conditions will be evaluated in greater detail. Each of the process options remaining will be evaluated according to the criteria of effectiveness, implementability, and cost. Following the further evaluation of process options, a representative process option is selected for each technology type, if possible, to simplify the subsequent assembly and analysis of remedial alternatives.
- *Assembly of remedial alternatives.* GRAs and representative technology process options will be assembled into various remedial alternatives representing a broad range of actions.
- *Detailed analysis of remedial alternatives.* Each of the remedial alternatives will be evaluated individually, followed by a comparative analysis identifying the relative performance of each alternative against the following criteria:
  - Protection of human health and the environment
  - Compliance with SCGs
  - Land use
  - Long-term effectiveness and permanence
  - Reduction of toxicity, mobility, or volume through treatment

[26] These are often referred to as applicable or relevant and appropriate requirements (ARARs).

- Short-term impact and effectiveness
- Implementability
- Cost.

As detailed in **Section 5**, an FS will be conducted and will include the development and detailed analysis of remedial alternatives, which will be documented in the FS Report along with a recommended remedial program. The FS Report will include the following:

- Site background description
- Description of SCGs
- Summary of FS objectives
- Summary of RAOs
- Articulation of GRAs
- Identification and screening of remedial technologies
- Description of remedial alternatives
- Detailed analysis of remedial alternatives
- Summary, conclusions and recommendations.

Based on the Settlement Agreement, NYSDEC's comments on the FS Report are expected within 60 days. NYSDEC's comments on the FS Report will be addressed in accordance with the standard provisions included Appendix A of the Settlement Agreement. Upon approval of the FS Report by NYSDEC, the report will be placed in the local document repository.

7. CITIZEN PARTICIPATION ACTIVITIES

As required by the Settlement Agreement, a CPP was prepared in accordance with NYSDEC's guidance entitled Citizen Participation Support Materials for DER-23 / Citizen Participation Handbook for Remedial Programs (January 2010). The CPP is currently available at the document repositories located at the following locations:

- NYSDEC Office
  625 Broadway
  Division of Environmental Remediation
  Albany, New York 12233
  Telephone: (518) 402-8013
- Petersburgh Town Hall at
  65 Main Street
  Petersburgh, New York 12138
  Telephone: (518) 658-3777

The CPP outlines public participation activities during execution of the RI/FS and through selection of the remedy by NYSDEC. This includes, among others, distribution of a fact sheet to a Site contact list that announces the availability of the RI/FS Work Plan and description of upcoming RI field work, distribution of a fact sheet that summarizes findings of the RI, and release of a PRAP for public comment after the RI and FS Reports have been prepared. A 30-day comment period will be held on the proposed remedy, during which a public meeting will be held. NYSDEC will subsequently address the oral and written comments received on the PRAP during the comment period in a Responsiveness Summary included in its ROD.

The CPP also identifies the local document repository where Site documents will be placed for review by interested parties. The plan also establishes a mailing list for the Site, which will be expanded to include

additional recipients as requests are received. The mailing list will be used for notifications (e.g., availability sessions, public meetings, availability of key documents) and transmittal of fact sheets.

8. SCHEDULE

A milestone schedule for implementation of the RI/FS is provided in the table below and is based on the Settlement Agreement. This schedule begins with submission of this CPP and progresses through approval of the FS Report, release of a PRAP and issuance of a ROD.

Milestone Activity	Estimated Schedule
CPP submittal to NYSDEC	December 9, 2016
RI/FS Work Plan submittal to NYSDEC for review	December 20, 2016
RI/FS Work Plan resubmittal to NYSDEC for review	May 12, 2017; November 20, 2017; March 2, 2018; and, April 9, 2018
Submittal of MPRs to NYSDEC	15th day of each month
NYSDEC approval of CPP	April 26, 2017
NYSDEC approval of RI/FS Work Plan and RI/FS Fact Sheet	TBD
Implementation of RI Phase 1 field activities	April/May 2018 through April 2019 (including water level and surface water sampling)
Interim investigation submittal to NYSDEC for review	90 days following receipt of the final analytical data for Phase 1
Implementation of RI Phase 2 field activities	TBD
RI Report submittal to NYSDEC for review	90 days following receipt of final analytical data for Phase 2; if Phase 2 is determined to not be necessary, then 90 days following that determination
NYSDEC approval of RI Report	TBD
FS Report submittal to NYSDEC for review	90 days following NYSDEC approval of RI Report
NYSDEC approval of FS Report	TBD
Release of PRAP (proposed remedy) by NYSDEC	TBD, following NYSDEC approval of RI/FS Reports
Public meeting on PRAP (proposed remedy)	Within the 30-day public comment period, following NYSDEC release of PRAP (proposed remedy)
Issuance of ROD (final remedy)	TBD, after close of the public comment period and after addressing comments

9. REFERENCES

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CHA, 2007. *Annual Groundwater Monitoring Report for the Taconic Facility Located in Petersburgh, New York*. June 4, 2007.

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USEPA, 1993. *Health and Safety Plan Users Guide*. July 1993.

Figures

FIGURE 1

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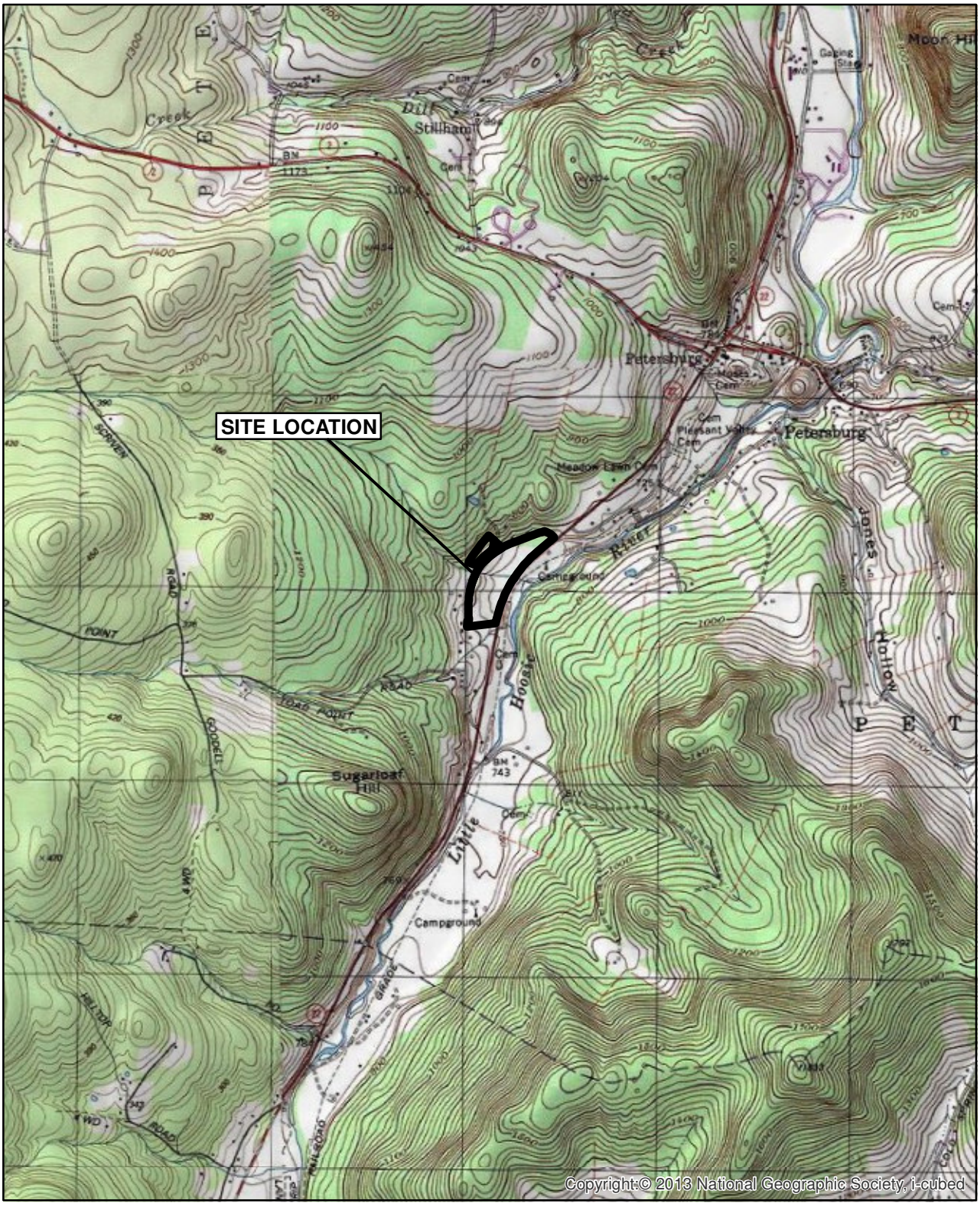
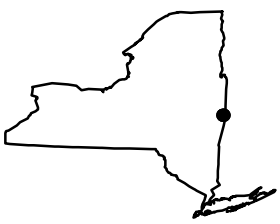
I:\Sichenzia-Ross.27400\63716.RI-Fs-Work-Plan\Docs\Reports\RIFS Work Plan\Figures\Figure 1 Site Location.mxd



PETERSBURG, NEW YORK

SITE LOCATION



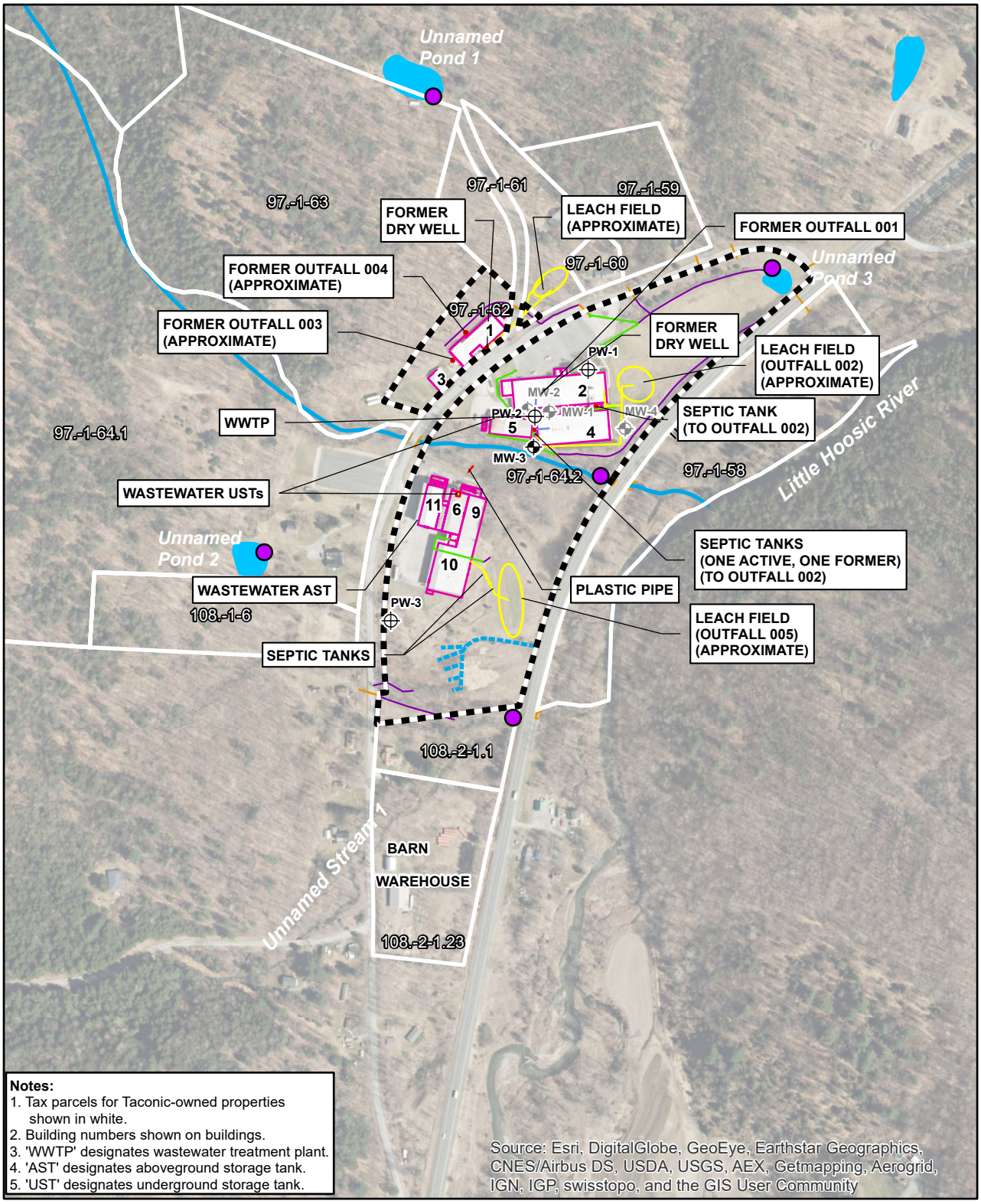
MAP LOCATION

N

0 1,250 2,500 5,000

Feet

O'BRIEN & GERE ENGINEERS, INC.



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I:\Sichenzia-Ross.27400\67498.Rifs-Wp-Revisio\Docs\Reports\3-2-2018 PLANS\Revised RIFSWP\Figures\Figure 2 Site Plan & Site Features.mxd

LEGEND

- Site Outline
- Pond
- Surface Water (Dashed where Intermittent)
- Production Well
- Surface Water Sample Location (Sampled 12/9/16)
- Existing Overburden Monitoring Well
- Abandoned Overburden Monitoring Well

PETERSBURG, NEW YORK

SITE PLAN AND SITE FEATURES

N

0 250 500 1,000
Feet

O'BRIEN & GERE ENGINEERS, INC.

