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Field Sampling Plan
Saint Gobain Performance Plastics Sites

14 McCaffrey Street (Site No. 442046)
and
1 Liberty Street (Site No. 442048)

Village of Hoosick Falls
Rensselaer County, New York

Mr. Christopher Angier
SAINT-GOBAIN PERFORMANCE PLASTICS
14 McCaffrey Street
Hoosick Falls, New York 12090

Prepared by:

C.T. MALE ASSOCIATES
50 Century Hill Drive
Latham, NY 12110
and

BEC ENGINEERING & GEOLOGY, P.C.
4300 MarketPointe Drive
Minneapolis, MN 55435

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**FIELD SAMPLING PLAN
SAINT GOBAIN PERFORMANCE PLASTICS SITES
14 MCCAFFREY STREET (442046) AND 1 LIBERTY STREET (442048)
VILLAGE OF HOOSICK FALLS
RENSSELAER COUNTY, NEW YORK**

TABLE OF CONTENTS

	<u>PAGE</u>
1.0 INTRODUCTION	1
2.0 MEDIA SAMPLING AND OVERVIEW OF FIELD ACTIVITIES.....	3
MEDIA SAMPLING	3
OVERVIEW OF FIELD ACTIVITIES	3
3.0 SITE INVESTIGATION OVERVIEW	4
3.1 General.....	4
3.1.1 Field Quality Control Samples.....	4
3.1.2 Sewage and Sludge Sampling	5
3.1.3 Surface Water Sampling.....	5
3.1.4 Storm Water Sampling	6
3.1.5 Sediment Sampling	6
3.2 Observation of Drilling Operations and Monitoring Well Installations.....	6
3.3 Drilling and Sampling.....	7
3.3.1 Soil Classification	7
3.3.2 Borehole Abandonment and Drill Cuttings.....	7
3.4 Monitoring Well Installation	8
3.5 Well Development	8
3.6 Decontamination of Drilling and Sampling/Gauging Equipment.....	9
4.0 GROUNDWATER SAMPLING PROCEDURES.....	10
4.1 General.....	10
4.2 Water level Measurements, Immiscible Layers, Total Well Depth in Well.....	11
4.3 Low-flow Sampling Techniques	11
4.4 Other Sampling Techniques	12

4.5	Field Analyses	13
5.0	SOIL SAMPLING PROCEDURES.....	14
5.1	Soil and Fill Sampling.....	14
5.2	Analytical Soil Sampling.....	14
6.0	FIELD QUALITY CONTROL.....	16
6.1	Additional QC Samples from Source Materials	16
7.0	FIELD INSTRUMENTATION OPERATING PROCEDURES.....	17
7.1	General.....	17
7.2	Photoionization and Flame Ionization Detector.....	17
7.3	Air Monitoring for Potential Contaminant Exposure.....	17
7.4	Temperature, pH, ORP and Specific Conductivity Meter	18
8.0	SAMPLE HANDLING AND CHAIN OF CUSTODY PROCEDURES	19
9.0	WATER LEVEL MEASUREMENT PROCEDURES.....	20
10.0	VAPOR AND AIR SAMPLING	21
11.0	INVESTIGATIVE DERIVED WASTE, STORAGE, SAMPLING AND DISPOSAL.....	22

1.0 INTRODUCTION

This Field Sampling Plan (FSP) has been prepared for the continuation of Remedial Investigation (RI) and Feasibility Study (FS) activities at the Saint-Gobain Performance Plastics Corporation (Saint-Gobain) Sites (“the Sites”) located at 14 McCaffrey Street and 1 Liberty Street in the Village of Hoosick Falls, including the Regional Air Deposition Study being performed in the Town of Hoosick located in Rensselaer County, New York. An FSP was prepared for each of the Sites in conjunction with their RI/FS Work Plans as prepared by C.T. Male Associates Engineering, Surveying, Architecture, Landscape Architecture & Geology, DPC (C.T. Male) in 2016. A description of the Sites, background information and objectives are presented in detail in these and subsequent work plans and reports. The FSP presents the standard field sampling and data gathering procedures to be followed during implementation of the field activity portions of scopes of work within or associated with the Sites.

This FSP addresses potential media and material sampling types, drilling methods including advancement of soil borings and installation of monitoring wells, decontamination procedures, various media sampling procedures, field screening and testing procedures, field instrumentation operating procedures, field measurements, sample handling and chain of custody procedures, and water level measurement procedures. This FSP is intended to be applicable to field sampling activities within the Site conducted by C.T. Male, BEC Engineering & Geology P.C. (BEC) and subcontractors.

