SITE CHARACTERIZATION WORK PLAN

South Corning Spoils Site

Corning, Steuben County, New York

Site Number: #851068

Prepared For:

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LIST OF ACRONYMS

AHA	Activity Hazard Analysis
bgs	below ground surface
CAMP	Community Air Monitoring Plan
CNG	Corning Natural Gas
EM	electromagnetic induction
FAP	Field Activities Plan
GPR	ground-penetrating radar
GPS	global positioning system
HDPE	high-density polyethylene
IDW	investigation-derived waste
MCL	Minimum Contaminant Levels
MS/MSD	matrix spike/matrix spike duplicate
NAD 83	North American Datum of 1983
NAVD 88	North American Vertical Datum of 1988
NTUs	nephelometric turbidity units
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PET	polyethylene terephthalate
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PID	photoionization detector
PPE	personal protective equipment
PSHEP	Project Safety, Health, and Environmental Plan
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
QAPP	Quality Assurance Project Plan
RF	radio frequency
SCG	Standards, criteria, and guidance
SSC	State Sanitary Code
SSHEP	Subcontractor Safety, Health, and Environment Plan
SVOCs	semivolatile organic compounds
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
USCS	Unified Soil Classification System
VOCs	volatile organic compounds

SECTION 1 PROJECT OBJECTIVES AND BACKGROUND

1.1 Project Objectives

New York State Department of Environmental Conservation (NYSDEC), along with the New York State Department of Health (NYSDOH), have been overseeing the investigation and implementation of remedial activities associated with past disposal of waste materials from pre-cursor companies of Corning Incorporated.

Parsons proposes to assist NYSDEC with the site characterization efforts at the South Corning Spoils site to:

1. Investigate potential impacts from target fill material containing ash, glass, and/or brick (glass manufacturing-related waste).
2. Investigate potential presence and location of contaminants in surface and subsurface soils.
3. Determine whether groundwater is being impacted.

The primary contaminants of concern, based on previous disposal of ash, glass, and/or brick, have been identified as arsenic, cadmium, lead, and semivolatile organic compounds (SVOCs). Analytical data from site characterization samples will be interpreted in accordance with NYSDEC Standards, Criteria, and Guidance (SCGs).

Tasks are further defined in subsequent sections, and include:

- Installation of test pits
- Installation of soil borings
- Collection of surface and subsurface soil samples
- Installation and collection of samples from groundwater monitoring wells
- Submittal of a final summary report

1.2 Project Background

The South Corning Spoils site is a 37.25-acre property located in the south of the Village of South Corning (**Figure 1**). The site is bounded by Caton Road to the west, residences and forested areas to the north, Whisky Creek and forested areas to the east, and utility company buildings (Corning Natural Gas Corporation and Dominion Transmission Corporation) and forested areas to the south (**Figure 2**). The site property includes two small buildings and an unplugged natural gas well. The focus of the Site Characterization is on the northwest portion of the property, which has been used as a disposal area (approximately 4.6 acres). This area is shown outlined in purple on **Figures 2 and 3**. The NYSDEC site number is #851068.

Characteristics of the overburden soils at the site are unknown. Overburden soils in the vicinity of the site are likely underlain by Upper Devonian shale or siltstone. Bedrock depth at the site is unconfirmed but based on published information is likely more than 80 feet below ground surface. The bedrock is overlain by alluvial silts and fine sand derived from post-glacial floodplain deposits generally exhibiting relatively low permeability. Hydrogeologic features of the site are unknown.

SECTION 2 HEALTH AND SAFETY

A *Project Safety, Health, and Environmental Plan* (PSHEP; Parsons 2020a) has been prepared for the investigation activities. All personnel and subcontractors working on the project are required to follow this plan for the work covered in this work plan. Copies of the PSHEP will be maintained at the support zone.

Prior to the start of work, the subcontractors shall submit a Subcontractor Safety, Health, and Environmental Plan (SSHEP) along with specific Activity Hazard Analyses (AHAs) for tasks to be performed under this work plan. Work cannot commence until SSHEP and AHAs are reviewed, and comments have been addressed. Copies of the SSHEP and AHAs will be maintained at the support zone.

A generic Community Air Monitoring Plan (CAMP) prepared for this contract will be implemented for real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the upwind and downwind perimeter of each designated work area during invasive activities on-site. Exceedances will be reported to NYSDEC and NYSDOH the same day (or next business day if after hours) along with the following:

- the reason for the exceedance
- what was done to correct the exceedance
- if the correction was effective

The Plan will follow the NYSDOH Generic CAMP as further detailed in DER-10 Appendix 1A (NYSDEC 2010), and recommended response levels and action(s) will be implemented in the event of exceedance.

SECTION 3 QUALITY CONTROL

3.1 Field Activities

Field activities will be conducted in accordance with the following documents, prepared by Parsons for the NYSDEC program:

- PSHEP (2020a)
- generic Quality Assurance Project Plan (QAPP; 2020b)
- Field Activities Plan (FAP; 2020c)

Site-specific elements and specific AHAs for soil borings, surface soil sampling, and monitoring well installation will be added to the PSHEP, as needed.

[redacted]

Per- and polyfluoroalkyl substances (PFAS) sampling will be performed in accordance with *Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs* (NYSDEC 2021).

All proposed sample locations will be discussed with representatives of NYSDEC prior to implementation of this scope. Investigation/sample location may be modified with concurrence from NYSDEC.

3.2 Emerging Contaminants

Sampling will be conducted for emerging contaminants as part of this investigation in general accordance with the applicable NYSDEC guidance, such as their guidelines for sampling and analysis of PFAS (NYSDEC 2021). One of these emerging contaminants is PFAS compounds. PFAS can be found in many standard environmental sampling materials, including fluoropolymer bailer/tubing, some decontamination solutions, and pump bladders/valves. Two of the principal target analytes – perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) – have been broadly utilized in the production of various everyday items such as: waterproof/stain-resistant clothing, non-stick cookware, and many commonly used plastics.

Another of the target analytes is 1,4-dioxane. This compound has been used in many products including the manufacturing of pharmaceuticals, personal care products, polyethylene terephthalate (PET) plastic, paint strippers, dyes, greases, varnishes, and waxes.

The field activities and methods in the FAP include steps to prevent cross-contamination, and to avoid the introduction of external contaminant sources. These steps include, but are not limited to:

- use of sampling materials, tools, and personal protective equipment (PPE) that are known to be free of emerging contaminants
- use of compatible apparel
- hygiene considerations
- sample management considerations (e.g., sampling for PFAS prior to sampling for 1,4-dioxane)
- quality assurance/quality control (QA/QC) procedures
- use of source water and decontamination solutions that are demonstrated to be free of emerging contaminants.

SECTION 4 SURVEYS, INVESTIGATIONS, ENVIRONMENTAL SAMPLING, AND IMPLEMENTATION

Parsons' approach to the site characterization is described in the following sections. Each portion of the investigation work will follow NYSDEC guidelines outlined in Division of Environmental Remediation (DER)-10 Technical Guidance document (NYSDEC 2010).

The overall program consists of:

1. Geophysical investigation (utility mapping)
2. Site survey of utilities and as-built investigation coordinates for soil borings/well locations
3. Installation of test trenches
4. Subsurface investigation soil borings
5. Monitoring well installation, development, and sampling

4.1 Field Preparation

4.1.1 Geophysical Investigation

A geophysical investigation will initially be performed at the site to locate subsurface utilities and/or subsurface anomalies at four test trench locations and 11 soil boring/monitoring well locations, which are shown in conjunction with site features on **Figure 3**.

Prior to intrusive work, Parsons will follow their *Subsurface Soil Disturbance Protocol* (see **Attachment 2**). Prior to initiation of site activities, Dig Safely NY will be contacted to locate utility lines that enter and/or cross the property. The geophysical survey will be conducted to detect buried structures and subsurface utilities within the specified locations, and/or to trace a particular utility line or system. The geophysical surveyor will apply the appropriate surface geophysical method(s) to search for utilities and/or buried obstructions. Geophysical technologies may include but not be limited to ground-penetrating radar (GPR), radio frequency (RF), and electromagnetic induction (EM). These techniques will be used to locate subsurface utility lines or subsurface features within a 10-foot radius of each proposed intrusive activity. Specific features may include subsurface utilities, subsurface anomalies, large voids, former subsurface structures, abandoned utilities, and former utility trenches. Based on an interpretation of data, the geophysical surveyor will mark the targets on the ground surface, for subsequent survey performed by others after the boring work and well installations are completed. Paint and flagging shall be used for marking of lines, showing any underground site utilities or obstructions.