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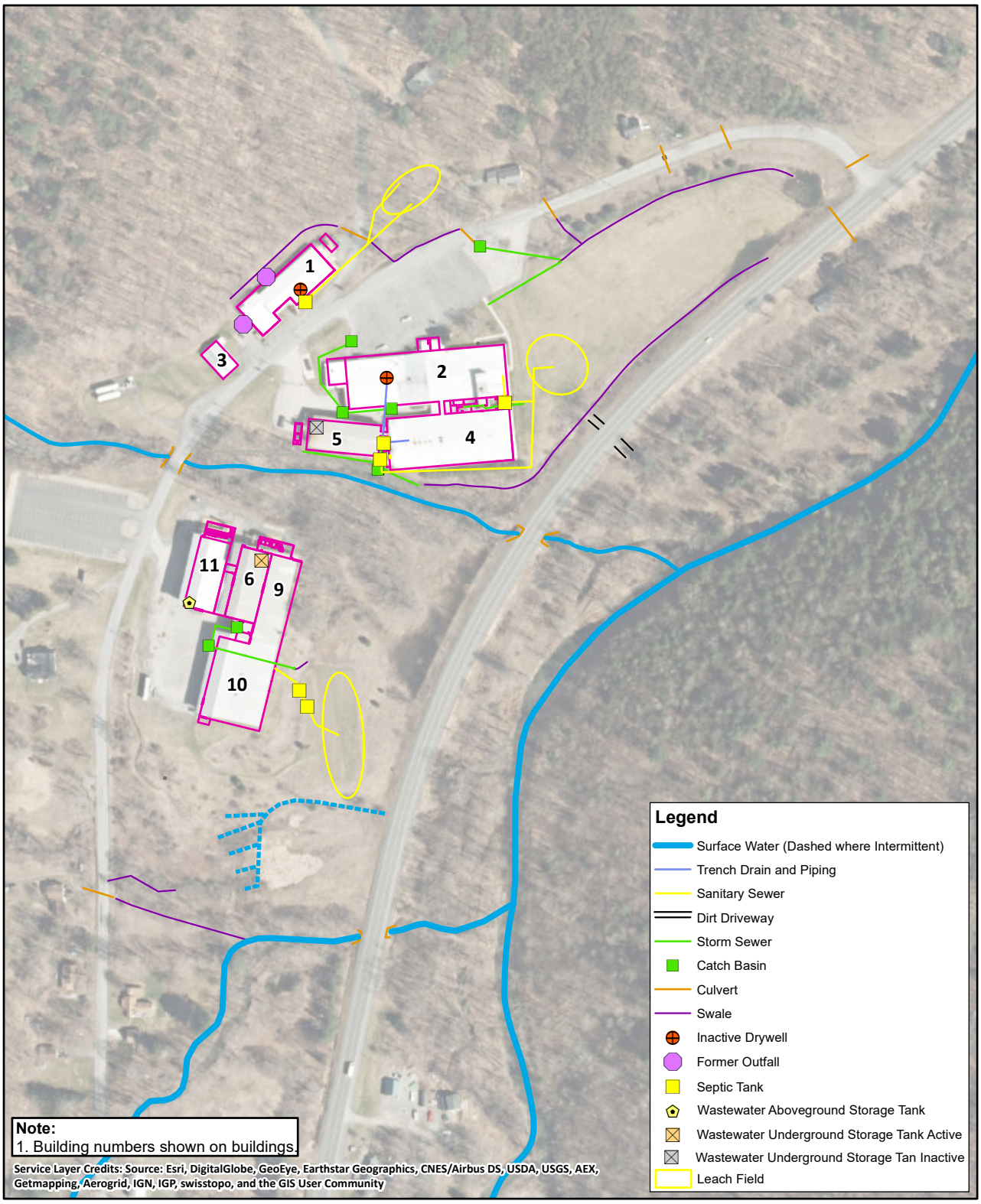

PETERSBURG, NEW YORK

SITE UTILITY FEATURES

N

0 150 300 600

Feet

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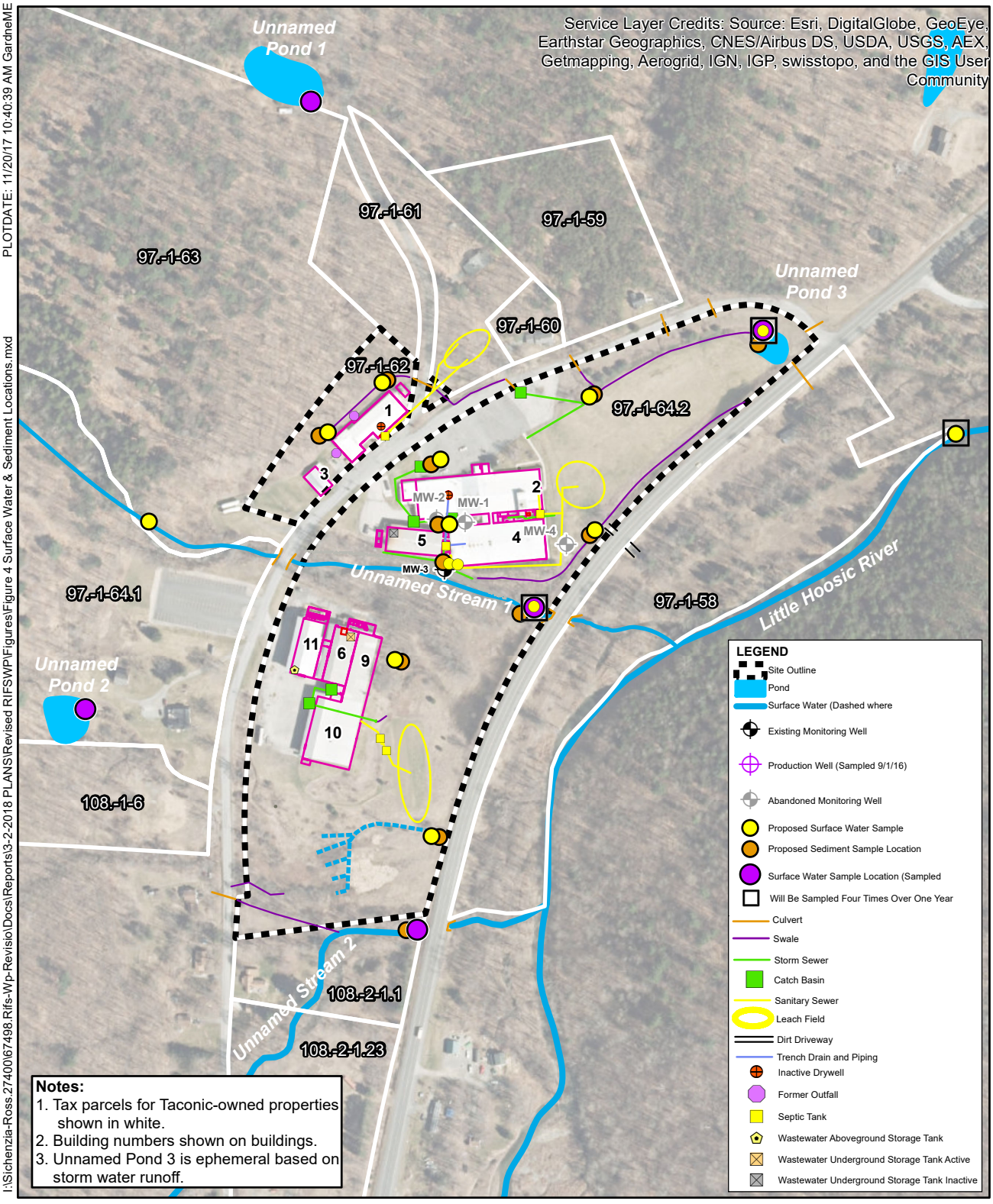
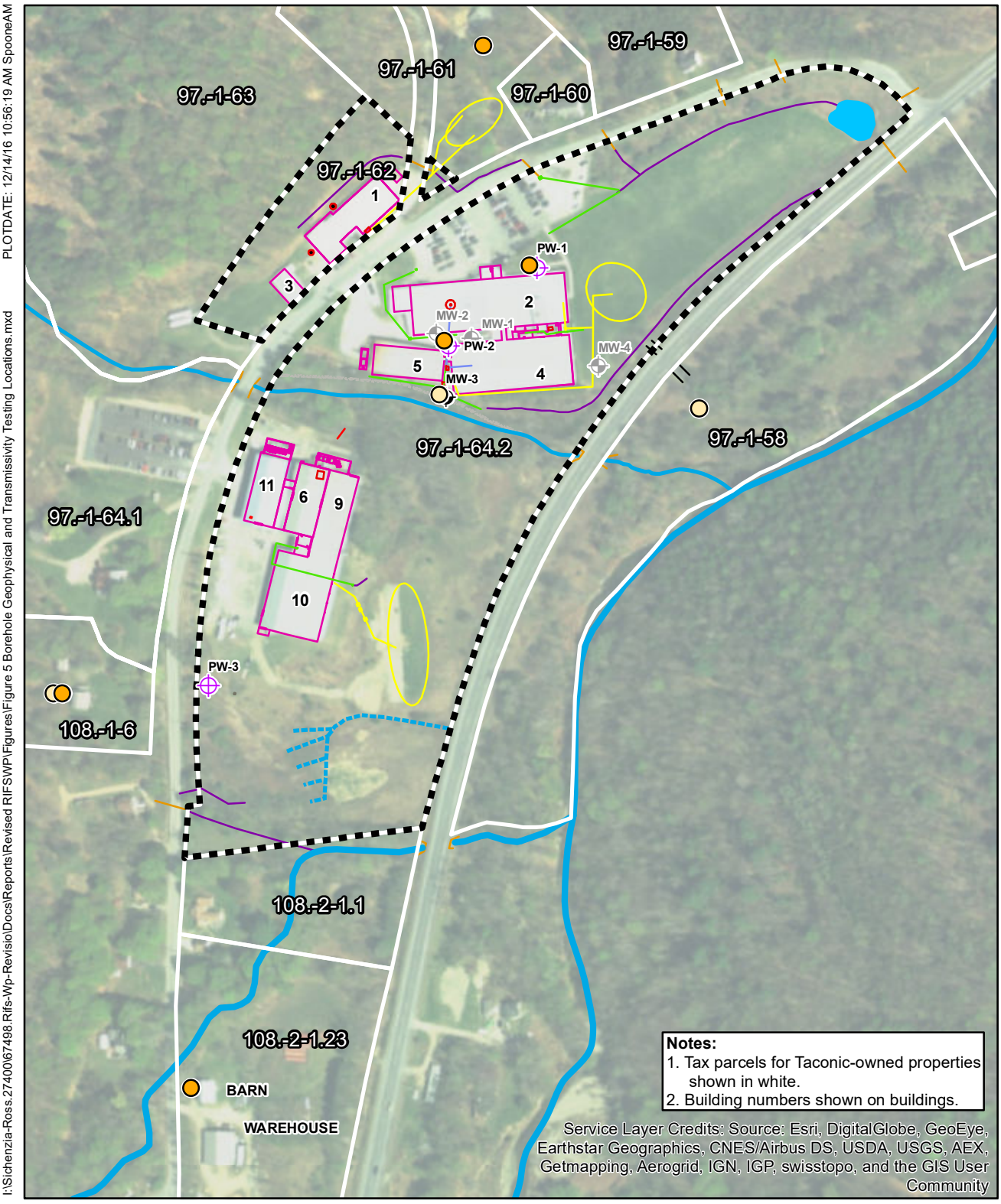


PETERSBURG, NEW YORK

SURFACE WATER AND SEDIMENT SAMPLE LOCATIONS

O'BRIEN & GERE ENGINEERS, INC.



LEGEND

- Site Outline
- Surface Water (Dashed where Intermittent)
- Pond
- Production Well (Sampled 9/1/16)
- Existing Monitoring Well
- Abandoned Monitoring Well
- Potential Groundwater Location (Taconic-Owned Wells, Sample if Accessible)
- Potential Borehole Geophysical and Transmissivity Testing Location (Taconic-Owned Wells, Test Selected if Accessible)

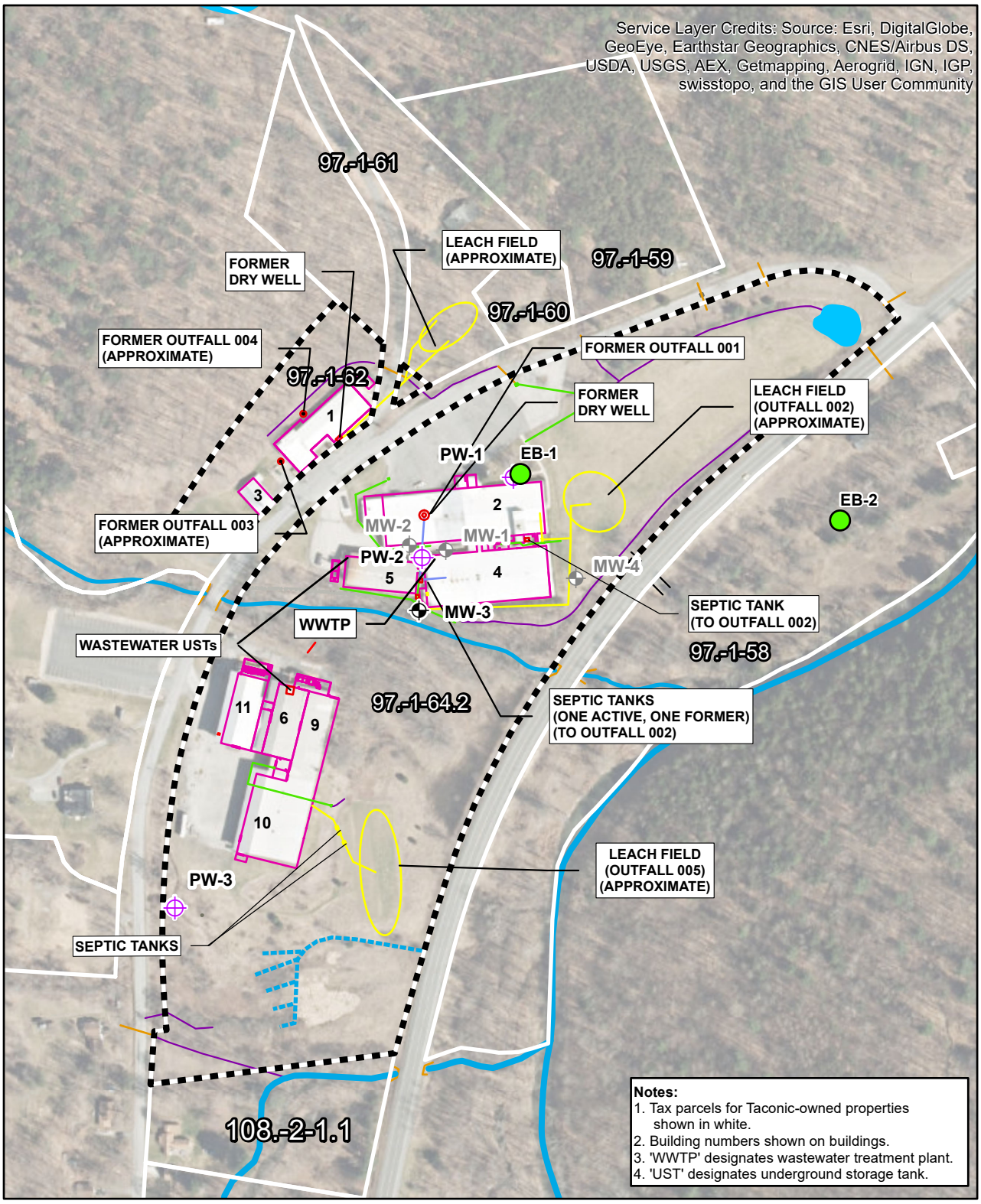
PETERSBURG, NEW YORK

POTENTIAL BOREHOLE GEOPHYSICAL AND TRANSMISSIVITY TESTING LOCATIONS

0 150 300 600
Feet

N

O'BRIEN & GERE ENGINEERS, INC.