The sample type, laboratory analysis, sampling method and sampling rationale for the samples collected during the Site investigations are summarized in the Site-specific work plans. Included in this FSP are the Compendium of Documents and references to standard operating procedures (SOPs) and field forms that are an integral part of this FSP and the Quality Assurance Project Plan (QAPP). The field sampling and data gathering procedures presented in this FSP are incorporated into the QAPP by reference. Together, the FSP and the QAPP document the quality assurance/quality control (QA/QC) procedures to be followed during analysis of samples collected in the field so that valid data of a known quality are generated.

The FSP has been prepared, in part, in general accordance with the following New York State Department of Environmental Conservation (NYSDEC) and United States Environmental Protection Agency (USEPA) guidance documents:

- DER-10, Technical Guidance for Site Investigation and Remediation, NYSDEC, May 2010.
- 6 NYCRR Part 375 Environmental Remediation Programs Subparts 375-1 to 375-4 and 375-6, Effective December 14, 2006.
- New York State Department of Health, Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006.
- New York State Department of Environmental Conservation, Guidelines for Sampling and Analysis of PFAS, January 2020.
- A Compendium of Superfund Field Operations Methods, EPA/540/P-87/001, USEPA, December 1987, revised 2005.

2.0 MEDIA SAMPLING AND OVERVIEW OF FIELD ACTIVITIES

MEDIA SAMPLING

Based upon the Site-specific work plans, sampling may include volatile organic vapor screening, subjective media assessment, laboratory analyses, and geologic and hydrogeologic characterization of the Site. The environmental media that may be sampled includes:

- Shallow soil/fill,
- Subsurface soil,
- Groundwater,
- Surface water,
- Storm water,
- Sediments,
- Sludge,
- Sewage,
- Investigative derived waste characterization,
- Soil vapor and sub-slab soil vapor, and
- Indoor and outdoor air.

OVERVIEW OF FIELD ACTIVITIES

The potential field activities are summarized in this FSP and details of each activity are provided within referenced SOPs.

Field Report Forms applicable to their corresponding field activity (i.e., monitoring well construction log, water level record, etc.) are referenced in their respective SOPs and contained in the SOPs or the Compendium of Field Documents.

3.0 SITE INVESTIGATION OVERVIEW

3.1 General

The anticipated investigations and ongoing monitoring activities include: collection and laboratory analysis of quality control samples; collection and laboratory analysis of sewage, storm water, surface water, and sludge samples; collection and laboratory analysis of fill and soil samples for subjective and laboratory analysis; conversion of select test borings into monitoring wells to aid in the collection of groundwater samples for laboratory analysis; collection of groundwater samples for laboratory analysis from existing monitoring wells; measurement of water levels; in-situ hydraulic conductivity testing; collection and laboratory analysis of soil vapor, outdoor and indoor air samples; and collection of investigative derived waste samples. The SOPs referenced in the preceding sections have been developed for the various investigative activities that may be performed during course of the projects. Additional SOPs will be developed for other investigative tasks that are not yet known or defined, as needed.

3.1.1 Field Quality Control Samples

Field quality control (QC) samples may include trip blanks, field blanks, equipment blanks, rinsate (or rinse) blanks, material checks, duplicates, and matrix spike/matrix spike duplicates. The types of field QC samples to be collected, the sampling frequency and rationale, and the analytical method are detailed in the QAPP. The SOPs for these field activities are SOP C.T. Male 'Collection of Quality Control Samples and SOP BEC 'Collection of Per- and Polyfluorinated Alkyl Substances Samples.

Since PFAS are found in many everyday items, rinse blanks and material checks may be collected from materials that are brought to the Site to aid in the investigation and sampling. Additional project-specific information regarding certain QC samples and equipment blanks is provided below.

Equipment Blank (EB): The equipment blank measures the potential for sample cross contamination of equipment between sampling locations. It is collected from reusable equipment that contacts media (e.g., soil and groundwater) being sampled for laboratory analysis; it is not collected from disposable or dedicated equipment. It consists of a sample of analyte-free water passed over or through equipment following decontamination. Examples of reusable equipment include, but are not limited to,

submersible pumps and tubing, split-barrel samplers, hollow-stem augers, direct-push core barrels, rotasonic core barrels, and drilling bits.