A natural gas utility, consisting of an unplugged well, is present at the site. An approximate location, provided by the operator, Corning Natural Gas (CNG), is shown on **Figure 3**. The utility will be located and demarcated using geophysical methods, CNG institutional knowledge, or a combination thereof. Any proposed borings in the immediate vicinity of the utility mark-out will be relocated until they are a minimum of 5 feet away from the marking.

4.1.2 Site Layout and Proposed Boring Locations

The site characterization efforts will include the following proposed field sampling activities:

Matrix	Approach	Number of locations	Purpose
Soil			
	Test Pits	4	Soil characterization, sample collection, laboratory analyses
	Surface Soil	4	Sample collection, laboratory analyses
	Soil Borings (40 feet)	8	Soil characterization, sample collection, laboratory analyses
	Soil Borings (50 feet)	3	Soil characterization, sample collection, laboratory analyses
Groundwater			
	Monitoring Wells	3	Water table depth, sample collection, laboratory analyses

The site layout and proposed sampling locations are shown in **Figures 2 and 3**, respectively.

Initially, the proposed sampling locations will be roughly located with a handheld global positioning system (GPS) and will take into account surface and overhead features that may affect execution of field investigation activities. Following completion of the field investigation activities, a licensed professional land surveyor registered to practice in the State of New York will collect as-built data from the sample locations (as described in **Section 4.4 Site Survey**).

4.2 Soil Investigation

Soil characterization activities at the site consist of excavation of a minimum of four test pits to 8 feet below ground surface (bgs). Surface soil samples (0 to 2 inches) will be collected from the test pits. In the case that target fill material is observed in the test pit, a sample of the target fill will be collected. In addition, 8 soil borings will be advanced to a depth of 40 feet bgs, and three soil borings will be advanced to a depth of 50 feet bgs. Samples will be collected from 0 to 6 inches, 6 to 12 inches, 12 to 24 inches, and the bottom of the boring. In the case that target fill material is observed in the soil boring, one sample of the target fill material will be collected, and one sample will be collected from the native material below the layer of fill. The proposed locations for each test pit and soil boring are shown on **Figure 3**. These proposed locations will be marked out during the site survey and will be verified following installation (**Section 4.4 Site Survey**).

Prior to intrusive work Dig Safely NY will be notified and a geophysical investigation will be conducted to identify underground utilities or buried obstructions at each proposed test pit or boring location (as described in **Section 4.1.1 Geophysical Investigation**).

4.2.1 Test Pits

A minimum of four test pits are proposed for excavation. Proposed locations for the test pits were selected based on review of historic documents that indicate areas potentially filled with non-native soils. The proposed locations for each test pit are shown on **Figure 3**. The proposed test pit locations will be marked out during the site survey and will be verified following excavation (**Section 4.4 Site Survey**).

4.2.1.1 Installation

Test pits will be excavated to the following dimensions, as site conditions allow:

- 25 feet long
- 2 feet wide
- 8 feet deep

Test pit dimensions may be modified in the field following discussion with the project manager and in concurrence with NYSDEC.

Test pits will be installed using excavation equipment capable of reaching the maximum proposed depth. Track mats should be considered prior to accessing the proposed test pit locations to minimize potential disturbances to ground surfaces at the site. Excavated test pit soils shall be placed on impervious polyethylene plastic sheeting (minimum 8-mil thickness). Any excavated soil piles shall be covered with plastic sheeting at the end of each workday. During excavation, the operator will excavate thin layers of soil, and will be mindful of the potential for encountering any previously unidentified buried materials, containers, utilities, or combination thereof. Test pit sidewalls may be cut back to prevent sidewalls from crumbling or collapsing. Test pits will be advanced until reaching desired 8-foot depth, encountering groundwater, or sidewalls show signs of destabilization, whichever occurs first.

Prior to beginning each test pit excavation, one surface soil sample shall be collected from 0 to 2 inches bgs. Soils excavated from test pits will be logged and visually assessed for the presence of ash, brick, and/or glass. Field personnel shall sketch test pit walls, log test pit lithology, and collect requisite soil samples in accordance with Section 4.2.1.2 Sampling. Photographs shall be taken of freshly exposed test pit sidewalls to document soil stratigraphy and other anomalies. Soils will be visually classified using the Burmister test methods for soil identification (1970) and Unified Soil Classification System (USCS; ASTM International 2018). Soil descriptions will be recorded in field notes or test pit logs. Any non-native material present in the excavated soils shall be noted and described (type, color, texture, moisture content, etc.) and any layer of fill material containing ash, brick, and/or glass shall be noted in field logs. If impacted soils are encountered one soil sample shall be collected from the surrounding strata. Photographs of recovered soils and any fill materials containing ash, brick, and/or glass will be taken and included in the site characterization report. Excavated soils shall also be screened for the presence of VOCs with a photoionization detector (PID) and readings recorded on test pit logs and/or field book. The field team shall photograph the entirety of the test pit and surrounding site conditions.

Once the test pits have been excavated to their total depth and all requisite samples have been collected, the test pits shall be backfilled using excavated material. All test pits should be backfilled the same day as the excavation, or as soon thereafter as practical. Backfill should be placed in the bottom of the trench in one-foot lifts and compacted using the equipment bucket. Test pits shall not be left open or uncovered overnight. In the event the crews need to leave an open test pit unattended, the test pit shall be delineated with orange fencing and caution tape to prevent access.

Excavating equipment will be decontaminated between trenches at the decontamination area using a high-pressure steam wash.

Grossly contaminated soils and decontamination rinsates will be containerized in 55-gallon steel drums and transported to a central waste staging area for further characterization and disposal.

4.2.1.2 Sampling

As previously noted in Section 4.2.1.1, care will be taken to prevent cross contamination of samples, especially introduction of emerging contaminants, into the samples.

Surface soil samples will be collected from each test pit from 0 to 2 inches bgs. Additionally, if target fill materials are encountered one sample will be collected from the target fill material itself and another from the material directly below the fill layer. Samples will be submitted for laboratory analysis.

Surface soil samples will be analyzed for the compounds listed in **Table 1**. Each sample will be analyzed for total metals, Toxicity Characteristic Leaching Procedure (TCLP) metals, SVOCs, and 1,4-dioxane. The remaining parameters will be analyzed on 20 percent of the samples collected at locations based on field observations. Except for soils that will be analyzed for VOCs, each soil sample collected for laboratory analysis will be field homogenized prior to placement in laboratory-supplied bottles.

[redacted]

For QA/QC purposes, duplicate samples, equipment blanks, and matrix spike/matrix spike duplicate (MS/MSD) samples will be collected and analyzed at a rate of one for every 20 field samples.

Results from the analytical sampling will be compared to Part 375 *Soil Cleanup Objectives* (NYSDEC 2006).

4.2.2 Soil Borings

A total of 11 soil borings are proposed for installation (eight to 40 feet bgs, and three to 50 feet bgs). The locations of proposed soil borings were selected to provide adequate distribution and coverage across the area of spoils disposal. The proposed locations for each soil boring are shown on **Figure 3**. The proposed soil boring locations will be marked out during the site survey and will be verified following boring installation (**Section 4.4 Site Survey**).

4.2.2.1 Installation

Soil cores will be collected and logged continuously until borings are terminated. Soils will be visually classified using the Burmister test methods for soil identification (1970) and USCS (ASTM International 2018). Soil descriptions will be recorded in the field notes or soil boring log form. Any non-native material present in the soil core will be noted and described (type, color, texture, moisture content, etc.) and any layer of fill material containing ash, brick and/or glass will be noted in the field logs. Photographs of recovered soils and any fill material containing ash, brick, and/or glass will be taken to provide in the final report. Each soil core will also be screened for the presence of VOCs with a PID and readings will be recorded on the boring log and/or field book.

Once the deeper soil borings have been advanced to their total depth, approximately 50 feet bgs, monitoring wells will be constructed in accordance with **Section 4.3 Groundwater Investigation.** Groundwater investigation activities at the site consist of installing three monitoring wells within these deeper borings. The proposed well locations are shown on **Figure 3**. The location, ground surface elevation, and top of casing elevation will be measured and recorded during the as-built survey (**Section 4.4 Site Survey**). The ground surface around the well and surrounding area will be restored to conditions prior to intrusive activities. Track mats may be used to access the boring locations and minimize ground disturbances.

Upon completion, each soil boring that does not have an installed monitoring well will be grouted from total depth to surface. After grouting is complete, the surface and surrounding area will be restored to conditions prior to intrusive activities.

Sampling equipment will be decontaminated between pushes and soil boring locations by washing equipment using a phosphate-free cleaning solution (e.g., Alconox) along with a distilled water rinse. All “down hole” drilling equipment will be decontaminated inside the decontamination pad, using a high-pressure steam wash.

Drill cuttings and decontamination rinsates will be containerized in 55-gallon steel drums and transported to a central waste staging area for further characterization and disposal.