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I:\Sichenzia-Ross.27400\67498.Rifs-Wp-Revisio\Docs\Reports\3-2-2018 PLANS\Revised RIFSWP\Figures\Figure 6 Exploratory Borehore Locations.mxd

LEGEND

- Site Outline
- Surface Water (Dashed where Intermittent)
- Pond
- Proposed Exploratory Boring Location
- Production Well (Sampled 9/1/16)
- Existing Overburden Monitoring Well
- Abandoned Overburden Monitoring Well

PETERSBURG, NEW YORK

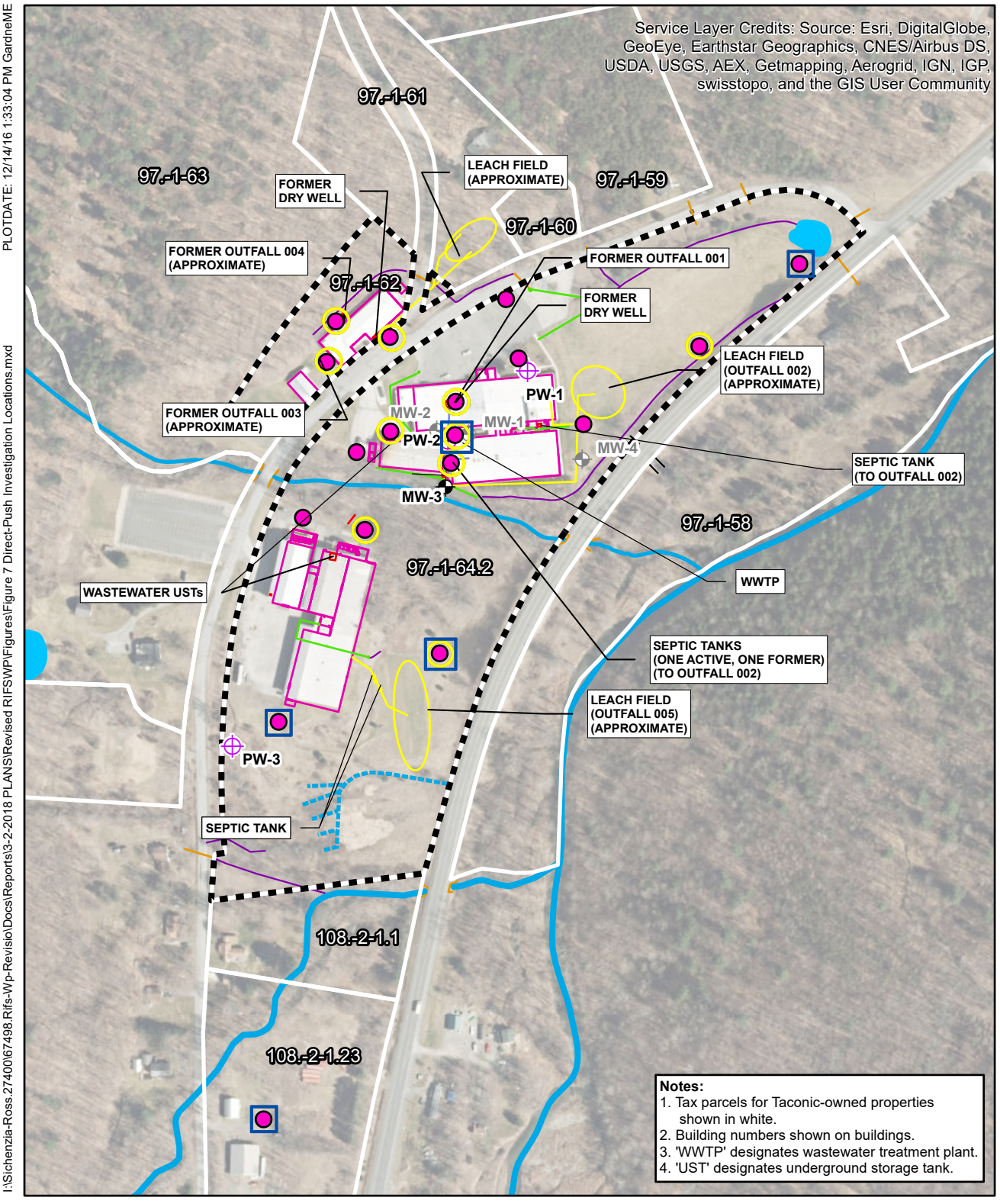
EXPLORATORY BOREHOLE LOCATIONS

0 125 250 500
Feet

N

O'BRIEN & GERE ENGINEERS, INC.

FIGURE 7



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I:\Sichenzia-Ross.27400\67498.Rifs-Wp-Revisio\Docs\Reports\3-2-2018 PLANS\Revised RIFSWP\Figures\Figure 7 Direct-Push Investigation Locations.mxd

LEGEND

- Site Outline
- Surface Water (Dashed where Intermittent)
- Pond
- Proposed Direct Push Groundwater Location
- Proposed Subsurface Soil Sample Location
- Proposed Direct Sensing Location
- Production Well (Sampled 9/1/16)
- Existing Overburden Monitoring Well
- Abandoned Overburden Monitoring Well

PETERSBURG, NEW YORK

DIRECT-PUSH INVESTIGATION LOCATIONS

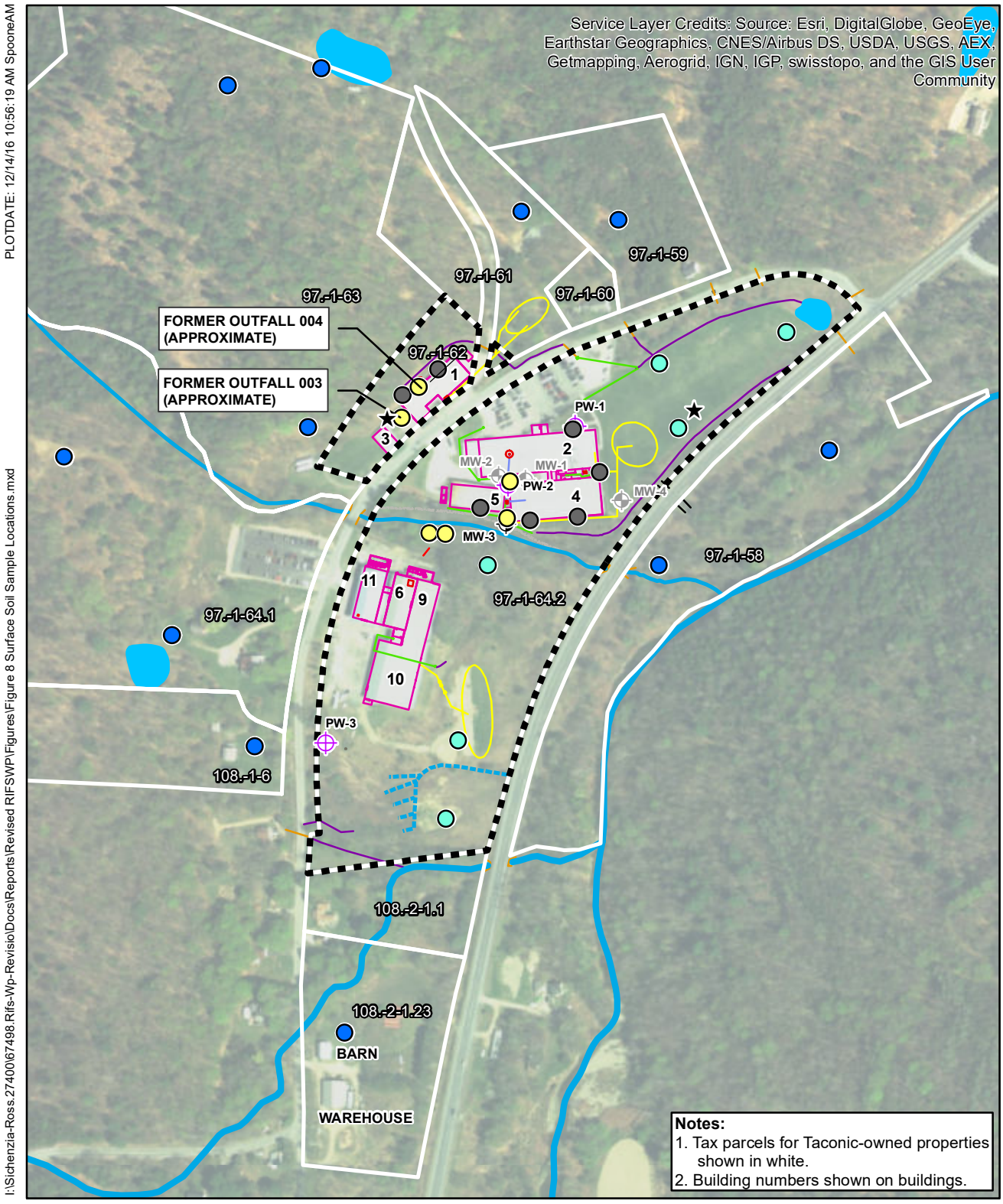
N

0 125 250 500

Feet

O'BRIEN & GERE ENGINEERS, INC.

FIGURE 8



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I:\Sichenzia-Ross.27400\67498.Rifs-Wp-Revisio\Docs\Reports\Revised RIFSWP\Figures\Figure 8 Surface Soil Sample Locations.mxd

Site Outline
Pond
Surface Water (Dashed where Intermittent)
Proposed Surface Soil Location
Proposed Surface Soil/Roof Drip Edge Location
Proposed Atmospheric Deposition Onsite Location
Proposed Atmospheric Deposition Offsite Location (Locations to be determined with NYSDEC)
Proposed TCL/TAL Surface Soil Sample
Production Well (Sampled 9/1/16)
Existing Monitoring Well
Abandoned Monitoring Well

PETERSBURG, NEW YORK

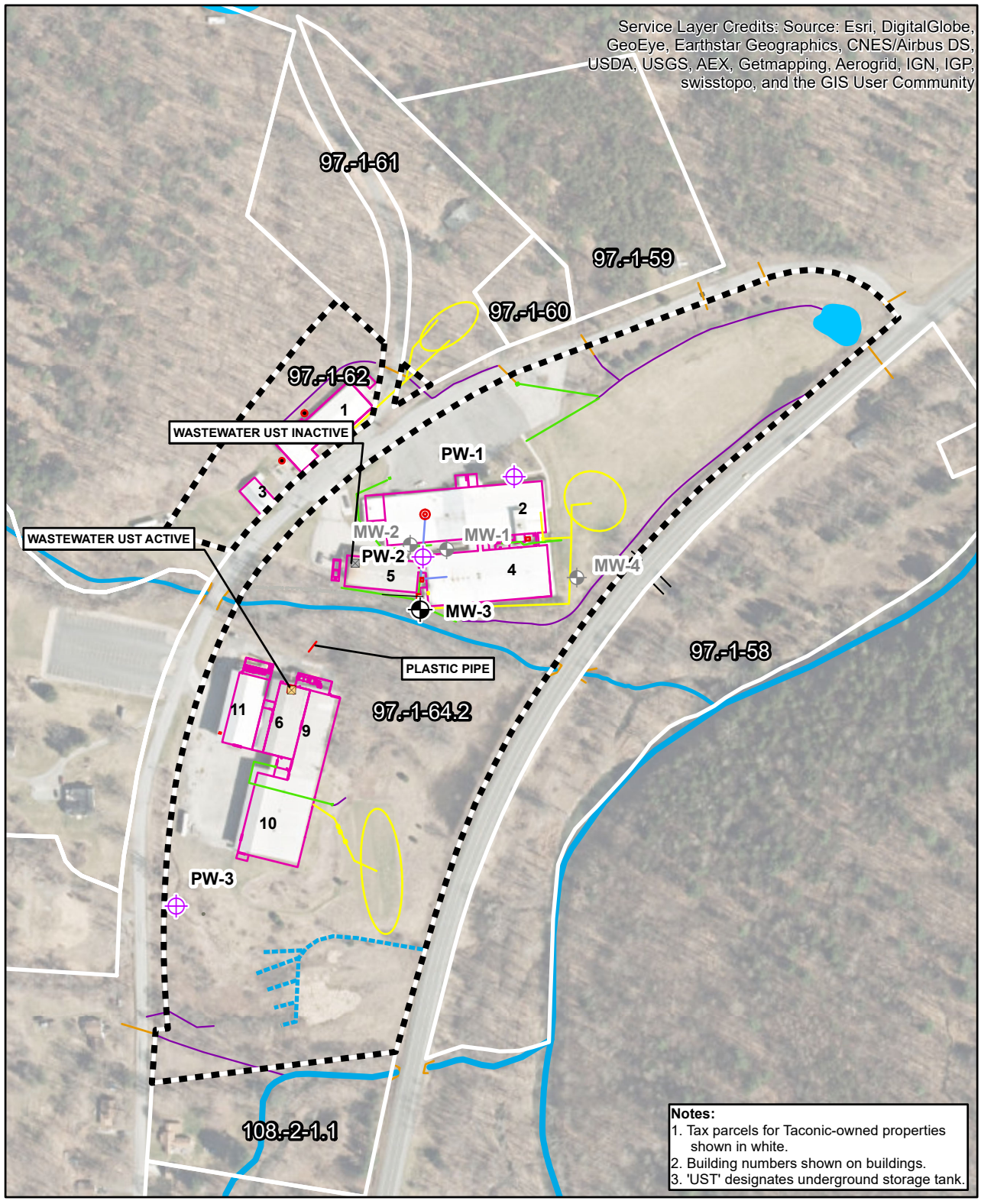
SURFACE SOIL SAMPLE LOCATIONS

0 150 300 600
Feet

N

O'BRIEN & GERE ENGINEERS, INC.