Rinsate (or Rinse) Blank (RB): For this project, rinsate or rinse blanks are unique QC samples and are not equivalent to equipment blanks. They evaluate the potential for dedicated or disposable sampling equipment and materials brought to the Site to contribute PFAS to analytical samples. They consist of samples of analyte-free water passed over or through dedicated or disposable equipment or a representative stock of the material. They are analyzed and the resulting data are evaluated prior to using the equipment or materials on the Site, to the extent practical. Once the rinse blank is collected, the equipment or materials shall be sequestered until its use onsite. Examples of materials from which rinse blanks shall be collected include, but are not limited to dedicated pumps and tubing, direct-push sample liners, disposable sample tubing and bailers, well construction materials (risers, screens, casing, and filter sand), and personal protective equipment.

Material Check (MC): The material check measures the potential for materials brought to the Site to introduce PFAS to analytical samples. Material checks differ from rinse blanks in that the material checks are samples of the actual material beings used, whereas rinse blanks are samples of analyte-free water passed over or through the material. The material check is collected, analyzed, and evaluated prior to using the materials in the field, to the extent practical. Once the material check is collected, the stock of material shall be sequestered until its use onsite. Examples of imported materials to be evaluated with material checks include, but are not limited to, water to be used for drilling and decontamination, drilling mud, bentonite, and lubricants to be used on downhole drilling equipment.

3.1.2 Sewage and Sludge Sampling

Sewage or sludge samples may be collected for laboratory analyses from water treatment systems, wastewater treatment systems, interceptor pits, piping runs, and public sewer system manholes. This field activity will be completed following the methods described in SOP C.T. Male 'Sediment, Sludge and Sewage Sampling'.

3.1.3 Surface Water Sampling

Surface water samples may be collected from surface water bodies, streams, rivers, ditches, lakes, ponds, lagoons, drainage swales, wetlands, and building structures in

which water may collect for laboratory analyses and water quality determinations. This field activity will be completed following the methods described in SOP C.T. Male 'Surface Water Sampling'.

3.1.4 Storm Water Sampling

Storm water samples may be collected from outfalls, roof gutter/drain downspouts and roof drip line locations in relation to the Site, and drainage areas from the Site or in relation to the investigation or remedial activities for laboratory analyses and water quality determinations. This field activity will be completed following the methods described in SOP C.T. Male 'Storm Water Sampling'.

3.1.5 Sediment Sampling

Sediment samples may be collected from streams, rivers, ditches, lakes, ponds, lagoons, outlet drainage ways, drainage swales, storm water catch basins and outfalls, and wetlands. This field activity will be completed following the methods described in SOP C.T. Male 'Sediment, Sludge, and Sewage Sampling'.

3.2 Observation of Drilling Operations and Monitoring Well Installations

Drilling, monitoring well installation and other associated field work to be performed by subcontractors to C.T. Male and BEC will be observed by full-time, onsite, C.T. Male and/or BEC representatives. Field decisions will be made in consultation with the NYSDEC or its representatives. C.T. Male and/or BEC will be responsible for collecting soil/fill samples, classifying soil, field screening of soil/fill samples, recording of drilling and sampling data, recording of groundwater data, deciding on the final drilling depths and monitoring well screened intervals (with input from the project manager), recording the monitoring well construction procedures, and monitoring the decontamination procedures. The representatives will also develop and purge the monitoring wells and conduct groundwater sampling, as in accordance with SOPs.

Field reports will be prepared to document the daily activities and their conformance to the work plan, FSP, and QAPP. The forms to be utilized by the applicable field team personnel are found in the Compendium of Field Documents or the SOPs.

The project manager or designee will be kept informed of the progress of work and problems encountered during the investigations so appropriate corrective action can be implemented in consultation with Saint-Gobain and NYSDEC.

3.3 Drilling and Sampling

There are several drilling techniques that can be utilized to aid in the collection of soil and fill samples and for installation of monitoring wells. These include direct-push, hollow stem auger, rotasonic, and air rotary drilling techniques. Drilling techniques of achieving objectives of investigation work as described in the site-specific work plans will be outlined in such work plans. C.T. Male and BEC personnel will observe the drilling subcontractor to document conformance with applicable QAPP and project SOPs prepared by the companies and approved by NYSDEC for the techniques outlined in the work plan.

3.3.1 Soil Classification

Soils collected during drilling activities will be visually classified in the field using the Unified Soil Classification System in general accordance with ASTM D-2488, Standard Practice for Description and Identification of Soils (Visual-Manual Method). The soil description may include matrix and clast descriptions, moisture content, color, appearance, odor, behavior of the material and other pertinent observations. This information will be recorded on a subsurface exploration log form along with the boring identification and elevation, date started and completed, sampling intervals, standard penetration values (if standard penetration testing is completed), length of recovered sample, and depth of first groundwater encountered. During the drilling, a photoionization detector (PID) or flame ionization detector (FID) will be used to monitor the volatile organic vapors exiting the borehole and soil cuttings, and of the recovered subsurface samples. This field activity will be completed following the methods described in SOP C.T. Male 'Organic Vapor Monitoring and Air Monitoring'. These visual observations and field measurements will be recorded on the appropriate subsurface field form. A blank copy of the subsurface field forms is included in the Compendium of Field Documents or C.T. Male's SOP 'Note Taking and Field Logs'.