4.2.2.2 Sampling

As previously noted in **Section 3.2 Emerging Contaminants**, care will be taken to prevent cross contamination of samples, especially introduction of emerging contaminants, into the samples. MacroCore samplers will be equipped with PFAS-free acetate liners. All necessary equipment, material, and supplies will be provided by the drilling subcontractor and will be compatible for collection of emerging contaminant samples (e.g., PFAS-free).

Soil boring samples will be collected from the following intervals and submitted for laboratory analysis:

- 0 to 6 inches
- 6 to 12 inches
- 12 to 24 inches
- Bottom interval of the boring

In addition to these intervals, up to two additional soil samples will be collected and submitted for laboratory analysis based on the following criteria:

- If target fill material is encountered one sample will be collected from the target fill material itself, and another from the material directly below the fill layer.
- If target fill material is not encountered, one soil sample will be collected from the interval exhibiting the highest PID reading, or other evidence of impacts (staining or odors), or from the interval directly above the water table.

As shown on **Table 1**, all samples will be analyzed for total and TCLP metals (including mercury) and SVOCs. The remaining parameters will be analyzed on 20 percent of the samples collected at locations based on field observations. Except for soils that will be analyzed for VOCs, each soil sample collected for laboratory analysis will be field homogenized prior to placement in laboratory-supplied bottles.

[redacted]

For QA/QC purposes, duplicate samples, equipment blanks and MS/MSD samples will be collected and analyzed at a rate of one for every 20 field samples.

Results from the analytical sampling will be compared to Part 375 *Soil Cleanup Objectives* (NYSDEC 2006).

4.3 Groundwater Investigation

Groundwater investigation activities at the site consist of installing three monitoring wells within the deeper borings described in **Section 4.2.2 Soil Borings**. The proposed well locations are shown on **Figure 3**. The location, ground surface elevation, and top of casing elevation will be measured and recorded during the as-built survey (**Section 4.4 Site Survey**).

4.3.1 Monitoring Well Installation

Monitoring wells will be installed at the three deep (e.g., 50-foot) soil boring locations (**Figure 3**). Each monitoring well will be constructed with 2-inch-diameter schedule 40 polyvinyl chloride (PVC) riser threaded with 10 feet of 2-inch-diameter schedule 40 PVC 0.010-slot screen. The screened interval should extend at least 2 feet above the water table interface unless field conditions warrant otherwise. Groundwater depth is estimated to be 25 feet bgs.

The annular space surrounding the well will be backfilled with clean sand from 6 inches below the bottom of the screen to 2 feet above the top of screen. A bentonite seal will be installed above the sand pack and either allowed to hydrate (in saturated conditions) or will be hydrated using potable water (in unsaturated conditions). Each well

will be grouted from the top of bentonite to grade using a Portland cement and bentonite slurry grout. Each well will be completed with a flush-mount or stick-up protective cover set within a 2-foot-diameter concrete apron, whichever is more conducive to site conditions.

As noted in **Section 3.2 Emerging Contaminants**, care will be taken to prevent the introduction of emerging contaminants into the completed monitoring wells. Downhole drilling equipment will be decontaminated between wells as previously noted and the area around the wells (including access routes) will be restored to previous conditions.

All necessary equipment, material, and supplies used to advance the sampler, purge groundwater, and collect groundwater samples will be compatible with emergent contaminant sampling (e.g., PFAS-free).

4.3.2 Monitoring Well Development

Each new monitoring well will be developed to remove drilling fluid used during boring advancement, as well as any fine-grained material that may have settled in and around the well screen during well construction. Well development will be performed a minimum of 24 hours after the grout has been installed to provide sufficient time for the grout to cure.

Well development activities will consist of purging water until one of the following two criteria are met:

1. Water quality parameters have stabilized for three successive measurements and purge water turbidity drops below 50 nephelometric turbidity units (NTUs).
2. A maximum of 10 well volumes have been removed.

Well development may be performed using a stainless steel or PVC bailer, as well as a water pump paired with high-density polyethylene (HDPE) tubing and surge block. If the well goes dry during development, bailing or pumping will pause until 80 percent of the initial water level has recharged, at which point pumping or bailing will resume. The well will be considered developed once this process has been repeated, and the well has been pumped dry three times.

Development water will be temporarily contained using new 55-gallon steel drums, which will be staged on-site at a central investigation-derived waste (IDW) accumulation area (refer to **Section 4.5 Waste Handling**). The drilling subcontractor will provide drums of sufficient number and quality to containerize well development water, and will provide the equipment, personnel, and materials necessary to transport IDW from the investigation location to the central IDW accumulation area. Parsons will be responsible for collecting waste characterization samples and coordinating subsequent disposal.

4.3.3 Monitoring Well Sampling

One round of groundwater sampling will be conducted at each of newly installed monitoring wells using low-flow sampling techniques. Prior to sampling, the water level in each boring will be measured and recorded to the nearest 0.01-foot using a PFAS-free electronic water level meter. Well sampling will commence once water quality parameters measured during low-flow purging are stable for three consecutive readings. The stabilization guidelines are as follows:

- Temperature ± 10% of measurement
- pH ± 0.1 pH units
- Specific conductance ± 3% of measurement
- Redox ± 10 mV
- Dissolved oxygen ± 10% of measurement
- Turbidity ± 10% of measurement, or under 10 NTUs

Dedicated and disposable groundwater sampling equipment (e.g., tubing) will be used for sample collection. Any non-dedicated or non-disposable equipment (e.g., water level meter) will be decontaminated between samples by washing equipment with phosphate-free solution followed by a PFAS-free distilled water rinse. Purge water and decontamination water will be transferred to drums for characterization and disposal.

Groundwater samples will be analyzed as shown in **Table 1**. Laboratory analytical results will be compared to NYSDEC Class GA Ambient Water Quality Standards presented in *Technical and Operational Guidance Series 1.1.1* (NYSDEC 1998). Emergent contaminant analytical results (PFAS and 1,4-dioxane) will be compared to NYSDOH Minimum Contaminant Levels (MCLs) as presented in the *New York State Sanitary Code* (SSC) 10 NYCRR Part 5 (NYSDOH 2018). For QA/QC purposes, duplicate samples, equipment blanks and MS/MSD samples will be collected and analyzed at a rate of one for every 20 field samples. Trip blanks will also be included in sample coolers containing field samples for VOC analyses; these trip blanks will be analyzed for Target Compound List (TCL) VOCs.

As previously noted in **Section 3.2 Emerging Contaminants**, care will be taken to prevent cross contamination of samples, especially introduction of emerging contaminants into the samples. Any non-dedicated well sampling equipment will be decontaminated between well locations.

4.4 Site Survey

Following the completion of investigation activities, a licensed professional land surveyor registered to practice in the State of New York will collect as-built data from the sample locations.

The following as-built data will be collected for soil borings:

- Northing
- Easting
- Ground surface elevation

The following as-built data will be collected for monitoring wells:

- Northing
- Easting
- Ground surface elevation
- Top of riser elevation
- Top of flush-mount or stick-up protective cover elevation

Horizontal survey data will be based on the North American Datum of 1983 (NAD 83) New York State Plane (Central Zone) coordinate system (in feet). Elevations will be based on the North American Vertical Datum of 1988 (NAVD 88).

4.5 Waste Handling

IDW, including excess soils from sample locations, decontamination rinsates, purge water, and other used materials (such as PPE, acetate Geoprobe liners, poly sheeting, etc.) will be placed in Department of Transportation-approved 55-gallon 17-H type drums. The IDW will be classified as hazardous or non-hazardous based on characterization results and will be disposed of in accordance with applicable NYSDEC regulations. Appropriate equipment capable of handling and/or moving IDW stored to the designated waste storage area will be used, and IDW drums will be stored in an area lined with polyurethane sheeting for secondary containment.

SECTION 5 REPORT PREPARATION

Data obtained during the field investigations identified in this scope of work will be validated, evaluated, and summarized. A Site Characterization Report will then be prepared following completion of the investigation and receipt of analytical data. This report will document investigation activities specified in this work plan.

Chemical analytical results for soil and groundwater will be compared to 6 NYCRR Part 375 (NYSDEC 2006) guidelines for various potential future land uses and State of New York Class GA water quality standards, respectively.

The document will include Category B data validation, and an evaluation of data for reclassification/delisting, or continuation of next steps of the site characterization.

SECTION 6 SCHEDULE

Following approval of this Work Plan by NYSDEC, the schedule shown below will be implemented. The work scope described herein is assumed to be completed during 2022.