FIGURE 9



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I:\Sichenzia-Ross.27400\67498.Rifs-Wp-Revisio\Docs\Reports\3-2-2018 PLANS\Revised RIFSWP\Figures\Figure 9 UST and Plastic Pipe Sample Locations.mxd

LEGEND

- Site Outline
- Surface Water (Dashed where Intermittent)
- Pond
- Production Well (Sampled 9/1/16)
- Existing Overburden Monitoring Well
- Abandoned Overburden Monitoring Well

PETERSBURG, NEW YORK

UNDERGROUND STORAGE TANK AND PLASTIC PIPE SAMPLE LOCATIONS

N

0 125 250 500

Feet

O'BRIEN & GERE ENGINEERS, INC.

Appendices

Appendix A

Field Sampling and Analysis Plan

The revised FSAP contained in Appendix A will be submitted separately from the Work Plan.

Appendix B

Quality Assurance Project Plan

The revised QAPP contained in Appendix B will be submitted separately from the Work Plan.

Appendix C

Health and Safety Plan /Community Air Monitoring Plan

The HASP/CAMP contained in Appendix C will be submitted separately from the Work Plan.

Appendix D

Validated Results of Accelerated RI Activities

Analytical Results from September 1, 2016 Sampling Event

Sample Location	PW-1	PW-2	PW-2	PW-3	FIELD REAGENT BLANK	TRIP BLANK
Sample ID	PW-1-09012016	PW-2-09012016	X-1-09012016	PW-3-09012016	FRB-09012016	TB-09012016
Sample Date	9/1/2016	9/1/2016	9/1/2016	9/1/2016	9/1/2016	9/1/2016
Perfluorinated Hydrocarbons (µg/L)						
Perfluorobutanesulfonic acid (PFBS)	0.020 U	0.020 U	0.0011 J	0.020 U	0.0019 U	---
Perfluorobutanoic acid (PFBA)	0.031 U	0.070	0.064	0.020 U	0.0019 U	---
Perfluorodecanesulfonic acid (PFDS)	0.020 U	0.020 U	0.0019 U	0.020 U	0.0019 U	---
Perfluorodecanoic acid (PFDA)	0.020 U	0.0077 J	0.0073	0.020 U	0.0019 U	---
Perfluorododecanoic acid (PFDoA)	0.020 U	0.020 U	0.0019 U	0.020 U	0.0019 U	---
Perfluoroheptanesulfonic Acid (PFHpS)	0.020 U	0.020 U	0.0019 U	0.020 U	0.0019 U	---
Perfluoroheptanoic acid (PFHpA)	0.14	0.24	0.23	0.035	0.0019 U	---
Perfluorohexanesulfonic acid (PFHxS)	0.020 U	0.013 J	0.0019 U	0.020 U	0.0019 U	---
Perfluorohexanoic acid (PFHxA)	0.15	0.52	0.46	0.030	0.0019 U	---
Perfluorononanoic acid (PFNA)	0.014 J	0.033	0.033	0.020 U	0.0019 U	---
Perfluorooctane Sulfonamide (FOSA)	0.020 U	0.020 UJ	0.00060 J	0.0066 J	0.0019 U	---
Perfluorooctanesulfonic acid (PFOS)	0.020 U	0.024 J	0.0026 J	0.020 U	0.0019 U	---
Perfluorooctanoic acid (PFOA)	8.3 JN	24 JN	24 JN	0.77 JN	0.0013 J	---
Perfluoropentanoic acid (PFPeA)	0.067	0.34	0.29	0.020 U	0.0019 U	---
Perfluorotetradecanoic acid (PFTeA)	0.020 U	0.020 U	0.0019 UJ	0.020 U	0.00076 J	---
Perfluorotridecanoic Acid (PFTriA)	0.020 U	0.020 U	0.0019 U	0.0059 J	0.0019 U	---
Perfluoroundecanoic acid (PFUnA)	0.020 U	0.020 U	0.0019 U	0.020 U	0.0019 U	---
Volatile Organic Compounds (VOCs) (µg/L)						
1,1,1-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
1,1,2,2-Tetrachloroethane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
1,1,2-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
1,1-Dichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
1,1-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
1,2,3-Trichlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
1,2,4-Trichlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
1,2-Dibromo-3-Chloropropane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
1,2-Dibromoethane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
1,2-Dichlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
1,2-Dichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
1,2-Dichloropropane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
1,3-Dichlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
1,4-Dichlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
2-Butanone (MEK)	10 U	10 U	10 U	10 U	---	10 U
2-Hexanone	5.0 U	5.0 U	5.0 U	5.0 U	---	5.0 U
4-Methyl-2-Pentanone (MIBK)	5.0 U	5.0 U	5.0 U	5.0 U	---	5.0 U
Acetone	10 U	10 U	10 U	10 U	---	10 U
Benzene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Bromodichloromethane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Bromoform	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Bromomethane	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	---	1.0 UJ
Carbon disulfide	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Carbon tetrachloride	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Chlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Chlorobromomethane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Chloroethane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Chloroform	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Chloromethane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
cis-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
cis-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Cyclohexane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Dibromochloromethane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Dichlorodifluoromethane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Ethylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Isopropylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
m,p-Xylene	2.0 U	2.0 U	2.0 U	2.0 U	---	2.0 U
Methyl Acetate	2.5 U	2.5 U	2.5 U	2.5 U	---	2.5 U
Methylcyclohexane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Methylene Chloride	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Methyl tert-butyl ether	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U

Analytical Results from September 1, 2016 Sampling Event

Sample Location	PW-1	PW-2	PW-2	PW-3	FIELD REAGENT BLANK	TRIP BLANK
Sample ID	PW-1-09012016	PW-2-09012016	X-1-09012016	PW-3-09012016	FRB-09012016	TB-09012016
Sample Date	9/1/2016	9/1/2016	9/1/2016	9/1/2016	9/1/2016	9/1/2016
o-Xylene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Styrene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Tetrachloroethene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Toluene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
trans-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
trans-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Trichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Trichlorofluoromethane	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Vinyl chloride	1.0 U	1.0 U	1.0 U	1.0 U	---	1.0 U
Xylenes, Total	2.0 U	2.0 U	2.0 U	2.0 U	---	2.0 U
Semi-Volatile Organic Compounds (SVOCs) (µg/L)						
1,1'-Biphenyl	4.9 U	4.8 U	4.7 U	4.8 U	---	---
1,2,4,5-Tetrachlorobenzene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
1,4-Dioxane	9.8 U	9.6 U	9.5 U	9.6 U	---	---
2,3,4,6-Tetrachlorophenol	4.9 U	4.8 U	4.7 U	4.8 U	---	---
2,4,5-Trichlorophenol	4.9 U	4.8 U	4.7 U	4.8 U	---	---
2,4,6-Trichlorophenol	4.9 U	4.8 U	4.7 U	4.8 U	---	---
2,4-Dichlorophenol	4.9 U	4.8 U	4.7 U	4.8 U	---	---
2,4-Dimethylphenol	4.9 U	4.8 U	4.7 U	4.8 U	---	---
2,4-Dinitrophenol	9.8 U	9.6 U	9.5 U	9.6 U	---	---
2,4-Dinitrotoluene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
2,6-Dinitrotoluene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
2-Chloronaphthalene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
2-Chlorophenol	4.9 U	4.8 U	4.7 U	4.8 U	---	---
2-Methylnaphthalene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
2-Methylphenol	4.9 U	4.8 U	4.7 U	4.8 U	---	---
2-Nitroaniline	9.8 U	9.6 U	9.5 U	9.6 U	---	---
2-Nitrophenol	4.9 U	4.8 U	4.7 U	4.8 U	---	---
3,3'-Dichlorobenzidine	4.9 U	4.8 U	4.7 U	4.8 U	---	---
3-Methylphenol	9.8 U	9.6 U	9.5 U	9.6 U	---	---
3-Nitroaniline	9.8 U	9.6 U	9.5 U	9.6 U	---	---
4,6-Dinitro-2-methylphenol	9.8 U	9.6 U	9.5 U	9.6 U	---	---
4-Bromophenyl phenyl ether	4.9 U	4.8 U	4.7 U	4.8 U	---	---
4-Chloro-3-methylphenol	4.9 U	4.8 U	4.7 U	4.8 U	---	---
4-Chloroaniline	4.9 U	4.8 U	4.7 U	4.8 U	---	---
4-Chlorophenyl-phenylether	4.9 U	4.8 U	4.7 U	4.8 U	---	---
4-Methylphenol	9.8 U	9.6 U	9.5 U	9.6 U	---	---
4-Nitroaniline	9.8 U	9.6 U	9.5 U	9.6 U	---	---
4-Nitrophenol	9.8 UJ	9.6 UJ	9.5 UJ	9.6 UJ	---	---
Acenaphthene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Acenaphthylene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Acetophenone	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Anthracene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Atrazine	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Benzaldehyde	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Benzo[a]anthracene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Benzo[a]pyrene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Benzo[b]fluoranthene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Benzo[g,h,i]perylene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Benzo[k]fluoranthene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Bis(2-Chloroethoxy)methane	4.9 U	4.8 U	4.7 U	4.8 U	---	---
bis (2-Chloroethyl) ether	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Bis(2-chloroisopropyl)ether	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Bis(2-Ethylhexyl) phthalate	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Butyl benzyl phthalate	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Caprolactam	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Carbazole	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Chrysene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Dibenz(a,h)anthracene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Dibenzofuran	9.8 U	9.6 U	9.5 U	9.6 U	---	---
Diethylphthalate	4.9 U	4.8 U	4.7 U	4.8 U	---	---

Analytical Results from September 1, 2016 Sampling Event

Sample Location	PW-1	PW-2	PW-2	PW-3	FIELD REAGENT BLANK	TRIP BLANK
Sample ID	PW-1-09012016	PW-2-09012016	X-1-09012016	PW-3-09012016	FRB-09012016	TB-09012016
Sample Date	9/1/2016	9/1/2016	9/1/2016	9/1/2016	9/1/2016	9/1/2016
Dimethyl phthalate	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Di-n-butyl phthalate	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Di-n-octyl phthalate	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Fluoranthene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Fluorene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Hexachlorobenzene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Hexachlorobutadiene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Hexachlorocyclopentadiene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Hexachloroethane	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Indeno[1,2,3-cd]pyrene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Isophorone	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Naphthalene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Nitrobenzene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
N-Nitrosodi-n-propylamine	4.9 U	4.8 U	4.7 U	4.8 U	---	---
N-Nitrosodiphenylamine	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Pentachlorophenol	9.8 UJ	9.6 UJ	9.5 UJ	9.6 UJ	---	---
Phenanthrene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Phenol	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Pyrene	4.9 U	4.8 U	4.7 U	4.8 U	---	---
Pesticides (µg/L)						
4-4'-DDD	0.048 U	0.047 U	0.049 U	0.049 U	---	---
4-4'-DDE	0.048 U	0.047 U	0.049 U	0.049 U	---	---
4-4'-DDT	0.048 U	0.047 U	0.049 U	0.049 U	---	---
Aldrin	0.048 U	0.047 U	0.049 U	0.049 U	---	---
alpha-BHC	0.048 U	0.047 U	0.049 U	0.049 U	---	---
alpha-Chlordane	0.048 U	0.047 U	0.049 U	0.049 U	---	---
beta-BHC	0.048 U	0.047 U	0.049 U	0.049 U	---	---
delta-BHC	0.048 U	0.047 U	0.049 U	0.049 U	---	---
Dieldrin	0.048 U	0.047 U	0.049 U	0.049 U	---	---
Endosulfan I	0.048 U	0.047 U	0.049 U	0.049 U	---	---
Endosulfan II	0.048 U	0.047 U	0.049 U	0.049 U	---	---
Endosulfan Sulfate	0.048 U	0.047 U	0.049 U	0.049 U	---	---
Endrin	0.048 U	0.047 U	0.049 U	0.049 U	---	---
Endrin Aldehyde	0.048 U	0.047 U	0.049 U	0.049 U	---	---
Endrin Ketone	0.048 U	0.047 U	0.049 U	0.049 U	---	---
gamma- BHC (Lindane)	0.048 U	0.047 U	0.049 U	0.049 U	---	---
gamma-Chlordane	0.048 U	0.047 U	0.049 U	0.049 U	---	---
Heptachlor	0.048 U	0.047 U	0.049 U	0.049 U	---	---
Heptachlor Epoxide	0.048 U	0.047 U	0.049 U	0.049 U	---	---
Methoxychlor	0.048 U	0.047 U	0.049 U	0.049 U	---	---
Toxaphene	0.48 U	0.47 U	0.49 U	0.49 U	---	---
Polychlorinated biphenyls (PCBs) (µg/L)						
PCB-1016	0.47 U	0.48 U	0.48 U	0.48 U	---	---
PCB-1221	0.47 U	0.48 U	0.48 U	0.48 U	---	---
PCB-1232	0.47 U	0.48 U	0.48 U	0.48 U	---	---
PCB-1242	0.47 U	0.48 U	0.48 U	0.48 U	---	---
PCB-1248	0.47 U	0.48 U	0.48 U	0.48 U	---	---
PCB-1254	0.47 U	0.48 U	0.48 U	0.48 U	---	---
PCB-1260	0.47 U	0.48 U	0.48 U	0.48 U	---	---
PCB-1262	0.47 U	0.48 U	0.48 U	0.48 U	---	---
PCB-1268	0.47 U	0.48 U	0.48 U	0.48 U	---	---
Metals (mg/L)						
Aluminum	0.076 J	0.20 U	0.20 U	0.20 U	---	---
Antimony	0.0010 U	0.0010 U	0.0010 U	0.0010 U	---	---
Arsenic	0.0018	0.0023	0.0024	0.0010 U	---	---
Barium	0.074	0.021	0.022	0.021	---	---
Beryllium	0.00070 U	0.00070 U	0.00070 U	0.00070 U	---	---
Cadmium	0.00050 U	0.00050 U	0.00050 U	0.00050 U	---	---
Calcium	25.8	15.9	15.3	11.0	---	---
Chromium	0.0015 U	0.0015 U	0.0015 U	0.0015 U	---	---
Cobalt	0.0040 U	0.0040 U	0.0040 U	0.0040 U	---	---