3.3.2 Borehole Abandonment and Drill Cuttings

In the event a borehole is not converted into a monitoring well, the drill cuttings will be placed back into the borehole provided field-screening results indicate no evidence of impacts (subject to approval by NYSDEC as applicable). In unpaved areas within residential properties, the top 12-inches of the borehole area shall be restored with 12-inches of compacted topsoil, unless otherwise approved by NYSDEC. If the soil cuttings cannot be returned to the borehole, the borehole will be filled from the bottom

depth of the boring to grade with a cement/bentonite grout mixture (20 to 1 ratio). If required, soil cuttings will be transferred to labeled DOT 17H approved 55-gallon open top steel drums and/or plastic lined roll-off containers and staged while waiting for proper disposal. The contents of the drums/roll-off will be subsequently characterized and profiled for offsite disposal. If field-screening indicates no evidence of impacts, soil cuttings may be thin spread on the ground in the immediate vicinity of the boring with prior approval of NYSDEC.

3.4 Monitoring Well Installation

Monitoring wells may be installed in unconsolidated materials and bedrock to characterize hydrogeologic conditions, ambient groundwater quality nature and extent of constituents of concern, plume transport, and the hydraulic relationship between the Site and localized groundwater regime. Monitoring wells will be installed following the methods described in SOP- C.T. Male 'Monitoring Well Installation'.

Monitoring wells to be installed within select boreholes are typically completed utilizing direct-push, rotasonic and hollow stem auger drilling methods as described in the Site-specific work plan. For the direct-push boreholes, one (1)-inch diameter monitoring wells with slotted screens are typically installed in the open boreholes. For rotasonic and hollow stem auger boreholes, two (2)-inch diameter monitoring wells with slotted screens are typically installed within the drill casing in accordance with standard practices and as described in the SOP C.T. Male 'Monitoring Well Installation'. Monitoring well depths, and screen lengths and depths will be calculated by the environmental scientist/geologist/engineer by maintaining accurate measurements of screen and casing placed in the borehole. The final screen length and depth will be determined by a professional geologist/engineer in consultation with NYSDEC. Monitoring Well Construction Log forms for the monitoring wells will be completed that documents the well materials and depths.

3.5 Well Development

Once installed, each well will be developed by surging and over pumping/bailing, or surging and air lifting, or a combination of methods to remove accumulated fine sediment within the well and to establish a hydraulic connection with the surrounding aquifer. Wells will be developed either prior to the installation of grout in the annulus between the riser pipe and borehole wall, or at least 24 hours following installation of grout. Monitoring of temperature, conductivity, pH, and turbidity for stabilization and

appropriate values will be conducted at a minimum. This field activity will be completed in conformance with SOP C.T. Male 'Monitoring Well Development'.

3.6 Decontamination of Drilling and Sampling/Gauging Equipment

Drilling equipment including augers, casing, rods, plugs, samplers, tools, drill unit and equipment that can come in contact with the formation will be cleaned with a high temperature/high pressure steam cleaner prior to the start of work and between each boring to limit cross-contamination between borings. Material check samples of water used for decontamination will be collected and analyzed for PFAS prior to being used on the Site as described in Section 3.1.1, to minimize the risk of cross-contaminating analytical samples. The drilling equipment will also be cleaned using the same procedure at completion of the work to prevent contaminants from leaving the Site. Equipment blanks will be collected to evaluate field decontamination procedures as described in Section 3.1.1. QC sampling methods are described in SOP C.T. Male 'Collection of Quality Control Samples'. QC sampling frequency is described in the QAPP.

Procedures for field decontamination of environmental sampling equipment and personal protective equipment (PPE) are described in SOP C.T. Male 'Equipment Decontamination Procedures'. Decontamination, as needed of equipment and PPE, is designed to document that sample cross-contamination, human-health exposure, and contamination transport are minimized.

4.0 GROUNDWATER SAMPLING PROCEDURES

4.1 General

Groundwater samples may be collected for laboratory analyses as described in the Site/activity-specific work plans. Appropriate sampling techniques and protocols as described in the referenced SOPs will be followed during the collection and transportation of groundwater samples to minimize the potential for sample variation from well to well.

