Site Characterization Work Plan

Falls Street Incinerator
NYSDEC Site No. 828227

Location:

52 & 96 Falls Street
Rochester, New York 14608

Prepared for:

City of Rochester
Division of Environmental Quality
30 Church Street, Room 300B
Rochester, New York 14614

LaBella Project No. 2241859

September 2024

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CERTIFICATION

I Ann A. Barber certify that I am currently a NYS registered professional engineer and that this Site Characterization Work Plan was prepared in accordance with all applicable statues and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and DER-31 Green Remediation.

100521	9/4/2024	
NYS Professional Engineer #	Date	Signature

1.0 INTRODUCTION

LaBella Associates, D.P.C. ("LaBella") has developed this Site Characterization Work Plan (SCWP) on behalf of the City of Rochester ("City") for the properties located at 52 and 96 Falls Street (Tax Map/Parcel Nos. 106.61-1-27 and 106.61-1-28), in the City of Rochester, Monroe County, New York, hereinafter referred to as the "Site." The City entered into an Order on Consent with the New York State Department of Environmental Conservation (NYSDEC) on April 17, 2024 (DEC Site No. 828227).

This Work Plan has been developed in accordance with the Order on Consent executed April 17, 2024, and NYSDEC Division of Environmental Remediation (DER)-10 *Technical Guidance for Site Investigation and Remediation* Issued May 3, 2010 and *DER-31 Green Remediation* issued August 11, 2010 revised January 20, 2011.

2.0 STIE DESCRIPTION AND HISTORY

2.1 Site Description

The Site consists of two (2) parcels totaling approximately 3.5-acres and is vacant industrial land owned by the City. The Site is bound by Smith Street with Roc Recycling Company beyond to the north, undeveloped land owned by Rochester Gas & Electric (RG&E) identified as NYSDEC Site #828205 to the south, Genesee Riverway Trail Extension to the west with undeveloped commercial land beyond, and the Genesee River to the east.

One (1) structure is present at the Site (Building 1). Building 1 is a two (2) story 10,791 square foot building with a partial third floor and a "chimney" that was constructed in 1938-1940 known as the Former Incinerator Building associated with the former Garbage Reduction Facility. Two (2) 10,000 gallon above ground storage tanks (ASTs) are present in the southwestern portion of the bottom floor of Building 1. The following table includes a summary of existing and former structures based on a review of the 2024 Phase I Environmental Site Assessment (ESA) prepared by Lu Engineers (refer to Figure 2 for building locations).

Table 1 – Summary of Current and Former Structures

Building #	Approximate Construction Date	Address	General Location on Site	Building Names	Status	Notes
Building 1	Between 1906 and 1921	96 Falls Street	Northern	Former Incinerator Building	Existing Site Building	Building is dilapidated. Chimney / stack located adjacent to the east.
Building 2	Between 1906 and 1921	96 Falls Street	Central	Original Incinerator Building	Demolished 2011-2012	Building foundation remains present
Building 3	Between 1906 and 1921	96 Falls Street	Southern/ southeastern	Former Garbage Reduction	Demolished 2011-2012	Former Building footprint

Building #	Approximate Construction Date	Address	General Location on Site	Building Names	Status	Notes
Building 4	Between 1906 and 1921			Company Reduction Plant	Demolished 1993-1994	covered in gravel and used for access to the Genesee River and south-adjacent property.
Building 5	1906	52 Falls Street	Southwestern	Former Garbage Reduction Company Disposal Plant	Demolished sometime between 1950-1958	Parking area and overgrown vegetation

Additional ancillary buildings were present and are depicted on Figure 2.

2.2 Site History

The following table summarizes the documented Site history.

Year(s)	Owner	Use	Notes
From at least 1892 to 1906	Private Individuals	Residential	Three (3) single-family dwellings
1906 to 1916	Genesee Reduction Company	Garbage Reduction Facility & Incinerator Plant	In 1906, a 5-year contract was made between the City and the Genesee Reduction Company to collect garbage and dispose of dead animals by "reduction." The Garbage Reduction Plant (Building 5) was constructed at 52 Falls Street. Digesters (used to "cook" garbage with steam in treatment cells/ tanks) were located on the southeastern portion of 96 Falls Street. Grease, coal ash, and digested garbage were byproducts of the process. Ten (10) digesters were present in 1911. In 1911, the contract with the Genesee Reduction Company was renewed for 5 years and Building 2 was constructed. In 1916, the Genesee Reduction Company sold the properties to the City.
1916 to 1950	City of Rochester	Garbage Reduction Facility & Incinerator Plant	All five (5) buildings were present in at least 1921. The City switched the plant to a new process which used a combination of high-pressure steam and solvents

Year(s)	Owner	Use	Notes
			(naptha and gasoline) to process garbage in large vessels under high pressure and temperature conditions (for more information on this process, see note ***1*** below). A new incinerator building was constructed in the northern portion of the Site in 1937-1940 (Building 1). Coal was reportedly likely used to burn garbage in Building 2 and fuel was used in Building 1. A 1935 blueprint depicts an oil tank on the northern portion of Building 1. A 1937 photograph depicts two (2) oil tanks were installed in the southwestern portion Building 1 (these appear to be the existing ASTs) and an oil supply line west of Falls Street. A septic tank was located north of the chimney.
1950	City of Rochester	Various	Building 2 was used for storage, stables, and blacksmith/wagon shop in at least 1950. Building 5 was converted to a machine shop and garbage receiving building in at least 1950.
1950 to 1977	City of Rochester	Department of Public Works, Sewer Maintenance office, and Street Department storage	Building 1 was decommissioned in 1952 and garbage processing and incineration at the Site ceased in 1955. Building 5 was demolished between 1950 and 1958. Additions were constructed onto Buildings 2, 3 and 4 between 1960 and 1975.
1977/1980 to 1993/1994	Steven Ross	RPM Performance Auto Parts (junk yard)	Addressed as 1 Falls Street at this time. A pit was noted in the center of Building 2. A 1990 inspection by NYSDEC identified several unmarked 55-gallon drums and associated oil leaks in Building 2. A permit was issued to Pat Dandrea in 1989 for a 1,000-gallon diesel tank. In 1990, an unspecified tank associated with Pat Dandrea, Inc. was removed after a violation was noted regarding an abandoned fuel tank.
1993/1994 to 2013	52-96 Falls Street, Inc. (Louis Sinisgalli)	Storage and sales of building materials and C&D debris, then vacant	The Site was sold to 52-96 Falls Street, Inc. (Louis Sinisgalli), which began operating as storage and sale of building materials, and later changed uses to a demolition debris transfer facility. Building 4 was demolished in 1993-1994.

Year(s)	Owner	Use	Notes
			For a summary of significant citations issued to Mr. Sinisgalli during this period, refer to note 2 below. According to a newspaper article, the City was granted permission to transport concrete and other construction and demolition debris to the Site from the former Sibley Parking Garage for temporary storage. Buildings 2 and 3 were demolished in 2011-2012.
2013 to 2022/2023	American Tax Funding Serving, LLC	Vacant	The City placed a tax lien on the properties in 2013 and the parcels and lien were sold to American Tax Funding Serving, LLC.
2022/2023 to present day	City of Rochester	Vacant	The City purchased the properties in 2022/2023.

[1] The Garbage Reduction Facility & Incinerator Plant operated by the City circa 1916 to 1950 used a combination of high-pressure steam and solvents (naptha and gasoline) to process garbage in large vessels under high pressure and temperature conditions. The garbage was loaded into tanks and flooded with solvent. Mixing blades were also used to break down the garbage. Vapors were recovered via condensers, and separated into oils, grease, solvent and water in above ground settling tanks. Recovered solvents were reused in the process. At least six (6) solvent storage tanks were located east of Buildings 3 and 4 (refer to Section 2.4 for tank details). Recovered grease was sold. Water was discharged to an on-Site sewer. The dried garbage was washed with naptha and a second steam injection process was used to remove solvent. The processed waste was transported on a conveyor belt to a screening, grinding, and storage room. Dried waste was sold for fertilizer base.

[2] In 1997, nine (9) tickets were issued to Sinisgalli regarding unsafe storage of combustible materials. In 1998, the City issued seven (7) fire code tickets. A Remediation and Compliance Plan was submitted by Sinisgalli to the City. In 2010, the City allowed Louis Sinisgalli 60 days to remove construction debris from the property.

2.3 Summary of Previous Environmental Reports

The following environmental reports have been prepared for the Site:

- Environmental Evaluation of Abandoned Buildings by Lu Engineers on behalf of the City of Rochester, dated 2011
- Phase I Investigation Summary by GEI Consultants on behalf of RG&E, dated July 31, 2014
- Draft Phase I Environmental Site Assessment (ESA) by Lu Engineers on behalf of the City of Rochester, dated May 2016
- Phase I ESA by Lu Engineers on behalf of the City of Rochester, dated February 21, 2024

These reports are summarized below.

2.3.1 Environmental Evaluation of Abandoned Buildings, Lu Engineers, 2011

Buildings 1, 3 and 4 were evaluated and determined to be structurally unsound. The report also identified a potential for buried C&D debris associated with Buildings 2, 3 and 4, potential for regulated building materials, the potential for orphan USTs on the southeastern and central portions of the Site, and the presence of two (2) ASTs in Building 1 used to store #6 fuel oil.

Buildings 3 and 4 were demolished in 2011-2012.

2.3.2 Phase I Off Property Investigation Summary, GEI Consultants, July 2014

RG&E was granted access to the Site to collect a seep sample and soil sample from the retaining wall between the Site and Genesee River. This investigation was summarized in the 2024 Phase I ESA by Lu Engineers. The seep sample reportedly contained low levels of organic and inorganic constituents and soil contained PAHs consistent with urban background levels.

2.3.3 Draft Phase I ESA, Lu Engineers, May 2016

Lu Engineers completed a Draft Phase I ESA in 2016 which was generally consistent with the 2024 Phase I ESA findings (refer to Section 2.3.4). Access was not granted for a Site visit as part of the 2016 Phase I ESA.

2.3.4 Phase I ESA, Lu Engineers, February 2024

Lu Engineers completed a Phase I ESA on behalf of the City which identified the following Recognized Environmental Conditions (RECs) associated with the Site.

1) *"The past presence of large-scale industrial chemical and process equipment associated with past Garbage Reduction and Incinerator operations within the developed portions of the Site including the following:*
   - *Process vessels, process tanks, piping and valves;*
   - *Former incinerator system within existing former Incinerator Building (Building 1);*
   - *Digesters observed on historical maps in the former Garbage Reduction Company Buildings (Buildings 3, 4 and 5);*
   - *Grease storage tanks observed on historical maps in the former Garbage Reduction Company Disposal Plant (Building 5);*
   - *Generator ("Dynamo") and pump room on the southwestern portion of the former Garbage Reduction Company Disposal Plant (Building 5);*
   - *Former boiler room on the southeastern portion of the former Garbage Reduction Company Disposal Plant (Building 5); and*
   - *Condenser located north of the former Garbage Reduction Company Reduction Plant (Building 3).*

2) *Current and former petroleum storage including:*
   - *Two (2) 10,000-gallon above ground storage oil tanks (ASTs) installed in 1937 remain within the existing former Incinerator Building (Building 1);*
   - *An oil supply line reportedly installed in 1937 on the western portion of the property. The location of the former supply line is unknown.*
   - *An AST was reportedly installed on the northern portion of the former Incinerator Building (Building 1) in 1937. The exact location and removal of this tank is not*

documented.

- *Three (3) gasoline ASTs identified on the 1911 Sanborn map updated 1937 adjacent to the east of the former Garbage Reduction Company Reduction Plant (Building 3); that were reportedly removed prior to the 1950s with no documentation of removal.*
- *One 1,000-gallon diesel tank was reportedly registered in 1989 and an AST was reportedly removed in 1990. The size, contents, use, location and installation date of the tank are unknown.*

3) *Former chemical storage including:*
   - *Six (6) solvent (naphthalene) ASTs located on the southeastern portion of the property (adjacent to the east of the former Garbage Reduction Company Reduction Plant (Buildings 3 and 4) ranging in size from 4,500-37,000-gallons were identified on the 1950 Sanborn map. All except one (1) of these tanks were reportedly removed prior to the 1970s.*
   - *A 40-gallon foam tank south of the former Garbage Reduction Company Reduction Plant (Building 3) was identified on the 1950 Sanborn Map.*

4) *Current and former on-site drainage features associated with the former use of the Site including:*
   - *at least one (1) pipe extending eastward from the river wall;*
   - *a pipe extending eastward from the former Incinerator Building (Building 1);*
   - *an open drain adjacent to the former Incinerator Building (Building 1)*
   - *a wash basin within the northeast quadrant of the former Incinerator Building (Building 1);*
   - *An oil/water separator on the northeast portion of the former Incinerator Building (Building 1); and*
   - *A concrete basin adjacent to the east of the former Incinerator Building (Building 1) that apparently drains to the Genesee River.*

5) *Suspected waste disposal including:*
   - *Construction/demolition debris and similar materials were observed at multiple locations throughout the Site;*
   - *Possible residual demolition debris from prior structures in the central (original Incinerator Building (Building 2)), southeastern (former Garbage Reduction Company Plant (Buildings 3 and 4) and southwestern (former Garbage Reduction Company Disposal Plant (Building 5) and former scale house) portions of the property that were demolished between the 1950s and early 2000s;*
   - *Possible residual demolition debris from demolished storage buildings located along the southern property boundary and Genesee River identified on the 1910-1935 Sanborn and Plat Maps; and former Humane Society Buildings and Dog Pound on the southern portion of 96 Falls Street identified on the 1910-1911 Sanborn and Plat Maps;*
   - *Possible presence of remaining unknown subsurface features associated with the former use of [the Site] (REC #1); and*
   - *The northeastern portion of the property is identified as "Local Disposal site RO176 Falls Street Incinerator", which reportedly contains construction and demolition debris.*

6) *Current and former chimneys on the Site likely containing residual ash and related residues. The procedures employed for management and disposal of waste ash generated from past operations are unknown.*
   - *A brick chimney is located immediately east of the former Incinerator Building (Building 1):*
   - *A former brick chimney adjacent to the north of the central building (original Incinerator Building (Building 2)) that has been demolished; and*
   - *A former iron chimney adjacent to the southeastern portion of the former Garbage Reduction Company Disposal Plant (Building 5) that has been demolished.*

7) *Closed NYSDEC Spills identified for the Site:*
   - *Spill #8181827 and 8181522 are listed associated with leaking vehicles on-site related to the former use of the property as a junkyard.*
   - *Spill #9710540 identified several containers stored on the Site, evidence of spilled oil on the floor of the central building (original Incinerator Building (Building 2)), and spilled diesel on the ground.*

8) *A railroad was formerly located immediately west (upgradient) of the Site until the early 2000s."*

The following Controlled REC (CREC) was identified:

1) *"Rochester Gas and Electric (RG&E) is an NYSDEC listed Inactive Hazardous Waste Disposal Site (#828010), located immediately adjacent to the southern property boundary. Remediation of this property is currently being completed under the direction of the NYSDEC. The fact that RG&E facility operated a manufactured gas plant (MGP), which resulted in environmental impacts to the Genesee River and property immediately adjacent to, and up-gradient of the Site represents a CREC."*

2.4 Areas of Interest

Based on a review of environmental reports available for the Site, seven (7) Areas of Interest (AOIs) were identified that warrant investigation at this time. To date, there has been no subsurface work at the Site and additional areas may be identified following further investigation. AOIs to be investigated as part of this Site Characterization are summarized below and depicted on Figures 3-6 .

- AOI 1 - Petroleum and chemical bulk storage tanks – Based on a review of historical records, seven (7) petroleum ASTs, six (6) solvent ASTs, an oil supply line, and a "foam tank" have been identified at the Site. Two (2) existing ASTs are located within Building 1.

  a. Two (2) 10,000-gallon ASTs installed in 1937 are currently present in Building 1.
  b. One (1) AST was reportedly installed on the northern portion of Building 1 in 1937. The exact location and status of this tank is unknown.
  c. Three (3) gasoline ASTs were identified on the 1911 Sanborn Map updated 1937 to the east of Building 3. These tanks were reportedly removed prior to the 1950s; however, there is no documentation of removal.
  d. Six (6) solvent (naphthalene) ASTs located east of Buildings 3 and 4 ranging in size from 4,500-37,000-gallons are depicted on the 1950 Sanborn Map. All except one (1) of these tanks were reportedly removed

prior to the 1970s.

e. One (1) 1,000-gallon diesel tank was reportedly registered in 1989 and an AST was reportedly removed in 1990. The location of this tank is unknown.
f. One (1) 40-gallon "foam tank" south of Building 3 was depicted on the 1950 Sanborn Map.
g. An oil supply line was reportedly installed in 1937 west of Falls Street. The exact location is unknown.

The presence of existing tanks, historical tanks, and the oil supply line as well as the potential for unknown USTs to be present represent an AOI.

- AOI 2 - Historical process equipment and drainage features – Industrial process equipment (e.g., storage/ holding tanks, condensers, digesters, piping, valves, etc.), associated with the former Garbage Reduction Plant specifically including incinerators (Building 1 and 2), digesters (Buildings 3, 4 and 5), grease storage tanks (Building 5), generator ("Dynamo") and pump room (Building 5), former boiler room (Building 5), condenser (north of Building 3) combined with the presence of on-Site drainage features including floor drains, oil/water separator, concrete basin, and miscellaneous piping represent an AOI. Not all process equipment is known; as such, Buildings 1-5 are included in this AOI. The following drainage features have been identified:

    a. Building 1 - Industrial process equipment including former incinerator and associated equipment. At least two (2) floor drains with an oil trap in the western portion of Building 1. Pipe extending eastward from Building 1. Wash basin in Building 1. Oil/water separator in Building 1. Concrete basin east of Building 1 that apparently drains to the Genesee River.
    b. Building 2 - Industrial process equipment including former incinerator and associated equipment. Floor drains in former Building 2.
    c. Building 3 and Building 4- Industrial process equipment including former digesters, condenser, and associated equipment. Filled in trench drain on east side of Building 3.
    d. Building 5 - Industrial process equipment including former digesters, grease storage room, generator ("Dynamo") and pump room.
    e. Miscellaneous - Pipe extending eastward from the retaining wall along the Genesee River.

  Additional drainage features may be present that were not visible during the 2024 Phase I ESA.

- AOI 3 - Waste disposal including construction and demolition debris – The Site was historically utilized as a storage facility for building materials and construction and demolition debris. C&D piles were observed in several locations across the Site including locations of former buildings during the 2024 Phase I ESA Site visit. The northeastern portion of the Site is identified as "Local Disposal site R0176 Falls Street Incinerator", which reportedly contains construction and demolition debris. The potential exists for fill material to be present associated with demolition of former structures (refer to Figure 2 for locations of former structures).

- **AOI 4 - Chimneys likely containing residual ash** – The existing brick chimney/ stack associated with Building 1, a former brick chimney associated with Building 2, and an iron chimney associated with Building 5 have the potential to contain residual ash and related residues and represent a REC.

- **AOI 5 - NYSDEC Petroleum Spills (8181827, 8181522 and 9710540) associated with leaking vehicles and containers** – Three (3) NYSDEC spills associated with leaking vehicles related to the former use as a junk yard, and several leaking containers represent an AOI. The spills are summarized below:

    a. Spill #8181827 opened March 11, 1982 is associated with complaints that gas and oil were being discharged to the river from the RPM Auto Parts property. The spill was closed after no signs of oil were present.
    b. Spill #8181522 opened June 22, 1982 is associated with an oil sheen observed on a stormwater outlet. A water main leak reportedly caused water to flow through the junk yard. The owner indicated they would remove the cars and place straw bales to contain the oil. Follow up inspections revealed the presence of oil discharging to the Genesee River.
    c. Spill #9710540 opened December 9, 1997 is associated with an inspection by NYSDEC which identified the following:
        - 4,000 cubic yards of C&D debris, tires, and furniture in Buildings 2 and 3.
        - Two (2) unregistered 10,000-gallon ASTs in Building 1.
        - Approximately 47 drums (55-gallons or less), in Building 2.
        - Oil spilled to the soil/gravel in an outdoor vehicle storage area.

- **AOI 6 - Former railroad** – The presence of a former railroad from at least 1892 until the early 2000s to the west of the Site presents an AOI. The presence of the former railroad represents potential for metals and/or SVOC contamination to be present.

- **AOI 7 – Adjacent property addressed as 100 Falls Street –** The southern adjacent property addressed as 100 Falls Street is undergoing remediation under NYSDEC oversight. The southern portion of the Site is considered an AOI based on the proximity to 100 Falls Street.

This Site Characterization will evaluate the presence of contamination in each of the AOIs.

2.5 Geology & Hydrogeology

Based on provided data, no subsurface investigations have been performed at the Site to-date. Based on a review of information gathered during the Phase I ESA (by others), groundwater flow direction is assumed to be towards the Genesee River to the east. National Wetlands and a 500-year flood plain are present along the eastern portion of the Site, adjacent to the Genesee River. Urban fill material is likely present. Other potential soil types are unknown.