TASK NAME	START	FINISH
Geophysical Investigation & Utilities Demarcation	Week 1	Week 1
Drilling Mobilization	Week 1	Week 2
Drilling/Soil Sampling/Well Installation/Well Development	Week 2	Week 3
Groundwater Sampling	Week 4	Week 4
As-built Coordinates and Elevations Survey	Week 4	Week 4
Data Management and Reporting Tasks	2 months after completion of field activities	

SECTION 7 REFERENCES

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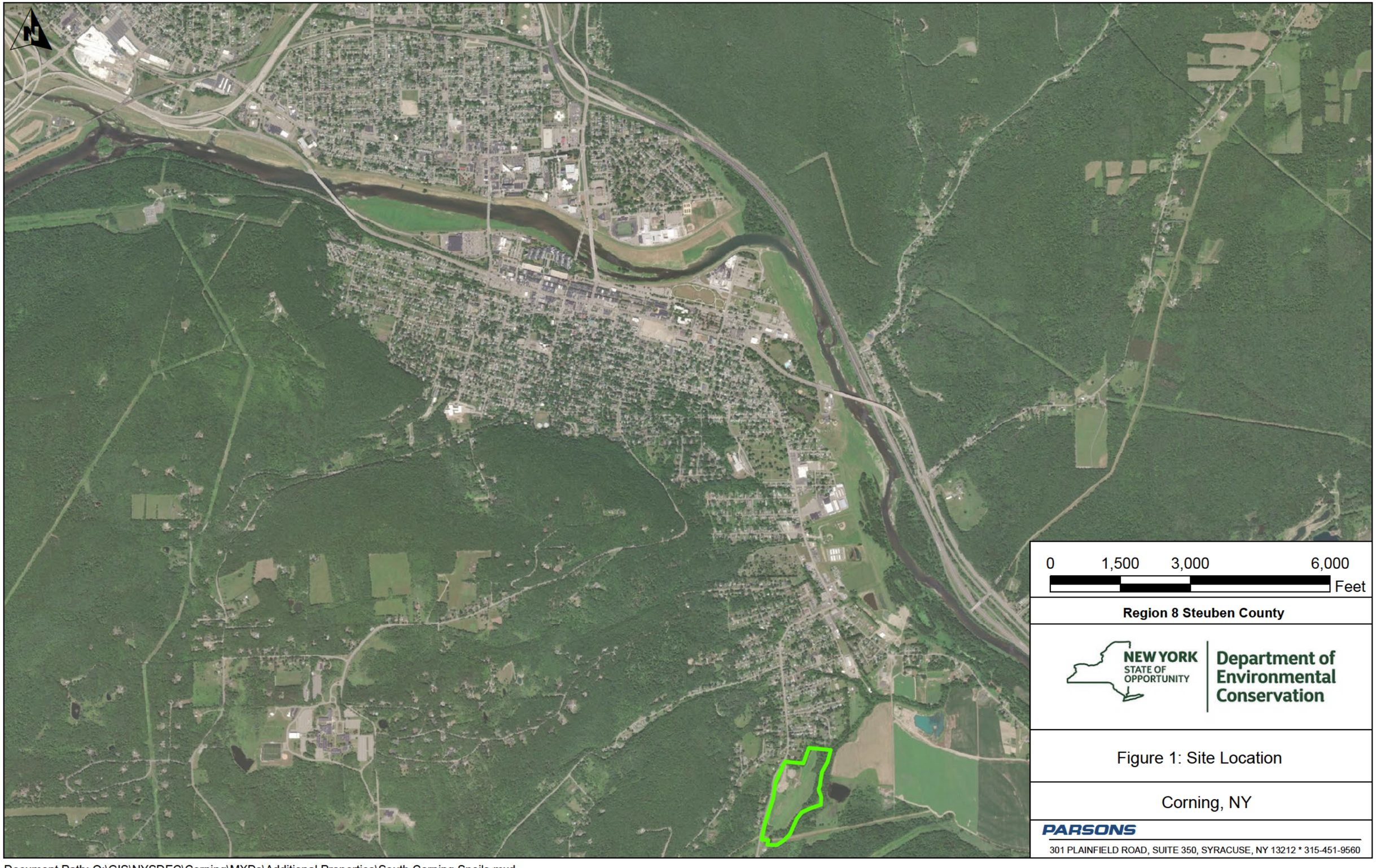
FIGURES



0 1,500 3,000 6,000
Feet

Region 8 Steuben County

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Figure 1: Site Location

Corning, NY

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 * 315-451-9560

Plotted By: CS

Plot Date: 2/26/2021

Document Path: Q:\GIS\NYSDEC\Corning\MXDs\Additional Properties\South Corning Spoils.mxd

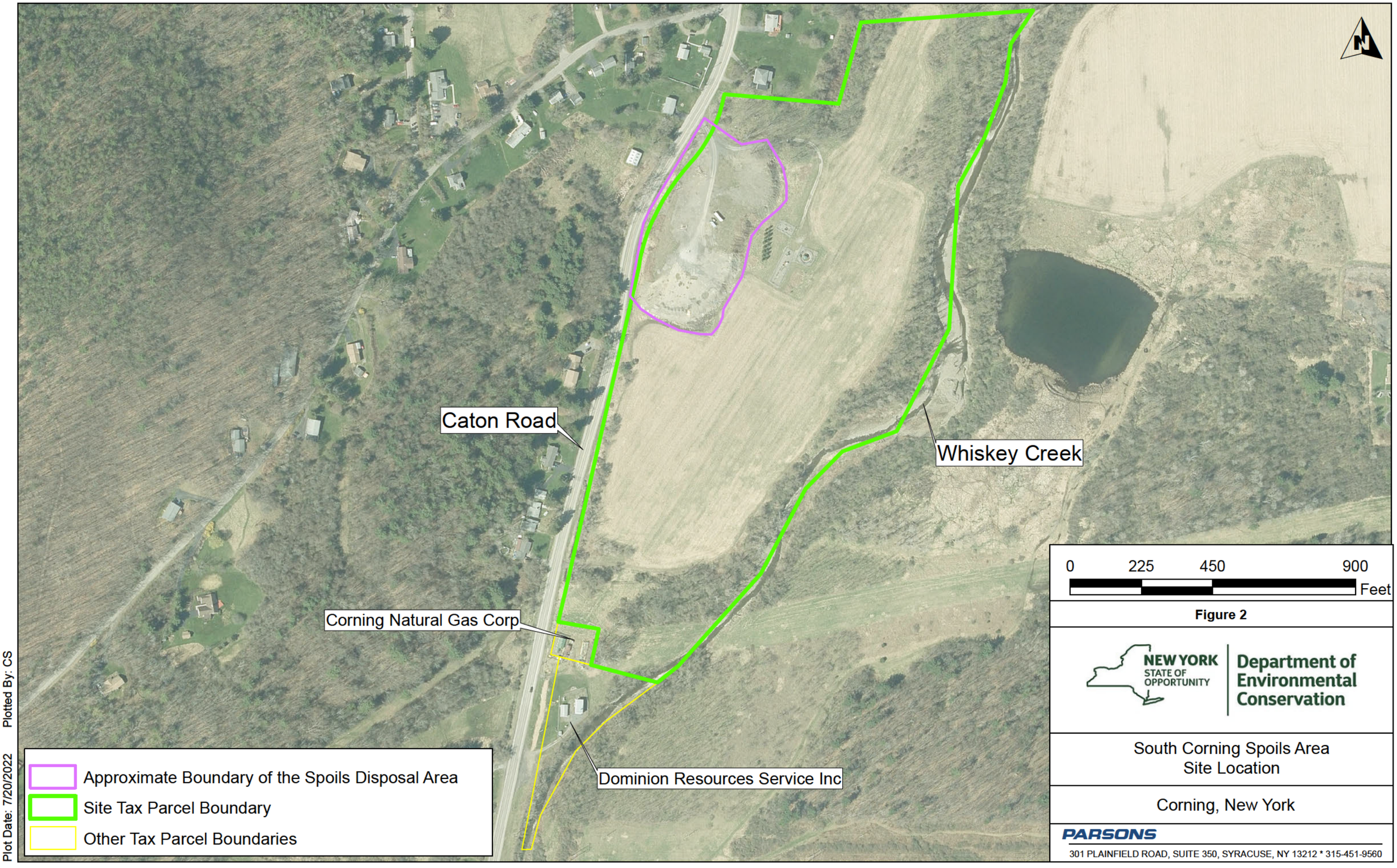


Figure 2

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

South Corning Spoils Area
Site Location

Corning, New York

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 * 315-451-9560

Plotted By: CS

Plot Date: 7/20/2022

Document Path: Q:\GIS\NYSDEC\Corning\MXDs\Additional Properties\South Corning Spoils Fig 2.mxd