Unless directed otherwise in the Site-specific work plans, groundwater samples will be collected using low-flow sampling techniques. Quality control measures will be instituted as discussed in this document and the QAPP as a check on the procedures being utilized so that the quality of the data can be assessed. The groundwater samples will be analyzed in the laboratory by standard methods following the QA/QC procedures outlined in the QAPP.

The following list provides a prioritization of samples to be collected and analyzed. This shall be used in the event a well does not provide sufficient volume for analysis of the planned parameters:

1. Polyfluoroalkyl Substances (PFAS).
2. Volatile organic compounds (VOCs)
3. In-field water quality parameters.
4. Total organic carbon (TOC).
5. Inorganic compounds (such as total metals, dissolved metals, nitrate/nitrite, and sulfide).
6. Semi-volatiles organic compounds (SVOCs).
7. PCBs and pesticides.

Periodic monitoring/sampling events may be conducted, and groundwater elevations monitored to determine the groundwater flow gradient and direction as described in Section 9.0.

If required, water from the wells generated during sampling will be placed in DOT approved 55-gallon drums and/or frac tanks, labeled and stored until laboratory analyses results of the soil and groundwater samples indicates the proper method of treatment or disposal.

4.2 Water level Measurements, Immiscible Layers, Total Well Depth in Well

Prior to sampling, static water levels and immiscible layer thicknesses, if any, will be measured in the wells slated for sampling. The measured water level and depth of the well obtained from the well construction record are used to calculate the well water volume. Total depths should not be measured prior to low-flow sampling to minimize disturbance of the groundwater and/or dedicated sampling equipment; the measurement can be completed after sampling to confirm depth. Non-vented well caps will be removed for a period of ten minutes to allow the water column to reach static conditions prior to taking the water level measurements.

The procedures for measuring static water level, immiscible layer (i.e., light non-aqueous phase liquid [LNAPL] level, dense non-aqueous phase liquid [DNAPL] thickness, and total well depth are described in Section 9.0.

4.3 Low-flow Sampling Techniques

Low-flow sampling is a method of collecting groundwater samples from a well that does not require purging volumes of water from the well and relies on natural flow of formation water through the well. Representative samples of the groundwater are collected by slowly pumping in order to minimize drawdown during purging, stabilization, and sampling. Low-flow sampling has the additional benefit of minimizing the volume of investigative derived waste that is generated.

Low-flow sampling methods emphasize minimal stress to the groundwater by low water-level drawdown and low pumping rates in order to collect samples with minimal alterations to water chemistry (U.S. Environmental Protection Agency [EPA], 2017; ASTM D6771-02). In summary, the proposed groundwater sampling methods are:

- Insert new tubing, purge at low-stress rates (100 milliliters per minute (ml/min)-500 ml/min) such that the water level stabilizes, achieve stabilization of field parameters, and collect samples following minimum purge volumes (see below); or
- If the recovery rate of the well is less than 100 ml/min or the well is essentially dewatering then purge the well dry, allow well to recover to at least 80% or until

recovery of sufficient volume and then collect samples.

The goal of low-stress purging and sampling is to achieve stable drawdown of less than 0.3 feet from the static water level; however, this is not mandatory. If after 2 hours of purging the indicator parameters have not stabilized, samples will then be collected and all attempts at stabilization will be documented in logbooks and/or sampling forms. The minimum purge volume following water level stabilization for each well will be based on the calculated volume of water between the initial water level and the stabilized water level plus the volume of the tubing.

Low-flow sampling is typically conducted using positive displacement pumps, submersible pumps, or peristaltic pumps. Commonly used low-flow pumps include the QED Sample Pro® bladder pump, Geotech® bladder pumps, Grundfos Redi-Flo 2® submersible pump, and the Geotech Geopump™ Series II peristaltic pump. The use of low-flow sampling and the type of pump to be used will be specified in the Site-specific work plan. Pumps that are to be used on site will be reviewed prior to use to determine if there would be an adverse impact to the sampling. This field activity will be completed following the methods described in SOP C.T. Male 'Collection of Groundwater Samples using Low-Flow Purging and Sampling'.

4.4 Other Sampling Techniques

The following sampling techniques should be followed only when specified in the Site-specific work plan or at the direction of the project manager and/or the field services coordinator. These techniques are not applicable to wells to be sampled using the low-flow method described in Section 4.3.

Prior to groundwater sampling, it is necessary to purge the wells. Purging of the wells allows for a fresh, representative sample to be collected from the well by removing stagnant water.