Based on a review of previous reports for the southern adjacent property by GEI which were obtained during the 2024 Phase I ESA by Lu Engineers, depth to groundwater at the southern adjacent property is reportedly approximately 18-ft bgs and depth to bedrock ranges from 8.5 to 35.3-ft bgs. Groundwater flow direction in the southern portion of the southern adjacent property is reportedly

towards the east and in the northern portion there is a relatively flat gradient due to the retaining wall which restricts flow towards the Genesee River.

3.0 OBJECTIVE

The objective of this Site Characterization is to investigate surface and subsurface conditions across the Site to determine if contamination is present in surface soil, subsurface soil, and/or groundwater. AOIs have been identified based on a review of previous environmental reports and the Site Characterization will evaluate each AOI to determine the presence of contamination.

4.0 SCOPE OF WORK

Field activities are to be completed in eight (8) tasks as listed below and detailed in the following subsections. Community Air Monitoring will be completed in accordance with the NYSDOH Generic Community Air Monitoring Plan included in Appendix 2. LaBella's Health and Safety Plan (HASP) and Quality Assurance Project Plan (QAPP) are included in Appendix 1 and Appendix 3, respectively. The scope of work will consist of the following tasks:

1. Site visit
2. Geophysical survey and utility stakeout
3. Advancement of up to fifteen (15) test pits, surface soil, and subsurface soil sampling
4. Advancement of up to thirty (30) overburden soil borings and associated subsurface soil sampling
5. Installation of up to eight (8) overburden groundwater monitoring wells and associated groundwater sampling
6. Collection of a seep sample from the retaining wall along the Genesee River, if accessible
7. Investigation Derived Waste Management/Disposal

The Site Characterization will be conducted in accordance with NYSDEC's *DER-10/ Technical Guidance for Site Investigation and Remediation* Issued May 3, 2010. Proposed testing locations are depicted on Figure 7 and are subject to revision based on the findings of Tasks 1-3.

Based on the topography of the Site, the western portion of the Site is inaccessible for drilling and/or test pits due to steep slopes. In addition, due to health and safety concerns associated with the structural integrity of the Site Building and existing chimney/ stack, investigation in proximity to these existing structures may not be able to be completed. Further investigation in this area will be addressed following demolition of remaining structures and is not a part of the scope of this Work Plan.

A table summarizing planned analytical sampling is included below, Refer to the QAPP included as Appendix 3 for sample containers and preservation requirements. Refer to Figure 7 for proposed testing locations. Full-suite samples will be selected at random and representative of the Site.

Analytical Summary Table

Matrix	# Samples and Analytical Methods	QA/QC	Locations
Surface Soil	• 3 full-suite • 7 VOCs, SVOCs, Metals	• 1 blind duplicate • 1 MS/MSD	Locations of debris generally along the

			Genesee River and south of Building 2.
Subsurface Soil	• 5 full-suite • 25 VOCs, SVOCs, Metals	• 2 blind duplicates • 2 MS/MSD	AOI 1 – AOI 7
Groundwater	• 3 full-suite • 5 VOCs, SVOCs	• 1 blind duplicate • 1 MS/MSD • 1 trip blank per shipment of VOC groundwater samples	AOI 1 – AOI 7

Notes:
Analytical methods are as follows:

- United States Environmental Protection Agency (USEPA) Target Compound List (TCL) and NYSDEC Commissioner Policy (CP-51) list VOCs including tentatively identified compounds (TICs) using USEPA Method 8260C;
- USEPA TCL and NYSDEC CP-51 list SVOCs including TICs using USEPA Method 8270D;
- Target Analyte List (TAL) metals using USEPA Methods 6010/7470/7471;
- Cyanide using USEPA Method 9012B;
- PCBs using USEPA Method 8082A;
- Pesticides using USEPA Method 8081B;
- 1,4-dioxane using USEPA Method 8270D; and,
- Per and polyfluoroalkyl substances (PFAS) using USEPA Method 1633.

4.1 Site Visit

A Site visit will be performed prior to field activities to observe Site conditions, including but not limited to, the presence of drums or other chemical storage containers, staining, fill material/ debris piles, floor drains, trench drains, piping, and other drainage features, etc. A GPS will be used to locate debris piles for investigation via test pits (refer to Section 4.3). The Site visit will also assess likely areas accessible for a geophysical survey and assess equipment access for test pits and drilling. Proposed investigation locations may be adjusted based on the findings of the Site visit.

4.2 Geophysical Survey and Utility Stakeout

A public utility stakeout (via *UDig NY*) will be conducted at the Site to locate any public subsurface utilities and associated right-of-ways.

An EM-61 geophysical survey will be completed across all accessible areas of the Site to detect subsurface metallic anomalies indicative of potential USTs, subsurface piping, drains, etc. Due to the vegetation across the northern and western portion of the Site, the survey will primarily be completed across the southeastern portion of the Site. Vegetation will be cleared from the Site as much as possible to allow for the survey and subsequent tasks. A geophysical survey report will be generated depicting locations of metallic anomalies identified during the geophysical survey. The anomalies will be further investigated via a test pit evaluation (refer to Section 4.3).

4.3 Test Pits

Up to fifteen (15) test pits will be advanced across the Site using an excavator to assess debris piles across the Site (to be located during Task 1; refer to Section 4.1), as well as investigate any

subsurface anomalies identified in Task 2. Test pits shown on Figure 7 are approximate based on visual observations of debris during a Site visit by LaBella in May 2024 as well as the Phase I ESA by Lu Engineers. Debris piles will be located using a GPS as part of this assessment and as a result, test pit locations may change. Test pits will be conducted as follows:

- Test pits will be advanced to approximately 8-ft. bgs, using an excavator.
- Soils from test pits will be continuously screened in the field for visible impairment, olfactory indications of impairment, and/or indication of detectable VOCs with a PID collectively referred to as "evidence of impairment." Field screening observations will be recorded in field logs.
- Soil samples will be collected and determined in the field based on the presence of fill material and/or evidence of impairment. The following subsurface soil samples will be collected for analysis:
    - Three (3) for "full-suite" parameters as follows:
        - United States Environmental Protection Agency (USEPA) Target Compound List (TCL) and NYSDEC Commissioner Policy (CP-51) list VOCs including tentatively identified compounds (TICs) using USEPA Method 8260C;
        - USEPA TCL and NYSDEC CP-51 list SVOCs including TICs using USEPA Method 8270D;
        - Target Analyte List (TAL) metals using USEPA Methods 6010/7470/7471;
        - Cyanide using USEPA Method 9012B;
        - PCBs using USEPA Method 8082A;
        - Pesticides using USEPA Method 8081B;
        - 1,4-dioxane using USEPA Method 8270D; and,
        - Per and polyfluoroalkyl substances (PFAS) using USEPA Method 1633.
    - Full-suite samples will be selected at random and representative of the Site.
    - An additional five (5) subsurface soil samples for the following:
        - TCL and CP-51 list VOCs using USEPA Method 8260C;
        - TCL and CP-51 list SVOCs using USEPA Method 8270D;
        - TAL metals using USEPA Methods 6010D/7470A/7471B.
    - Soil samples collected for VOC analysis will be collected via USEPA Method 5035.
- Surface soil samples will also be collected from the test pits. The surface soil samples will be collected from depths of approximately 0-1-ft bgs (composite samples shall not be collected).
- The following surface soil samples will be collected for analysis:
    - Three (3) for "full-suite" parameters (refer to above).
    - An additional seven (7) surface soil samples for the following:
        - TCL and CP-51 list SVOCs using USEPA Method 8270D;
        - TAL metals using USEPA Methods 6010D/7470A/7471B.
- Refer to Section 7.0 for QA/QC sampling.
- If USTs are encountered, the size and contents will be assessed. Any liquids in tanks will be pumped out of the tank, containerized, stored, handled, and disposed of properly prior to removal.
- Excavated soils will be returned to the test pit they originated from on a last-out-first-in basis.
- Test pit locations (northing, easting, and elevation) will be collected using a GPS.

4.4 Overburden Soil Borings

Approximately thirty (30) soil borings will be advanced across the Site to assess surface and subsurface conditions. Due to the condition of Building 1, soil borings will not be advanced within Building 1. Proposed soil boring locations are shown in Figure 7; however, the soil boring locations are subject to revision based on the site visit, geophysical survey, and field observations at the time

of sampling. In addition, the structural integrity of Building 1 and the chimney/ stack are being evaluated and if deemed unsafe, machinery may not be allowed in the vicinity of these structures (i.e., SB-28, SB-29 and SB -30 depicted on Figure 7 may not be advanced). If SB-30 is deemed safe to advance, overhead protection will be utilized to mitigate safety concerns related to falling objects from the bridge overhead, Soil borings will be completed as follows:

- Soil borings will be advanced with a Geoprobe® direct push sampling system. The use of direct push technology allows for rapid sampling, observation, and characterization of soil. Soil cores will be retrieved and cut from polyethylene sleeves for observation and sampling. Soil borings will be advanced to equipment refusal, into an apparent confining layer or at the discretion of the field geologist or engineer to maximum depths of 25-ft below ground surface (bgs).
- Drilling equipment will be decontaminated prior to use and between boring locations, using an Alconox® and potable water solution.
- Soils from borings will be continuously screened in the field for visible impairment, olfactory indications of impairment, and/or indication of detectable VOCs with a PID collectively referred to as "evidence of impairment."
- Soil samples will be collected and determined in the field based on the presence of fill material and/or evidence of impairment. The following subsurface soil samples will be collected for analysis:
    - Two (2) for "full-suite" parameters (refer to Section 4.3).
    - An additional twenty (20) samples for the following:
        - TCL and CP-51 list VOCs using USEPA Method 8260C;
        - TCL and CP-51 list SVOCs using USEPA Method 8270D;
        - TAL metals using USEPA Methods 6010D/7470A/7471B.
    - Full-suite samples will be selected at random and representative of the Site.
- Refer to Section 7.0 for QA/QC sampling.
- Sample locations will be biased towards soil borings exhibiting evidence of impairment and/or the presence of fill material.
- Soil boring locations (northing, easting, and elevation) will be collected using a GPS.
- Excess soil generated during soil boring and sampling activities (i.e., "cuttings) will be containerized in 55-gallon drums, characterized, and disposed of off-Site in accordance with applicable regulations (refer to Section 4.7).

4.5 Overburden Monitoring Wells and Groundwater Sampling

During the soil boring program, up to eight (8) overburden groundwater monitoring wells will be installed and sampled as follows:

- Overburden monitoring wells will consist of 1-inch diameter polyvinyl chloride (PVC). Wells will be constructed of 5 or 10 feet of 0.010-slot well screen connected to an appropriate length of solid PVC well riser to complete each well.
- The annulus will be sand packed with quartz sand to a nominal depth of 1 to 2-ft. above the screen section. A bentonite seal will be placed above the sand pack to 1-ft bgs.
- A stickup metal casing with locking well cover will be grouted approximately 1-ft into the ground at each well location.
- Following installation, overburden groundwater monitoring wells will be developed by purging a minimum of three (3) well volumes or until dry using a dedicated bailer or pump (depending on well volumes). Development water will be containerized in 55-gallon drums, characterized, and disposed of off-Site in accordance with applicable regulations (refer to Section 4.7).

- Following development, wells will be allowed to recharge for a minimum of 1 week prior to sampling.
- A round of static water levels will be collected from the monitoring wells prior to sampling in order to generate groundwater elevation contours.
- Wells will be sampled using modified low-flow techniques (i.e., peristaltic pump with HDPE tubing). Water quality parameters including turbidity, pH, temperature, specific conductivity, dissolved oxygen, oxidation reduction potential, and depth to water will be recorded at three-to-five (3-5) minute intervals, depending on flow rate. Samples will be collected when the parameters have stabilized for two (2) consecutive intervals to within the specified ranges below, or after 30 minutes of monitoring (whichever occurs first):
    - Water level drawdown (<0.3')
    - Turbidity (+/- 10%, <50 NTU for metals)
    - pH (+/-0.1)
    - Temperature (+/- 3%)
    - Specific conductivity (+/- 3%)
    - Dissolved Oxygen (+/- 10%)
    - Oxidation reduction potential (+/- 10 millivolts)
- The following groundwater samples will be collected for analysis:
    - Three (3) for "full-suite" parameters (refer to Section 4.3).
    - An additional five (5) samples for the following:
        - TCL and CP-51 list VOCs using USEPA Method 8260C; and
        - TCL and CP-51 list SVOCs using USEPA Method 8270D.
    - Full-suite samples will be selected at random and representative of the Site.
- Refer to Section 7.0 for QA/QC sampling.
- Purge water will be containerized in 55-gallon drums, characterized, and disposed of off-Site in accordance with applicable regulations (refer to Section 4.7).
- Monitoring well locations (northing, easting, and elevation) will be collected using a GPS. Elevation of the top of PVC and the ground surface will be collected.

4.6 Seep Sample

A water sample will be collected from the retaining wall in the general location of the seep sample collected during the 2013 investigation GEI conducted on behalf of RG&E (refer to Figure 7) if the seep is still present and able to be located. The sample will be analyzed for the following:

- TCL and CP-51 list VOCs using USEPA Method 8260C; and
- TCL and CP-51 list SVOCs using USEPA Method 8270.

4.7 Investigation Derived Waste

Investigation derived waste will be managed in accordance with DER-10 and all applicable local, State, and Federal regulations and permits. Investigation derived waste including drilling/boring cuttings, development water, purge water, and decontamination water will be containerized in 55-gallon drums stored on-Site and disposed of following all investigation activities at a permitted facility pending waste characterization. Waste characterization requirements will be dependent on the disposal facility requirements and contaminant concentrations. For security purposes, drums may be stored in a locked storage container at the Site. Drums will be labeled identifying the contents and date generated.

All transport of materials must be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded. Material transported by trucks exitingthe site will be secured with either tight-fitting opaque covers that are secured on the sides and/or back, or opaque covers that are locked on all sides. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

4.8 Green Remediation

In accordance with DER-31, the investigation will include the following green techniques:

- Vehicles will be shut off when not in use for more than 5 minutes consistent with 6 NYCRR Part 217 Motor Vehicle Emissions, Subpart 217-3 Idling Prohibition For Heavy Duty Vehicles.

Evaluation of remedial alternatives is not included as part of this scope of work; however, future remedial alternatives will be evaluated in accordance with DER-31.

5.0 HEALTH AND SAFETY

LaBella's Health and Safety Plan (HASP) for this project is included in Appendix 1. All contractors working on the Site will be responsible for their own HASP.

6.0 COMMUNITY AIR MONITORING

The NYSDOH Generic Community Air Monitoring Plan (CAMP) and Fugitive Dust and Particulate Monitoring will be utilized for this SC and is included in Appendix 2.

7.0 QUALITY CONTROL

LaBella's Quality Assurance Project Plan (QAPP) is included as Appendix 3. Quality assurance/ quality control (QA/QC) sampling shall include the following:

- One (1) matrix spike/ matrix spike duplicate (MS/MSD) for each matrix type (i.e., soil, groundwater) at a rate of one per 20 samples for all analytical parameters.
- One (1) blind duplicate sample for each matrix type (i.e., soil, groundwater) at a rate of one per 20 samples for all analytical parameters.
- One (1) trip blank will be included in each shipment of groundwater samples for VOC analysis.
- One (1) equipment blank for each matrix type (i.e., soil, groundwater) for each shipment of PFAS samples.

QA/QC samples will not be collected for waste characterization samples. All samples will be delivered under Chain of Custody procedures to a NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory. The laboratory will provide NYSDEC ASP Category B Deliverables and NYSDEC EQUIS Electronic Data Deliverables (EDDs) for all samples except waste characterization. A data usability summary report (DUSR) will be completed for all ASP Category B format laboratory data packages per DER-10.

8.0 SCHEDULE AND DELIVERABLES

At the conclusion of the investigation a Site Characterization Report will be developed including investigation methods, results, findings, and conclusions. The report will contain data tables with results compared to applicable regulatory criteria and mapping depicting testing locations, contaminant contours, groundwater elevation contours, and areas of the Site that exceed applicable regulatory criteria. Soil sampling results will be compared to NYSDEC Part 375 Restricted Residential Soil Cleanup Objectives. In accordance with DER-31, the report will describe green remediation/ sustainability efforts.

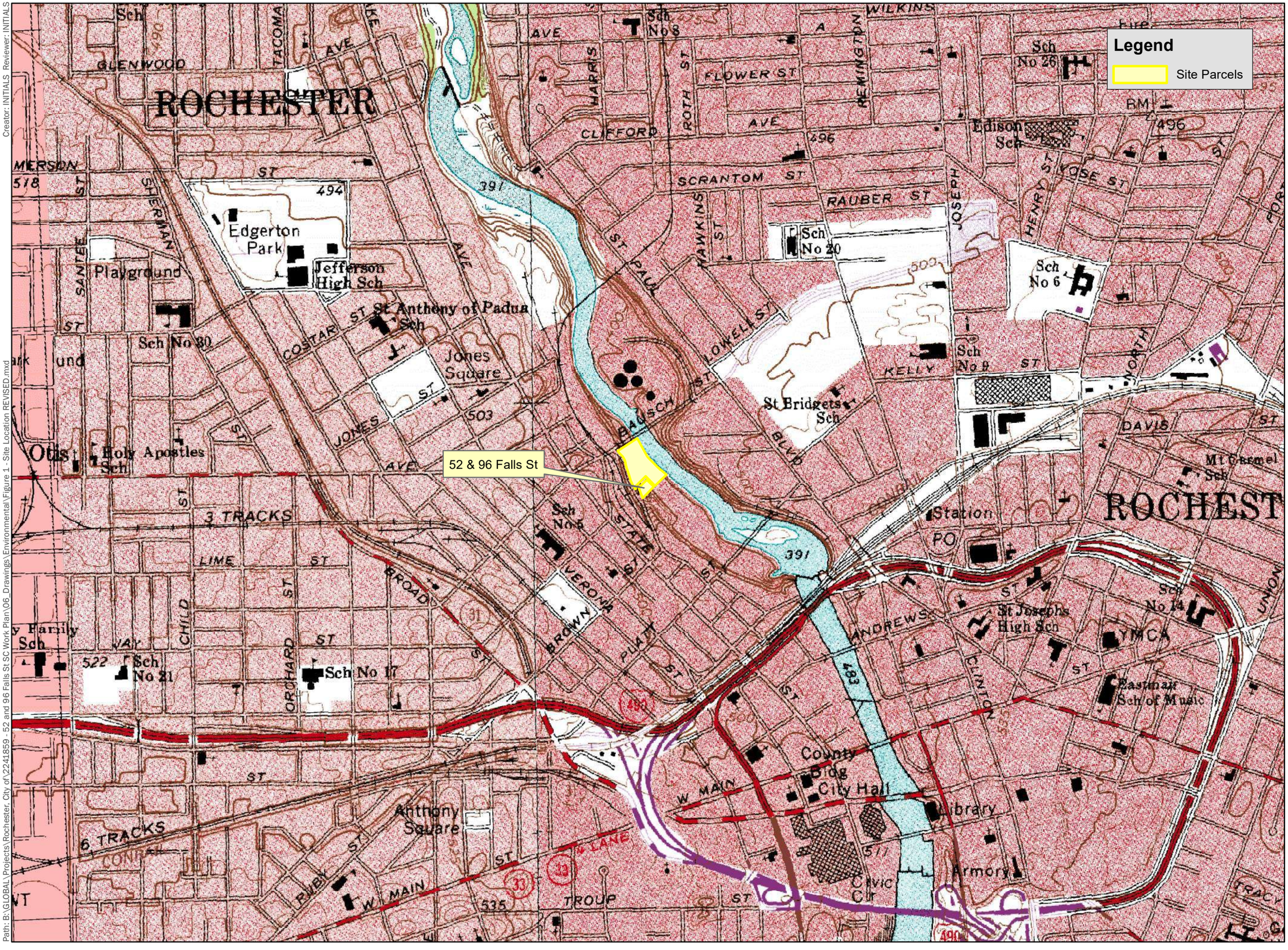
The total project duration is anticipated to be approximately 11 months. An anticipated schedule is below. NYSDEC will be notified a minimum of two (2) weeks prior to commencement of field activities. Exact start dates are unknown at this time. The City will update the NYSDEC when funding has been secured and an anticipated start date has been determined.

Task	Duration	Anticipated Dates
Site Visit and Project Planning	1 month	February 2025
Site Characterization Fieldwork	2 months	March- April 2025
Laboratory Analysis and Data Validation	1 month	May 2025
Demolition of Building and Stack	2 months	June-July 2025
Develop & Implement Work Plan Addendum for Area Near Building/ Stack	3 months	August -October 2025
Site Characterization Report	3 months	October-December 2025

FIGURES

Creator: INITIALS Reviewer: INITIALS

Path: B:\GLOBAL\Projects\Rochester, City of\2241859 - 52 and 96 Falls St SC Work Plan\06_Drawings\Environmental\Figure 1 - Site Location REVISED.mxd



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CITY OF ROCHESTER

52 & 96 FALLS STREET
ROCHESTER, NY

N

0 1,000 Feet

1 inch = 1,000 feet

Page Size: 11x17

Sources:
1. USGS topographic map.