Analytical Results from September 1, 2016 Sampling Event

	Sample Location	PW-1	PW-2	PW-2	PW-3	FIELD REAGENT BLANK	TRIP BLANK
	Sample ID	PW-1-09012016	PW-2-09012016	X-1-09012016	PW-3-09012016	FRB-09012016	TB-09012016
	Sample Date	9/1/2016	9/1/2016	9/1/2016	9/1/2016	9/1/2016	9/1/2016
Copper		0.0054	0.0061	0.0087	0.0090	---	---
Cyanide (total)		0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	---	---
Iron		0.050 U	0.050 U	0.050 U	0.024 J	---	---
Lead		0.0012	0.0010	0.0026	0.0020	---	---
Magnesium		5.4	4.1	4.0	2.5	---	---
Manganese		0.023	0.0021	0.0021	0.0010 U	---	---
Mercury		0.00020 U	0.00020 U	0.00020 U	0.00020 U	---	---
Nickel		0.010 U	0.010 U	0.0024 J	0.010 U	---	---
Potassium		0.54	0.89	0.84	1.4	---	---
Selenium		0.0010 U	0.0010 U	0.0010 U	0.0010 U	---	---
Silver		0.00050 U	0.00050 U	0.00050 U	0.00050 U	---	---
Sodium		16.5	30.0	28.8	7.0	---	---
Thallium		0.00020 U	0.00020 U	0.00020 U	0.00020 U	---	---
Vanadium		0.0050 U	0.0050 U	0.0050 U	0.0050 U	---	---
Zinc		0.019	0.024	0.066	0.010 U	---	---
General Chemistry (mg/L)							
Cyanide (total)		0.010 UJ	0.010 UJ	0.010 UJ	0.010 UJ	---	---

Notes:

1. Results reported in micrograms per liter (µg/L) except metals and general chemistry, which are in milligrams per liter (mg/L).
2. Perfluorinated Hydrocarbons were analyzed by United State Environmental Protection Agency (USEPA) Method 537 by TestAmerica Laboratories, Inc. in West Sacramento, California. VOCs, SVOCs, pesticides, PCBs, metals, mercury and cyanide were analyzed by USEPA SW-846 Methods 8260C, 8270D, 8081B, 8082A, and USEPA Methods 200.7 or 200.8, 245.1, 335.4, respectively, by TestAmerica Laboratories, Inc. in Amherst, New York.
3. "U" indicates that the analyte was not detected and the sample reporting limit (RL) is presented.
4. "J" indicates that the concentration should be considered approximate.
5. “JN” indicates that the target analyte has been “tentatively identified” as present and the associated numerical value is the estimated concentration in the sample.
6. “UJ” indicates that the analyte was analyzed for and was not detected; however, the RL is presented and should be considered approximate.
7. "---" indicates that the analyte was not analyzed for on that sampling date.

Analytical Results from December 9, 2016 Sampling Event

Sample Location	UP-1	UP-2	UP-3	US-1	US-1	US-2
Sample ID	UP-1-120916	UP-2-120916	UP-3-120916	US-1-120916	X-1-120916	US-2-120916
Sample Date	12/9/2016	12/9/2016	12/9/2016	12/9/2016	12/9/2016	12/9/2016
Perfluorinated Hydrocarbons (µg/L)						
Perfluorobutanesulfonic acid (PFBS)	0.0019 U	0.0019 U	0.0010 J	0.0019 U	0.0019 U	0.0019 U
Perfluorobutanoic acid (PFBA)	0.0014 J	0.0019 U	0.017	0.0019 U	0.0014 J	0.0019 U
Perfluorodecanesulfonic acid (PFDS)	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
Perfluorodecanoic acid (PFDA)	0.00052 JN	0.0019 U	0.0020	0.0019 U	0.0019 U	0.0019 U
Perfluorododecanoic acid (PFDoA)	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
Perfluoroheptanesulfonic Acid (PFHpS)	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
Perfluoroheptanoic acid (PFHpA)	0.018 J	0.0089	0.12	0.0019 U	0.018 J	0.0019 U
Perfluorohexanesulfonic acid (PFHxS)	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
Perfluorohexanoic acid (PFHxA)	0.0076 J	0.0025 JN	0.097	0.0019 U	0.0076 J	0.0019 U
Perfluorononanoic acid (PFNA)	0.0013 J	0.0017 J	0.0095	0.0019 U	0.0014 J	0.0019 U
Perfluorooctane Sulfonamide (FOSA)	0.0019 UJ	0.0019 UJ	0.0019 UJ	0.0019 UJ	0.0019 UJ	0.0019 UJ
Perfluorooctanesulfonic acid (PFOS)	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0023	0.0019 U
Perfluorooctanoic acid (PFOA)	0.34 JN	0.25 JN	3.9 JN	0.011 JN	0.34 JN	0.0066 JN
Perfluoropentanoic acid (PFPeA)	0.0015 J	0.0019 U	0.041	0.0019 U	0.0015 J	0.0019 U
Perfluorotetradecanoic acid (PFTeA)	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
Perfluorotridecanoic Acid (PFTriA)	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
Perfluoroundecanoic acid (PFUnA)	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U
Volatile Organic Compounds (VOCs) (µg/L)						
1,1,1-Trichloroethane	---	---	---	1.0 U	1.0 U	---
1,1,2,2-Tetrachloroethane	---	---	---	1.0 U	1.0 U	---
1,1,2-Trichloro-1,2,2-trifluoroethane	---	---	---	1.0 U	1.0 U	---
1,1,2-Trichloroethane	---	---	---	1.0 U	1.0 U	---
1,1-Dichloroethane	---	---	---	1.0 U	1.0 U	---
1,1-Dichloroethene	---	---	---	1.0 U	1.0 U	---
1,2,3-Trichlorobenzene	---	---	---	1.0 U	1.0 U	---
1,2,4-Trichlorobenzene	---	---	---	1.0 U	1.0 U	---
1,2-Dibromo-3-Chloropropane	---	---	---	1.0 U	1.0 U	---
1,2-Dibromoethane	---	---	---	1.0 U	1.0 U	---
1,2-Dichlorobenzene	---	---	---	1.0 U	1.0 U	---
1,2-Dichloroethane	---	---	---	1.0 U	1.0 U	---
1,2-Dichloropropane	---	---	---	1.0 U	1.0 U	---
1,3-Dichlorobenzene	---	---	---	1.0 U	1.0 U	---
1,4-Dichlorobenzene	---	---	---	1.0 U	1.0 U	---
2-Butanone (MEK)	---	---	---	10 U	10 U	---
2-Hexanone	---	---	---	5.0 U	5.0 U	---
4-Methyl-2-Pentanone (MIBK)	---	---	---	5.0 U	5.0 U	---
Acetone	---	---	---	10 UJ	10 UJ	---
Benzene	---	---	---	1.0 U	1.0 U	---
Bromodichloromethane	---	---	---	1.0 U	1.0 U	---
Bromoform	---	---	---	1.0 UJ	1.0 UJ	---
Bromomethane	---	---	---	1.0 UJ	1.0 UJ	---
Carbon disulfide	---	---	---	1.0 U	1.0 U	---
Carbon tetrachloride	---	---	---	1.0 U	1.0 U	---
Chlorobenzene	---	---	---	1.0 U	1.0 U	---
Chlorobromomethane	---	---	---	1.0 U	1.0 U	---
Chloroethane	---	---	---	1.0 UJ	1.0 UJ	---
Chloroform	---	---	---	1.0 U	1.0 U	---
Chloromethane	---	---	---	1.0 UJ	1.0 UJ	---
cis-1,2-Dichloroethene	---	---	---	1.0 U	1.0 U	---
cis-1,3-Dichloropropene	---	---	---	1.0 U	1.0 U	---
Cyclohexane	---	---	---	1.0 U	1.0 U	---
Dibromochloromethane	---	---	---	1.0 UJ	1.0 UJ	---
Dichlorodifuoromethane	---	---	---	1.0 U	1.0 U	---
Ethylbenzene	---	---	---	1.0 U	1.0 U	---
Isopropylbenzene	---	---	---	1.0 U	1.0 U	---
m,p-Xylene	---	---	---	2.0 U	2.0 U	---
Methyl acetate	---	---	---	2.5 U	2.5 U	---
Methylcyclohexane	---	---	---	1.0 U	1.0 U	---
Methylene Chloride	---	---	---	1.0 U	1.0 U	---

Analytical Results from December 9, 2016 Sampling Event

Sample Location	UP-1	UP-2	UP-3	US-1	US-1	US-2
Sample ID	UP-1-120916	UP-2-120916	UP-3-120916	US-1-120916	X-1-120916	US-2-120916
Sample Date	12/9/2016	12/9/2016	12/9/2016	12/9/2016	12/9/2016	12/9/2016
Methyl tert-butyl ether	---	---	---	1.0 U	1.0 U	---
o-Xylene	---	---	---	1.0 U	1.0 U	---
Styrene	---	---	---	1.0 U	1.0 U	---
Tetrachloroethene	---	---	---	1.0 U	1.0 U	---
Toluene	---	---	---	1.0 U	1.0 U	---
trans-1,2-Dichloroethene	---	---	---	1.0 U	1.0 U	---
trans-1,3-Dichloropropene	---	---	---	1.0 U	1.0 U	---
Trichloroethene	---	---	---	1.0 U	1.0 U	---
Trichlorofluoromethane	---	---	---	1.0 U	1.0 U	---
Vinyl Chloride	---	---	---	1.0 U	1.0 U	---
Xylenes, Total	---	---	---	2.0 U	2.0 U	---
Semi-Volatile Organic Compounds (SVOCs) (µg/L)						
1,1'-Biphenyl	---	---	---	4.8 U	4.7 U	---
1,2,4,5-Tetrachlorobenzene	---	---	---	4.8 U	4.7 U	---
1,4-Dioxane	---	---	---	9.5 U	9.3 U	---
2,3,4,6-Tetrachlorophenol	---	---	---	4.8 U	4.7 U	---
2,4,5-Trichlorophenol	---	---	---	4.8 U	4.7 U	---
2,4,6-Trichlorophenol	---	---	---	4.8 U	4.7 U	---
2,4-Dichlorophenol	---	---	---	4.8 U	4.7 U	---
2,4-Dimethylphenol	---	---	---	4.8 U	4.7 U	---
2,4-Dinitrophenol	---	---	---	9.5 U	9.3 U	---
2,4-Dinitrotoluene	---	---	---	4.8 U	4.7 U	---
2,6-Dinitrotoluene	---	---	---	4.8 U	4.7 U	---
2-Chloronaphthalene	---	---	---	4.8 U	4.7 U	---
2-Chlorophenol	---	---	---	4.8 U	4.7 U	---
2-Methylnaphthalene	---	---	---	4.8 U	4.7 U	---
2-Methylphenol	---	---	---	4.8 U	4.7 U	---
2-Nitroaniline	---	---	---	9.5 U	9.3 U	---
2-Nitrophenol	---	---	---	4.8 U	4.7 U	---
3,3'-Dichlorobenzidine	---	---	---	4.8 U	4.7 U	---
3-Methylphenol	---	---	---	9.5 U	9.3 U	---
3-Nitroaniline	---	---	---	9.5 U	9.3 U	---
4,6-Dinitro-2-methylphenol	---	---	---	9.5 U	9.3 U	---
4-Bromophenyl phenyl ether	---	---	---	4.8 U	4.7 U	---
4-Chloro-3-methylphenol	---	---	---	4.8 U	4.7 U	---
4-Chloroaniline	---	---	---	4.8 U	4.7 U	---
4-Chlorophenyl-phenyl ether	---	---	---	4.8 U	4.7 U	---
4-Methylphenol	---	---	---	9.5 U	9.3 U	---
4-Nitroaniline	---	---	---	9.5 U	9.3 U	---
4-Nitrophenol	---	---	---	9.5 U	9.3 U	---
Acenaphthene	---	---	---	4.8 U	4.7 U	---
Acenaphthylene	---	---	---	4.8 U	4.7 U	---
Acetophenone	---	---	---	4.8 U	4.7 U	---
Anthracene	---	---	---	4.8 U	4.7 U	---
Atrazine	---	---	---	4.8 U	4.7 U	---
Benzaldehyde	---	---	---	4.8 U	4.7 U	---
Benzo[a]anthracene	---	---	---	4.8 U	4.7 U	---
Benzo[a]pyrene	---	---	---	4.8 U	4.7 U	---
Benzo[b]fluoranthene	---	---	---	4.8 U	4.7 U	---
Benzo[g,h,i]perylene	---	---	---	4.8 U	4.7 U	---
Benzo[k]fluoranthene	---	---	---	4.8 U	4.7 U	---
Bis(2-Chloroethoxy)methane	---	---	---	4.8 U	4.7 U	---
Bis(2-Chloroethyl)Ether	---	---	---	4.8 U	4.7 U	---
bis (2-chloroisopropyl) ether	---	---	---	4.8 U	4.7 U	---
Bis(2-ethylhexyl) phthalate	---	---	---	4.8 U	4.7 U	---
Butyl benzyl phthalate	---	---	---	4.8 U	4.7 U	---
Caprolactam	---	---	---	4.8 U	4.7 U	---
Carbazole	---	---	---	4.8 U	4.7 U	---
Chrysene	---	---	---	4.8 U	4.7 U	---