Wells will be purged by either pumping or bailing, or both methods, followed by well recovery, well stabilization and then sampling via pumping or bailing. Field parameter monitoring will be conducting during purging and at time of sample collection. This field activity will be completed following the methods described in SOP C.T. Male 'Groundwater Sampling'.

Well stabilization is conducted to verify the groundwater sample is representative of aquifer conditions. A well is considered 'stabilized' after the groundwater stabilization

parameter measurements are within acceptable limits for three consecutive readings. The procedures for conducting well stabilization are included in SOP C.T. Male 'Collection of Groundwater Samples Using Low-Flow Purging and Sampling'.

Similar to purging, sampling requires the use of pumps or bailers. It may be appropriate to use a different device to sample than that which was used to purge. A common example of this is the use of a pump to purge and a bailer to sample. There are various factors to be taken into consideration when choosing a sampling device. The experience of the project team will be used to determine which is appropriate and care should be taken when reviewing the advantages or disadvantages of any one device. The procedures for collecting samples are included in SOP C.T. Male 'Groundwater Sampling'.

4.5 Field Analyses

The field analysis of groundwater for pH, temperature, specific conductivity, turbidity, dissolved oxygen and oxidation-reduction potential (ORP) will be measured with flow through cells, water quality meters and instruments in accordance with C.T. Male SOPs 'Field Water Quality Measurements', 'Collection of Groundwater samples low flow purging and sampling', and 'Groundwater Sampling'. The water quality meters and instruments automatically adjust to compensate for the temperature of the sample. The turbidity of a sample is measured with a turbidimeter. The pH, temperature, specific conductivity, turbidity, dissolved oxygen and ORP will be recorded on the Groundwater Services Field Log. A blank form for recording these parameters can be found in C.T. Male's SOP, 'Note Taking and Field Logs'. The water quality meters and instruments will be calibrated to known standards prior to the start of field activities each day when being used, as per manufactures procedures.

Prior to the collection of groundwater samples for analysis, the field water quality parameters need to equilibrate. Equilibration is achieved when well stabilization criteria, listed in SOP C.T. Male 'Field Water Quality Measurements' and 'Collection of Groundwater samples low flow purging and sampling' or in the Site-specific work plan, are met for three consecutive measurements. If stabilization is not achieved under low flow rates, the well shall not be sampled using a low-flow method.

Measurement and operating procedures for these field analyses are presented in Section 7.0 of this FSP.

5.0 SOIL SAMPLING PROCEDURES

5.1 Soil and Fill Sampling

Soil and/or fill sampling may occur during Site investigations, as described in the Site-specific work plans. The samples may be collected employing a hand auger, shovel, Shelby tubes, direct-push sampling unit (i.e., Geoprobe®), split-barrel sampling during drilling, and rotasonic drilling. Non-dedicated equipment will be decontaminated following procedures as set forth in SOP C.T. Male 'Equipment Decontamination Procedures' between sample intervals and sampling locations. The collected soils will be logged in accordance with ASTM D2488 (visual-manual method) and screened for signs of obvious environmental impacts (e.g., staining, sheen, odor, discoloration, or the presence of headspace as measured by a PID). This field activity will be completed following the methods described in SOP C.T. Male 'Surface and Subsurface Soil Sampling' and SOP BEC 'Collection of PFAS Samples'.

5.2 Analytical Soil Sampling

Select soil samples will be subjected to laboratory analysis to assist in characterizing the environmental quality of the Site. The target sampling locations, intervals and analytes are described in the Site-specific work plans. However, soil sampling intervals collected at each location during investigations at the Sites typically include surface soil (0-2" below ground surface; bgs), shallow soil samples (2-12" bgs), and subsurface soil samples (deeper than 12" bgs).

Two (2) discrete soils samples are collected at each of the surface soil sampling (0-2" bgs) locations. The first discrete surface soil sample is collected from the ground surface (or below any sub-base material, if present) to a depth of 2" and will include any underlying vegetation (roots) or organic debris. This sample will be analyzed in the laboratory, if part of the investigation scope, for PFAS, TOC, pH and moisture content. The second discrete surface soil sample will be collected alongside the first sample and will be collected from beneath the vegetative root zone (or below any sub-base material, if present) to a depth of 2" and submitted for analysis of the all other analytical parameters in accordance with the QAPP and Site-specific work plans.