Date: 5/6/2024

SITE LOCATION

2241859

FIGURE 1

Creator: INITIALS Reviewer: INITIALS

Path: B:\GLOBAL\Projects\Rochester, City of\2241859 - 52 and 96 Falls St SC Work Plan\06_Drawings\Environmental\Figure 2 - Site Layout REVISED.mxd

Genesee River

Chimney

Former brick chimney

Building 1
Former Incinerator Building

96 FALLS ST

Building 4
Former Garbage
Reduction Company
Reduction Plant

Building 2
Original Incinerator Building

Building 3
Former Garbage
Reduction Company
Reduction Plant

100 Falls St
Former MGP Site
NYSDEC IHWDS #828010

Former dwellings (1892)

Conveyor

Smith St

Building 5
Former Garbage
Reduction Company
Disposal Plant

Former iron chimney

52 FALLS ST

Driveway

Scale house

Former dog pound

Office

Falls St

Scale house

Railroad (1892 to early 2000s)

Legend

- Site Parcels
- Existing Structures
- Former Structures
- Former Chimney
- Other Historical Features
- Surrounding Parcels

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CITY OF ROCHESTER

52 & 96 FALLS STREET
ROCHESTER, NY

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0 50 Feet

1 inch = 50 feet

Page Size: 11x17

Sources:
1. Aerial image from Monroe County 2020 and may not represent current conditions.
2. Parcel boundaries from Monroe County 2012.
3. Historical features were georeferenced from historical documents and previous environmental reports and locations are approximate.

Date: 5/6/2024

SITE LAYOUT & HISTORICAL FEATURES

2241859

FIGURE 2

AOI 1B
1 oil AST installed in northern portion of building in 1937
removal date unknown
exact location unknown

AOI 1D
4 naphthalene ASTs
4,500 gallons each
installed 1950s, removed prior to 1970s

AOI 1D
5,000 gallon naphthalene AST
installed 1950s, removed prior to 1970s

AOI 1D
37,000 gallon naphthalene AST
installed 1950s, removed between 1970 and 1990s

AOI 1A
2 fuel oil ASTs
10,000 gallon
installed 1937

AOI 1C
3 gasoline tanks
installed 1930s, removed 1950s

AOI 1F
40 gallon foam tank on wheels (1950)
removal date unknown
exact location unknown

AOI 1G
oil supply line installed 1937
exact location unknown

AOI 1E
1,000 gallon diesel tank registered 1989, removed 1990
size and location unknown
installation date unknown

Smith St

Bldg.1

Bldg.2

Bldg.3

Bldg.4

Bldg.5

Falls St

Legend

- Tanks
- Site Parcels
- Former Structures
- Existing Structures
- Surrounding Parcels

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ROCHESTER, NY

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Sources:
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2. Parcel boundaries from Monroe County 2012.
3. Historical features were georeferenced from historical documents and previous environmental reports and locations are approximate.

Date: 5/6/2024

AREA OF INTEREST (AOI) 1 PETROLEUM & CHEMICAL BULK STORAGE TANKS

2241859

FIGURE 3

Smith St

Concrete basin drains to riverbank

Oil/ water separator

AOI 2B
Building 2 Historical Process Equipment and Drainage Features

AOI 2E
Pipe extending from retaining wall

Open drain

Floor drains in former building

condenser (1950)

hot water tank (1950)

AOI 2C
Building 3 and Building 4 Historical Process Equipment and Drainage Features

Former wash basin

Filled in trench drain east side of building
Floor drains in former building

Bldg.1

Bldg.4

Bldg.2

40 digesters (1919)

Floor drains in former building

Bldg.3

AOI 2A
Building 1 Historical Process Equipment and Drainage Features

10 Digesters (1911)

Machine Shop (1950)

Bldg.5

AOI 2D
Building 5 Historical Process Equipment and Drainage Features

2 boilers (1911)

Dynamo and Pump Room (1911)

Falls St

Legend

- Site Parcels
- Existing Structures
- Former Structures
- Process Equipment
- Surrounding Parcels

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52 & 96 FALLS STREET ROCHESTER, NY

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1 inch = 50 feet

Page Size: 11x17

Sources:
1. Aerial image from Monroe County 2020 and may not represent current conditions.
2. Parcel boundaries from Monroe County 2012.
3. Historical features were georeferenced from historical documents and previous environmental reports and locations are approximate.
4. Not all process equipment is known. All 5 buildings are included in this AOC.

Date: 5/6/2024

AREA OF INTEREST (AOI) 2 HISTORICAL PROCESS EQUIPMENT & DRAINAGE FEATURES

2241859

FIGURE 4

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CITY OF ROCHESTER

52 & 96 FALLS STREET ROCHESTER, NY

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Sources:
1. Aerial image from Monroe County 2020 and may not represent current conditions.
2. Parcel boundaries from Monroe County 2012.
3. Historical features and fill material, debris and refuse locations were georeferenced from historical documents and previous environmental reports and locations are approximate.

Date: 5/7/2024

AREA OF INTEREST (AOI) 3 WASTE DISPOSAL INCLUDING CONSTRUCTION & DEMOLITION DEBRIS

2241859

FIGURE 5

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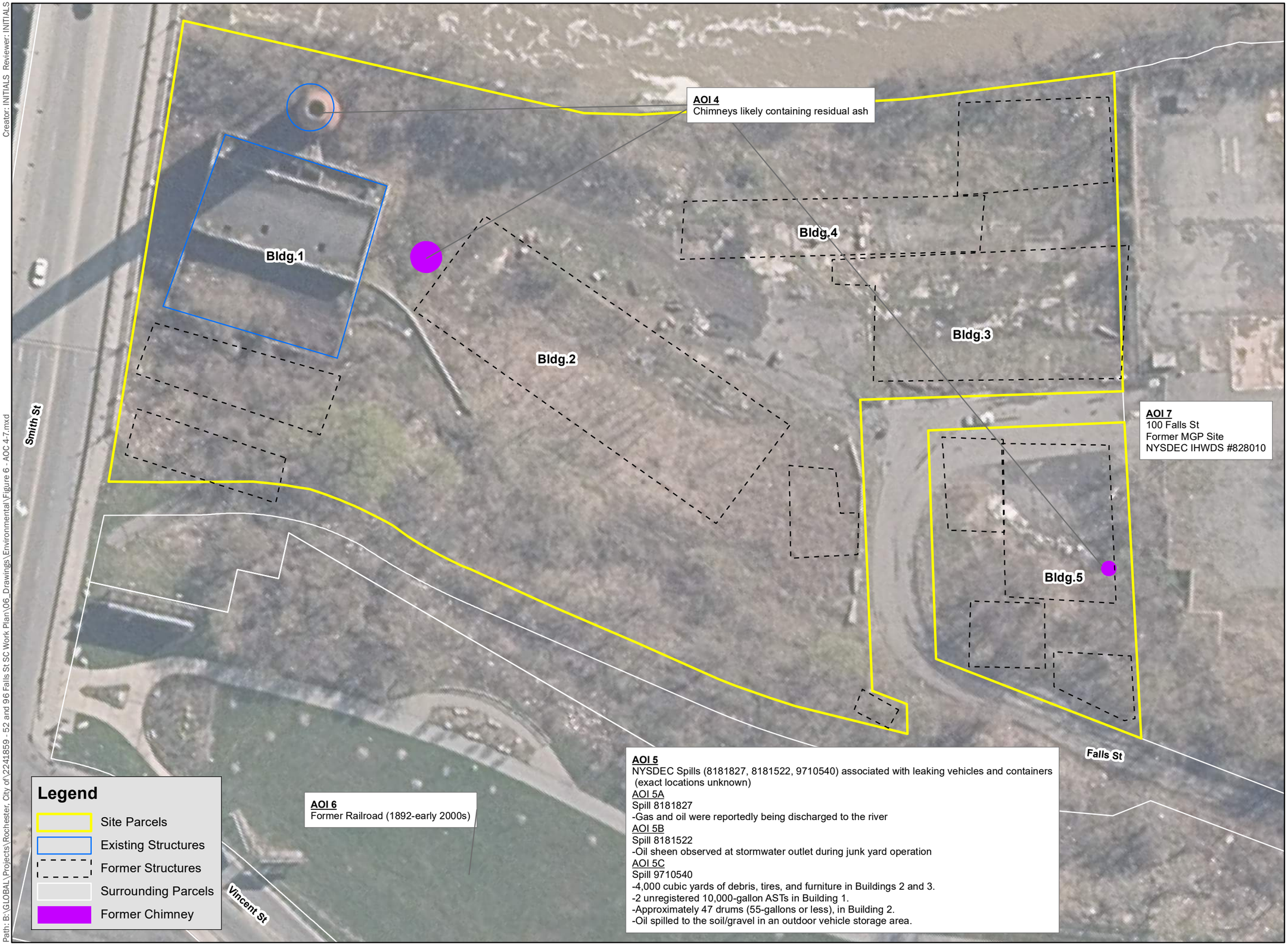

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1 inch = 50 feet

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Sources:
1. Aerial image from Monroe County 2020 and may not represent current conditions.
2. Parcel boundaries from Monroe County 2012.
3. Historical features were georeferenced from historical documents and previous environmental reports and locations are approximate.

Date: 5/7/2024

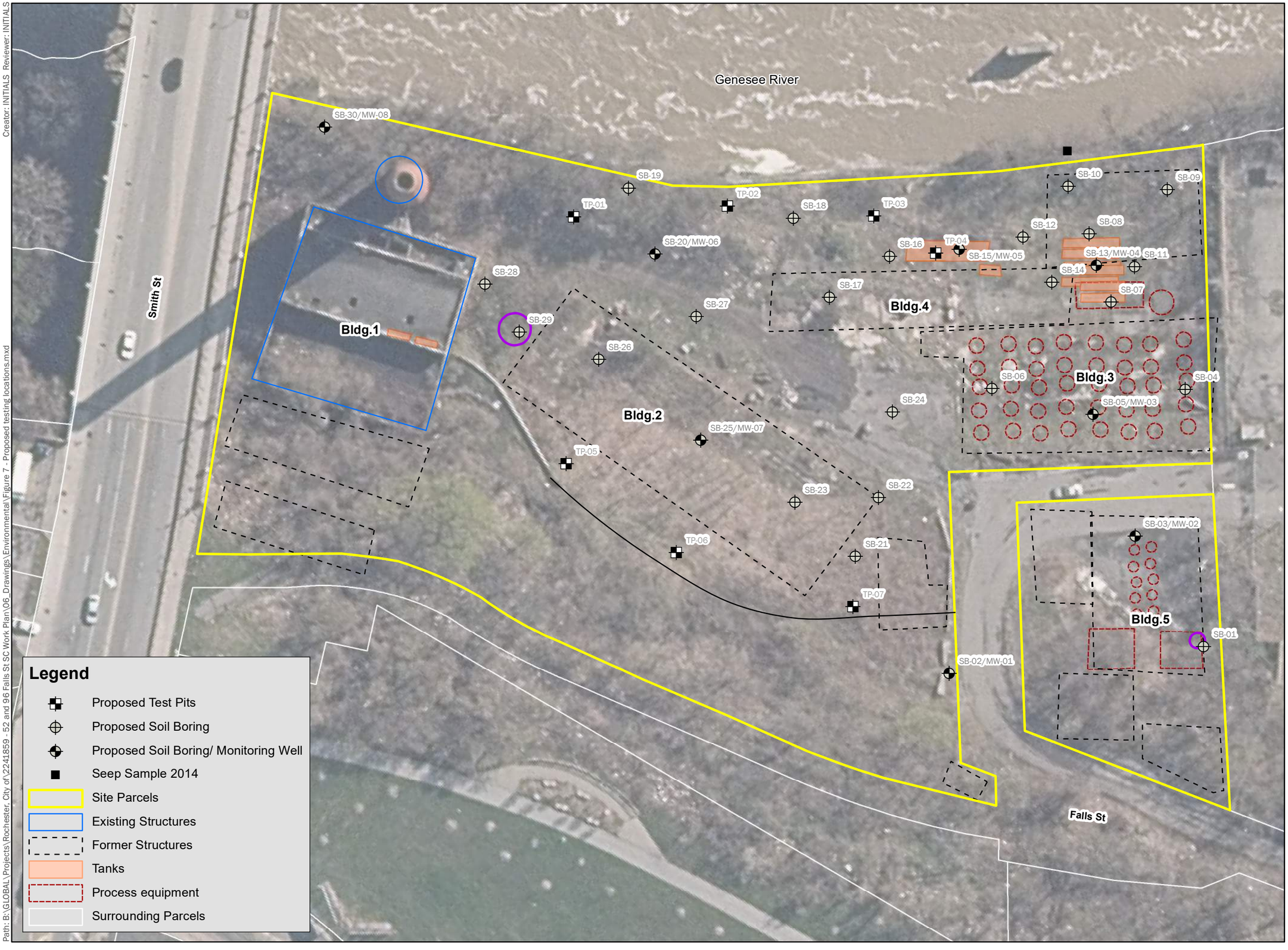
AREAS OF INTEREST (AOI) 4 THROUGH 7

2241859

FIGURE 6

Creator: INITIALS Reviewer: INITIALS

Path: B:\GLOBAL\Projects\Rochester, City of\2241859 - 52 and 96 Falls St SC Work Plan\06_Drawings\Environmental\Figure 7 - Proposed testing locations.mxd



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CITY OF ROCHESTER

52 & 96 FALLS STREET
ROCHESTER, NY

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Page Size: 11x17

Sources:
1. Aerial image from Monroe County 2020 and may not represent current conditions.
2. Parcel boundaries from Monroe County 2012.
3. Historical features were georeferenced from historical documents and previous environmental reports and locations are approximate.
4. Testing locations are approximate and subject to revision based on the findings of the site visit, geophysical survey, presence of buried utilities, accessibility, and the field observations of the project geologist at the time of the investigation. Test pit locations to be determined based on geophysical survey results and locating debris piles with GPS as part of the SC Work Plan.

Date: 5/31/2024

PROPOSED TESTING LOCATIONS

2241859

FIGURE 7

APPENDIX 1

Health and Safety Plan

Site-Specific Health and Safety Plan (HASP)

Project Title:

52 & 96 Falls Street

Location:

52 & 96 Falls Street, Rochester, New York

Prepared For:

City of Rochester

LaBella Project No. 2241859

TABLE OF CONTENTS

ATTACHMENTS

APPENDICES

APPENDIX A - Directions to Medical Facility

APPENDIX B - Task Hazard Analysis Forms

APPENDIX C - Daily Tailgate Safety Meeting Form

0.0 HASP Acknowledgment

All LaBella project personnel, contractors, and subcontractors are required to sign the following agreement prior to conducting work:

1. I have read and fully understand the requirements of this site-specific HASP including my individual responsibilities listed above.

2. I agree to abide by the provisions of the HASP and participate in any health and safety meetings or modifications to the HASP criteria during the implementation of work.

Name	Company	Date

1.0 Introduction

The purpose of this Health and Safety Plan (HASP) is to provide guidelines for responding to potential health and safety issues that may be encountered at the project site, located at 52 & 96 Falls Street, Rochester, New York This HASP only reflects the policies of LaBella Associates D.P.C. and its affiliated companies LaBella Environmental, LLC and Aztech Environmental Technologies, Inc., collectively referred to as "LaBella". The requirements of this HASP are applicable to all approved LaBella personnel, contractors and subcontractors at the work site. This document's project specifications are to be consulted for guidance in preventing and quickly abating any threat to human safety or the environment. The provisions of the HASP do not replace or supersede any federal, state or local regulatory requirements.

2.0 Responsibilities

This HASP presents guidelines to minimize the risk of injury to project personnel, and to provide rapid response in the event of injury. The HASP is applicable only to activities of approved LaBella personnel and their authorized visitors specific to this project. The Project Manager shall implement the provisions of this HASP for the duration of the project. It is the responsibility of LaBella employees to follow the requirements of this HASP, and all applicable company safety procedures.

3.0 Daily Pre-Job Safety Meetings

Prior to the beginning of work each day the Field Supervisor/Foreman or on-site Project Manager will review upcoming daily job requirements, anticipated hazards and hazard control measures with the project team members. At this meeting information such as personal protective equipment, site conditions, emergency procedures, and other applicable topics may be addressed. A copy of the **Daily Pre-Job Safety Tailgate/Toolbox Meeting Form** is attached to this HASP.

4.0 Site Information

Project Name:	52 & 96 Falls Street
LaBella Project No.:	2241859
Project Location:	52 & 96 Falls Street, Rochester, New York
Current Use of Project Location:	Vacant
Uses of Surrounding Areas (Res Vacant Land, Commercial, etc.):	Commercial/ Industrial
Proposed Date(s) of Field Activity - Start:	TBD

Proposed Date(s) of Field Activity - End:	TBD

5.0 Scope of Work

The proposed field work covered under this HASP includes the following:

- Geophysical Survey, Test Pits using an Excavator, Geoprobe Soil Borings and Monitoring Well Installation, GPS Testing Locations, Sewer Scoping and Dye Testing

6.0 Emergency Information

The personnel and emergency response contacts associated with the proposed scope of work are presented below and are to be posted onsite during all field activities. The Site Safety Officer (SSO) is the primary authority for directing site operations and relaying communications under emergency conditions. During the SSO's absence, the Project Manager or Site Supervisor will lead emergency operations.

Project Personnel		
Contact	**Name**	**Phone**
LaBella Project Manager	TBD	TBD
LaBella Site Supervisor	TBD	TBD
Corporate Safety Manager	Catherine Monian	845-486-1557
Environmental Division Safety Program Manager	Tim Ruddy	315.440.5125
Site Safety Officer	TBD	TBD
Site Contact	TBD	TBD
Human Resources	HR Department	585-454-6110
Emergency Personnel including Police and Fire Dept and Ambulance – Dial 911		
Hospital- *see Hospital Route Section below for directions*	Highland Hospital	585-473-2200
Poison Control		800-336-6997
NYSDEC Spill Response Hotline		800-457-7362

First Aid

A First Aid Kit will be located as follows: The injured person may be transported to a trained medical center for further examination and treatment. The preferred transport method is a professional emergency transportation service; however, if this option is not readily available or would result in excessive delay, other transport is authorized.

Under no circumstances should an injured person transport themselves to a medical facility for treatment, no matter how minor the injury may appear.

Incident Reporting

Employees shall report all incidents and injuries to their supervisor as soon as possible, including those involving employees operating vehicles and other equipment. All reporting procedures contained in LaBella Safety Policy 1.22 must be followed.

During emergencies employees should seek medical care immediately. When contacting their Supervisor/Safety Manager/HR, employees should discuss medical care options. If an employee is asked by medical personnel for a worker's compensation number they should tell them that LaBella should be billed directly.

When emergency medical care is not imminent, employees shall immediately report events to their immediate Supervisor, the Safety Manager and Human Resources, and participate in the investigation process as well as the corrective action process, as needed. An Accident-Incident-Near Miss-Hazard Form must be submitted online or by e-mail to the Supervisor, Safety Manager and HR as soon as possible but no later than 24 hours after the event. The Form can be found on LaBella's intranet under "Operations".

7.0 Potential Health and Safety Hazards and Controls

This section lists potential health and safety hazards that project personnel may encounter at the project site and actions to be implemented by approved personnel to control and reduce the associated risk to health and safety. This is not intended to be a complete listing of any and all potential health and safety hazards. New or different hazards may be encountered as site environmental and site work conditions change. The suggested actions to be taken under this plan are not to be substituted for good judgment on the part of project personnel. At all times, the Site Safety Officer has responsibility for site safety and their instructions must be followed.