Analytical Results from December 9, 2016 Sampling Event

Sample Location	UP-1	UP-2	UP-3	US-1	US-1	US-2
Sample ID	UP-1-120916	UP-2-120916	UP-3-120916	US-1-120916	X-1-120916	US-2-120916
Sample Date	12/9/2016	12/9/2016	12/9/2016	12/9/2016	12/9/2016	12/9/2016
Dibenz(a,h)anthracene	---	---	---	4.8 U	4.7 U	---
Dibenzofuran	---	---	---	9.5 U	9.3 U	---
Diethyl phthalate	---	---	---	4.8 U	4.7 U	---
Dimethyl phthalate	---	---	---	4.8 U	4.7 U	---
Di-n-butylphthalate	---	---	---	1.3 J	4.7 U	---
Di-n-octylphthalate	---	---	---	4.8 U	4.7 U	---
Fluoranthene	---	---	---	4.8 U	4.7 U	---
Fluorene	---	---	---	4.8 U	4.7 U	---
Hexachlorobenzene	---	---	---	4.8 U	4.7 U	---
Hexachlorobutadiene	---	---	---	4.8 U	4.7 U	---
Hexachlorocyclopentadiene	---	---	---	4.8 U	4.7 U	---
Hexachloroethane	---	---	---	4.8 U	4.7 U	---
Indeno[1,2,3-cd]pyrene	---	---	---	4.8 U	4.7 U	---
Isophorone	---	---	---	4.8 U	4.7 U	---
Naphthalene	---	---	---	4.8 U	4.7 U	---
Nitrobenzene	---	---	---	4.8 U	4.7 U	---
N-Nitrosodi-n-propylamine	---	---	---	4.8 U	4.7 U	---
N-Nitrosodiphenylamine	---	---	---	4.8 U	4.7 U	---
Pentachlorophenol	---	---	---	9.5 U	9.3 U	---
Phenanthrene	---	---	---	4.8 U	4.7 U	---
Phenol	---	---	---	4.8 U	4.7 U	---
Pyrene	---	---	---	4.8 U	4.7 U	---
Pesticides (µg/L)						
4-4'-DDD	---	---	---	0.047 U	0.047 U	---
4-4'-DDE	---	---	---	0.047 U	0.047 U	---
4-4'-DDT	---	---	---	0.047 U	0.047 U	---
a-BHC	---	---	---	0.047 U	0.047 U	---
Aldrin	---	---	---	0.047 U	0.047 U	---
alpha-Chlordane	---	---	---	0.047 U	0.047 U	---
beta-BHC	---	---	---	0.047 U	0.047 U	---
delta-BHC	---	---	---	0.047 U	0.047 U	---
Dieldrin	---	---	---	0.047 U	0.047 U	---
Endosulfan I	---	---	---	0.047 U	0.047 U	---
Endosulfan II	---	---	---	0.047 U	0.047 U	---
Endosulfan sulfate	---	---	---	0.047 U	0.047 U	---
Endrin	---	---	---	0.047 U	0.047 U	---
Endrin aldehyde	---	---	---	0.047 U	0.047 U	---
Endrin ketone	---	---	---	0.047 U	0.047 U	---
gamm-BHC (Lindane)	---	---	---	0.047 U	0.047 U	---
gamma-Chlordane	---	---	---	0.047 U	0.047 U	---
Heptachlor	---	---	---	0.047 U	0.047 U	---
Heptachlor Epoxide	---	---	---	0.047 U	0.047 U	---
Methoxychlor	---	---	---	0.047 U	0.047 U	---
Toxaphene	---	---	---	0.47 U	0.47 U	---
Polychlorinated biphenyls (PCBs) (µg/L)						
PCB-1016	---	---	---	0.47 U	0.47 U	---
PCB-1221	---	---	---	0.47 U	0.47 U	---
PCB-1232	---	---	---	0.47 U	0.47 U	---
PCB-1242	---	---	---	0.25 J	0.47 U	---
PCB-1248	---	---	---	0.47 U	0.47 U	---
PCB-1254	---	---	---	0.47 U	0.47 U	---
PCB-1260	---	---	---	0.47 U	0.47 U	---
PCB-1262	---	---	---	0.47 U	0.47 U	---
PCB-1268	---	---	---	0.47 U	0.47 U	---
Metals (mg/L)						
Aluminum	---	---	---	0.083 J	0.075 J	---
Antimony	---	---	---	0.0010 U	0.0010 U	---
Arsenic	---	---	---	0.0010 U	0.0010 U	---
Barium	---	---	---	0.0093	0.0094	---

Analytical Results from December 9, 2016 Sampling Event

Sample Location	UP-1	UP-2	UP-3	US-1	US-1	US-2
Sample ID	UP-1-120916	UP-2-120916	UP-3-120916	US-1-120916	X-1-120916	US-2-120916
Sample Date	12/9/2016	12/9/2016	12/9/2016	12/9/2016	12/9/2016	12/9/2016
Beryllium	---	---	---	0.00070 U	0.00070 U	---
Cadmium	---	---	---	0.00050 U	0.00050 U	---
Calcium	3.4	2.3	12.2	2.8	2.8	3.7
Chromium	---	---	---	0.0015	0.0018	---
Cobalt	0.0040 U	0.0040 U	0.0040 U	0.0040 U	0.0040 U	0.0040 U
Copper	---	---	---	0.00027 J	0.00033 J	---
Iron	---	---	---	0.050 U	0.050 U	---
Lead	---	---	---	0.00023 J	0.00026 J	---
Magnesium	1.2	0.46	1.9	0.45	0.45	0.57
Manganese	---	---	---	0.00068 J	0.00081 J	---
Mercury	---	---	---	0.00020 U	0.00020 U	---
Nickel	---	---	---	0.010 U	0.010 U	---
Potassium	0.86	0.25 J	0.68	0.28 J	0.27 J	0.33 J
Selenium	---	---	---	0.0010 U	0.0010 U	---
Silver	---	---	---	0.00050 U	0.00050 U	---
Sodium	1.4	1.3	20.3	3.6	3.5	9.3
Thallium	---	---	---	0.00020 U	0.00020 U	---
Vanadium	---	---	---	0.0050 U	0.0050 U	---
Zinc	---	---	---	0.010 U	0.010 U	---
General Chemistry (mg/L)						
Alkalinity, Bicarbonate	10.0 U	10.0 U	30.2	10.0 U	10.0 U	10.0 U
Alkalinity, Carbonate	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Chloride	2.3	0.85	33.0	5.0	5.0	14.2
Cyanide (total)	---	---	---	0.010 U	0.010 U	---
Sulfate	4.3	3.5	6.1	4.2	4.0	3.6
TOC Result 1	3.9	2.0	1.4	2.3	2.2	2.8
TOC Result 2	4.0	2.1	1.4	2.3	2.3	2.9
Total Organic Carbon-Duplicates	4.0	2.0	1.4	2.3	2.3	2.8

Notes:

1. Results reported in micrograms per liter (µg/L) except metals and general chemistry, which are in milligrams per liter (mg/L).
2. Perfluorinated Hydrocarbons were analyzed by United State Environmental Protection Agency (USEPA) Method 537 by TestAmerica Laboratories, Inc. in West Sacramento, California. VOCs, SVOCs, pesticides, PCBs, metals, mercury, cyanide, alkalinity, chloride/sulfate, and total organic carbon (TOC) were analyzed by USEPA SW-846C Methods 8260C, 8270D, 8081, 8082A, 200.7 or 200.8, 245.1, 335.4, 310.2, 300.0, SM5310C respectively, by TestAmerica Laboratories, Inc. in Amherst, New York.
3. "U" indicates that the analyte was not detected and the sample reporting limit (RL) is presented.
4. "J" indicates that the concentration should be considered approximate.
5. “JN” indicates that the target analyte has been “tentatively identified” as present and the associated numerical value is the estimated concentration in the sample.
6. “UJ” indicates that the analyte was analyzed for and was not detected; however, the RL is presented and should be considered approximate.
7. "---" indicates that the analyte was not analyzed for on that sampling date.

Analytical Results from December 9, 2016 Sampling Event

Sample Location	TRIP BLANK	FIELD REAGENT BLANK
Sample ID	TB-120916	FRB-120916
Sample Date	12/9/2016	12/9/2016
Perfluorinated Hydrocarbons (µg/L)		
Perfluorobutanesulfonic acid (PFBS)	---	0.0018 U
Perfluorobutanoic acid (PFBA)	---	0.0018 U
Perfluorodecanesulfonic acid (PFDS)	---	0.0018 U
Perfluorodecanoic acid (PFDA)	---	0.0018 U
Perfluorododecanoic acid (PFDoA)	---	0.0018 U
Perfluoroheptanesulfonic Acid (PFHpS)	---	0.0018 U
Perfluoroheptanoic acid (PFHpA)	---	0.0018 U
Perfluorohexanesulfonic acid (PFHxS)	---	0.0018 U
Perfluorohexanoic acid (PFHxA)	---	0.0018 U
Perfluorononanoic acid (PFNA)	---	0.0018 U
Perfluorooctane Sulfonamide (FOSA)	---	0.0018 UJ
Perfluorooctanesulfonic acid (PFOS)	---	0.0018 U
Perfluorooctanoic acid (PFOA)	---	0.0018 U
Perfluoropentanoic acid (PFPeA)	---	0.0018 U
Perfluorotetradecanoic acid (PFTeA)	---	0.00060 J
Perfluorotridecanoic Acid (PFTriA)	---	0.0018 U
Perfluoroundecanoic acid (PFUnA)	---	0.0018 U
Volatile Organic Compounds (VOCs) (µg/L)		
1,1,1-Trichloroethane	1.0 U	---
1,1,2,2-Tetrachloroethane	1.0 U	---
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0 U	---
1,1,2-Trichloroethane	1.0 U	---
1,1-Dichloroethane	1.0 U	---
1,1-Dichloroethene	1.0 U	---
1,2,3-Trichlorobenzene	1.0 U	---
1,2,4-Trichlorobenzene	1.0 U	---
1,2-Dibromo-3-Chloropropane	1.0 U	---
1,2-Dibromoethane	1.0 U	---
1,2-Dichlorobenzene	1.0 U	---
1,2-Dichloroethane	1.0 U	---
1,2-Dichloropropane	1.0 U	---
1,3-Dichlorobenzene	1.0 U	---
1,4-Dichlorobenzene	1.0 U	---
2-Butanone (MEK)	10 U	---
2-Hexanone	5.0 U	---
4-Methyl-2-Pentanone (MIBK)	5.0 U	---
Acetone	10 UJ	---
Benzene	1.0 U	---
Bromodichloromethane	1.0 U	---
Bromoform	1.0 UJ	---
Bromomethane	1.0 UJ	---
Carbon disulfide	1.0 U	---
Carbon tetrachloride	1.0 U	---
Chlorobenzene	1.0 U	---
Chlorobromomethane	1.0 U	---
Chloroethane	1.0 UJ	---
Chloroform	1.0 U	---
Chloromethane	1.0 UJ	---
cis-1,2-Dichloroethene	1.0 U	---
cis-1,3-Dichloropropene	1.0 U	---
Cyclohexane	1.0 U	---
Dibromochloromethane	1.0 UJ	---
Dichlorodifuoromethane	1.0 U	---
Ethylbenzene	1.0 U	---
Isopropylbenzene	1.0 U	---
m,p-Xylene	2.0 U	---
Methyl acetate	2.5 U	---
Methylcyclohexane	1.0 U	---
Methylene Chloride	1.0 U	---