Subsurface soil analytical samples are typically collected at boring locations at the following depth intervals: immediately above the water table; at soil mottling zones; at the fill/native soil interface; and at major stratigraphic changes. In the event that major

stratigraphic changes are not encountered at the depths explored, soil samples will be collected at standard depth intervals relative to ground surface (i.e. 5'-7', 10'-12', etc).

Shallow subsurface soil samples can be collected by hand using a variety of sampling equipment and devices. Common equipment used to collect shallow subsurface soil samples include soil coring devices, various types of hand augers (bucket-type, continuous-flight, and posthole), and other common hand tools such as shovels and pickaxes. Deep subsurface soil samples are typically collected using split-spoon and/or macro-core samplers.

The laboratory analytical methods, container types, sample holding times, and preservation of the samples are outlined in the QAPP. The samples will be extracted from the sampling equipment in a timely fashion such that the sample has limited exposure to the outside air. This field activity will be completed by following the methods described in SOP C.T. Male 'Surface and Subsurface Soil Sampling'; SOP BEC 'Collection of PFAS Samples'; SOP C.T. Male 'Chain of Custody Procedures'; SOP C.T. Male 'Domestic Transport of Samples to Laboratories in USA'.

6.0 FIELD QUALITY CONTROL

Field Quality Control samples may include Trip Blanks, Equipment Blanks, Duplicates, Field blanks, and Matrix Spike/Matrix Spike Duplicates (MS/MSD). The types of field quality control samples to be collected and the sampling method and rationale are summarized in the QAPP. This field activity will be completed following the methods described in SOP C.T. Male 'Collection of Quality Control Samples' and SOP BEC 'Collection of PFAS Samples'.

6.1 Additional QC Samples from Investigation Related Materials / Supplies

Because PFAS (including perfluorooctanoic acid [PFOA] and perfluorooctanesulfonic acid [PFOS]) are found in many everyday items, additional QC samples will be collected from investigation related source materials/supplies brought to the Site to aid in investigation and sampling activities. The samples will be collected, and the data evaluated prior to using the materials on the Site, to the extent practical. The additional QC samples consist of material checks and rinse blanks. Material checks are samples of the actual material that is imported to the Site. Rinse blanks are samples of analyte-free water passed through or over the imported material.

Examples of material check samples include, but are not limited to, water used for advancement of test borings, construction of monitoring wells, and decontamination of drilling and sampling equipment; bentonite used in drilling mud or to seal boreholes, and lubricants used on downhole drilling equipment that may come in contact with soil or groundwater that will be sampled. Water imported onto the Site for investigation/sampling purposes will be identified by its source.

Rinse blanks may be collected from totes and tanks used by the drilling contractor for temporary storage of drilling water; well construction materials (steel and PVC risers and screens) used by the drilling contractor for construction of wells; filter sand used by the drilling contractor for the monitoring well sand pack, and dedicated equipment installed in wells that may come in contact with groundwater (e.g., pumps, drop pipes, and wiring).

7.0 FIELD INSTRUMENTATION OPERATING PROCEDURES

7.1 General

The field instruments that may be utilized during implementation of the Site investigations or remedial activities are: PID or FID for air monitoring of VOCs, PID or FID for headspace analysis of soil samples for VOCs; vapor monitoring onsite; airborne particulates during field activities; a temperature/dissolved oxygen /pH/ORP/conductivity water quality meter(s); and a turbidity meter for field analysis of groundwater samples. The field instruments used will be calibrated and operated in accordance with the manufacturer's instructions and the procedures identified in the SOP. This field activity will be completed following the methods described in SOP C.T. Male 'Field Water Quality Measurements and Calibration' and SOP C.T. Male 'Organic Vapor Monitoring and Air Monitoring'.

7.2 Photoionization and Flame Ionization Detector

A PID and data logger with a 10.6 eV lamp will be utilized to measure VOCs. If the ionization potential of the compound is expected to be greater than 11.7 eV, an FID meter is preferred. Instruments are calibrated at the factory upon purchase and annually thereafter using a certified service shop that utilizes standards of benzene and isobutylene. Prior to use in the field, the instrument will be calibrated in accordance with the manufacturer's instructions using a disposable cylinder containing isobutylene obtained from a reputable supplier. The calibration value varies by the manufacturer, however, 100 parts per million is commonly utilized. During use, the PID or FID will be calibrated at least once every 8 hours in accordance with manufacturer's instructions.

Care will be taken when handling and using the PID or FID to prevent any debris from entering the sample line which will affect the instrument's operation. If this occurs, the field personnel will clean the unit or replace it with a functional PID or FID.