Physical Hazards		
Work Action or Condition	**Potential Safety Hazard**	**Controls (including PPE)**

Building Structural Integrity	Physical injury	• Do not enter buildings if they appear to be structurally unsafe. • Have an engineering survey conducted. • If inside building and structural Instability is identified leave the building the way you came in using caution and test floor strength before placing full body weight.
Cold Weather	Frost nip, Frost bite, Hypothermia	Engineering: • Basic wind block • Heated shelter • Barriers or insulation placed on metal surfaces to reduce heat loss from extremities Administrative: It is recommended that multiple vehicles be utilized during periods of extreme cold unless a warm shelter is within reasonable proximity to the work site. Number of vehicles depends on number of employees. Warm liquids should be considered to combat dehydration and to manage core temperatures. Note that caffeinated beverages will lessen circulation and are discouraged. Adequate Breaks - Break periods will be at least ten (10) minutes long. While on break personnel should remove outer layers of clothing to ensure adequate warming of the core and extremities. Individuals should assess their physical condition during breaks. Do not return to work in the cold until adequately warmed. If engineering controls, such as shelters are used, the ambient temperature/wind chill where the work is taking place will be used to determine the work / warm–up schedule. Personal Protective Equipment: The outer layer of clothing must be fire retardant. • The outer most layers should consist of winter clothing (i.e. bibs, bomber or parka, head sock, winter /arctic boots). • Under layers (insulation) should consist of one or more thin garments. Outer winter layers should be removed prior to insulation layers becoming wet with perspiration. • Wet clothing should not be worn. A best practice is to bring extra insulating clothing and change clothes if they become wet. • PPE that is in direct contact with the skin should be changed if it becomes wet. • Exposed skin shall be avoided in extreme cold

		temperatures to minimize the risk of frostbite. • Hand / foot warmers are available on all sites.
Drilling Activities	Potential presence of underground or overhead utilities, rotating and moving parts, pinch point hazards, falling objects/debris, high noise levels, ergonomic issues related to lifting heavy drill tooling and supplies (e.g., augers, bags of sand or grout).	• Prior to initiating drilling activities conduct a utility stakeout via the state one call system (e.g., UDig NY). A private utility location service may be required if private utilities may be present. • Ensure safe distance from overhead utilities such as electric, telephone and fiber optic/cable lines. • Wear appropriate PPE and avoid loose clothing or jewelry. • Stay clear of moving parts and know the location of emergency shut-off switches. • Take particular caution when raising/lowering the mast and near rotating augers/drill rods. • Practice safe lifting techniques. • Where possible use winches/cables to lift heavy tooling. • Use team lifting where mechanical lifting is not practical.
Blades and Sharp Objects	Injury	Blades and Sharp objects are likely to be present on site, presenting risk of physical injury. The following hazard control measures will be applied: • Only use tools designed for the task. Do not improvise. • Inspect the tool before sure; do not use dull or damaged blades. • Carry blades with tip sheathed or pointed down and away from the body. • Cut on a stable surface with sufficient lighting. • Wear appropriate PPE (gloves, safety glasses, etc.).
Excavations and Trenches	Injury from fall into or cave-in of trench/excavation. Asphyxiation, engulfment, or explosion (if pipe bursts)	An open excavation or trench may be present during site activity, or could be present during demolition or remediation activities. No Labella employees should enter a trench or excavation unless authorized to by the designated Competent Person. During heavy precipitation, excessive runoff may create slippery surfaces and also weaken the excavation sidewalls making the excavation more susceptible to collapse. The following hazard control measures will be applied: • All materials must be placed greater than 2 feet from the edge of the trench and LaBella

		employees should remain at least 2-feet from the edge of any excavation or trench. • LaBella employees are not to enter excavations greater than 4-feet in depth unless they have received appropriate training, stabilization measures are in place and a competent person has determined that the conditions are safe. • Any samples must be collected from the equipment bucket or from the spoils pile.
Hand Tools	Physical injury	• Do not use a tool if you have not been trained. Inspect tool before use and do not use damaged tools. • Maintain tools in good condition and follow manufacturers' instructions. • Wear gloves, safety glasses and and appropriate PPE /apparel, avoiding loose clothing; secure long hair. • When using a cutting tool hold its handly firmly and cut away from your body, never towards it. • If working on a ladder or scaffold raise and lower tools using a bucket and hand line; never carry tools in a way that prevents using both hands on a ladder (maintain three poits of contact)
Heavy Equipment - Working Near	Struck by, Caught in between, Causing an obstruction on existing roadway, Rollaway, and hearing damage.	Working near heavy equipment presents struck-by and caught-in or in-between risks. Heavy equipment can also rollaway or obstruct roadways, limiting visibility. The following hazard control measures will be applied: • Maintain 360 degrees of awareness of your surroundings. • Meet the Operator, discuss work operations, and stay in line of sight. • Wear high visibility clothing (outer layer), hard hat, safety glasses, work boots. • Stand in safe zone away from blind areas. Never walk behind or to the side of heavy equipment without the operator's knowledge. Have an escape plan. • Stay out of the swing zone of heavy equipment such as excavators or traditional auger rigs. The swing zone is defined as an entire 360 degree circle equipment may move within as measured from a central location point. • Only approach drill rig after auger has stopped rotating and the operator has given the OK for you to approach to collect a sample.

		• Wear hearing protection when working near heavy or moving equipment.
Hot Weather & Sun, Other Heat Hazards	Prickly Heat (Heat rash), Heat Cramps, Heat Exhaustion Heat Fatigue, Heat Collapse, Heat Stroke, Sunburn	Environmental heat hazards, whether indoors or outdoors, present physical injury risks. Exercise caution when working in hot temperatures or around hot tar or other materials, hot ovens or other equipment, heat absorbing surfaces such as roofs and roads, and reflective surfaces such as water or metal. The following hazard control measures will be applied: • Have sunscreen available for ultraviolet protection on sunny days. • Have water or electrolyte drinks for dehydration. • Check the weather and adjust work schedules if heat is excessive. Work early or later in day. • Perform work during cooler hours of the day or at night if adequate lighting can be provided. • Utilize shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods. • Use cooling devices such as fans and water misters. • Allow workers to take breaks in air-conditioned vehicles.
Parking Vehicle	Struck by, caught in between, casing an obstruction on existing roadway. Fire from plants under hot exhaust	• Workers will park far enough off the edge of the road to stay well clear of traffic. • Put on hi-visibility vest before exiting parked car. • Leave Field Card on dashboard. • Use appropriate number of cones to mark for oncoming traffic as needed. • Do not park on/in flammable vegetation. • Keys stay on field person.
Underground Utilities	Damage to utility infrastructure, Electrocution, Explosion	• Utility marking is needed for this project. • Prior to the commencement of ground intrusive activities, underground utilities will be located by a third-party locator. • Workers will not stand within 20-feet of any active excavations or boreholes if not actively working in those areas.
Slip-Trip-Fall	Injury	• Reduce and avoid slippery (wet, icy, oily, muddy, etc.) surfaces. • Workers will watch where they step and wear proper footwear. • Keep work areas free of obstructions and debris.

Biological and Environmental Hazards		
Work Action or Condition	**Potential Safety Hazard**	**Controls (including PPE)**
Droppings from Pigeons or Bats	Histoplasmosis Disease from Histoplasma Fungus	Exposure to pigeon and bat droppings present a biological health hazard. The following hazard control measures will be applied: • Prior to work where pigeons or bats may roost perform an inspection to determine if there is a build-up of droppings. • Control dust generation when removing bat or bird droppings by wetting material such as through careful spraying. • Wear appropriate PPE such as gloves, rubber boots, rain suit, goggles and disposable N95 mask. • Dispose of any waste material properly and safely in accordance with state and local requirements.
Allergens	Allergic reaction	Common workplace allergens like dust mites, mold, pollen, fungi, and metal can trigger a dangerous reaction. The following hazard control measures will be applied: • Take medication (i.e. anti-histamine) to minimize allergic reaction to pollen or other allergen as directed by your medical care practitioner, and bring it with you in the field. • Wear a dust mask, if necessary.
Hazardous Plants	Injury from Hazardous Plants	Hazardous plants may be encountered on rural sites. The following hazard control measures will be applied: • Create a narrow path or route when possible. • Wear appropriate PPE for the vegetation (i.e. leather gloves, Carhart coveralls, and face shield for vegetation that could cause cuts/punctures and/or is higher than waist level) • Become familiar with and avoid poisonous plants, see Safety Manual section '3.05 Plants' • Separate clothes from normal laundry if you've been in contact with poisonous plants. • Use soap/water or Technu to wash poisonous plant oils from skin.
Water - Near/On (Wetlands,	Drowning, Hypothermia	• All workers must be capable swimmers to be assigned to projects involving water. • Appropriately sized Personal Flotation Devices

Streams, Lakes, Ponds)		(PFDs) must be worn when on a water craft or when working within 5-feet of water above knee height. • Workers will observe depth of water body and speed of any currents before proceeding. • Ensure enough PFDs for boat occupants, that PFD is appropriately sized for the wearer, and is worn per the manufacturer's instructions (straps/zippers used appropriately).

Ergonomic Hazards		
Work Action or Condition	**Potential Safety Hazard**	**Controls (including PPE)**
Lifting Heavy Objects	Injury from Improper Lifting/Lifting weights that are too heavy	• When lifting heavy objects, keep the load close to the body and use the leg muscles instead of the back muscles to perform lifting tasks. • Do not attempt to lift large, heavy (especially over 50-lbs), or awkwardly shaped objects without assistance from another employee or from a manual lifting devise.

Chemical Hazards (General)		
Work Action or Condition	**Potential Safety Hazard**	**Controls (including PPE)**
Chemical Exposure - Heavy Metals	*Contaminants identified in testing locations at the Site include low-level heavy metals, primarily associated with Site contamination. Heavy metal-impacted media including fill material may be encountered during subsurface*	The presence of heavy metals in site media may be difficult to ascertain in the field. Heavy metal concentrations at this site are not anticipated to exceed PELs. The following hazard control measures will be applied, however: • Workers shall wear appropriate PPE and follow listed decontamination procedures to prevent exposures. Refer to the relevant sections of this HASP for more detail regarding PPE and decontamination procedures.

	activities at the project work site.	
Chemical Exposure - PFAS	*Contaminants identified in testing locations at the Site include PFAS. PFAS-impacted media may be encountered during subsurface activities at the project work site. Research is still ongoing regarding the health effects of PFAS, but studies have shown that exposures to certain levels of PFAS can increase one's risk of certain cancers and create reproductive, immunulogical or developmental effects.*	The presence of PFAS in site media may be difficult to ascertain in the field. PFAS concentrations at this site are not anticipated to exceed PELs. The following hazard control measures will be applied, however: • Workers should be wearing appropriate PPE and following listed decontamination procedures to prevent exposures. Refer to the relevant sections of this HASP for more detail regarding PPE and decontamination procedures.
Chemical Exposure - Semi-Volatile Organic Compounds (SVOC)	*Contaminants identified in testing locations at the Site include SVOCs. SVOC-impacted media including fill material may be encountered during subsurface activities at the project work site.*	The presence of SVOCs in site media may be detected by their odor and monitoring instrumentation. SVOC concentrations at this Site are not anticipated to exceed PELs. The following hazard control measures will be applied, however: • Workers should be wearing appropriate PPE and following listed decontamination procedures to prevent exposures. Refer to the relevant sections of this HASP for more detail regarding PPE and decontamination procedures.
Chemical Exposure - Volatile Organic Compounds (VOC)	*Contaminants identified in testing locations at the Site include various volatile organic compounds (VOCs), primarily*	Volatile Organic Compound (VOC) gases may be emitted from a number of materials and products. The presence of organic vapors may be detected by their odor and by monitoring instrumentation and can lead to physical harm. VOC concentrations at this Site are not anticipated to exceed PELs. The following hazard control measures will be applied,

	VOCs associated with Site contamination. Volatile organic vapors may be encountered during subsurface activities at the project work site. Inhalation of high concentrations of volatile organic vapors can cause headache, stupor, drowsiness, confusion and other health effects. Skin contact can cause irritation, chemical burn, or dermatitis.	however: • Workers should be wearing appropriate PPE, following listed decontamination procedures and be periodically screening the work zone to prevent against and evaluate for unexpected exposures. Refer to the relevant sections of this HASP for more detail regarding PPE, decontamination procedures and work zone screening.
Chemical Exposure - Polychlorinated Biphenyls	*Contaminants identified in testing locations at the Site include PCBs. PCB-impacted media may be encountered during subsurface activities at the project work site. Potential human health effects of PCB exposure include cancer as well as neurological, immunological and reproductive effects.*	The presence of PCBs in site media may be difficult to ascertain in the field. PCB concentrations at this site are not anticipated to exceed PELs. The following hazard control measures will be applied, however: • Workers should be wearing appropriate PPE and following listed decontamination procedures to prevent exposures. Refer to the relevant sections of this HASP for more detail regarding PPE and decontamination procedures.
Chemical Exposure - Pesticides	*Contaminants identified in testing locations at the Site include organochlorine pesticides. Pesticide-impacted media*	The presence of pesticides in site media may be difficult to ascertain in the field. Pesticide concentrations at this site are not anticipated to exceed PELs. The following hazard control measures will be applied, however: • Workers should be wearing appropriate PPE and following listed decontamination procedures to prevent exposures. Refer to the

	may be encountered during subsurface activities at the project work site. Exposure to high concentrations of organochlorine pesticides over a short period may produce convulsions, headache, dizziness, nausea, vomiting, tremors, confusion, muscle weakness, slurred speech, salivation and sweating. Long-term exposure to organochlorine pesticides may damage the liver, kidney, central nervous system, thyroid and bladder. There is some evidence indicating that organochlorine pesticides may also cause cancer in humans.	relevant sections of this HASP for more detail regarding PPE and decontamination procedures.
Sample Collection - Soil or Groundwater	*Exposure to contaminants. Hand injury from cutting, crushing, tool or glass breakage. Back strain from lifting cooler.*	• When collecting samples, workers will utilize nitrile gloves, safety glasses or goggles. If material being sampled potentially contains fill or other sharp material, use a stainless steel spoon (or similar) as a tool to collect the sample. Any such tools should be dedicated or properly decontaminated between samples. • When lifting sample coolers, workers will use proper lifting techniques and get assistance when possible, especially for containers heavier than 50 lbs.

Individual Contaminant Hazards			
Chemical	**OSHA Permissible Exposure Limit (PEL)/ NIOSH Recommended Exposure Limit (REL) or Immediately dangerous to life or health air concentration values (IDLH)**	**Routes of Exposure**	**Symptoms of Overexposure**

8.0 Personal Protective Equipment (PPE)

All site workers will have appropriate training as identified in Section 7.0. Training includes the identification of PPE necessary for various tasks; how to don, doff, adjust, and wear PPE; limitations of PPE; and proper care, inspection, testing, maintenance, useful life, storage, and disposal of the PPE. PPE will be inspected on a regular basis.

Level D: A work uniform affording minimal protection, used for nuisance contamination, only.	• Coveralls or long-sleeves and pants • Gloves • Nitrile sampling gloves (as needed) • Boots/shoes, chemical-resistant steel toe and shank • Safety glasses or chemical splash goggles • Hard hat

9.0 Employee Training

All workers and other personnel shall receive appropriate training prior to engaging in site activities. All workers must recognize and understand the potential hazards to health and safety that are associated with the proposed scope of work and must be thoroughly familiar with programs and procedures contained in this Safety Plan.

The following training levels were determined to be needed:

- OSHA 40 Hour - HAZWOPER

10.0 Exposure Monitoring

Based on the presence or potential presence of VOCs at the Site, LaBella will utilize a photoionization detector (PID) to periodically screen the ambient air in the work area and downwind of the work area for total Volatile Organic Compounds (VOCs).
If sustained PID readings of greater than xxx are recorded in the breathing zone, either personnel are to leave the work area until satisfactory readings are obtained or approved personnel may re-enter the work areas wearing at a minimum a ½ face respirator with organic vapor cartridges for an 8-hour duration (i.e., upgrade to Level C PPE). If PID readings are sustained, in the work area, at levels above 50 ppm for a 5-minute average, work will be stopped immediately until safe levels of VOCs are encountered or additional PPE will be required.
If downwind PID measurements reach or exceed 25 ppm consistently for a 5-minute period downwind of the work area, PID readings will be taken within any nearby buildings (if occupied) on Site to ensure that the vapors are not penetrating any occupied building and impacting occupants. If the PID measurements reach or exceed 25 ppm within any nearby buildings, the personnel should be evacuated via a route in which they would not encounter the work area. The building should then be ventilated until the PID measurements within the building are at or below background levels.

11.0 Site Control

No - Contaminant Exclusion or Reduction zone not required or applicable at the site.

12.0 Recordkeeping

An electronic or hardcopy version of this HASP will be present at the Site during all field work activities. Copies of field logs, including daily pre-job safety meeting logs, will be filed by LaBella and available for the duration of the project.

Employees will be able to provide physical or electronic copies of required training certificates.

Incident reporting will be completed in accordance with LaBella policies.

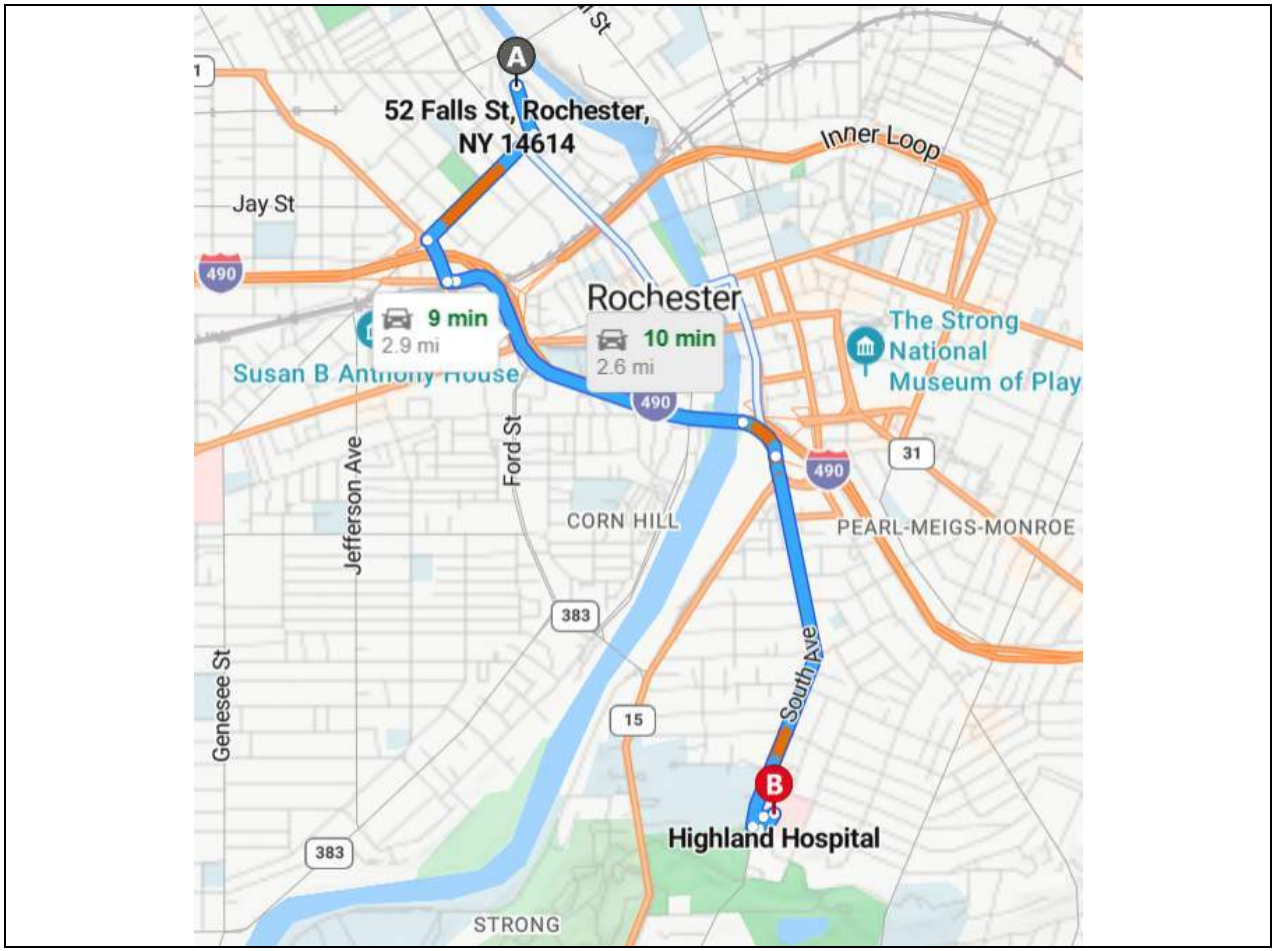
APPENDIX A

Directions to Nearest Medical Facility

Hospital Route

Hospital Directions:

- Head South on Falls St towards Brown St
- Turn right onto Brown St
- Turn left onto Allen St
- Take the ramp on the right and follow signs for 490 East
- Take exit 15 and follow signs for NY-15
- Bear left onto South Ave
- Turn left onto Bellevue Dr
- Arrive at 1000 South Ave



APPENDIX B

Task Hazard Analysis Forms

JOB SAFETY ANALYSIS

6.02 TASK HAZARD ANALYSIS (THA) FORM

THA Title or Work Activity:	Division:	Project #:	THA ID#:	Date:	Revised Date:
Use of Power Tools					

Person Preparing THA:	Position / Title:	Person Assisting with THA:	Position / Title:

Reviewer w/ Relevant Task Experience	Position / Title:	Safety Manager Sign off for High Risk or Very High Risk THAs	Position / Title:

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☑ HARD HAT	☐ AIR PURIFYING RESPIRATOR
☑ SAFETY GLASSES	☐ FACE SHIELD (WIRE MESH FOR DEBRIS, POLYCARBONATE IF MATERIAL REQUIRES SPASH PROTECTION)
☑ GLOVES	☐ HEARING PROTECTION
☑ SAFETY SHOES	☐ EYE WASH
☑ HIGH VIS CLOTHING	Other:

Materials, Equipment &Tools Needed

☐ Kevlar Chaps ☐ Kevlar Gloves ☐ Wire mesh face shield ☐ Back laced, steel protected boots

SEQUENCE OF STEPS	POTENTIAL HAZARDS	Recommended Control Measures/PPE/ Training
1. Work setup and inspection	Lacerations	Avoid contact with blades/bits/pinch points/ etc.
		Wear approprate work gloves
	Electrical shock	Inspect cords for frays and wear. Do not use tool cord not in good condition.
2. Plug in power tool	Laceratons/pinch points	Ensure tool is in the off position before plugging in.
3. Power tool operation	Lacerations and other injuries	Wear appropriate PPE
		Ensure blade/bit or other moving part is not binding
		Know what you are cutting/drilling/etc. Evaluate surroundings and check for utilties in walls/floor prior to operating tool
		Do not wear loose fitting clothing or jewelry when operating power tools
		Ensure material being cut/drilled/etc. is secure and will not move
	Electrical shock	Use GFCI when in wet conditions.
		Check for utilities prior to using power tool
	Hearing damage	Wear appropriate hearing protection for task
4. Changing blade/bit or other tool part	Lacerations/abrasions	Ensure tool is unplugged before changing any moving part
		Wear appropriate gloves to protect hands
On-site edits:		