Figure 3

NEW YORK STATE OF OPPORTUNITY
Department of Environmental Conservation

South Corning Spoils Area
Proposed Sample Areas

Corning, New York

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 * 315-451-9560

Plotted By: CS
Plot Date: 7/19/2022

Document Path: Q:\GIS\NYSDEC\Corning\MXDs\Additional Properties\South Corning Spoils Samples.mxd

TABLES

TABLE 2
ANALYTICAL DATA SUMMARY FOR SITE CHARACTERIZATION
SOUTH CORNING SPOILS SITE , CORNING NEW YORK

Task	Sample Type	Analysis	Method	Turn-Around-Time	Samples	QA/QC Samples						Total
						Duplicate	Equipment Blank	Trip Blank	Field Blank	MS	MSD	
Soil Boring Sampling [1,3,5]	Soil	Metals	SW6010D/SW7471B	Standard	70	4	0	0	0	4	4	82
	Soil	TCLP Metals	SW6010C/SW7470A	Standard	70	4	0	0	0	4	4	82
	Soil	SVOCs+1,4-Dioxane	SW8270D	Standard	70	4	0	0	0	4	4	82
	Soil	Cyanide	SW9012B	Standard	14	1	0	0	0	1	1	17
	Soil	VOCs	SW8260C	Standard	14	1	0	0	0	1	1	17
	Soil	Pesticides	SW8081B	Standard	14	1	0	0	0	1	1	17
	Soil	PCBs + Total	SW8082A	Standard	14	1	0	0	0	1	1	17
	Soil	Herbicides	SW8151A	Standard	14	1	0	0	0	1	1	17
	Soil	TPH	EPA 1664 (SGT HEM)	Standard	14	1	0	0	0	1	1	17
	Soil	PFAS	Modified EPA 537.1	Standard	14	1	0	0	0	1	1	17
Surface Soil Sampling [1,5]	Soil	Metals	SW6010D/SW7471B	Standard	4	1	0	0	0	1	1	7
	Soil	TCLP Metals	SW6010C/SW7470A	Standard	4	1	0	0	0	1	1	7
	Soil	SVOCs+1,4-Dioxane	SW8270D	Standard	4	1	0	0	0	1	1	7
	Soil	Cyanide	SW9012B	Standard	1	1	0	0	0	1	1	4
	Soil	VOCs	SW8260C	Standard	1	1	0	0	0	1	1	4
	Soil	Pesticides	SW8081B	Standard	1	1	0	0	0	1	1	4
	Soil	PCBs + Total	SW8082A	Standard	1	1	0	0	0	1	1	4
	Soil	Herbicides	SW8151A	Standard	1	1	0	0	0	1	1	4
	Soil	TPH	EPA 1664 (SGT HEM)	Standard	1	1	0	0	0	1	1	4
	Soil	PFAS	Modified EPA 537.1	Standard	1	1	0	0	0	1	1	4
Groundwater Sampling [4]	Groundwater	VOCs	SW8260C	Standard	3	1	1	1	1	1	1	9
	Groundwater	SVOCs + 1,4-Dioxane	SW8270D/SW8270D SIM	Standard	3	1	1	0	1	1	1	8
	Groundwater	Pesticides	SW8081A	Standard	3	1	1	0	1	1	1	8
	Groundwater	PCBs + Total	SW8082A	Standard	3	1	1	0	1	1	1	8
	Groundwater	Herbicides	SW8151A	Standard	3	1	1	0	1	1	1	8
	Groundwater	Metals	SW6010D/SW7470A	Standard	3	1	1	0	1	1	1	8
	Groundwater	TPH	EPA 1664 (SGT HEM)	Standard	3	1	1	0	1	1	1	8
	Groundwater	PFAS	Modified EPA 537.1	Standard	3	1	1	0	1	1	1	8

TABLE 2
ANALYTICAL DATA SUMMARY FOR SITE CHARACTERIZATION
SOUTH CORNING SPOILS SITE , CORNING NEW YORK

Task	Sample Type	Analysis	Method	Turn-Around-Time	Samples	QA/QC Samples						Total
						Duplicate	Equipment Blank	Trip Blank	Field Blank	MS	MSD	
Waste Characterization Sampling	Soil	TCLP	SW1311	Standard	1	0	0	0	0	0	0	1
	Soil	TCLP Volatiles	SW8260C	Standard	1	0	0	0	0	0	0	1
	Soil	TCLP Semivolatiles	SW8270D	Standard	1	0	0	0	0	0	0	1
	Soil	TCLP Pesticides	SW8081B	Standard	1	0	0	0	0	0	0	1
	Soil	TCLP Herbicides	SW8151A	Standard	1	0	0	0	0	0	0	1
	Soil	TCLP Metals	SW6010C/SW7470A	Standard	1	0	0	0	0	0	0	1
	Soil	PCBs + Total	SW8082A	Standard	1	0	0	0	0	0	0	1
	Soil	Corrosivity	SW9045	Standard	1	0	0	0	0	0	0	1
	Soil	Ignitability	SW1030	Standard	1	0	0	0	0	0	0	1
	Soil	Reactivity (Cyanide and Sulfide)	SW7.3.3.2/SW7.3.4.2	Standard	1	0	0	0	0	0	0	1
	Water	VOCs	SW8260C	Standard	1	0	0	0	0	0	0	1
	Water	SVOCs	SW8270D	Standard	1	0	0	0	0	0	0	1
	Water	Pesticides	SW8081B	Standard	1	0	0	0	0	0	0	1
	Water	Herbicides	SW8151A	Standard	1	0	0	0	0	0	0	1
	Water	Total Cyanide	SW9012B	Standard	1	0	0	0	0	0	0	1
	Water	PCBs + Total	SW8082A	Standard	1	0	0	0	0	0	0	1
	Water	Metals	SW6010D/SW7470A	Standard	1	0	0	0	0	0	0	1
	Water	Corrosivity (pH)	SW9040	Standard	1	0	0	0	0	0	0	1
	Water	Flashpoint	SW1010	Standard	1	0	0	0	0	0	0	1
	Water	Reactivity (Cyanide and Sulfide)	SW7.3.3.2/SW7.3.4.2	Standard	1	0	0	0	0	0	0	1

NOTES:
1. NYCRR Subpart 375 Compounds
2. NYSDEC Screening and Assessment of Contaminated Sediment
3. An additional soil sample will be collected from native materials directly under any ash/brick/glass layer encountered
4. NYSDEC Ambient Water Quality Standard TOGS 1.1.1
5. Analysis of Cyanide, VOCs, Pesticides, PCBS + Total, Herbicides, TPH, PFAS, and Organic Carbon(sediment only) will be submitted for 20% of samples.

[redacted]

[redacted]

NYSDEC CORNING AREA GLASS SAMPLING STANDARD

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

- [redacted]
- [redacted]
- [redacted]

[redacted]

[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

[redacted]

[redacted]

[redacted]

[redacted] [redacted]

[redacted]

[redacted]

Submitted to:

Chain Of Custody / Analysis Request

AESI Ref:

COC # :

Lab Use Only

Lab Proj #

Lab ID

Job No.

Privileged & Confidential

EDD To:

Site Name:

Location of Site:

Client Contact: (name, co., address)

Sampler:

P O #

Analysis Turnaround Time:

Standard -

2 weeks -

1 week -

Next Day -

Hardcopy Report To:

Invoice To:

Preservative

Sample Identification																															
	Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID	Sample Date	Sample Time	Sample Type	Sample Matrix	Sample Purpose	# of Cont.	Grab/Composite	MS/MSD	Field Filtered Sample ?	Units																	
															0	0	2														
1																															
2																															
3																															
4																															
5																															
6																															
7																															
8																															
9																															
10																															
11																															
12																															

Special Instructions:
Samples will be held at the Parsons field office following sample collection, and may be submitted under chain of custody for analytical testing at a later date.

Notes:

Sample Collected/Held by	Company			Company		Condition	Custody Seals Intact
	Date/Time			Date/Time		Cooler Temp.	
Transferred to Archived by	Company			Company		Condition	Custody Seals Intact
	Date/Time			Date/Time		Cooler Temp.	

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn. Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (specify):

ATTACHMENT 2

PARSONS SUBSURFACE SOIL DISTURBANCE PROTOCOL

PARSONS ENVIRONMENT & INFRASTRUCTURE GROUP
MANDATORY SUBSURFACE SOIL DISTURBANCE PROTOCOL

1. INTRODUCTION

Intrusive investigation or excavation of the subsurface in areas developed for commercial, industrial or residential use exposes Parsons to the risk of causing damage to underground utilities and structures on a daily basis.

The potential consequences of causing damage to an underground utility or structure include, but are not limited to the following:

- Injury or loss of life
- Financial responsibility for repair, lost time, and/or loss of service
- Loss of client
- Federal investigation of job site work practices
- Litigation (third party lawsuits)

The mandatory protocol and checklists provided herein are intended as tools to aid in the management of risk, and ensure that a responsible standard is consistently applied at project sites where intrusion of the subsurface will occur.