Analytical Results from December 9, 2016 Sampling Event

Sample Location	TRIP BLANK	FIELD REAGENT BLANK
Sample ID	TB-120916	FRB-120916
Sample Date	12/9/2016	12/9/2016
Methyl tert-butyl ether	1.0 U	---
o-Xylene	1.0 U	---
Styrene	1.0 U	---
Tetrachloroethene	1.0 U	---
Toluene	1.0 U	---
trans-1,2-Dichloroethene	1.0 U	---
trans-1,3-Dichloropropene	1.0 U	---
Trichloroethene	1.0 U	---
Trichlorofluoromethane	1.0 U	---
Vinyl Chloride	1.0 U	---
Xylenes, Total	2.0 U	---
Semi-Volatile Organic Compounds (SVOCs) (µg/L)		
1,1'-Biphenyl	---	---
1,2,4,5-Tetrachlorobenzene	---	---
1,4-Dioxane	---	---
2,3,4,6-Tetrachlorophenol	---	---
2,4,5-Trichlorophenol	---	---
2,4,6-Trichlorophenol	---	---
2,4-Dichlorophenol	---	---
2,4-Dimethylphenol	---	---
2,4-Dinitrophenol	---	---
2,4-Dinitrotoluene	---	---
2,6-Dinitrotoluene	---	---
2-Chloronaphthalene	---	---
2-Chlorophenol	---	---
2-Methylnaphthalene	---	---
2-Methylphenol	---	---
2-Nitroaniline	---	---
2-Nitrophenol	---	---
3,3'-Dichlorobenzidine	---	---
3-Methylphenol	---	---
3-Nitroaniline	---	---
4,6-Dinitro-2-methylphenol	---	---
4-Bromophenyl-phenyl ether	---	---
4-Chloro-3-methylphenol	---	---
4-Chloroaniline	---	---
4-Chlorophenyl-phenyl ether	---	---
4-Methylphenol	---	---
4-Nitroaniline	---	---
4-Nitrophenol	---	---
Acenaphthene	---	---
Acenaphthylene	---	---
Acetophenone	---	---
Anthracene	---	---
Atrazine	---	---
Benzaldehyde	---	---
Benzo[a]anthracene	---	---
Benzo[a]pyrene	---	---
Benzo[b]fluoranthene	---	---
Benzo[g,h,i]perylene	---	---
Benzo[k]fluoranthene	---	---
Bis(2-Chloroethoxy)methane	---	---
Bis(2-Chloroethyl)Ether	---	---
bis (2-chloroisopropyl) ether	---	---
Bis(2-ethylhexyl) phthalate	---	---
Butyl benzyl phthalate	---	---
Caprolactam	---	---
Carbazole	---	---
Chrysene	---	---

Analytical Results from December 9, 2016 Sampling Event

Sample Location	TRIP BLANK	FIELD REAGENT BLANK
Sample ID	TB-120916	FRB-120916
Sample Date	12/9/2016	12/9/2016
Dibenzo(a,h)Anthracene	---	---
Dibenzofuran	---	---
Diethyl phthalate	---	---
Dimethyl phthalate	---	---
Di-n-butylphthalate	---	---
Di-n-octylphthalate	---	---
Fluoranthene	---	---
Fluorene	---	---
Hexachlorobenzene	---	---
Hexachlorobutadiene	---	---
Hexachlorocyclopentadiene	---	---
Hexachloroethane	---	---
Indeno[1,2,3-cd]pyrene	---	---
Isophorone	---	---
Naphthalene	---	---
Nitrobenzene	---	---
N-Nitrosodi-n-propylamine	---	---
N-Nitrosodiphenylamine	---	---
Pentachlorophenol	---	---
Phenanthrene	---	---
Phenol	---	---
Pyrene	---	---
Pesticides (µg/L)		
4-4'-DDD	---	---
4-4'-DDE	---	---
4-4'-DDT	---	---
a-BHC	---	---
Aldrin	---	---
alpha-Chlordane	---	---
beta-BHC	---	---
delta-BHC	---	---
Dieldrin	---	---
Endosulfan I	---	---
Endosulfan II	---	---
Endosulfan sulfate	---	---
Endrin	---	---
Endrin aldehyde	---	---
Endrin ketone	---	---
gamm-BHC (Lindane)	---	---
gamma-Chlordane	---	---
Heptachlor	---	---
Heptachlor Epoxide	---	---
Methoxychlor	---	---
Toxaphene	---	---
Polychlorinated biphenyls (PCBs) (µg/L)		
PCB-1016	---	---
PCB-1221	---	---
PCB-1232	---	---
PCB-1242	---	---
PCB-1248	---	---
PCB-1254	---	---
PCB-1260	---	---
PCB-1262	---	---
PCB-1268	---	---
Metals (mg/L)		
Aluminum	---	---
Antimony	---	---
Arsenic	---	---
Barium	---	---

Analytical Results from December 9, 2016 Sampling Event

Sample Location	TRIP BLANK	FIELD REAGENT BLANK
Sample ID	TB-120916	FRB-120916
Sample Date	12/9/2016	12/9/2016
Beryllium	---	---
Cadmium	---	---
Calcium	---	---
Chromium	---	---
Cobalt	---	---
Copper	---	---
Iron	---	---
Lead	---	---
Magnesium	---	---
Manganese	---	---
Mercury	---	---
Nickel	---	---
Potassium	---	---
Selenium	---	---
Silver	---	---
Sodium	---	---
Thallium	---	---
Vanadium	---	---
Zinc	---	---
General Chemistry (mg/L)		
Alkalinity, Bicarbonate	---	---
Alkalinity, Carbonate	---	---
Chloride	---	---
Cyanide (total)	---	---
Sulfate	---	---
TOC Result 1	---	---
TOC Result 2	---	---
Total Organic Carbon-Duplicates	---	---

Notes:

1. Results reported in micrograms per liter (µg/L) except metals and general chemistry, which are in milligrams per liter (mg/L).
2. Perfluorinated Hydrocarbons were analyzed by United State Environmental Protection Agency (USEPA) Method 537 by TestAmerica Laboratories, Inc. in West Sacramento, California. VOCs, SVOCs, pesticides, PCBs, metals, mercury, cyanide, alkalinity, chloride/sulfate, and total organic carbon (TOC) were analyzed by USEPA SW-846C Methods 8260C, 8270D, 8081, 8082A, 200.7 or 200.8, 245.1, 335.4, 310.2, 300.0, SM5310C respectively, by TestAmerica Laboratories, Inc. in Amherst, New York.
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4. "J" indicates that the concentration should be considered approximate.
5. “JN” indicates that the target analyte has been “tentatively identified” as present and the associated numerical value is the estimated concentration in the sample.
6. “UJ” indicates that the analyte was analyzed for and was not detected; however, the RL is presented and should be considered approximate.
7. "---" indicates that the analyte was not analyzed for on that sampling date.

Appendix E

Analytical Results for GenX Sampling

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

TestAmerica Job ID: 320-31183-1
Client Project/Site: Petersburgh, NY

For:
Tonoga Inc dba Taconic
136 Coonbrook Road
Petersburgh, New York 12138

Attn: Karen Toth

Authorized for release by:
9/14/2017 4:16:37 PM

Jill Kellmann, Manager of Project Management
(916)374-4402
jill.kellmann@testamericainc.com

Table of Contents

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 320-31183-1

Laboratory: TestAmerica Sacramento

Narrative

Receipt

The samples were received on 8/30/2017 9:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.2º C, 1.5º C and 2.4º C.

LCMS

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Client Sample ID: PB0484082917POST1 — **Lab Sample ID: 320-31183-1**

No Detections.

Client Sample ID: PB0484082917MID1 — **Lab Sample ID: 320-31183-2**

No Detections.

Client Sample ID: PB0484082917PRE1 — **Lab Sample ID: 320-31183-3**

No Detections.

Production Well 1

Client Sample ID: PB0484082917POST2 — **Lab Sample ID: 320-31183-4**

No Detections.

Client Sample ID: PB0484082917MID2 — **Lab Sample ID: 320-31183-5**

No Detections.

Client Sample ID: PB0484082917PRE2 — **Lab Sample ID: 320-31183-6**

No Detections.

Production Well 2

Client Sample ID: PB0484082917POST3 — **Lab Sample ID: 320-31183-7**

No Detections.

Client Sample ID: PB0484082917MID3 — **Lab Sample ID: 320-31183-8**

No Detections.

Client Sample ID: PB0484082917PRE3 — **Lab Sample ID: 320-31183-9**

No Detections.

Production Well 3

Client Sample ID: PB0483082917POST — **Lab Sample ID: 320-31183-10**

No Detections.

Client Sample ID: PB0483082917PRE — **Lab Sample ID: 320-31183-11**

No Detections.

Russell Road Pond

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Client Sample ID: PB0484082917POST1
Date Collected: 08/29/17 07:29
Date Received: 08/30/17 09:50

Lab Sample ID: 320-31183-1
Matrix: Water

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro(2-propoxypropanoic) acid	ND		0.010	0.0052	ug/L		09/06/17 08:51	09/12/17 13:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*106*		*50 - 200*	*09/06/17 08:51*	*09/12/17 13:42*	*1*

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Client Sample ID: PB0484082917MID1
Date Collected: 08/29/17 07:37
Date Received: 08/30/17 09:50

Lab Sample ID: 320-31183-2
Matrix: Water

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro(2-propoxypropanoic) acid	ND		0.011	0.0055	ug/L		09/06/17 08:51	09/12/17 13:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*106*		*50 - 200*	*09/06/17 08:51*	*09/12/17 13:45*	*1*

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Client Sample ID: PB0484082917PRE1
Date Collected: 08/29/17 07:44
Date Received: 08/30/17 09:50

Lab Sample ID: 320-31183-3
Matrix: Water

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro(2-propoxypropanoic) acid	ND		0.010	0.0052	ug/L		09/06/17 08:51	09/12/17 13:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*103*		*50 - 200*	*09/06/17 08:51*	*09/12/17 13:51*	*1*

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Client Sample ID: PB0484082917POST2
Date Collected: 08/29/17 08:00
Date Received: 08/30/17 09:50

Lab Sample ID: 320-31183-4
Matrix: Water

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro(2-propoxypropanoic) acid	ND		0.010	0.0052	ug/L		09/06/17 08:51	09/12/17 13:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*105*		*50 - 200*	*09/06/17 08:51*	*09/12/17 13:54*	*1*

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Client Sample ID: PB0484082917MID2
Date Collected: 08/29/17 08:06
Date Received: 08/30/17 09:50

Lab Sample ID: 320-31183-5
Matrix: Water

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro(2-propoxypropanoic) acid	ND		0.0099	0.0051	ug/L		09/06/17 08:51	09/12/17 13:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*103*		*50 - 200*	*09/06/17 08:51*	*09/12/17 13:57*	*1*

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Client Sample ID: PB0484082917PRE2
Date Collected: 08/29/17 08:12
Date Received: 08/30/17 09:50

Lab Sample ID: 320-31183-6
Matrix: Water

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro(2-propoxypropanoic) acid	ND		0.0099	0.0050	ug/L		09/06/17 08:51	09/12/17 14:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*95*		*50 - 200*	*09/06/17 08:51*	*09/12/17 14:00*	*1*

Client Sample Results

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Client Sample ID: PB0484082917POST3
Date Collected: 08/29/17 09:02
Date Received: 08/30/17 09:50

Lab Sample ID: 320-31183-7
Matrix: Water

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro(2-propoxypropanoic) acid	ND		0.0097	0.0049	ug/L		09/06/17 08:51	09/12/17 14:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*99*		*50 - 200*	*09/06/17 08:51*	*09/12/17 14:03*	*1*

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Client Sample ID: PB0484082917MID3
Date Collected: 08/29/17 09:05
Date Received: 08/30/17 09:50

Lab Sample ID: 320-31183-8
Matrix: Water

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro(2-propoxypropanoic) acid	ND		0.0099	0.0051	ug/L		09/06/17 08:51	09/12/17 14:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*97*		*50 - 200*	*09/06/17 08:51*	*09/12/17 14:06*	*1*

Client Sample Results

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Client Sample ID: PB0484082917PRE3
Date Collected: 08/29/17 09:10
Date Received: 08/30/17 09:50

Lab Sample ID: 320-31183-9
Matrix: Water

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro(2-propoxypropanoic) acid	ND		0.010	0.0051	ug/L		09/06/17 08:51	09/12/17 14:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*104*		*50 - 200*	*09/06/17 08:51*	*09/12/17 14:09*	*1*

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Client Sample ID: PB0483082917POST
Date Collected: 08/29/17 09:26
Date Received: 08/30/17 09:50

Lab Sample ID: 320-31183-10
Matrix: Water

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro(2-propoxypropanoic) acid	ND		0.010	0.0053	ug/L		09/06/17 08:51	09/12/17 14:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*101*		*50 - 200*	*09/06/17 08:51*	*09/12/17 14:12*	*1*

Client Sample Results

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Client Sample ID: PB0483082917PRE
Date Collected: 08/29/17 09:41
Date Received: 08/30/17 09:50

Lab Sample ID: 320-31183-11
Matrix: Water

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro(2-propoxypropanoic) acid	ND		0.011	0.0054	ug/L		09/06/17 08:51	09/12/17 14:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*96*		*50 - 200*	*09/06/17 08:51*	*09/12/17 14:16*	*1*

Surrogate Summary

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Method: 8321A - HFPO-DA

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	C3 HFPO-I (50-200)
320-31183-1	PB0484082917POST1	106
320-31183-2	PB0484082917MID1	106
320-31183-3	PB0484082917PRE1	103
320-31183-4	PB0484082917POST2	105
320-31183-5	PB0484082917MID2	103
320-31183-6	PB0484082917PRE2	95
320-31183-7	PB0484082917POST3	99
320-31183-8	PB0484082917MID3	97
320-31183-9	PB0484082917PRE3	104
320-31183-10	PB0483082917POST	101
320-31183-11	PB0483082917PRE	96
DLCK 280-384201/12	Lab Control Sample	95
LCS 280-386687/2-A	Lab Control Sample	111
LCSD 280-386687/3-A	Lab Control Sample Dup	113
LLCS 280-386687/4-A	Lab Control Sample	119
MB 280-386687/1-A	Method Blank	119

Surrogate Legend

13C3 HFPO-DA = 13C3 HFPO-DA

Method: 8321A - HFPO-DA

Lab Sample ID: DLCK 280-384201/12
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	DLCK Result	DLCK Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoro(2-propoxypropanoic) acid	0.250	ND		ug/L		94	70 - 130

Surrogate	*DLCK %Recovery*	*DLCK Qualifier*	*Limits*
13C3 HFPO-DA	*95*		*50 - 200*

Lab Sample ID: MB 280-386687/1-A
Matrix: Water
Analysis Batch: 387321

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386687

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro(2-propoxypropanoic) acid	ND		0.010	0.0051	ug/L		09/06/17 08:51	09/12/17 13:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*119*		*50 - 200*	*09/06/17 08:51*	*09/12/17 13:17*	*1*