RISK ASSESSMENT CODES

Likelihood of Harm (People, Environment, Facility)	**Severity of Harm/Consequences** (People, Environment, Facility, Supply Chain Disruption, Brand Impact)		
	Slight Harm	**Moderate Harm**	**Extreme Harm**
Very Unlikely	Very Low Risk	Very Low Risk	High Risk
Unlikely	Very Low Risk	Medium Risk	Very High Risk
Likely	Low Risk	Medium Risk	Very High Risk
Very Likely	Low Risk	High Risk	Very High Risk

Definitions

Likelihood of Harm Categories:
-Very Unlikely: Will not occur except in rare instances under certain conditions
-Unlikely: Typically would not occur
-Likely: May occur on a regular basis
-Very Likely: Will occur in most instances

Severity of Harm Categories:
-Slight harm: Only first aid required
-Moderate harm: Injury or illness resulting in inability to work for a short period of time
-Extreme harm: Death or serious injury or illness resulting in inability to work indefinitely

JOB SAFETY ANALYSIS

6.02 TASK HAZARD ANALYSIS (THA) FORM

THA Title or Work Activity:	Division:	Project #:	THA ID#:	Date:	Revised Date:
CHEMICAL HANDLING/WORK PRACTICES (AQUA-CLEAR MGA/AQUA-CLEAR AE)					

Person Preparing THA:	Position / Title:	Person Assisting with THA:	Position / Title:

Reviewer w/ Relevant Task Experience	Position / Title:	Safety Manager Sign off for High Risk or Very High Risk THAs	Position / Title:

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☐ HARD HAT	☐ AIR PURIFYING RESPIRATOR
☐ SAFETY GLASSES	☐ FACE SHIELD (WIRE MESH FOR DEBRIS, POLYCARBONATE IF MATERIAL REQUIRES SPASH PROTECTION)
☐ GLOVES	☐ HEARING PROTECTION
☐ SAFETY SHOES	☐ EYE WASH
☐ HIGH VIS CLOTHING	Other:

Materials, Equipment &Tools Needed

☐ Kevlar Chaps ☐ Kevlar Gloves ☐ Wire mesh face shield ☐ Back laced, steel protected boots

SEQUENCE OF STEPS	POTENTIAL HAZARDS	Recommended Control Measures/PPE/ Training
1. Transportation	1a. Potential Releases	1a. While mobilizing to site, package chemicals securely on slack rack. Chemicals must be in secondary containment to prevent accidental releases. Vehicle transporting chemicals does not need DOT placards unless the amount of material being transported exceeds 1000lbs.
	1b. Inhalation	1b. Chemicals are never to be transported inside the vehicle with the driver.
2. Handling Procedures	2a. Splashes	2a. When transferring chemicals, a face shield in addition to safety glasses must be utilized to prevent potential eye exposure. An adequate water source or saline solution must be available on site.
	2b.Chemical Burns	2b. When transferring chemicals, employees must don appropriate chemical resistant clothing to minimize the potential for dermal exposure. An adequate water supply or source must be adjacent to work area to rinse off in case of contact.
	2c. Inhalation	2c. Chemicals are to be used in well ventilated areas to prevent inhalation exposure.
3. Decontamination Procedures	3a. Potential Releases	3a. Ensure that chemical containers are properly closed prior to loading or unloading. If chemicals have been placed in a new container, the new container must have appropriately filled out NFPA labels that accurately reflect the hazards for the materials in them.
	3b. Splashes	3b. Carefully peel Tyvek clothing inside out to prevent potential exposure that may arise if chemical residues are present on clothing. All used PPE must be placed in a watertight container or bag and sealed prior to removal from site.
On-site edits:		

RISK ASSESSMENT CODES

Likelihood of Harm (People, Environment, Facility)	Severity of Harm/Consequences		
	Slight Harm	**Moderate Harm**	**Extreme Harm**
Very Unlikely	Very Low Risk	Very Low Risk	High Risk
Unlikely	Very Low Risk	Medium Risk	Very High Risk
Likely	Low Risk	Medium Risk	Very High Risk
Very Likely	Low Risk	High Risk	Very High Risk

Definitions

Likelihood of Harm Categories:
-Very Unlikely: Will not occur except in rare instances under certain conditions
-Unlikely: Typically would not occur
-Likely: May occur on a regular basis
-Very Likely: Will occur in most instances

Severity of Harm Categories:
-Slight harm: Only first aid required
-Moderate harm: Injury or illness resulting in inability to work for a short period of time
-Extreme harm: Death or serious injury or illness resulting in inability to work indefinitely

JOB SAFETY ANALYSIS

6.02 TASK HAZARD ANALYSIS (THA) FORM

THA Title or Work Activity:	Division:	Project #:	THA ID#:	Date:	Revised Date:
DIRECT PUSH SAMPLING	ENV	2240513			

Person Preparing THA:	Position / Title:	Person Assisting with THA:	Position / Title:

Reviewer w/ Relevant Task Experience	Position / Title:	Safety Manager Sign off for High Risk or Very High Risk THAs	Position / Title:

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☐ HARD HAT	☐ AIR PURIFYING RESPIRATOR
☐ SAFETY GLASSES	☐ FACE SHIELD (WIRE MESH FOR DEBRIS, POLYCARBONATE IF MATERIAL REQUIRES SPASH PROTECTION)
☐ GLOVES	☐ HEARING PROTECTION
☐ SAFETY SHOES	☐ EYE WASH
☐ HIGH VIS CLOTHING	Other:

Materials, Equipment &Tools Needed

☐ Kevlar Chaps ☐ Kevlar Gloves ☐ Wire mesh face shield ☐ Back laced, steel protected boots

SEQUENCE OF STEPS	POTENTIAL HAZARDS	Recommended Control Measures/PPE/ Training
1. Load tools and travel to site	1a. Strains 1b. Pinches 1c. Traffic Accidents 1d. Striking or crushing from loose or shifting loads	1a. Use proper lifting techniques. 1b. Wear gloves. 1c. Check brakes, lights, mirrors, and clear windows on drill rig and support trucks. Check for safety flairs, triangles, fire extinguisher, and first aid kit in vehicles. Drive defensively. 1d. Secure loads with ratchet tie down straps, chain binders or other appropriate means.
2. Site set up	2a. Hazardous site conditions from other's activities 2b. Traffic, getting hit by public, drill rig or support vehicles. 2c. Slips, trips, and falls from obstacles restricting movement around rig.	2a. Review work scope with client. Conduct site reconnaissance by walking site to become familiar with visible utilities, non-NYEG Drilling workers and operations, identify methods of ingress and egress for work and for emergencies, note weather conditions and forecast, anticipate site changes due to retail customer activities, shift changes, deliveries, etc. Conduct Safe Performance Self Assessment (SPSA) for drill location and tool and material lay down areas. 2b.Wear highly visible clothing, set up work zone suitable to site conditions (i.e. traffic cones, caution tape, vehicle placement). Follow traffic control plan, if required. Use spotter standing to side of vehicle (not behind) when backing. 2c. Maintain good housekeeping around rig and in work zone. Use equipment racks on rig and store tools and supplies neatly away from borehole and moving parts. Use proper lifting techniques - lift with legs, straight back, do not twist while lifting heavy loads.
3. Borehole set up	3a. Traffic, getting hit by public, drill rig, or support vehicles 3b. Tripping over on uneven terrain 3c. Electrocution from overhead power lines 3d. Explosion, electrocution, utility damage from underground utilities	3a. Wear highly visible clothing, set up work zone suitable to site conditions (i.e. traffic cones, caution tape, vehicle placement). Follow traffic control plan , if required. Use spotter standing to side of rig (not behind) when backing drill rig. Confirm proper operation of back-up alarm. Position drill rig and support vehicles to shield borehole and work zone from on-site traffic. 3b. Choose level, open areas to drill whenever possible. Use jackets and proper blocking to level rig. 3c. Avoid borehole locations near overhead lines, if possible. Do not move drill rig with tower up. Maintain distance of at least 30 feet from overhead power lines. 3d. Confirm local "One Call" or other appropriate locaters have been called (call Bonnie, Lawrie or Project Manager if necessary) and have responded to mark-out requests. Identify utility markings near boring, if appropriate. Check for signs of buried utilities including pavement patches, gas and water meters, manholes, vertical conduit or vents on building or utility poles, etc.
4. Connecting drill tools to drive head or other tools	4a. Pinching, crushing, striking	4a. Wear gloves when connecting tools. Keep hands clear of joints when aligning drill tools for connection. If joining tools requires operation of winch or feed controls, have 2 workers present: one to

JOB SAFETY ANALYSIS

		operate controls and one to align tools. One person should not operate controls and join tolls simultaneously.
5. Advancing percussion tools, (driving sampler, driving casing, direct push hammering)	5a. Pinching, crushing, striking 5b. Hearing loss	5a. Keep hands clear of pinch points and joints. Maintain percussion force in-line with hammer and tool string (minimize bending of tool string or driving at an angle). 5b. Wear appropriate hearing protection (i.e. ear plugs and/or ear muffs)
6. Collecting soil samples / Removal of and opening acetate sleeves from sampler	6a. House-keeping 6b. Cuts 6c. Muscle/Joint strain	6a. Maintain your work area. Keep walkways clear. Pick up tools. Drill spoils should be kept out of walkways and traffic areas. 6b. Use appropriate liner cutter to open liners. Place liner in wooden or metal liner cutting holder. Never cut toward yourself. 6c. Use caution in removing liners from samplers. Use vise or similar device to hold sample while extruding liner.
7. Down-hole tool removal	7a. Striking from recoil of pulling cables, ropes, or drive tools	7a. Have operator at controls at all times when tool string is under a load. Use rod clamp, vice, or slide ring to support loads. Minimize time that objects are suspended above ground or secure supporting surface. Minimize slippage by using proper tools for material being lifted. Lift straight up using safety hook or hoisting plug whenever possible. Remove drill tools in 5 ft. sections, or less. Stay clear of strained winch cables or drive shafts. Never place body between pulling force and load.
8. Well construction	Pinch point	Watch hands, don't pinch between well casing and drill casing/auger while installing
	Inhalation of silica dust from sand, bentonite or concrete	Avoid dust in breathing zone and work up wind. Wear dust mask if dust cannot be controlled.
	Lacerations to hands while opening bagged materials	Open bags of dry materials carefully using appropriate tool, cut away from body.
	Strains from carrying bagged material	Use proper lifting techniques and good body position while lifting/carrying/holding bagged material. Use mechanical means to lift if available.
7. Drum handling	Pinch points	Position hands/fingers to avoid pinching/smashing/crushing when closing drum rings.
	Strains from moving heavy drums	Do not lift or move heavy containers with out assistance.
		Use proper bending/lifting techniques by lifting with arms and legs and not with back
		If possible, use powered lift truck, drum cart, or other mechanical means

Very Likely	Low Risk	High Risk	Very High Risk

Definitions

Likelihood of Harm Categories: -Very Unlikely: Will not occur except in rare instances under certain conditions -Unlikely: Typically would not occur -Likely: May occur on a regular basis -Very Likely: Will occur in most instances	**Severity of Harm Categories:** -Slight harm: Only first aid required -Moderate harm: Injury or illness resulting in inability to work for a short period of time -Extreme harm: Death or serious injury or illness resulting in inability to work indefinitely

6.02 TASK HAZARD ANALYSIS (THA) FORM

THA Title or Work Activity:	Division:	Project #:	THA ID#:	Revision Date:	Risk Code:
Drilling/Well Construction	Enivronmental	2240856		1/24/2024	Medium Risk

Person Preparing THA:	Position / Title:	Person Assisting with THA:	Position / Title:
Zach Andreasen	Environmental Manager		

Reviewer w/ Relevant Task Experience	Position / Title:	Safety Manager Sign off for High Risk or Very High Risk THAs	Position / Title:

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☑ HARD HAT	☐ AIR PURIFYING RESPIRATOR
☑ SAFETY GLASSES	☐ FACE SHIELD (WIRE MESH FOR DEBRIS, POLYCARBONATE IF MATERIAL REQUIRES SPASH PROTECTION)
☑ GLOVES	☑ HEARING PROTECTION
☑ SAFETY SHOES	☑ EYE WASH
☑ HIGH VIS CLOTHING	Other:

Materials, Equipment &Tools Needed

☐ Kevlar Chaps ☐ Kevlar Gloves ☐ Wire mesh face shield ☐ Back laced, steel protected boots

SEQUENCE OF STEPS	POTENTIAL HAZARDS	Recommended Control Measures/PPE/ Training
1. Load tools and travel to site	Strains	Use proper lifting techniques.
	Pinches	Wear leather work gloves
	Traffic Accidents	Check brakes, lights, mirrors and clean windows on drill rig and support trucks. Check for safety flairs, triangles, fire extinguisher, and first aid kit in vehicles. Drive defensively.
	Striking or crushing from loose or shifting loads	Secure loads with ratchet tie down straps. chain binders or other appropriate means.
2. Site set-up	Hazardous site conditions from other's activities	Review work scope with client. Conduct site reconnaissance by walking site to become familiar with visible utilities, non-LaBella workers and operations, identify methods of ingress and egress for work and for emergencies, note weather conditions and forecast, anticipate site changes due to retail customer activities, shift changes, deliveries, etc.
	Equipment failure, employee incident/accident	Conduct Daily Rig Inspection
	Traffic, getting hit by public, drill rig or support vehicles	Wear snug, highly visible clothing, set up work zone suitable to site conditions (i.e. traffic cones, caution tape, vehicle placement). Follow traffic control plan, if required. Use spotter standing to side of vehicle (not behind) when backing.
	Slips, trips and falls from obstacles restricting movement around rig	Maintain good housekeeping around rig and in work zone. Use equipment racks on rig and store tools and supplies neatly away from borehole and moving parts. Leave excess materials on support vehicle. Place empty material bags in trash bag. Use proper lifting techniques - lift with legs, straight back, do not twist while lifting heavy loads. As needed use sand or salt on work surfaces to improve traction and minimize potential for slips.
2. Site set-up (continued)	Fire	At least one 20-pound fire extinguisher is on site. Fuel can only be in approved safety cans. Fuel may only be added to non-operating equipment. Whenever possible allow equipment to cool before refueling. * Fire extinguisher must be directly adjacent to work area for immediate access as needed.

3. Drill rig set up	Traffic, getting hit by public, drill rig or support vehicles	Wear highly visible clothing, set up work zone suitable to site conditions (i.e. traffic cones, caution tape, vehicle placement). Follow traffic control plan, if required. Use spotter standing to side of rig (not behind) when backing drill rig. Confirm proper operation of back-up alarm. Position drill rig and support vehicles to shield borehole and work zone from on-site traffic.
	Tripping over on uneven terrain	Choose level, open areas to drill whenever possible. Use jacks and proper blocking to level rig.
	Electrocution from overhead power lines	Avoid borehole locations near overhead lines, if possible. Do not move drill rig with tower up. Maintain distance of at least 20 feet from overhead power lines.
	Explosion, electrocution, utility damage from underground utilities	Confirm local "One Call" or other appropriate locators have been called (call Project Manager if necessary) and have responded to mark-out requests. Identify utility markings near boring, if appropriate. Check for signs of buried utilities including pavement patches, gas and water meters, manhole, vertical conduit or vent on buildings or utility poles, etc.
	Backing up/collision	Make all backing meneuvers slowly and cautiously
		Use spotter when moving, especially when backing up.
	Rig roll over	Do not move rig with mast raised.
		Cross all hills and obstructions head on.
		Set outriggers on solid surface or jack pads prior to raising mast.
	Contact with electric lines and other overhead obstacles	Position rig to avoid overhead utility lines by distance defined by voltage and local regulations
		Use a spotter when raising mast to confirm clearance of overhead lines and obstacles.
4. Advancing and adding rotating tools (augers, roller bit, spun casing, core barrel...)	Pinching, striking, crushing from rotating drill string	Wear gloves when connecting tools. Keep hands from under joints when aligning drill tools for connection. If joining tools requires operation of winch or feed controls, have 2 workers present: one to operate controls and one to align tools. One person should not operate controls and join tools simultaneously.
		All drilling personnel must know location of kill switch. Test prior to advancing first boring.
		Do not touch moving drill string or drive parts.
		Wear tight fitting clothes to avoid catching on moving parts.
		Be sure unused tools (especially chains, cables, and ropes) are secured to minimize shifting, falling or entanglement in moving parts due to vibrations from drill rig.
	Striking from suspended, swinging or dropped tools	Communicate and stay in sight of helper/driller when using winch. Clear path between tool racks or lay down area before using winch to lift tools.
	Splashing, striking from high pressure fluids or debris	Check conditions of hydraulic lines, water hoses, and pipe joints before and during use.
		Observe pressure gauges and return flow where applicable.
		Use whip checks on high pressure manual connections.
		Use wash "T" or diverter to minimize spray of soil or rock cuttings exiting from top of boring.
5. Down hole tool removal	Faulty equipment	Inspect rope/cable/rod for wear, fraying, oils and moisture prior to use, do not use if faulty until repaired or replaced
	Striking from recoil of pulling cables, ropes or drive tools	Do not wrap rope or cable around any part of the hand or body
		Have operator at controls at all times when tool string is under a load.

		Use auger fork, vice, or slide ring to support loads.
		Lift straight up using clevis or hoisting plug whenever possible (i.e. no J-hooks through auger bolt holes).
		Stay clear of strained winch cables or drive shafts.
		Never place body between pulling force and load.
6. Well construction	Pinch point	Watch hands, don't pinch between well casing and drill casing/auger while installing
	Inhalation of silica dust from sand, bentonite or concrete	Avoid dust in breathing zone and work up wind. Wear dust mask if dust cannot be controlled.
	Lacerations to hands while opening bagged materials	Open bags of dry materials carefully using appropriate tool, cut away from body.
	Strains from carrying bagged material	Use proper lifting techniques and good body position while lifting/carrying/holding bagged material. Use mechanical means to lift if available.
7. Drum handling	Pinch points	Position hands/fingers to avoid pinching/smashing/crushing when closing drum rings.
	Strains from moving heavy drums	Do not lift or move heavy containers with out assistance.
		Use proper bending/lifting techniques by lifting with arms and legs and not with back
		If possible, use powered lift truck, drum cart, or other mechanical means
On-site edits:		

RISK ASSESSMENT CODES

Likelihood of Harm (People, Environment, Facility)	**Severity of Harm/Consequences** (People, Environment, Facility, Supply Chain Disruption, Brand Impact)		
	Slight Harm	**Moderate Harm**	**Extreme Harm**
Very Unlikely	Very Low Risk	Very Low Risk	High Risk
Unlikely	Very Low Risk	Medium Risk	Very High Risk
Likely	Low Risk	Medium Risk	Very High Risk
Very Likely	Low Risk	High Risk	Very High Risk

Definitions

Likelihood of Harm Categories: -Very Unlikely: Will not occur except in rare instances under certain conditions -Unlikely: Typically would not occur -Likely: May occur on a regular basis -Very Likely: Will occur in most instances	**Severity of Harm Categories:** -Slight harm: Only first aid required -Moderate harm: Injury or illness resulting in inability to work for a short period of time -Extreme harm: Death or serious injury or illness resulting in inability to work indefinitely

JOB SAFETY ANALYSIS

6.02 TASK HAZARD ANALYSIS (THA) FORM

THA Title or Work Activity:	Division:	Project #:	THA ID#:	Date:	Revised Date:
55 GALLON DRUM HANDLING					

Person Preparing THA:	Position / Title:	Person Assisting with THA:	Position / Title:

Reviewer w/ Relevant Task Experience	Position / Title:	Safety Manager Sign off for High Risk or Very High Risk THAs	Position / Title:

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☐ HARD HAT	☐ AIR PURIFYING RESPIRATOR
☐ SAFETY GLASSES	☐ FACE SHIELD (WIRE MESH FOR DEBRIS, POLYCARBONATE IF MATERIAL REQUIRES SPASH PROTECTION)
☐ GLOVES	☐ HEARING PROTECTION
☐ SAFETY SHOES	☐ EYE WASH
☐ HIGH VIS CLOTHING	Other:

Materials, Equipment &Tools Needed

☐ Kevlar Chaps ☐ Kevlar Gloves ☐ Wire mesh face shield ☐ Back laced, steel protected boots

SEQUENCE OF STEPS	POTENTIAL HAZARDS	Recommended Control Measures/PPE/ Training
1. Loading and Unloading EMPTY DRUMS	1a. Pinches from metal to metal contact 1b. Strains from improper lifting technique or moving too much weight without help 1c. Drums rolling off truck or trailer	1a. Wear leather or PVC gloves and keep body parts clear of pinch points. Never put your hands under the drum where it contacts the ground. 1b. Use proper lifting technique. Bend your knees, keep your back straight up and down, and lift with your legs. If load is more than 50 lbs. or is awkward to handle, get another person to help. If a lift gate is available, use it to load the drums on the truck. 1c. Keep drums secure using the appropriate sized strap until needed/after removing straps store drums in vertical position. Put strap away so that it does not become a trip hazard.
Opening Empty Drums for Use	2a. Pinches from wrench and lid contact 2b. Uncontrolled air pressure releasing debris or lid causing bodily harm	2a. Wear leather or PVC gloves/use the correct wrench or socket and ratchet to open drums. Never use a worn or malfunctioning socket, ratchet, or wrench. If possible, a socket and ratchet is the preferred tool. 2b. Keep clear of drum lid while opening. Wear safety glasses and all listed PPE. Keep adequate pressure on drum lid to keep lid from releasing air pressure too quickly.
3. Filling Drum - liquids or solids	3a. Trip hazards from drum lid, ring and tools laying on ground 3b. Splashing contaminated spoils on the body 3c. Drum weight too heavy to move safely	3a. Stage drum and open lid in safe area behind rig or work area. Keep control of the immediate area where the drums are being handled and do not allow other to enter your work area without permission. Communicate to others that there are tools laying on the ground. Do not leave tools and drums that are being filled unattended. Replace the lid, lay the ring on top of the lid, and pick up your tools before leaving the area. 3b. Lower materials into drum to minimize splashing/wear gloves and safety glasses. If the material can not be loaded into drum without containing the splash hazard, a face shield and outer garment must be worn. 3c. Allow for expansion - do not fill drum more than 2/3 full.
4. Refastening drum lid	4a. Striking with hammer creating pinch point 4b. Pinches from ring and lid contact 4c. Container leaking from lid not being fastened correctly	4a. Wear gloves, use caution while hammering the retaining ring into place. Keep body parts clear where the lid, ring, and hammer contact each other. 4b. Keep fingers clear of retaining ring while fastening/wear gloves. 4c. Ensure gasket is in place/fasten lid completely ensuring retaining ring is in place all the way around drum.