2. PURPOSE

The purpose of this mandatory protocol is the prevention of potential injury and/or loss of life; and damage to subsurface utilities and structures. Parsons' staff will identify and evaluate the hazards associated with underground utilities and other structures prior to conducting any intrusive subsurface operation including but not limited to drilling/boring, test pitting, excavation and other subsurface intrusive activities.

3. SCOPE

Parsons' staff will employ sound investigative and work practices, and will use appropriate measures to avoid damage to subsurface utilities and structures. Furthermore, Parsons requires that these procedures be implemented by all of Parsons' employees and subcontractors, as appropriate. Subcontractors will have a copy of the procedures set forth in Section 6 of this document as an appendix to their contracts.

4. POLICY

Parsons' policy requires that the project manager follow all local, state, and federal laws applying to intrusive subsurface work (i.e. obtain permits, inform agencies, obtain utility clearances, etc). The project manager shall review, as available, all current and historical site drawings and plans from the client, facility owner or tenant, utility providers, municipal government offices (i.e. city engineer or building department) and third parties as appropriate.

The Pre-Drilling/Subsurface Checklist for Intrusive Fieldwork **(Attachment A)** shall be completed prior to initiating fieldwork. Note: *The checklist includes a site visit as a requisite to meet with knowledgeable staff as appropriate (current or former site/owner personnel, utility representatives, municipal representatives, etc.), and review site conditions and features relative to the proposed locations for intrusive work. The checklist should be turned in to the Parsons Project Manager and a copy placed in the project file.*

The procedure described under Section 6 of this document is mandatory at all sites where any intrusive subsurface activities will take place, including but not limited to drilling, augering, boring, excavating, test pitting, trenching or direct push (Geoprobe) technology.

Variance from the Subsurface Soil Disturbance Protocol is allowed only with the written approval from the appropriate Parsons' Program Manager or Sector Leader and the completion of the Utility Clearance Variance Request Form (Attachment B). GBU, Division or Project Safety personnel should be consulted as needed. Failure to obtain a variance in writing is grounds for disciplinary action. Copies of all variances will be maintained in the project files.

The Project Manager is encouraged to find locations that are acceptable to the project team to perform intrusive subsurface work that are not within right-of-ways, streets, highways, or near municipal or third party-owned utility corridors. When it is necessary to conduct work within these areas, the Project Manager should obtain approval from either the Program Manager or Sector Leader and submit the existing work plan to the GBU or Division Safety Manager for review.

5. RESPONSIBILITY

It is the responsibility of the Project Manager to ensure that the Pre-Drilling/Subsurface Checklist for Intrusive Fieldwork and Utility Clearance Variance Request form are followed. If a variance is sought, it is the responsibility of the Project manager to gain written approval of the appropriate Parsons' Program Manager or Sector Leader.

6. PROCEDURE: SUBSURFACE SOIL DISTURBANCE PROTOCOL

The Parsons' Project Manager will be responsible for fulfilling the objectives of this protocol by ensuring that the procedures are carried out by Parsons' employees, subcontractors, and any other person acting on behalf of Parsons. The Parsons' Project Manager will ensure that all individuals working on drilling and other subsurface exploration projects are adequately trained and supervised. Parsons will practice sound investigation and work practices and employ

all necessary measures to avoid damage to subsurface systems and structures. The Parsons' Program Manager or Sector Leader will be contacted and advised in advance of beginning field work in the event that a variance to this protocol is requested by the Parsons' Project Manager or designee. The following tasks/subtasks will be completed at every site and documented on the checklist.

6.1 PRE-INVESTIGATION TASKS

The objective of these tasks is to gather all relevant information about the site to assist in identifying exploration locations and obtaining necessary permits. Please note that in some instances the following information will be obtained or gathered by a subcontractor, which meets this objective.

6.1.1 Obtain Site Plans

Obtain as-built drawings and/or existing site plans as available. NOTE: As-built drawings may not accurately depict the locations of improvements and subsurface features and should therefore not be solely relied upon to determine acceptable locations for intrusive subsurface activities.

6.1.2 Obtain Permits

The project staff will observe all local, state, and federal laws, obtain all necessary permits and utility clearances, and secure site access permission. NOTE: Some permits/clearances require this step to be completed after the exploration locations have been identified and marked in the field. If this is required, proceed with Items 6.2 and 6.3 prior to obtaining permits.

6.1.3 Utility Mark-outs

Parsons' project staff will request a utility mark-out through the local utility locating one-call system for the work site, and document a reasonable degree of effort to locate all main electrical, gas, telephone and all other subsurface utilities. The Parsons' Project Manager must be notified of the status of locating underground utilities before field work progresses. If locating utilities becomes problematic, the Parsons' Project Manager should update the client and discuss potential alternative methods for locating or reducing risk of damage to underground utilities/structures for consideration (i.e. subcontract a private locating service, re-evaluate risk/reward of specific locations or utilize intrusive non-destructive methods as described in Section 6.5.6). Site plans will be updated as appropriate to include utility mark-out information. On third party sites, close coordination with the site owner's representatives for mark-outs, review of as-builts, and other information reviews should be conducted prior to work. NOTE: Some utilities require the exploration locations to be identified and marked in the field prior to performing mark-outs. If this is required proceed with Items 6.2 and 6.3 prior to obtaining permits.

6.2 SITE VISIT

A site visit is required to compare the site plan to actual conditions, document all findings, and update the site plan. Parsons will obtain information needed to prepare a vicinity map of the area that may include significant neighboring addresses, land use, surface water bodies, and other natural as well as manmade features of note, as appropriate. The site visit should be scheduled concurrent with, or soon after the utility mark-out. The inspection should include the following activities at a minimum.

6.2.1 Utilities

Note the location of all utility mark-outs and aboveground utilities:

- Area lights
- Phones
- Drain lines
- Overhead lines
- Fire hydrants
- Fiber optic cable signage
- Catch basins
- Manholes
- Junction boxes
- Natural gas
- Other utilities
- Observe paving scars such as areas of new pavement or saw cuts

6.2.2 Plant/Property Systems

If possible, speak with someone having historical site knowledge to gain information about the site (locations of former tanks, lines, etc.). For UST systems:

- Inspect for the presence of a dispenser pan and, if possible, determine whether product piping is rigid or flexible.
- Visually inspect the location of the tank field, observation wells (if present), dispensers and vent stack(s).

- Note the orientation, arrangement, location, sizes, etc. of the tanks and manholes. Estimate the burial depth of the tank field.

- Observe paving scars (i.e. fresh asphalt/concrete patches, scored asphalt/concrete). Note that this may not indicate location of product piping.

6.2.3 Existing Remediation Systems

Visually inspect the location of aboveground components. Note the locations of well manholes, sparge points, etc.

6.2.4 Safety

For UST systems, note the location of the emergency shut off switch and become familiar with its use.

6.3 SELECTION OF DRILLING/TEST PIT LOCATIONS

6.3.1 Critical Zones

Establish pre-drilling critical zones appropriate to the project site. These are zones where no drilling (if possible and if client concurs) will be conducted. As an example, the following critical zones could be applied at a UST site:

- 10ft (3m) distance from the furthest edge of any operating tank

- 10ft (3m) distance surrounding operating dispenser islands

- At active service station sites, the entire area between the tank field and the dispenser islands.

- The zone between 0 and 5-feet of utility markings

6.3.2 Select Drilling Locations

The information collected to this point will be utilized in combination with regulatory requirements and investigation objectives to select drilling locations. It is recommended that alternate drilling locations be selected in case additional explorations are required or obstructions are encountered. The effort to investigate a specific proposed drilling location should be to clear a minimum five-foot radius circle around the location.

6.3.3 Review Selected Locations with the Client

At a minimum, offer to review the selected and alternate drilling locations with the client's project manager or designated representative. When completing Geoprobe^{tm} (or similar) investigations in which some boring locations are not selected in advance, but partially

determined in the field based on field screening results, the client should approve the areas in which work will be performed. Do not proceed with the investigation until the plan has been discussed with the client, and approval to proceed has been granted. If relocation of a boring outside approved limits is necessary at any time and for any reason, contact the client prior to proceeding. CLIENT APPROVAL MUST BE DOCUMENTED. Verbal approval is acceptable if followed with written approval. Documentation may include a notation in the field book, email or written correspondence.