Lab Sample ID: LCS 280-386687/2-A
Matrix: Water
Analysis Batch: 387321

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386687

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoro(2-propoxypropanoic) acid	0.200	0.234		ug/L		117	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*111*		*50 - 200*

Lab Sample ID: LCSD 280-386687/3-A
Matrix: Water
Analysis Batch: 387321

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 386687

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoro(2-propoxypropanoic) acid	0.200	0.228		ug/L		114	70 - 130	3	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*113*		*50 - 200*

Lab Sample ID: LLCS 280-386687/4-A
Matrix: Water
Analysis Batch: 387321

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386687

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoro(2-propoxypropanoic) acid	0.0200	0.0211		ug/L		105	70 - 130

Method: 8321A - HFPO-DA (Continued)

Lab Sample ID: LLCS 280-386687/4-A
Matrix: Water
Analysis Batch: 387321

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386687

Surrogate	LLCS %Recovery	LLCS Qualifier	Limits
13C3 HFPO-DA	119		50 - 200

LCMS

Analysis Batch: 384201

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
DLCK 280-384201/12	Lab Control Sample	Total/NA	Water	8321A	

Prep Batch: 386687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-31183-1	PB0484082917POST1	Total/NA	Water	3535	
320-31183-2	PB0484082917MID1	Total/NA	Water	3535	
320-31183-3	PB0484082917PRE1	Total/NA	Water	3535	
320-31183-4	PB0484082917POST2	Total/NA	Water	3535	
320-31183-5	PB0484082917MID2	Total/NA	Water	3535	
320-31183-6	PB0484082917PRE2	Total/NA	Water	3535	
320-31183-7	PB0484082917POST3	Total/NA	Water	3535	
320-31183-8	PB0484082917MID3	Total/NA	Water	3535	
320-31183-9	PB0484082917PRE3	Total/NA	Water	3535	
320-31183-10	PB0483082917POST	Total/NA	Water	3535	
320-31183-11	PB0483082917PRE	Total/NA	Water	3535	
MB 280-386687/1-A	Method Blank	Total/NA	Water	3535	
LCS 280-386687/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 280-386687/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
LLCS 280-386687/4-A	Lab Control Sample	Total/NA	Water	3535	

Analysis Batch: 387321

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-31183-1	PB0484082917POST1	Total/NA	Water	8321A	386687
320-31183-2	PB0484082917MID1	Total/NA	Water	8321A	386687
320-31183-3	PB0484082917PRE1	Total/NA	Water	8321A	386687
320-31183-4	PB0484082917POST2	Total/NA	Water	8321A	386687
320-31183-5	PB0484082917MID2	Total/NA	Water	8321A	386687
320-31183-6	PB0484082917PRE2	Total/NA	Water	8321A	386687
320-31183-7	PB0484082917POST3	Total/NA	Water	8321A	386687
320-31183-8	PB0484082917MID3	Total/NA	Water	8321A	386687
320-31183-9	PB0484082917PRE3	Total/NA	Water	8321A	386687
320-31183-10	PB0483082917POST	Total/NA	Water	8321A	386687
320-31183-11	PB0483082917PRE	Total/NA	Water	8321A	386687
MB 280-386687/1-A	Method Blank	Total/NA	Water	8321A	386687
LCS 280-386687/2-A	Lab Control Sample	Total/NA	Water	8321A	386687
LCSD 280-386687/3-A	Lab Control Sample Dup	Total/NA	Water	8321A	386687
LLCS 280-386687/4-A	Lab Control Sample	Total/NA	Water	8321A	386687

Lab Chronicle

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Client Sample ID: PB0484082917POST1
Date Collected: 08/29/17 07:29
Date Received: 08/30/17 09:50

Lab Sample ID: 320-31183-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			246.3 mL	5 mL	386687	09/06/17 08:51	HMA	TAL DEN
Total/NA	Analysis	8321A		1			387321	09/12/17 13:42	AGCM	TAL DEN

Client Sample ID: PB0484082917MID1
Date Collected: 08/29/17 07:37
Date Received: 08/30/17 09:50

Lab Sample ID: 320-31183-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			233.9 mL	5 mL	386687	09/06/17 08:51	HMA	TAL DEN
Total/NA	Analysis	8321A		1			387321	09/12/17 13:45	AGCM	TAL DEN

Client Sample ID: PB0484082917PRE1
Date Collected: 08/29/17 07:44
Date Received: 08/30/17 09:50

Lab Sample ID: 320-31183-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			247.3 mL	5 mL	386687	09/06/17 08:51	HMA	TAL DEN
Total/NA	Analysis	8321A		1			387321	09/12/17 13:51	AGCM	TAL DEN

Client Sample ID: PB0484082917POST2
Date Collected: 08/29/17 08:00
Date Received: 08/30/17 09:50

Lab Sample ID: 320-31183-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			245.9 mL	5 mL	386687	09/06/17 08:51	HMA	TAL DEN
Total/NA	Analysis	8321A		1			387321	09/12/17 13:54	AGCM	TAL DEN

Client Sample ID: PB0484082917MID2
Date Collected: 08/29/17 08:06
Date Received: 08/30/17 09:50

Lab Sample ID: 320-31183-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			251.4 mL	5 mL	386687	09/06/17 08:51	HMA	TAL DEN
Total/NA	Analysis	8321A		1			387321	09/12/17 13:57	AGCM	TAL DEN

Client Sample ID: PB0484082917PRE2
Date Collected: 08/29/17 08:12
Date Received: 08/30/17 09:50

Lab Sample ID: 320-31183-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			252.7 mL	5 mL	386687	09/06/17 08:51	HMA	TAL DEN
Total/NA	Analysis	8321A		1			387321	09/12/17 14:00	AGCM	TAL DEN

Lab Chronicle

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Client Sample ID: PB0484082917POST3

Lab Sample ID: 320-31183-7
Date Collected: 08/29/17 09:02
Matrix: Water
Date Received: 08/30/17 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			257.7 mL	5 mL	386687	09/06/17 08:51	HMA	TAL DEN
Total/NA	Analysis	8321A		1			387321	09/12/17 14:03	AGCM	TAL DEN

Client Sample ID: PB0484082917MID3

Lab Sample ID: 320-31183-8
Date Collected: 08/29/17 09:05
Matrix: Water
Date Received: 08/30/17 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			251.8 mL	5 mL	386687	09/06/17 08:51	HMA	TAL DEN
Total/NA	Analysis	8321A		1			387321	09/12/17 14:06	AGCM	TAL DEN

Client Sample ID: PB0484082917PRE3

Lab Sample ID: 320-31183-9
Date Collected: 08/29/17 09:10
Matrix: Water
Date Received: 08/30/17 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			248.8 mL	5 mL	386687	09/06/17 08:51	HMA	TAL DEN
Total/NA	Analysis	8321A		1			387321	09/12/17 14:09	AGCM	TAL DEN

Client Sample ID: PB0483082917POST

Lab Sample ID: 320-31183-10
Date Collected: 08/29/17 09:26
Matrix: Water
Date Received: 08/30/17 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			240.9 mL	5 mL	386687	09/06/17 08:51	HMA	TAL DEN
Total/NA	Analysis	8321A		1			387321	09/12/17 14:12	AGCM	TAL DEN

Client Sample ID: PB0483082917PRE

Lab Sample ID: 320-31183-11
Date Collected: 08/29/17 09:41
Matrix: Water
Date Received: 08/30/17 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			235.5 mL	5 mL	386687	09/06/17 08:51	HMA	TAL DEN
Total/NA	Analysis	8321A		1			387321	09/12/17 14:16	AGCM	TAL DEN

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Accreditation/Certification Summary

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Laboratory: TestAmerica Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17 *
Arkansas DEQ	State Program	6	88-0691	06-17-18
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-18
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-18
Georgia	State Program	4	N/A	01-29-18
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-18
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-18
New Hampshire	NELAP	1	2997	04-18-18
New Jersey	NELAP	2	CA005	06-30-18
New York	NELAP	2	11666	04-01-18
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-18
Texas	NELAP	6	T104704399	05-31-18
US Fish & Wildlife	Federal		LE148388-0	07-31-18
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-18
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

Laboratory: TestAmerica Denver

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
A2LA	ISO/IEC 17025		2907.01	10-31-17
Alabama	State Program	4	40730	09-30-12 *
Alaska (UST)	State Program	10	UST-30	04-05-18
Arizona	State Program	9	AZ0713	12-20-17
Arkansas DEQ	State Program	6	88-0687	06-01-18
California	State Program	9	2513	01-08-18
Connecticut	State Program	1	PH-0686	09-30-18
Florida	NELAP	4	E87667	06-30-18
Georgia	State Program	4	N/A	01-08-18
Illinois	NELAP	5	200017	04-30-18
Iowa	State Program	7	370	12-01-18
Kansas	NELAP	7	E-10166	04-30-18
Louisiana	NELAP	6	02096	06-30-18
Maine	State Program	1	CO0002	03-03-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Laboratory: TestAmerica Denver (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	8-999-405	12-31-17
Nevada	State Program	9	CO0026	07-31-18
New Hampshire	NELAP	1	205310	04-28-18
New Jersey	NELAP	2	CO004	06-30-18
New York	NELAP	2	11964	04-01-18
North Carolina (WW/SW)	State Program	4	358	12-31-17
North Dakota	State Program	8	R-034	01-09-18
Oklahoma	State Program	6	8614	08-31-18
Oregon	NELAP	10	4025	01-08-18
Pennsylvania	NELAP	3	68-00664	07-31-18
South Carolina	State Program	4	72002001	01-08-18
Texas	NELAP	6	T104704183-16-12	09-30-17
USDA	Federal		P330-16-00397	12-15-19
Utah	NELAP	8	CO00026	07-31-18
Virginia	NELAP	3	460232	06-14-18
Washington	State Program	10	C583	08-03-18
West Virginia DEP	State Program	3	354	11-30-17
Wisconsin	State Program	5	999615430	08-31-18
Wyoming (UST)	A2LA	8	2907.01	10-31-17

Method Summary

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Method	Method Description	Protocol	Laboratory
8321A	HFPO-DA	SW846	TAL DEN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: Tonoga Inc dba Taconic
Project/Site: Petersburgh, NY

TestAmerica Job ID: 320-31183-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-31183-1	PB0484082917POST1	Water	08/29/17 07:29	08/30/17 09:50
320-31183-2	PB0484082917MID1	Water	08/29/17 07:37	08/30/17 09:50
320-31183-3	PB0484082917PRE1	Water	08/29/17 07:44	08/30/17 09:50
320-31183-4	PB0484082917POST2	Water	08/29/17 08:00	08/30/17 09:50
320-31183-5	PB0484082917MID2	Water	08/29/17 08:06	08/30/17 09:50
320-31183-6	PB0484082917PRE2	Water	08/29/17 08:12	08/30/17 09:50
320-31183-7	PB0484082917POST3	Water	08/29/17 09:02	08/30/17 09:50
320-31183-8	PB0484082917MID3	Water	08/29/17 09:05	08/30/17 09:50
320-31183-9	PB0484082917PRE3	Water	08/29/17 09:10	08/30/17 09:50
320-31183-10	PB0483082917POST	Water	08/29/17 09:26	08/30/17 09:50
320-31183-11	PB0483082917PRE	Water	08/29/17 09:41	08/30/17 09:50

TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Phone (916) 373-5600 Fax (916) 372-1059

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Kellmann, Jill	Carrier Tracking No(s):	COC No: 320-100815.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jill.kellmann@testamericainc.com	State of Origin: New York	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 320-31183-1
Address: 4955 Yarrow Street, ,	Due Date Requested: 9/12/2017			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: Petersburgh, NY	Project #: 32007845			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8321A_HFPO_Du/3535_PFC HFPO-DA	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
PB0484082917POST1 (320-31183-1)	8/29/17	07:29 Eastern		Water			X	2	
PB0484082917MID1 (320-31183-2)	8/29/17	07:37 Eastern		Water			X	2	
PB0484082917PRE1 (320-31183-3)	8/29/17	07:44 Eastern		Water			X	2	
PB0484082917POST2 (320-31183-4)	8/29/17	08:00 Eastern		Water			X	2	
PB0484082917MID2 (320-31183-5)	8/29/17	08:06 Eastern		Water			X	2	
PB0484082917PRE2 (320-31183-6)	8/29/17	08:12 Eastern		Water			X	2	
PB0484082917POST3 (320-31183-7)	8/29/17	09:02 Eastern		Water			X	2	
PB0484082917MID3 (320-31183-8)	8/29/17	09:05 Eastern		Water			X	2	
PB0484082917PRE3 (320-31183-9)	8/29/17	09:10 Eastern		Water			X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	8-30-17 1658	STL	[signature]	8/31/17 0850	TAL
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 0.6+0.1 IR#75 8/31/17

TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Phone (916) 373-5600 Fax (916) 372-1059

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Kellmann, Jill	Carrier Tracking No(s):	COC No: 320-100815.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: jill.kellmann@testamericainc.com	State of Origin: New York	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 320-31183-1
Address: 4955 Yarrow Street, ,	Due Date Requested: 9/12/2017			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: Petersburgh, NY	Project #: 32007845			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8321A_HFPO_Du/3535_PFC HFPO-DA	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
PB0483082917POST (320-31183-10)	8/29/17	09:26 Eastern		Water			X	2	
PB0483082917PRE (320-31183-11)	8/29/17	09:41 Eastern		Water			X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	8-30-0 1630	TBUS	[signature]	8/31/17 0850	TAD
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Login Sample Receipt Checklist

Client: Tonoga Inc dba Taconic

Job Number: 320-31183-1

Login Number: 31183
List Number: 1
Creator: Edman, Connor M

List Source: TestAmerica Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	740993 ; 74092 ; 740991
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Tonoga Inc dba Taconic

Job Number: 320-31183-1

Login Number: 31183
List Number: 2
Creator: True, Joshua A

List Source: TestAmerica Denver
List Creation: 08/31/17 10:30 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Exhibit A

Historical Site Information (on seven compact discs)