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5. Moving and Staging full drums with drum dolly	5a. Rough surfaces that could cause uncontrolled movement of drum 5b. Pinches from drum falling off dolly 5c. Strains from bad body mechanics or too heavy of a load	5a. Ensure drum dolly has the correct wheels for the surface it is being used on - pneumatic tires for grass and gravel/solid tires for concrete and asphalt. 5b. Ensure drum is correctly fastened to the dolly. 5c. Use proper lifting technique as described in part 1b. and use buddy system for tipping drums onto dolly and transporting. If drums are more than 2/3 full, transfer materials to an additional drum until both are less than 2/3 full.
6. Moving and staging drums with vehicle lift gate	6a. Pinches from metal to metal contact on lift gate 6b. Strains from a heavy load 6c. Uncontrolled rolling of drums	6a. Keep clear of moving parts on lift gate, do not extend between lift gate and vehicle and lift gate and ground surface, wear safety toed shoes. Keep hands clear from between multiple drums or drums and vehicle. Keep all body parts away from areas that have the potential for metal to metal contact. 6b. While moving drums, use the buddy system and proper lifting technique described in step 1b. If available, use mechanical means first to move drums. 6c. Properly secure drums while transporting. Use the appropriate sized strap that is rated for the load size.
7. Moving and staging drums with vehicle crane	7a. Dropping drum causing bodily harm or contents release 7b. Hoist swinging under load	7a. Use the proper drum hoist attachment, not a chain or strap. Ensure winch cable is in good condition and inspected before each use. Stand clear of drums while elevated. Have an appropriate sized spill kit available to minimize content release. 7b. Ensure vehicle is level before lifting drum and that swing brake is in proper working order. Do not stand between drum and vehicle. Use a tag line to control placement of drum.
On-site edits:		

RISK ASSESSMENT CODES

Likelihood of Harm (People, Environment, Facility)	**Severity of Harm/Consequences** (People, Environment, Facility, Supply Chain Disruption, Brand Impact)		
	Slight Harm	**Moderate Harm**	**Extreme Harm**
Very Unlikely	Very Low Risk	Very Low Risk	High Risk
Unlikely	Very Low Risk	Medium Risk	Very High Risk
Likely	Low Risk	Medium Risk	Very High Risk
Very Likely	Low Risk	High Risk	Very High Risk

Definitions

Likelihood of Harm Categories: -Very Unlikely: Will not occur except in rare instances under certain conditions -Unlikely: Typically would not occur -Likely: May occur on a regular basis -Very Likely: Will occur in most instances	**Severity of Harm Categories:** -Slight harm: Only first aid required -Moderate harm: Injury or illness resulting in inability to work for a short period of time -Extreme harm: Death or serious injury or illness resulting in inability to work indefinitely

JOB SAFETY ANALYSIS

6.02 TASK HAZARD ANALYSIS (THA) FORM

THA Title or Work Activity:	Division:	Project #:	THA ID#:	Date:	Revised Date:
EQUIPMENT DECONTAMINATION / PRESSURE WASHER	Environmental				

Person Preparing THA:	Position / Title:	Person Assisting with THA:	Position / Title:

Reviewer w/ Relevant Task Experience	Position / Title:	Safety Manager Sign off for High Risk or Very High Risk THAs	Position / Title:

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☑ HARD HAT	☐ AIR PURIFYING RESPIRATOR
☑ SAFETY GLASSES	☑ FACE SHIELD (WIRE MESH FOR DEBRIS, POLYCARBONATE IF MATERIAL REQUIRES SPASH PROTECTION)
☑ GLOVES	☑ HEARING PROTECTION
☑ SAFETY SHOES	☑ EYE WASH
☑ HIGH VIS CLOTHING	Other: Tyvek suit

Materials, Equipment &Tools Needed

☐ Kevlar Chaps ☐ Kevlar Gloves ☐ Wire mesh face shield ☐ Back laced, steel protected boots

SEQUENCE OF STEPS	POTENTIAL HAZARDS	Recommended Control Measures/PPE/ Training
1. Decon site set up	1a. Slips, trips and falls	1a. Keep work area clear of debris. Organize site to minimize walking distance. If possible, avoid creating wet walking services that might become slippery. Ensure equipment is not leaking water.
	1b. Improper lifting / muscle strain	1b. Lift loads using legs, keeping back straight, and get help with awkward or heavy loads.
2. Building a decon pad	2a. Pinch points and abrasion	2a. Wear leather or PVC work gloves to prevent hand injuries.
	2b. Back strain	2b. Never "Hunch Over" with legs straight while hammering nails or setting screws. Keep legs bent and back upright as much as possible. Move boards longer than 6 feet using one person at each end. Move only one board at a time.
	2c. Laceration	2c. Cut with a motion directed away from the body. Push the knife, never pull it toward you. Keep hands clear of cutting area. **A "SAFE ZONE" of 6 inches will be observed around the hand working with the knife blade. Keep all other body parts out of the "SAFE ZONE".**
	2d. Contamination leak	2d. Build pas on suitable surface (concrete or pavement if available) with polyethylene sheeting. Inspect pad daily for leaks and make appropriate repairs.
3. Pressure washer operation	3a. Chemical exposure	3a. Wear all appropriate PPE as directed above. Wear outer boot covers if water is splashed during pressure washer use. If possible, use engineering controls (i.e. shielding) to lower the risk of exposure.
	3b. High pressure / noise exposure	3b. Keep hands and clothing an arms length away from the discharge opening of the nozzle. Ensure all manufactured guards in place. Defective equipment must be repaired or replaced prior to use. *Wear hearing protection*.
	3c. Cross contamination	3c. All wastewater and waste materials including PPE, generated onsite will be contained, disposed, dispersed, or left on site according to site specific safety procedures.
	3d. Hot surfaces, burns to skin	3d. Do not touch pressure washer during operation. Do not half equipment being cleaned. Always work so that high pressure steam spray is directed away from the body and other personnel.
	3e. Repetitive motion	3e. Alternate hands frequently during long periods of use. Rotate personnel periodically.
	3f. Splash	3f. A face shield must be worn in addition to safety glasses. Long sleeve shirts and pants must be worn. If chemical exposure is present, a non-permeable outer layer of clothing will be worn (Tyveks, rubber apron and sleeves, Poly rain gear, etc.).
On-site edits:		

RISK ASSESSMENT CODES

Likelihood of Harm (People, Environment, Facility)	Severity of Harm/Consequences (People, Environment, Facility, Supply Chain Disruption, Brand Impact)

JOB SAFETY ANALYSIS

(People, Environment, Facility)	**Slight Harm**	**Moderate Harm**	**Extreme Harm**
Very Unlikely	Very Low Risk	Very Low Risk	High Risk
Unlikely	Very Low Risk	Medium Risk	Very High Risk
Likely	Low Risk	Medium Risk	Very High Risk
Very Likely	Low Risk	High Risk	Very High Risk

Definitions

Likelihood of Harm Categories:
-Very Unlikely: Will not occur except in rare instances under certain conditions
-Unlikely: Typically would not occur
-Likely: May occur on a regular basis
-Very Likely: Will occur in most instances

Severity of Harm Categories:
-Slight harm: Only first aid required
-Moderate harm: Injury or illness resulting in inability to work for a short period of time
-Extreme harm: Death or serious injury or illness resulting in inability to work indefinitely

JOB SAFETY ANALYSIS

6.02 TASK HAZARD ANALYSIS (THA) FORM

THA Title or Work Activity:	Division:	Project #:	THA ID#:	Date:	Revised Date:
EXCEPTION ACTIVITIES	Environmental				

Person Preparing THA:	Position / Title:	Person Assisting with THA:	Position / Title:

Reviewer w/ Relevant Task Experience	Position / Title:	Safety Manager Sign off for High Risk or Very High Risk THAs	Position / Title:

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☑ HARD HAT	☐ AIR PURIFYING RESPIRATOR
☑ SAFETY GLASSES	☐ FACE SHIELD (WIRE MESH FOR DEBRIS, POLYCARBONATE IF MATERIAL REQUIRES SPASH PROTECTION)
☐ GLOVES	☑ HEARING PROTECTION
☑ SAFETY SHOES	☐ EYE WASH
☑ HIGH VIS CLOTHING	Other:

Materials, Equipment &Tools Needed

☐ Kevlar Chaps ☐ Kevlar Gloves ☐ Wire mesh face shield ☐ Back laced, steel protected boots

SEQUENCE OF STEPS	POTENTIAL HAZARDS	Recommended Control Measures/PPE/ Training
1. Mobilize to trench/ excavation location, establish work zone for staff and equipment	1a. cuts or fractures to the arms and other body parts that could result from the contact with equipment 1b. Damage equipment that could from excavation equipment operating to close to the edge of the excavation	1a. Check excavation locations for underground and overhead utilities follow PEC' Excavation Protocol or client-specific protocol. -Observe equipment set up, ensuring no contact with overhead obstacles. -The excavator must be positioned on level terrain prior to any excavation activities. -Do not position outriggers on landscaping and verify that they are not directly above an underground utility if on grass. -Excavator leveling is required. -Remind everyone never to leave hand tools on/near equipment. 1b. If excavator needs to work inside the opened excavation, insure that side slope and access ramp are constructed and approved by the onsite excavation competent person. -Excavator shall not be left unattended inside opened excavation. Note: If the mark out locations are not visible (i.e. covered by snow, debris, vehicles, washed away/faded, etc.), stop work and contact the project manager or senior office manager.
2 Begin Excavating Soil	2a. Whole body injury from the contact with or caught by machinery 2b. Skin or eye injury from exposure to site contaminants 2c. Burns from a Fire or explosion from the ignition of a flammable atmosphere inside excavation 2d. Body injury from trench collapse 2e. Arm and or hand fractures and contusions from tripping and falling from walking or working on uneven surfaces 2f. Fractures or muscular injuries from falls from ladder. 2g. Personal injury (SIF) due to the positioning of site vehicles (i.e., excavation machinery and dump trucks)	1a. Stay at least a 20 feet radius of center of moving equipment and at least 5 feet away from moving or rotating parts (e.g., excavator bucket, equipment tracks/wheels, vehicle drive shaft, etc.). 1b. Monitor air in work area in the breathing zone of workers and third party nearby accessed areas for elevated vapors during digging activities as required by the H&S plan. -Record any air monitoring data as required for the project's H&S Plan. -If visible airborne soil (particulate) results within the immediate work area, measures must be taken to limit or control emissions. The measures could include, but not be limited to wetting the area, using surfactant, etc. -In addition, if off-site migration results or is possible, a community air monitoring program may be necessary. 1c. Monitor excavation with an LEL meter. -If combustible gas levels exceed meter levels of 20 % of the LEL, digging activities should be halted and excavation and vapor control measures implemented that would include but not be limited to foam, surfactant, or similar material application. 1d. Excavated soils should be stored on site as indicated in the excavation plan. No personnel shall be permitted to enter a trench/excavation with the presence of standing water/product at the bottom. -Constantly monitor for the signs of weakening sidewalls, evacuate the area if an unstable condition develops. -Typically soil is stored on poly and covered with poly. - Keep soils and equipment at least 2 feet back from the excavation/trench. -If excavator needs to work inside the opened excavation, insure that the required side slope and access ramp are made. -Excavator shall not be left unattended inside opened excavation. -Ensure that any structures that may be supported by soil being removed (e.g., curbing, buildings, etc.) are supported or braced. 1e. Access to the trench/excavation shall be restricted if deeper than 4 feet. -If work scope requires personnel to enter a trench/excavation greater than 4 feet, specific approval must be obtained from corporate H&S prior to initiating field activities. -Under NO circumstances will a PEC employee and/or sub-contractor be allowed to enter an excavation greater than 4 feet in depth without the prior corporate H&S approval. 1f. Ladders shall be placed in the trench/excavation if the trench/excavation is 4 feet deep. These shall

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C. Working in a Trench/ Excavation	1a. Whole Body injury from contact with fill material 1b. Whole body Injury from contact with machinery	1a. Personnel are not permitted in trenches/excavations during the backfill process. -Remove all tools and equipment from the trench/excavation prior to replacing soils/pea gravel. 1b. Stay at least a 20 feet radius of center of moving equipment and at least 5 feet away from moving or rotating parts (e.g., excavator bucket, equipment tracks/wheels, vehicle drive shaft, etc.).
On-site edits:		

RISK ASSESSMENT CODES

Likelihood of Harm (People, Environment, Facility)	**Severity of Harm/Consequences** (People, Environment, Facility, Supply Chain Disruption, Brand Impact)		
	Slight Harm	**Moderate Harm**	**Extreme Harm**
Very Unlikely	Very Low Risk	Very Low Risk	High Risk
Unlikely	Very Low Risk	Medium Risk	Very High Risk
Likely	Low Risk	Medium Risk	Very High Risk
Very Likely	Low Risk	High Risk	Very High Risk

Definitions

Likelihood of Harm Categories: -Very Unlikely: Will not occur except in rare instances under certain conditions -Unlikely: Typically would not occur -Likely: May occur on a regular basis -Very Likely: Will occur in most instances	**Severity of Harm Categories:** -Slight harm: Only first aid required -Moderate harm: Injury or illness resulting in inability to work for a short period of time -Extreme harm: Death or serious injury or illness resulting in inability to work indefinitely

JOB SAFETY ANALYSIS

6.02 TASK HAZARD ANALYSIS (THA) FORM

THA Title or Work Activity:	Division:	Project #:	THA ID#:	Date:	Revised Date:
HEAVY EQUIPMENT OPERATIONS					

Person Preparing THA:	Position / Title:	Person Assisting with THA:	Position / Title:

Reviewer w/ Relevant Task Experience	Position / Title:	Safety Manager Sign off for High Risk or Very High Risk THAs	Position / Title:

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

☑ HARD HAT	☐ AIR PURIFYING RESPIRATOR
☑ SAFETY GLASSES	☐ FACE SHIELD (WIRE MESH FOR DEBRIS, POLYCARBONATE IF MATERIAL REQUIRES SPASH PROTECTION)
☑ GLOVES	☑ HEARING PROTECTION
☑ SAFETY SHOES	☐ EYE WASH
☑ HIGH VIS CLOTHING	Other:

Materials, Equipment &Tools Needed

☐ Kevlar Chaps ☐ Kevlar Gloves ☐ Wire mesh face shield ☐ Back laced, steel protected boots

SEQUENCE OF STEPS	POTENTIAL HAZARDS	Recommended Control Measures/PPE/ Training
A. Equipment Inspection 1A. Inspect heavy equipment Note: *Complete EQUIPMENT INSPECTION FORM.*	1A. Leg/ arm/ hand injury (fracture or contusion) that could result from tripping and falling while walking around the equipment -Cuts to the hands that could result from testing switches and levers. -Blunt force injury to arms/ legs/ torso that could result being struck by equipment that is operated in an unsafe manner or by inexperienced operator	1A. Inspect equipment for leaks, damaged components, integrity of tracks/tires prior to the start of work. Visually inspect walkway around skid steer prior to inspection to evaluate ground surface for trip hazards such as tools, uneven pavement, rocks. Clear pathway before traversing. -Check the operation of all safety/kill switches and safety equipment. Inspect levers and switches for burrs. Wear cut resistant gloves and leather gloves when inspecting equipment. -All personnel operating heavy equipment must have been previously approved. -Heavy Equipment must be operated per the manufacturer's requirements and will not make any modifications to the equipment. -Confirm that back up alarms work during inspection.
B. Driving and Operating Activities 1B. Heavy machinery operation	1B. Blunt force injury (fractures or contusions) to arms/ torso/ legs that could result from heavy equipment contact with objects/ personnel -Amputation/ cuts that could result to the hands, arms or legs from placement of body parts under moving equipment parts -Burns from a fire/explosion that could result from flammable fuel vapor with a hot engine (ignition source). -Burns from a fire/explosion that could result from flammable fuel vapor with a hot engine (ignition source).	1B. Unauthorized personnel must not approach within 15 feet of an operating piece of equipment at any time. -Operator should wear seat belt while seated and observe blind spot locations prior to starting/moving equipment. Test brakes, shut off or kill switch, steering and other controls. -The load being carried must not interfere with the operator's line of sight. -Spotters will be used when the heavy equipment is operating in tight quarters/ going around corners. Ensure hand signals are communicated prior to using spotter. -Drive straight up and straight down slopes. Back down inclines when bucket is loaded, go forward up include when bucket is empty. Avoid turns on slope and do not drive on slope exceeding 20% incline. -Set parking brake and turn off engine when not in use. - Do not place any part of your body between vehicle parts (i.e., tailgate and bed of dump truck, stabilizing arms, etc.). -Equipment must be turned off and allow to cool before refueling -An ABC-rated fire extinguisher must be 10 feet from the equipment being refueled.
2. Damage to utilities	2. Electrocution/ shock/ burns that could result from contact with energized electrical overhead lines	2. Perform an SPSA to identify overhead electrical power lines. -Do not approach within 10-feet of an overhead electric power line. -Locate all sources of electricity to site parking lights, air compressor, vacuum, car wash, ID sign, and de-energize lines by using locks and tags or a tag at a minimum. Notify all affected employees on-site are notified of the de-energized condition.
4. Backing equipment	4a. Blunt force injury (fractures or contusions) to arms/ legs/ torso that could result from heavy equipment striking personnel.	4a. Always, use a spotter when backing up; unless a designated work area has been established and deemed clear of obstacles / personnel. -Utilize a spotter when entering/exiting heavily trafficked areas/roadways. -While loading vehicles, employ the use of a spotter to protect personnel working around heavy equipment. -Keep a distance of 15 feet away from the vehicle while acting as a spotter. -Keep eye contact with the operator at all times. -Discuss any hand or verbal signals with the operator prior to moving the equipment.

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C. Concrete Breaker 1C. Performing concrete breaking	1C. Debris/sparks - Heavy vibrations -Ergonomics/Awkward postures -Inhalation of Dust/Harmful Chemicals -Eye Injury -Noise hazards	1C. Alternate workers throughout the day if working with tool for 8 hours -Administrative control – switch every 15 to 20 minutes -Anti-vibration gloves, safety glasses/goggles, dust mask, and hearing protection -Water to keep dust down/comply with Table 1 -Keep proper footing and balance all timesWork in a well-ventilated area
On-site edits:		

RISK ASSESSMENT CODES

Likelihood of Harm (People, Environment, Facility)	**Severity of Harm/Consequences** (People, Environment, Facility, Supply Chain Disruption, Brand Impact)		
	Slight Harm	**Moderate Harm**	**Extreme Harm**
Very Unlikely	Very Low Risk	Very Low Risk	High Risk
Unlikely	Very Low Risk	Medium Risk	Very High Risk
Likely	Low Risk	Medium Risk	Very High Risk
Very Likely	Low Risk	High Risk	Very High Risk

Definitions

Likelihood of Harm Categories: -Very Unlikely: Will not occur except in rare instances under certain conditions -Unlikely: Typically would not occur -Likely: May occur on a regular basis -Very Likely: Will occur in most instances	**Severity of Harm Categories:** -Slight harm: Only first aid required -Moderate harm: Injury or illness resulting in inability to work for a short period of time -Extreme harm: Death or serious injury or illness resulting in inability to work indefinitely

APPENDIX C

Daily Tailgate Safety Meeting Form

6.08 PRE-JOB SAFETY TAILGATE/TOOLBOX MEETING FORM

Date		Time	
Location or Address		Temperature	
Project Number		Humidity	
Conducted by		Conditions	
Were all workers reminded that COVID is still prevalent and that appropriate measures should be taking to prevent infection of themselves and others?			Yes ☐ No ☐

911	**If 911 is unavailable at this location, please state the procedure for reporting emergencies** _____

List Safety Topic of Discussion and/or Any Specific Hazards for the Work Being Performed Today	
1	
2	
3	
4	
5	
6	
7	
List Control Measures for Each Specific Hazard Listed Above	
1	
2	
3	
4	
5	
6	
7	

PLEASE SIGN THE BACK OF THIS SHEET

The presenter and all attendees shall print and sign in the appropriate areas on the back of this sheet

By signing, you declare that you understand the information presented in today's meeting, and that you have had the opportunity to ask questions and to clarify any uncertainty regarding such information.