7.3 Air Monitoring for Potential Contaminant Exposure

Air monitoring for potential exposure to airborne contaminants is typically conducted using a PID, FID, combustible gas indicator (measuring oxygen level and explosive

atmosphere), MultiRae Plus meter (measuring oxygen level, explosive atmosphere, organic vapors, and hydrogen sulfide), or dust/aerosol meter. This field activity will be completed following the methods described in is SOP C.T. Male 'Organic Vapor Monitoring and Air Monitoring'.

7.4 Temperature, Dissolved Oxygen, pH, ORP and Specific Conductivity Meter

The instrument used to measure temperature, dissolved oxygen, pH, ORP and specific conductivity will be equipped with an automatic temperature control for accurate adjustment to the temperatures of the samples and calibration standards. Prior to use each day, the instrument will be calibrated. A calibration check will be performed, at a minimum, at the end of each workday to determine whether the water quality meter drifted while in use during the daily operational period. Measurements will be recorded and incorporated into the daily field logs and daily calibration record. Deviations greater than those indicated in the SOP will be documented.

This field activity will be completed following the methods described in is SOP C.T. Male 'Field Water Quality Measurements and Calibration'.

8.0 SAMPLE HANDLING AND CHAIN OF CUSTODY PROCEDURES

The purpose of this procedure is to describe how to properly handle the sampling container and to document information on a chain-of-custody (COC) form. A COC is the document that includes sample identification and analyses required, and documents possession of samples from the time they are collected until they arrive at the laboratory. These field activities will be completed following the methods described in SOP C.T. Male 'Chain-of-Custody Procedures'; SOP C.T. Male 'Collection of Quality Control Samples' and SOP C.T. Male 'Domestic Transport of Samples to Laboratories in USA'.

9.0 WATER LEVEL MEASUREMENT PROCEDURES

Water levels will be measured in the monitoring wells using a water level indicator probe. The water levels will be measured from the surveyed reference point to the nearest 0.01 foot. Water levels will be measured progressively, attempting to measure water levels from the well with the lowest concentration of target compounds to the well with the highest concentration of target compounds.

To avoid possible cross-contamination of the wells, the water level indicator will be decontaminated prior to and following the water measurement of each well. The water level indicator will be decontaminated by rinsing it with imported water, washing it with laboratory-grade standard detergent (e.g., Alconox® or Liquinox®) and imported water, then rinsing it in accordance with SOP C.T. Male 'Equipment Decontamination Procedures'.

The procedure for measuring static water level and total well depth in a groundwater well is contained in SOP C.T. Male 'Measuring Static Water Level, Immiscible Layers (DNAPL and LNAPL), and Total Well Depth in Water'.

10.0 VAPOR AND AIR SAMPLING

Soil vapor, indoor air and outdoor ambient air samples will be subjected to laboratory analysis to assist in characterizing potential vapor intrusion of contaminants.

Vapor samples will be collected from soil borings and from beneath buildings as described in Site-specific work plans. The methodology for installing soil gas and sub-slab gas points and collecting soil gas and sub-slab gas samples for laboratory analysis by using a SUMMA canister is described in the following SOPs BEC: 'Soil Vapor Sampling', 'Collection of Air Samples from Sub-Slab Soil Vapor Monitoring Points', 'Collection of Indoor and Ambient Air Samples Using Evacuated Canisters', 'Helium Leak Testing at Soil Vapor Monitoring Points', and 'Field Measurements of Landfill Gases'. Where possible and as needed, permanent soil gas sampling points may be installed and left in place to allow future soil gas sampling.

In accordance New York State Department of Health (NYSDOH) guidance, indoor air samples will typically also be co-located with sub-slab soil gas samples. The indoor air quality samples will be collected in laboratory-certified clean 6-liter Summa canisters with pre-set air flow regulators.

Outdoor (ambient) air quality sampling locations will be determined in the field at the time of sampling and will be selected upwind in an area not subject to wind obstructions and away from features and activities that may emit vapors. A field sketch will be developed depicting the sub-slab vapor, indoor air quality and outdoor air quality sampling locations along with site features having the potential to emit vapors.

11.0 INVESTIGATIVE DERIVED WASTE, STORAGE, SAMPLING AND DISPOSAL

Investigative derived waste (IDW) will be containerized in appropriately sized compatible containers, for subsequent characterization and profiling for disposal at a facility permitted to accept the waste. Water IDW may be treated on site and disposed of at a location and following a procedure approved by NYSDEC and, if applicable, the municipality with jurisdiction over the point of disposal. This field activity will be completed following the methods described in SOP C.T. Male 'Collection and Disposal of Investigative Derived Waste'.