6.4. REQUIRED NOTIFICATIONS

Affected parties must be notified at least 48-hours (longer if possible) in advance of planned intrusive fieldwork. An exception would be in the event of an emergency response situation. Parsons' staff will avoid scheduling conflicts with facility activities at the site. The Parsons' Project Manager or designee will notify the following persons as applicable:

- The oversight regulatory agency (includes local fire, police and municipal contacts as appropriate).
- Property owner for private properties. This should include neighboring third party property owners if a potential exists for causing inconvenience as a result of the scheduled fieldwork.
- Client specific notifications as appropriate (i.e. facility maintenance, retail and/or real estate managers as appropriate)

6.5. ON-SITE SUBSURFACE ACTIVITIES

6.5.1 Safety

A Project Safety, Health and Environmental Plan (PSHEP) must be available on site at all times and all Parsons' staff, contractors and subcontractors must be familiar with it. Parsons' employees are to acknowledge their review of the PSHEP by signing the signature form contained within the PSHEP. The Parsons' field team leader is tasked with conducting a tailgate meeting at the start of each day to review project specific health and safety items with staff and subcontractors. Subcontractors, however, are responsible for their own health and safety. All work areas shall be secured with safety cones, safety tape, construction fence, barricades, or signs as appropriate.

A copy of this entire subsurface activity protocol and completed checklist must be appended to the health and safety plan.

6.5.2 Supervision

A Parsons' on-site representative will be responsible for overseeing subsurface activities. This representative will ensure that the work is performed with due caution and will be alert for warning signs that could indicate the presence of underground tanks, lines, or other subsurface structures.

6.5.3 Warning Signs

The following warning signs may indicate the presence of a subsurface structure such as tanks or lines:

- Pea Gravel/Sand/Non-indigenous Material.
- The absence of soil recovery in the hand auger. This could indicate pea gravel that has spilled out of the auger.
- Any unexpected departure from the native soil or groundwater conditions as established in other on-site digging.
- Obstructions encountered

If any of the above warning signs or a suspicious condition is encountered, intrusive subsurface activities in this area should immediately cease and the Parsons' Project Manager shall be contacted.

6.5.4 Drill Boring Sequence

If possible, the boring sequence should be planned such that the boring furthest from any suspected underground improvements is carried out first. This is done to determine the natural subsurface conditions and to allow the field geologist/scientist to recognize native versus fill conditions. Also, least impacted locations should be done first if possible to prevent possible cross contamination.

6.5.5 Surface Removal for Paved Areas

Sufficient paving or surface improvement should be removed to allow clear visibility of the subsurface conditions during hand augering/digging, and allow excavation with hand tools. Drilling in an area of high risk may warrant a larger pavement opening.

- Monitoring Well Installations: 2-ft x 2-ft (60cm x 60cm) minimum removal is suggested (assumes for example: 6.25-inch hollow stem auger (HSA) or smaller).
- Soil Borings: 8-inch (20cm) diameter minimum removal is suggested (assumes for example: 3.25-inch HAS or smaller).
- Direct Push Samplers: 4 to 6 inch (10 to 15 cm) diameter minimum removal is suggested (assumes for example: 2-inch diameter sample tube).

The technique used should not pose a threat to subsurface structures. Final completion for holes in pavement shall be neatly saw-cut or cored unless otherwise directed by the client.

6.5.6 Clearing the Subsurface for Utilities and Other Structures

Parsons' staff must ensure that no subsurface utilities, structures, or improvements exist where intrusive subsurface activities will occur. Locations will be cleared using results of historical data research and with geophysical methods (see below for details) at a zone 5 feet in radius around the proposed location. Staff (or personnel supervised by Parsons) will also utilize intrusive, non-destructive procedures such as hand digging to a depth of 5 feet and a diameter or width equivalent to the outside dimensions of the auger to investigate the boring location.

The method used to delineate the subsurface should be compatible with the inherent risk associated with the type of facility/property and the location of the drilling. Proactive investigative methods to clear specific drilling locations will include the following non-invasive and invasive non-destructive methods:

Non-Invasive Geophysical Remote Sensing: Multiple appropriate instruments (ground penetrating radar, electromagnetic detector, magnetometer, metal detector) can be used for this work. Survey an area around the location to a distance of 5 feet using geophysical methods to identify potential subsurface utilities or facilities. Move the borehole location, if necessary, within the cleared circle to avoid an object identified by the geophysical instrument. Examples of geophysical methods are provided below:

- Electromagnetic and radio frequency;
- Ferrous metal or magnetic locators;
- Ground probing radar (GPR).

Important note: A combination of two or more non-invasive instruments may be required to properly clear a subsurface area. For example, a ferrous metal detector may not detect metals pipes embedded in concrete duct banks, PVC pipes, FRP pipes, or other non-ferrous materials.

Intrusive Non-Destructive Procedures: Delineate the subsurface at the borehole location by probing or digging. Several acceptable methods are discussed below. In some cases, these intrusive procedures may not be practical due to the subsurface conditions or requirements of the explorations.

- Vacuum/Air Knife Digging: Vacuum digging has proven to be a very effective and safe means of digging and is recommended instead of probing and digging with hand tools.
- Probing: The probe should have a blunt or rounded tip and should be advanced by hand in a triangular pattern around the bore location without excessive force.
- Hand Digging: Should be performed with a small hand garden spade.

- Hand Augering: The auger is to be turned slowly and not forced through the soil. It is recommended that an auger without sharp points (some augers have rounded edges) be used.

- Post Hole Digging: Can be used for soil removal only in soil that has been probed and cannot be used to advance the hole beyond the depth or width of probing.

The area to be cleared for underground utilities or structures for augering shall exceed the diameter of the largest tool (hand auger, drill auger, sampling tube, etc.) to be advanced and sufficiently large to allow for visual inspection of any obstructions encountered. The first 1 - 2ft (0.3 - 0.6m) can be cleared by hand digging to remove the soil. Slowly and carefully probe (i.e. triangular pattern), vacuum, or hand auger throughout the area to be cleared to ensure that no obstructions exist anywhere near the potential path of the drill auger or push type sampler. The soil in the area to be cleared shall be fully removed during this step. If probing is utilized, then alternate probing with soil removal as necessary, until the first 5-ft (1.5m) has been delineated.

6.5.7 Refusal

Where natural subsurface conditions (e.g. cobbles/rocks, fill material, and/or bedrock) may prevent adequate probing and augering, a practical and sensible evaluation by the Parsons' Project Manager will be the basis for determining if continuation of probing and augering is feasible. In all cases Parsons must employ all means necessary to prevent damaging subsurface utilities, product lines, tanks, or other structures. **When conventional means of probing and augering cannot be utilized, the Parsons' field representative believes that additional probing/augering is not feasible, or if the probing/augering poses additional hazard to personnel because of the physical demands of performing the task, work in that specific area will cease**. The Parsons' Project Manager will contact the client's project manager or designee to discuss alternatives. If Parsons' staff suspects, based on past information or boring logs, that hand augering is infeasible, then alternatives such as vacuum clearing or non-invasive procedures should be evaluated in advance.

6.5.8 Event Notification

If any portion of a tank, pipe, utility or other subsurface structure is encountered, or if there is any doubt it has been encountered, the work is to cease in that area and the Parsons' Project Manager notified immediately. If there is reason to believe that the structure has been damaged, if applicable, the emergency shut-off switch should be activated (if applicable) and the appropriate municipality and client notified immediately. The Parsons' Project Manager and/or client will decide if additional uncovering by hand is required. If it is confirmed that a UST system has been encountered, a tightness test(s) should be considered. Under no circumstances is the area to be backfilled without notifying the Parsons' Project Manager, unless risk of personal injury or damage warrants a temporary backfilling.

In case of refusal or if an unknown subsurface object is encountered during intrusive subsurface activities, then the following specified resolution process must take place.

- Additional and deliberately careful excavation by hand will be conducted in an attempt to define the cause of refusal or identify the subsurface object.

    a. If the cause CAN be readily and correctly defined as not destructive or hazardous, the field task manager should call the PM to discuss the situation.

    b. If the cause CAN be readily and correctly defined as potentially destructive or hazardous, the field task manager should call the PM to discuss the situation. The specific location must be re-evaluated.

    c. If the cause CANNOT be readily and correctly defined, the field task manager should call the PM to discuss the situation. The specific location must be re-evaluated.

- In case "a," drilling may proceed ONLY after consultation with the PM.

- In cases "b" and "c," drilling MUST STOP so that location re-evaluation can take place. The client, the utility owner (if applicable) and if required, the appropriate regulatory agency, must be advised of the situation and consulted to determine if (1) the location is necessary, which may require additional effort to clear a new location, or (2) the location is not necessary, and can be deleted from the program.

6.5.9 Scheduling

Since clearing locations for augering, drilling, excavation and similar intrusive field work can be time consuming, it may be appropriate to perform the surface removal subsurface delineation prior to the arrival of subcontractors and their equipment on site. If these activities are conducted prior to the actual day of intrusive field work, then the cleared locations must be adequately covered with plates and/or backfilled, or barricaded to protect pedestrians and other surface traffic. Care must be taken to prevent settlement of the material used to cover the holes.