All Visitors and Contractors Must Print Their Company Name

Name	Signature	Company

APPENDIX 2

Community Air Monitoring Plan

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

APPENDIX 3

Quality Assurance Project Plan

Quality Assurance Project Plan

Location:

52 & 96 Falls Street
Rochester, New York

LaBella Project No. 2241859

April 17, 2024

LaBella
Powered by partnership.

300 State Street, Suite 201 | Rochester, NY 14614 | p 585-454-6110 | f 585-454-3066

Table of Contents

1.0 INTRODUCTION

LaBella's Quality Assurance Project Plan (QAPP) is an integral part of its approach to environmental investigations. By maintaining a rigorous Quality Control (QC) program, our firm is able to provide accurate and reliable data. This QAPP should be followed during implementation of environmental investigation and remediation projects and should serve as a basis for quality control methods to be implemented during field programs. Project-specific requirements may apply.

The QC program contains procedures which allow for the proper collection and evaluation of data and documents that QC procedures have been followed during field investigations. The QC program presents the methodology and measurement procedures used in collecting quality field data. This methodology includes the proper use of equipment, documentation of sample collection, and sample handling procedures.

Procedures used in the firm's QC program are compatible with federal, state, and local regulations, as well as, appropriate professional and technical standards.

This QC program includes the following:

- QC Objectives and Checks
- Field Equipment, Handling, and Calibration
- Sampling and Logging Techniques
- Sample Handling, Packaging, and Shipping
- Laboratory Requirements and Deliverables

It should be noted that project-specific work plans (e.g., Remedial Investigation Work Plans) may have project specific details that will differ from the procedures in this QC program. In such cases, the project-specific work plan should be followed (subsequent to regulatory approval).

The characteristics of major importance for the assessment of generated data are accuracy, precision, completeness, representativeness, and comparability. Application of these characteristics to specific projects is addressed later in this document. The characteristics are defined below.

1.1 Accuracy

Accuracy is the degree of agreement of a measurement or average of measurements with an accepted reference or "true" value and is a measure of bias in the system.

1.2 Precision

Precision is the degree of mutual agreement among individual measurements of a given parameter.

1.3 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected to be obtained under correct normal conditions.

1.4 Representativeness

Representativeness expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition

Careful choice and use of appropriate methods in the field will ensure that samples are representative. This is relatively easy with water or air samples since these components are homogeneously dispersed. In soil and sediment, contaminants are unlikely to be evenly distributed, and thus it is important for the sampler and analyst to exercise good judgment when removing a sample.

1.5 Comparability

Comparability expresses the confidence with which one data set can be compared to another. The data sets may be inter- or intra- laboratory.

2.0 MEASUREMENT OF DATA QUALITY

2.1 Accuracy

Accuracy of a particular analysis is measured by assessing its performance with "known" samples. These "knowns" take the form of EPA standard reference materials, or laboratory prepared solutions of target analytes spiked into a pure water or sample matrix. In the case of gas chromatography (GC) or GC/MS (mass spectrometry) analyses, solutions of surrogate compounds are used. These solutions can be spiked into every sample and are designed to mimic the behavior of target analytes without interfering with their determination.

In each case the recovery of the analyte is measured as a percentage, correcting for analytes known to be present in the original sample if necessary, as in the case of a matrix spike analysis. For EPA supplied known solutions, this recovery is compared to the published data that accompany the solution.

For the firm's prepared solutions, the recovery is compared to EPA-developed data or the firm's historical data as available. For surrogate compounds, recoveries are compared to EPA CLP acceptable recovery tables.

If recoveries do not meet required criteria, then the analytical data for the batch (or, in the case of surrogate compounds, for the individual sample) are considered potentially inaccurate. The analyst or his supervisor must initiate an investigation of the cause of the problem and take corrective action. This can include recalibration of the instrument, reanalysis of the QC sample, reanalysis of the samples in the batch, or flagging the data as suspect if the problems cannot be resolved. For highly contaminated samples, recovery of the matrix spike may depend on sample homogeneity. As a rule, analyses are not corrected for recovery of matrix spike or surrogate compounds.

2.2 Precision

Precision of a particular analysis is measured by assessing its performance with duplicate or replicate samples. Duplicate samples are pairs of samples taken in the field and transported to the laboratory as distinct samples. Their identity as duplicates is typically not known to the laboratory. For most purposes, precision is determined by the analysis of replicate pairs (i.e., two samples

prepared at the laboratory from one original sample). Often in replicate analysis the sample chosen for replication does not contain target analytes so that quantitation of precision is impossible. For EPA CLP analyses, replicate pairs of spiked samples, known as matrix spike/matrix spike duplicate samples, are used for precision studies. This has the advantage that two real positive values for a target analyte can be compared.

Precision is calculated in terms of Relative Percent Difference (RPD).

- Where X_1 and X_2 represent the individual values found for the target analyte in the two replicate analyses or in the matrix spike/matrix spike duplicate analyses.
- RPDs must be compared to the method RPD for the analysis. The analyst or his supervisor must investigate the cause of RPDs outside stated acceptance limits. This may include a visual inspection of the sample for non-homogeneity, analysis of check samples, etc. Follow-up action may include sample reanalysis or flagging of the data as suspect if problems cannot be resolved.
- During the data review and validation process, field duplicate RPDs are assessed as a measure of the total variability of both field sampling and laboratory analysis.

2.3 Completeness

Completeness for each parameter is calculated as follows:

- The firm's target value for completeness for all parameters is 100%. A completeness value of 95% will be considered acceptable. Incomplete results will be reported to the site managers. In planning the field sample collection, the site manager will plan to collect field duplicates from identified critical areas. This procedure should assure 100% completeness for these areas.

2.4 Representativeness

The characteristic of representativeness is not quantifiable. Subjective factors to be taken into account are as follows:

- The degree of homogeneity of a site;
- The degree of homogeneity of a sample taken from one point in a site; and
- The available information on which a sampling plan is based.

To maximize representativeness of results, sampling techniques and sample locations will be carefully chosen so that they provide laboratory samples representative of the site and the specific area. Within the laboratory, precautions are taken to extract from the sample bottle an aliquot representative of the whole sample. This includes premixing the sample and discarding pebbles from soil samples.

2.5 Comparability

Comparability of laboratory tests is ensured by utilizing only New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP)- certified laboratories. This certification is the basis for demonstrating proficiency in testing requirements. Using ELAP certified laboratories will result in consistency amongst analytical data within a specific project and across projects.

3.0 QUALITY CONTROL TARGETS

Target values for detection limit, percent spike recovery and percent "true" value of known check standards, and RPD of duplicates/replicates are included in the QCP, Analytical Procedures. Note that tabulated values are not always attainable. Instances may arise where high sample concentrations, non-homogeneity of samples, or matrix interferences preclude achievement of target detection limits or other quality control criteria. In such instances, the firm will report reasons for deviations from these detection limits or noncompliance with quality control criteria.

4.0 SOIL BORING ADVANCEMENT & MONITORING WELL INSTALLATION PROCEDURES

Soil and groundwater sampling shall be conducted in accordance with NYSDEC Division of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation dated May 3, 2010 and any Site-specific work plans.

Prior to drilling, all drill sites will be cleared with appropriate utility companies to avoid potential accidents relating to underground utilities. Utility drawings will be reviewed, if available.

4.1 Drilling Equipment and Techniques

Direct Push Geoprobe Advanced Borings:

Soil borings and monitoring wells will be advanced with a Geoprobe direct push sampling system. The use of direct push technology allows for rapid sampling, observation, and characterization of relatively shallow overburden soils. The Geoprobe utilizes a four to five-foot macrocore sampler, with disposable polyethylene sleeves. Soil cores will be retrieved in four or five-foot sections, and can be easily cut from the polyethylene sleeves for observation and sampling. The macrocore sampler will be decontaminated between boring locations using an alconox and water solution.

Prior to initiating drilling activities, the Macrocores, drive rods, and pertinent equipment, will be steam cleaned or washed with an alconox and water solution. This cleaning procedure will also be used between each boring. Throughout and after the cleaning processes, direct contact between the equipment and the ground surface will be avoided. Plastic sheeting and/or clean support structures (e.g., pallets, sawhorses) will be used.

Test borings will be advanced with 2-inch (or larger) inside diameter (ID) direct push Macrocore through overburden soils. Drilling fluids, other than potable water will not be allowed without special consideration and agreement from NYSDEC. The use of lubricants is also not allowed unless approved by the NYSDEC representative.

During the drilling, a properly calibrated photoionization detector (PID) will be used to screen soil cores retrieved from the Macrocores.

Direct Push Geoprobe advanced groundwater-monitoring wells typically utilize minimum 1.25-inch threaded flush joint PVC pipe with 0.010-in. slotted screen or pre-packed well screens. PVC piping used for risers and screens will conform to the requirements of ASTM-D 1785 Schedule 40 pipe.. All

materials used to construct the wells will be NSF/ASTM approved. Solvent PVC glue shall not be used at any time in the construction of the wells. The bottom of the screen shall be sealed with a treated cap or plug. No lead shot or lead wool is to be employed in sealing the bottom of the well or for sealant at any point in the well. Stainless steel wells or pre-packed PVC wells may be used if specified in the work plan and approved by the NYSDEC.

Hollow-Stem Auger Advanced Borings:

The drilling and installation of soil borings and monitoring wells will be performed using a rotary drill rig which will have sufficient capacity to perform 4 1/4-inch inside diameter (ID) hollow-stem auger drilling in the overburden, retrieve Macrocore or split-spoon samples, and perform necessary rock coring using NX, NQ, HQ or core barrel size as specified in the project-specific work plan. The borehole may be reamed up to 5 1/2-inch diameter prior to monitoring well installation as cased hole in the bedrock, or may be left as open bedrock hole, with regulatory concurrence. Equipment sizes and diameters may vary based on project-specific criteria. Any investigative derived waste generated during the advancement of soil borings and monitoring well installations will be containerized and characterized for proper disposal.

Prior to initiating drilling activities, the augers, rods, Macrocore, split spoons, and other pertinent equipment will be steam cleaned or washed with an alconox and water solution. This cleaning procedure will also be used between each boring. Steam cleaning activities will be performed in a designated on-site decontamination area. During and after the cleaning processes, direct contact between the equipment and the ground surface will be avoided. Plastic sheeting and/or clean support structures (e.g., pallets, sawhorses) will be used.
Test borings will be advanced with 4 1/4-inch (ID) hollow stem augers through overburden, and cored with a NX, NQ, HQ or core barrel size as specified in the project-specific work plan sized diamond core barrels in competent rock, driven by truck-, track-, or trailer-mounted drilling equipment. Alternative methods of drilling or equipment may be allowed or requested for project-specific criteria, but must be approved by the NYSDEC. Drilling fluids, other than water from a NYSDEC-approved source, will not be allowed without special consideration and agreement from NYSDEC. The use of lubricants is also not allowed unless approved by the NYSDEC representative.

During the drilling, a (PID) will be used to screen soils retrieved from the split spoons or Macrocores. In the event that headspace field screening is required to determine the presence of VOCs in soil samples, the following procedure will be utilized:

- Soils from core will be inserted into an airtight glass jar and/or disposable polyethylene bag, and the container will be sealed immediately
- After sealing the container, the soils will be shaken or kneaded for 10-15 seconds to release volatiles into the headspace of the sealed container
- The PID inlet will be inserted into the headspace of the airtight container to screen soil samples for VOCs

During the drilling, visual screening will be utilized to identify any Non-Aqueous Phase Liquid (NAPL) in the soil cores.

Where bedrock wells are required, test borings shall be advanced into rock with NX, NQ, HR (or similar) coring tools. Only water from an approved source shall be used in rock coring. The consultant shall monitor and record the petrology, core recovery, fractures, rate of advance, and water lost or produced in each test boring. The Rock Quality Determination (RQD) value shall be calculated for each 5-foot core. Each core shall be screened with a PID upon extraction. All core samples shall be retained and stored by the consultant in an approved wooden core box for a period

of not less than one year.

The method selected may be percussion or rotary drilling. The method and equipment selected must be capable of penetrating the bedrock at each well location to a depth required by the work plan.

Bedrock well installation will involve construction of a rock socket in the weathered bedrock. The socket will be drilled into the top of rock (typically 1-ft. to 5-ft. into the top of rock) at each bedrock well location to allow a permanent steel casing to be grouted securely in place prior to completion of the well. The purpose for this is to provide a seal at the overburden/bedrock interface and into the upper bedrock surface, to prevent the entrance of overburden water into the bedrock. After the grout and casing have set up for a minimum of 12 hours, the remaining bedrock can be NX (or similar) cored through the steel casing to a depth determined by the project-specific work plan.

Bedrock wells will either be open coreholes in the rock or consist of threaded, flush-joint PVC piping. Construction will vary depending on the project and as such, specific construction of the wells will be detailed in the project-specific work plan. Bedrock wells which do utilized PVC piping for risers and screens will conform to the requirements of ASTM-D 1785 Schedule 40 pipe. All materials used to construct the wells will be NSF/ASTM approved.

Screen and riser sections shall be joined by flush-threaded coupling to form watertight unions that retain 100% of the strength of the casing. Solvent PVC glue shall not be used at any time in the construction of the wells. The bottom of the screen shall be sealed with a treated cap or plug. No lead shot or lead wool is to be employed in sealing the bottom of the well or for sealant at any point in the well.

4.1.1 Artificial Sand Pack

When utilized, granular backfill will be chemically and texturally clean, inert, siliceous, and of appropriate grain size for the screen slot size and the host environment The sand pack will be installed using a tremie pipe, when possible (i.e., a tremie pipe may not fit into smaller, 2-in. diameter boreholes). When utilized, the well screen and casing will be installed, and the sand pack placed around the screen and casing to a depth extending at least 2-ft.. A pre-packed well screen may be used if pre-approved by the NYSDEC.

An artificial sand pack will not be utilized in bedrock wells without screens (i.e., open borehole wells).

4.1.2 Bentonite Seal

A minimum 2-ft. thick seal will be placed directly on top of the sand pack, and care will be taken to avoid bridging. In the event that Site geology does not allow for a 2-ft. seal (e.g., only 1-ft. of space remains between the top of the sand pack and ground surface), the remaining space in the annulus will be filled with bentonite.

4.1.3 Grout Mixture

Upon completion of the bentonite seal, the well may be grouted with a non-shrinking cement grout (e.g., Volclay^{R}) mix to be placed from the top of the bentonite seal to the ground surface. The cement grout shall consist of a mixture of Portland cement (ASTM C 150) and water, in the proportion of not more than 7 gallons of clean water per bag of cement (1 cubic foot or 94 pounds). Additionally, 3% by weight of bentonite powder may be added.

4.1.4 Surface Protection

At all times during the progress of the work, precautions shall be used to prevent tampering with or

the entrance of foreign material into the well. Upon completion of the well, a suitable cap shall be installed to prevent material from entering the well. Where permanent wells are to be installed, the well riser shall be protected by a flush mounted road box set into a concrete pad or locking well cap for stick-up wells. A concrete pad, sloped away from the well, shall be constructed around the flush mount road box or stick-up casing at ground level.

Any well that is to be temporarily removed from service or left incomplete due to delay in construction shall be capped with a watertight cap.

4.2 Surveying

Coordinates and elevations will be established for each monitoring well and sampling location. Elevations to the closest 0.01 foot shall be used for the survey. These elevations shall be referenced to a regional, local, or project-specific datum. The location, identification, coordinates, and elevations of the wells will be plotted on maps with a scale large enough to show their location with reference to other structures at each site.

4.3 Well Development

After completion of the well, but not sooner than 24 hours after grouting is completed, development will be accomplished using pumping, bailing, or surge blocking. No dispersing agents, acids, disinfectants, or other additives will be used during development or introduced into the well at any other time. During development, water will be removed throughout the entire water column by periodically lowering and raising the pump intake (or bailer stopping point).

Development water will be either properly contained and treated as waste until the results of chemical analysis of samples are obtained or discharged on Site as determined by the Site-specific work plans and/or consultation with the NYSDEC representatives on Site.

The development process will continue until removal of a minimum of 110% of the water lost during drilling, three well volumes; whichever is greater, or as specified in the work plan. In the event that limited recharge does not allow for the recovery of all drilling water lost in the well or three (3) well volumes, the well will be allowed to stabilize to conditions deemed representative of groundwater conditions. Stabilization periods will vary by project but will be confirmed with the NYSDEC prior to sampling.

4.4 PFAS Soil Sampling Procedure

PFAS sampling will be conducted in accordance with current NYSDEC PFAS Guidance. Soil samples for PFAS analysis will be collected using PFAS-Free equipment. Samples will be collected in bottleware provided by the laboratory. Because PFAS are found in numerous everyday items, the following special precautions will be taken during sampling activities:

- No use of Teflon®-containing materials (e.g., Teflon® tubing, bailers, tape, sample jar lid liners, plumbing paste).
- No use of low density polyethylene (LDPE)-containing materials.
- No Tyvek® clothing will be worn by samplers.
- Clothes treated with stain-resistant or rain-resistant coatings (e.g., Gortex®) will be not be worn by samplers.
- All clothing worn by sampling personnel must have been laundered multiple times.
- No fast food wrappers, disposable cups or microwave popcorn will be within the vicinity of the wells/ samples.

- There will be no use of chemical (blue) ice packs, aluminum foil, or Sharpies® within the vicinity of the wells/ samples.
- No use of sunscreen, insect repellants, cosmetic, lotions or moisturizers will be allowed by sampling personnel the day of sampling.
- If any of the above items are handled by the field personnel prior to sampling activities, field personnel will wash their hands thoroughly with soap and water prior to any sampling activities.
- Powder-free nitrile gloves will be worn during all sample collection activities.

Quality assurance/ quality control (QA/QC) samples for PFAS sampling will include one (1) field duplicate, one (1) matrix spike / matrix spike duplicates (MS/MSD) and one (1) equipment blank. The procedures and rationale for collecting these samples are described below.

- Field duplicate – Sample will be used to assess the variability in concentrations of samples from the same well due to the combined effects of sample processing in the field and laboratory as well as chemical analysis.

- Matrix spike/matrix spike duplicate – Sample will be used to provide information about the effect of the sample matrix on the design and measurement methodology used by the laboratory.

- Equipment blank – Sample will be collected to help identify possible contamination from sampling equipment (i.e., shovel, soil core, etc.).

PFAS samples will be submitted to an Environmental Laboratory Accreditation Program (ELAP) certified laboratory for analysis of the full PFAS target analyte list (21 compounds listed in the NYSDEC Guidance) via modified USEPA Method 537 with a method detection limit not to exceed 1 ug/kg. Note, the laboratory utilized will be ELAP certified for PFOA and PFOS in drinking water by EPA method 537 or ISO 25101 as ELAP does not currently offer certification for PFAS compounds in matrices other than finished drinking water.

5.0 GEOLOGIC LOGGING AND SAMPLING

At each investigative location, borings will be advanced through overburden using either a drill rig and hollow-stem auger or direct push technology (split spoons or Macrocore). Soils will be evaluated for visual and olfactory evidence of impairment (i.e., staining, odors, and elevated PID readings) by a qualified individual. Sampling devices will be decontaminated according to procedures outlined in the Decontamination section of this document. When utilized, split-spoon samplers will be driven into the soil using a minimum 140-pound safety hammer and allowed to free-fall 30-inches, in accordance with ASTM-D 1586-84 specifications. The number of blows required to drive the sampler each 6-inches of penetration will be recorded. When required, samples will be stored in the appropriate bottleware (refer to Section 10) until analysis or deemed unnecessary.

In the event that maximum design depth of investigation is reached and hydrogeologic conditions are not suitable for well installation, the maximum drilling depth may be revised.

Boulders and bedrock encountered during well installation may be cored by standard diamond-core drilling methods using an NX, NQ, HQ size core barrel or other if specified in the project-specific work plan. All rock cores recovered will be logged by a qualified individual, and stored in labeled wooden core boxes. The cores will be stored by the firm until the project is completed or for at least one year. Drilling logs will be prepared by a qualified individual who will be present during drilling operations.

One copy of each field boring and well construction log and groundwater data, will typically be submitted as part of the investigation summary report (e.g., Remedial Investigation Report). The RQD value shall be calculated for each 5-foot section. Information provided in the logs shall include, but not be limited to, the following:

- Date(s), test hole identification, and project identification;
- Name of individual developing the log;
- Name of driller and assistant(s);
- Drill, make and model, auger size;
- Identification of alternative drilling methods used and justification thereof (e.g., rotary drilling with a specific bit type to remove material from within the hollow stem augers);
- Standard penetration test (ASTM D-1586) blow counts;
- Field diagram of each monitoring well installed with the depth to bottom of well/ screen, top of screen, length of riser, depth of steel casing, depths of sand pack, bentonite seal, grout, type of well completion etc.;
- Depth of each change of stratum;
- Identification of the material of which each stratum is composed, according to the USCS system or standard rock nomenclature, as appropriate;
- Depth interval from which each sample was taken, sample identification, and sample time;
- Depth at which hole diameters (bit sizes) change;
- Depth at which groundwater is encountered;
- Drilling fluid and quantity of water lost during drilling;
- Depth or location of any loss of tools or equipment;
- Depths of any fractures, joints, faults, cavities, or weathered zones

6.0 GROUNDWATER SAMPLING PROCEDURES

The groundwater in all new monitoring wells will be allowed to stabilize for at least 1week following development prior to sampling. Water levels will be measured to within 0.01 feet prior to purging and sampling. Sampling of each well will typically be accomplished in one of two ways; active or passive.