ATTACHMENT A

PRE-DRILLING/SUBSURFACE CHECKLIST FOR INTRUSIVE FIELD WORK

PREDRILLING/SUBSURFACE CHECKLIST FOR INTRUSIVE FIELDWORK

Site Name: _____ **Job Number:** _____
Site Phone Number: _____
Site Address: _____ **County:** _____
Client Proj. Mgr.: _____ **Phone:** _____
Site Manager Contacted Date: _____ **By:** _____
Site Drawings (yes / no / NA) _____ (please attach) **Historical Drawings (yes / no / NA)** _____
Third Party Construction/Redevelopment Plans (Yes/No/NA)

***ATTACH SITE FIGURE WITH PROPOSED BORING LOCATIONS

Subcontractor's (drillers, concrete, etc…) **Company** _____
Subcontractor's Contact Person _____ **Phone** _____
Meeting / Start Date _____ **Time** _____

1) **Health and Safety Signoff Form Completed? (Yes/No)** **Date** _____

2) **Utility Protection Services (Minimum 48 Hrs. Advance Notice, State Specific Notification Period Supercedes)**
Called: Date _____ **Time** _____ **Initials** _____
Reference # _____
Proposed Drilling Locations Premarked for Locating Service. **Y / N**

3) **Private or In-House Utility Locating Service Performed?** **Y / N** _____
Called: Date _____ **Time** _____ **Initials** _____
Name of Locating Service: _____
Telephone #/ contact: _____
Name of Supplier Locating Technician: _____
Type of sensing equipment used: _____
Proposed Drilling Locations Premarked **Y / N**

4) **Other Potential Underground Structures**
Name of City Engineer/Utility Representative: _____
Telephone #: _____
Date Notified _____ **Maps:** **Y / N**
Cleared: **Y / N**

5) **COMPLETED SITE WALKOVER W/ SITE MANAGER/DESIGNEE OR OWNER/TENANT REP.** **Y / N**
Name of Site Manager: _____
Name of Property Owner/Tenant Representative: _____
Cleared: **Yes / No**
Building Utility Service Line Connections Identified: **Y / N**
(Hand sketch on site map w/proposed boring locations and most likely utility trench locations)

6) **Utility Inventory:** **Y / N**

Utility	Name	Depth (ft) (If Available)	Phone	Notified - Date	Marked
Above Ground Services					
Electric		NA		Y / N	Y / N
Telephone		NA		Y / N	Y / N
Cable		NA		Y / N	Y / N
Overhead Supports		NA		Y / N	Y / N
Traffic light cables		NA		Y / N	Y / N

PREDRILLING/SUBSURFACE CHECKLIST FOR INTRUSIVE FIELDWORK

6) Utility Inventory Continued:

Below Ground Services:

Electric				Y / N		Y / N
Telephone				Y / N		Y / N
Cable				Y / N		Y / N
Gas				Y / N		Y / N
Water				Y / N		Y / N
UST System				Y / N		Y / N
Storm				Y / N		Y / N
Sanitary				Y / N		Y / N
Steam				Y / N		Y / N
Pipeline Companies				Y / N		Y / N

Other:

				Y / N		Y / N
				Y / N		Y / N
				Y / N		Y / N

7) Site-Specific Emergency Contingency Plan Incorporated in Health & Safety Plan Y / N

8) Drilling Locations Approved by Client Project Manager Named Above? Y / N

9) Signature of Parsons' Project Mgr. (required to begin fieldwork):

Name of Project Manager	**Signature of Project Manager**
Name of Parsons Field Personnel	**Signature of Field Personnel**

(This document to be included with the site H&S Plan and should be available upon request.)

ADDITIONAL COMMENTS / NOTES:

ATTACHMENT B
UTILITY CLEARANCE VARIANCE REQUEST FORM

PARSONS

UTILITY CLEARANCE VARIANCE REQUEST

To: Enter Parsons Manager (Program, Sector or Operations)

From:

Client Company Name:

Site/Project Name:

Date of Request:

Work Start Date:

The purpose of this document is to request a variance from one or more of the PE&I Mandatory Subsurface Soil Disturbance Protocol requirements. The purpose of the mandatory protocol is to prevent potential injury and/or loss of life; and damage to subsurface utilities and structures during any soil disturbance. Any waiver of these requirements should be carefully evaluated.

Variance from the Subsurface Soil Disturbance Protocol is allowed only with the written approval of the appropriate Parsons' Program/Sector/Operations Manager. GBU/Divisional/Program safety resources should be consulted as needed. Failure to obtain a variance in writing is grounds for disciplinary action.

Brief Project Description

Insert a brief background and description of the intrusive activities, which are the reason(s) for requesting a variance.

Utility Clearance Requirements

Step No.	Requirement	Step Completed[1]
Prep-1	Obtain as-built drawings and/or existing site plans if available and review for on-site utilities.	☐ Yes ☐ No

[1]Any "No" response must include the rationale for not completing the step at the end of the Variance Request form.

Step No.	Requirement	Step Completed[1]
Prep-2	Utility mark-out requested through the nationwide utility locating one-call system (www.call811.com) for the work site.	☐ Yes ☐ No
Prep-3	Review the Subsurface Soil Disturbance protocol with all PE&I technical staff that will potentially be involved in projects that include subsurface investigation.	☐ Yes ☐ No
Pre Mob-1	Notify affected parties at least 48-hours (longer if possible) in advance of planned intrusive fieldwork.	☐ Yes ☐ No
Pre Mob-2	Prepare a Project Safety, Health and Environmental Plan (PSHEP) that includes a copy of the Subsurface Soil Disturbance protocol.	☐ Yes ☐ No
Pre Mob-3	Select a competent Parsons' on-site representative to oversee all surface removal, hand augering/digging, drilling, and test pitting.	☐ Yes ☐ No
Site [2] Visit-1	Perform a site visit and identify indications of underground utilities. Indications could include [3]: ➢ Area lights ➢ Phones ➢ Drain lines ➢ Overhead lines ➢ Fire hydrants ➢ Fiber optic cable signage ➢ Catch basins ➢ Manholes ➢ Junction boxes ➢ Natural gas	☐ Yes ☐ No

[1] Any "No" response must include the rationale for not completing the step at the end of the Variance Request form.

[2] Site visit activities must be included with mobilization activities if a Site visit is not performed prior to mobilization for the field work.

[3] Note that list is not all inclusive.

Step No.	Requirement	Step Completed[1]
	➢ Observe paving scars such as areas of new pavement or saw cuts	
Site Visit-2	Prepare a vicinity map of the proposed work area to include significant features and utilities. The site visit should be scheduled concurrent with, or soon after the utility mark-out.	☐ Yes ☐ No
Site Visit-3	Interview someone having historical site knowledge to gain information about the site (locations of former tanks, lines, etc.).	☐ Yes ☐ No
Site Visit-4	Establish pre-drilling critical zones appropriate to the project site	☐ Yes ☐ No
Site Visit-4	Review Selected Locations with the Client	☐ Yes ☐ No
Field Work-1	Review site utility maps against each proposed work activity. Check for legibility, accuracy, and scale while walking areas of concern. Evaluate the work area for any items in Site Visit-1 that may have been missed.	☐ Yes ☐ No
Field Work-2	Obtain all necessary permits and utility from the facility.	☐ Yes ☐ No
Field Work-3	Remove any surface paving or surface cover allow clear visibility of the subsurface conditions during hand augering/digging, and allow excavation with hand tools.	☐ Yes ☐ No
Field Work-4	Non-Invasive Clearing: Clear a minimum of a five foot radius for each proposed intrusive activity. Locations will be cleared using results of historical data research and with geophysical methods. Multiple appropriate instruments (ground penetrating radar, electromagnetic detector, magnetometer, metal detector) can be used for this work.	☐ Yes ☐ No
Field Work-5	Invasive Clearing: Delineate the subsurface at the borehole location by probing or digging. Dimensions of the intrusive method must exceed the diameter of the largest tool (hand auger, drill auger, sampling tube, etc.) to be advanced and	☐ Yes ☐ No

Step No.	Requirement	Step Completed[1]
	sufficiently large to allow for visual inspection of any obstructions encountered. Approved methods could include the following: ➢ Vacuum Extraction (Air Knifing, SoftDig®) ➢ Probing ➢ Hand Digging ➢ Hand Augering ➢ Post Hole Digging	

Rationale

Below, identify the step or steps the variance is being requested for and an explanation of why the waiver is necessary and/or justified.

Step No.	Rationale for Variance Request

Approvals

	Name	**Date**
Parsons Manager (Program, Sector, or Operations)		