Active Sampling:

Active sampling includes bailing or pumping. Purging will be completed prior to active sampling if specified in the project-specific work plan. During purging, the following will be recorded in field books or groundwater sampling logs:

- date
- purge start time
- weather conditions
- presence of NAPL, if any, and approximate thickness
- pump rate
- pH
- dissolved oxygen
- temperature
- conductivity
- redox
- turbidity
- depth of well

- depth to water
- depth to pump intake
- purge end time
- volume of water purged

During low flow sampling, the water quality parameters including pH, conductivity, temperature, dissolved oxygen, redox, water level drawdown, and turbidity will be recorded at five (5) minute intervals. Samples will be collected after the parameters have stabilized for three (3) consecutive 5-minute intervals to within the specified ranges below:

- Water level drawdown (<0.3')
- Turbidity (+/- 10%, < 50-NTU for Metals Samples)
- pH (+/-0.1)
- Temperature (+/- 3%)
- Specific conductivity (+/- 3%)
- Dissolved Oxygen (+/- 10%)
- Oxidation reduction potential (+/- 10 millivolts)

Passive Sampling:

Groundwater samples will be collected via passive methods (i.e., no-purge) according to the following procedures and in the volumes specified in Table 10-1:

Samples will be collected via passive diffusion bag (PDB) samplers. PDB samplers are made of low-density polyethylene plastic tubing (typically 4 mil), filled with laboratory grade (ASTM Type II) deionized water and sealed at both ends.

- Pre-filled PDBs will not be stored for longer than 30 days and will be kept stored at room temperature in a sealed plastic bag until ready to use.
- PDBs filled in the field will be used immediately and not stored for future use.
- PDB samplers will only be used to collect groundwater samples which will be analyzed for VOCs.
- Mesh covers will be utilized for open rock holes as to not puncture the PDB and will be secured to the bag using zip-ties.
- PDB samplers will be deployed by hanging in the well at the depth(s) specified in the project-specific work plan. The depth at which the PDB is deployed will be recorded on the groundwater sampling form. The PDB samplers will be deployed at least 14 days prior to sampling;
- When transferring water from the PDB to sample containers, care will be taken to avoid agitating the sample, since agitation promotes the loss of volatile constituents;
- Gloves will be changed between collection of each PDB and tools used to open the PDB will be decontaminated with an alconox and potable water solution between each PDB;
- Any volume not used will be treated as investigation derived waste;
- Any observable physical characteristics of the groundwater (e.g., color, sheen, odor, turbidity) at the time of sampling will be recorded; and
- Weather conditions (i.e., air temperature, sky condition, recent heavy rainfall, drought conditions) at the time of sampling will be recorded.

6.1 PFAS Groundwater Sampling Procedure

PFAS sampling will be conducted in accordance with current NYSDEC PFAS Guidance. Samples for PFAS analysis will be collected using PFAS-Free equipment, specifically a dedicated disposable high density polyethylene (HDPE) or PVC bailers, and/or low-flow sampling equipment with PFAS-Free components. Samples will be collected in bottleware provided by the laboratory. Because PFAS are found in numerous everyday items, the following special precautions will be taken during sampling activities:

- No use of Teflon®-containing materials (e.g., Teflon® tubing, bailers, tape, sample jar lid liners, plumbing paste).
- No use of low density polyethylene (LDPE)-containing materials.
- No Tyvek® clothing will be worn by samplers.
- Clothes treated with stain-resistant or rain-resistant coatings (e.g., Gortex®) will be not be worn by samplers.
- All clothing worn by sampling personnel must have been laundered multiple times.
- No fast food wrappers, disposable cups or microwave popcorn will be within the vicinity of the wells/ samples.
- There will be no use of chemical (blue) ice packs, aluminum foil, or Sharpies® within the vicinity of the wells/ samples.
- No use of sunscreen, insect repellants, cosmetic, lotions or moisturizers will be allowed by sampling personnel the day of sampling.
- If any of the above items are handled by the field personnel prior to sampling activities, field personnel will wash their hands thoroughly with soap and water prior to any sampling activities.
- Powder-free nitrile gloves will be worn during all sample collection activities.

Quality assurance/ quality control (QA/QC) samples for PFAS sampling will include one (1) field duplicate, one (1) matrix spike / matrix spike duplicates (MS/MSD) and one (1) equipment blank. The procedures and rationale for collecting these samples are described below.

- Field duplicate – Sample will be used to assess the variability in concentrations of samples from the same well due to the combined effects of sample processing in the field and laboratory as well as chemical analysis.

- Matrix spike/matrix spike duplicate – Sample will be used to provide information about the effect of the sample matrix on the design and measurement methodology used by the laboratory.

- Equipment blank – Sample will be collected to help identify possible contamination from sampling equipment (i.e., bailer). One equipment blank will be collected by pouring laboratory certified analyte-free deionized water over a bailer into the sample container.

PFAS samples will be submitted to an Environmental Laboratory Accreditation Program (ELAP) certified laboratory for analysis of the full PFAS target analyte list (21 compounds listed in the NYSDEC Guidance) via modified USEPA Method 537 with a method detection limit not to exceed 2 ng/L. Note, the laboratory utilized will be ELAP certified for PFOA and PFOS in drinking water by EPA method 537 or ISO 25101 as ELAP does not currently offer certification for PFAS compounds in matrices other than finished drinking water.

7.0 SOIL VAPOR INTRUSION SAMPLING PROCEDURES

Soil vapor intrusion (SVI) sampling is to be conducted in accordance with the *NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York* dated October 2006 and subsequent updates. Tracer gas testing is to be conducted for sub-slab sampling points to ensure concentrations of the tracer gas are not detected in the sub-slab at greater than 10% of the concentration detected in the atmosphere. An outdoor air sample is to be collected at an upwind direction as a control. A building inventory should be completed to document building construction information and identify products that may be contributing to the levels in indoor air.

8.0 FIELD DOCUMENTATION

8.1 Daily Logs/ Field Notebook

Daily logs are necessary to provide sufficient data and observations to enable participants to reconstruct events that occurred during the project and to refresh the memory of the field personnel if called upon to give testimony during legal proceedings. Daily logs may be kept in a project-specific notebook labelled with the project name/ number and contact information.

The daily log is the responsibility of the field personnel and will include:

- Name of person making entry;
- Start and end time of work;
- Names of team members on-site;
- Changes in required levels of personnel protection:
  - Level of protection originally used;
  - Changes in protection, if required; and
  - Reasons for changes.
- Air monitoring locations, start and end times, and equipment identification numbers;
- Summary of tasks completed;
- Summary of samples collected including location, matrix, etc.;
- Field observations and remarks;
- Weather conditions, wind direction, etc.;
- Any deviations from the work plan;
- Initials/ signature of person recording the information.

As with any data logbooks, no pages will be removed for any reason. If corrections are necessary, these must be made by drawing a single line through the original entry (so that the original entry can still be read) and writing the corrected entry alongside. The correction must be initialed and dated. Corrected errors may require a footnote explaining the correction.

Sample documents, forms, or field notebooks are not to be destroyed or thrown away, even if they are illegible or contain inaccuracies that require a replacement document. If an error is made on a document assigned to one individual, that individual may make corrections simply by crossing a line through the error and entering the corrected information. The incorrect information should not be obliterated. Any subsequent error discovered on a document should be corrected by the person who made the entry. All corrections must be initialed and dated.

8.2 *Photographs*

Photographs will be taken to document the work. Documentation of a photograph is crucial to its validity as a representation of an existing situation. Photographs should be documented with date, location, and description of the photograph.

9.0 INVESTIGATION DERIVED WASTE

Purpose:

The purposes of these guidelines are to ensure the proper holding, storage, transportation, and disposal of materials that may contain hazardous wastes. Investigation-derived waste (IDW) included the following:

- Drill cuttings, drilling mud solids;
- Water produced during drilling;
- Well development and purge waters, unused PDB waters;
- Decontamination waters and associated solids;

IDW will be managed in substantial accordance with DER-10 and all applicable local, State and Federal regulations.

Procedure:

1. Contain all investigation-derived wastes in Department of Transportation (DOT)-approved 55-gallon drums, roll-off boxes, or other containers suitable for the wastes.
2. Place different media in separate drums (i.e., do not combine solids and liquids).
3. To the extent practicable, separate solids from drilling muds, decontamination waters, and similar liquids. Place solids within separate containers.
4. Transfer all waste containers to a staging area. Access to this area will be controlled. Waste containers must be transferred to the staging area as soon as practicable after the generating activity is complete.
5. Label all containers with regard to contents, origin, and date of generation. Use indelible ink for all labeling.
6. Collect samples for waste characterization purposes, use boring/well sample analytical data for characterization.
7. For wastes determined to be hazardous in character, be aware on accumulation time limitations. Coordinate the disposal of these wastes with the Owner and NYSDEC.
8. Dispose of investigation-derived wastes as follows;
    - Soil, water, and other environmental media for which analysis does not detect organic constituents, and for which inorganic constituents are at levels consistent with background, may be spread on-site (pending NYSDEC approval) or otherwise treated as a non-waste material.
    - Soils, water, and other environmental media in which organic compounds are detected or metals are present above background will be disposed as industrial waste or hazardous waste, as appropriate. Alternate disposition must be

consistent with applicable State and Federal laws.

- Personal protective equipment, disposable bailers, and similar equipment may be disposed as municipal waste, unless waste characterization results mandate disposal as industrial wastes

9. If waste is determined to be listed hazardous waste, it must be handled as hazardous waste as described above, unless a contained-in determination is accepted by the NYSDEC.

10.0 DECONTAMINATION PROCEDURES

Sampling methods and equipment have been chosen to minimize decontamination requirements and to prevent the possibility of cross-contamination. Decontamination of equipment will be performed between discrete sampling locations. Equipment used to collect samples between composite sample locations will not require decontamination between collection of samples. All drilling equipment will be decontaminated after the completion of each drilling location. Special attention will be given to the drilling assembly and augers.

Split spoons and other non-disposable equipment will be decontaminated between each sampling location. The sampler will be cleaned prior to each use, by one of the following procedures:

- Initially cleaned of all foreign matter;
- Sanitized with a steam cleaner;

OR

- Initially cleaned of all foreign matter;
- Scrubbed with brushes in alconox solution;
- Triple rinsed; and
- Allowed to air dry.

Other sampling equipment including but not limited to low-flow sampling pumps, surface soil sampling trowel, water level meters, etc. will be decontaminated between sample location using an alconox solution. Consumables including gloves, tubing, bailers, string, etc. will be dedicated to one sample location and will not be reused.

11.0 SAMPLE CONTAINERS

The containers required for sampling activities are pre-washed and ordered directly from a laboratory, which has the containers prepared in accordance with USEPA bottle washing procedures. The following tables detail sample volumes, containers, preservation and holding time for typical analytes.

Table 11-1
Groundwater Samples

Type of Analysis	Type and Size of Container	Number of Containers and Sample Volume (per sample)	Preservation	Holding Time Until Extraction/ Analysis
VOCs	40-ml glass vial with Teflon-backed septum	Two (2); fill completely, no headspace	Cool to 4° C (ice in cooler), Hydrochloric acid to pH <2	14 days
Semi-volatile Organic Compounds (SVOCs)	1,000-ml amber glass jar	One (1); fill completely	Cool to 4° C (ice in cooler)	7/40 days
Pesticides	1,000-ml amber glass jar	One (1); fill completely	Cool to 4° C (ice in cooler)	7/40 days
Polychlorinated biphenyls (PCBs)	1,000-ml amber glass jar	One (1); fill completely	Cool to 4° C (ice in cooler)	7/40 days
Metals	250-ml HDPE	One (1); fill completely	Cool to 4° C (ice in cooler) Nitric acid to pH <2	180 days (28 for mercury)
Cyanide	1,000-mL HDPE		Cool to 4° C (ice in cooler) Nitric acid to pH <2	14 days
1,4-Dioxane	40-ml glass vial with Teflon-backed septum	Three (3); fill completely, no headspace	Cool to 4° C (ice in cooler), Hydrochloric acid to pH <2	14 days
PFAS	250-mL HDPE, no Teflon	Two (2); fill completely	Cool to 4° C (ice in cooler), Trizma	14 days

Note:
All sample bottles will be prepared in accordance with USEPA bottle washing procedures.
Consult with laboratory as bottleware may vary by laboratory.
Holding time begins at the time of sample collection.

TABLE 11-2
Soil Samples

Type of Analysis	Type and Size of Container	Number of Containers and Sample Volume (per sample)	Preservation	Holding Time Until Extraction/ Analysis
VOCs	4-oz, glass jar with Teflon-lined cap	One (1), fill as completely as possible	Cool to 4° C (ice in cooler)	14 days
VOCs via EPA 5035	40 mL vials with sodium bisulfate, methanol, and/or DI water	Three (3), 5 grams each	Cool to 4° C (ice in cooler)	2 days*
SVOCs	4-oz, glass jar with Teflon-lined cap	One (1), fill as completely as possible	Cool to 4° C (ice in cooler)	7/40 days
PCBs	4-oz, glass jar with Teflon-lined cap	One (1), fill as completely as possible	Cool to 4° C (ice in cooler)	7/40 days
Pesticides	4-oz, glass jar with Teflon-lined cap	One (1), fill as completely as possible	Cool to 4° C (ice in cooler)	14/40 days
Metals	4-oz. glass jar with Teflon-lined cap	One (1), fill as completely as possible	Cool to 4° C (ice in cooler)	180 days (28 for mercury)
Cyanide	4-oz, glass jar with Teflon-lined cap	One (1), fill as completely as possible	Cool to 4° C (ice in cooler)	14 days
1,4-Dioxane	40 mL vials with sodium bisulfate, methanol, and/or DI water	Three (3), 5 grams each	Cool to 4° C (ice in cooler)	2 days*
PFAS	8-oz HDPE, no Teflon	One (1); fill as completely as possible	Cool to 4° C (ice in cooler)	28 days

Note:
**Or freeze within holding time.*
All sample bottles will be prepared in accordance with USEPA bottle washing procedures.
Consult with laboratory as bottleware may vary by laboratory.
Holding time begins at the time of sample collection.

Table 11-3
Air Samples

Type of Analysis	Type and Size of Container	Number of Containers and Sample Volume (per sample)	Preservation	Holding Time Until Extraction/ Analysis
VOCs	1 – Liter Summa® Canister	One (1) 1-Liter 1.4- Liter for MS/MSD	N/A	14 days

Note:
All sample bottles will be prepared in accordance with USEPA bottle washing procedures.
Consult with laboratory as bottleware may vary by laboratory.
Holding time begins at the time of sample collection.

12.0 SAMPLE CUSTODY AND SHIPMENT

12.1 Sample Identification

All containers of samples collected from the project will be identified using the following format on a label or tag fixed to the sample container:

AA-BB-CC-DD-EE

AA: This set of initials indicates an abbreviation for the Site from which the sample was collected.
BB This set of initials represents the type of sample (e.g., SB for soil boring and MW for monitoring well)
CC: These initials identify the unique sample location number.
DD: These initials identify the sample start depth (if soil sample)
EE These initials identify the sample end depth (if soil sample)

Each sample will be labeled, chemically preserved (if required) and sealed immediately after collection. To minimize handling of sample containers, labels will be filled out prior to sample collection when possible. The sample label will be filled out using waterproof ink and will be firmly affixed to the sample containers. The sample label will give the following information:

- Date and time of collection
- Sample identification
- Analysis required
- Project name/number
- Preservation

Sample tags attached to or affixed around the sample container must be used to properly identify all samples collected in the field. The sample tags are to be placed on the bottles so as not to obscure any QC lot numbers on the bottles; sample information must be printed in a legible manner using waterproof ink. Field identification must be sufficient to enable cross-reference with the logbook. For chain-of-custody purposes, all QC samples are subject to exactly the same custodial procedures and documentation as "real" samples.

12.2 Chain of Custody

This section describes standard operating procedures for sample identification and chain-of-custody to be utilized for all field activities. The purpose of these procedures is to ensure that the quality of the samples is maintained during their collection, transportation, and storage through analysis. All chain-of-custody requirements comply with standard operating procedures indicated in USEPA sample handling protocol.

Sample identification documents must be carefully prepared so that sample identification and chain-of-custody can be maintained and sample disposition controlled. Sample identification documents include:

- Field notebooks;
- Sample label; and
- Chain-of-custody records.

The primary objective of the chain-of-custody procedures is to provide an accurate written or computerized record that can be used to trace the possession and handling of a sample from collection to completion of all required analyses. A sample is in custody if it is:

- In someone's physical possession;
- In someone's view;
- Locked up; or
- Kept in a secured area that is restricted to authorized personnel.

As few persons as possible should handle samples. Sample bottles will be obtained pre-cleaned from the a laboratory. Sample containers should only be opened immediately prior to sample collection. The sample collector is personally responsible for the care and custody of samples collected until they are transferred to another person or dispatched properly under chain-of-custody rules. The sample collector will record sample data in the field notebook and/or field logs.

The chain-of-custody record must be fully completed in duplicate, using black carbon paper where possible, by the field technician who has been designated by the project manager as responsible for sample shipment to the appropriate laboratory for analysis. In addition, if samples are known to require rapid turnaround in the laboratory because of project time constraints or analytical concerns (e.g., extraction time or sample retention period limitations, etc.), the person completing the chain-of-custody record should note these constraints on the chain of custody.

12.3 Transfer of Custody and Shipment

The coolers in which the samples are packed must be accompanied by a chain-of-custody record. When transferring samples, the individuals relinquishing and receiving them must sign, date, and note the time on the chain-of-custody record. This record documents sample custody transfer.

Shipping containers must be sealed with custody seals for shipment to the laboratory. The method of shipment, name of courier, and other pertinent information are entered on the chain-of-custody.

All shipments must be accompanied by the chain-of-custody record identifying their contents. The original record accompanies the shipment. The other copies are distributed appropriately to the site manager.

12.4 Custody Seals

Custody seals are preprinted adhesive-backed seals. Sample shipping containers (coolers, cardboard boxes, etc., as appropriate) are sealed in as many places as necessary to ensure security.

Seals must be signed and dated before shipment. On receipt at the laboratory, the custodian must check (and certify, by completing the package receipt log and LABMIS entries) that seals on boxes and bottles are intact. Strapping tape should be placed over the seals to ensure that seals are not accidentally broken during shipment.

12.5 Sample Packaging

Samples must be packaged carefully to avoid breakage or contamination and must be shipped to the laboratory at proper temperatures. The following sample packaging requirements will be followed:

- Sample bottle lids must never be mixed. All sample lids must stay with the original containers.
- The label should not cover any bottle preparation QC lot numbers.
- All sample bottles are placed in a plastic bag and/or individual bubble wrap sleeves to minimize the potential for cross-contamination and breaking.
- Shipping coolers must be partially filled with packing materials and ice when required, to prevent the bottles from moving during shipment.
- The sample bottles must be placed in the cooler in such a way as to ensure that they do not directly come in contact with other samples. Ice will be added to the cooler to ensure that the samples reach the laboratory at temperatures no greater than 4°C.
- Any remaining space in the cooler should be filled with inert packing material. Under no circumstances should material such as sawdust, sand, etc., be used.
- A chain of custody record must be placed in a plastic bag inside the cooler. Custody seals must be affixed to the sample cooler.

12.6 Sample Shipment

Shipping containers are to be custody-sealed for shipment as appropriate. The container custody seal will consist of tape wrapped around the package and custody seals affixed in such a way that access to the container can be gained only by cutting the filament tape and breaking the seal. Chain of custody seals shall be placed on the container, signed, and dated prior to taping the container to ensure the chain of custody seals will not be destroyed during shipment. In addition, the coolers must also be labeled and placarded in accordance with DOT regulations if shipping medium and high hazard samples.

Field personnel will make arrangements for transportation of samples to the lab. The lab must be notified as early as possible regarding samples intended for Saturday delivery. The transportation and handling of samples must be accomplished in a manner that not only protects the integrity of the sample, but also prevents any detrimental effects due to the possible hazardous nature of samples. Regulations for packaging, marking, labeling, and shipping hazardous materials are promulgated by the United States DOT in the Code of Federal Regulation, 49 CFR 171 through 177. All samples will be delivered to the laboratory and analyzed within the holding times specified by the analytical method for that particular analyte.

All chain-of-custody requirements must comply with standard operating procedures in the USEPA sample handling protocol.

12.7 Laboratory Custody Procedures

A designated sample custodian accepts custody of the shipped samples and verifies that the sample identification number matches that on the chain-of-custody record and traffic reports, if required. Pertinent information as to shipment, pickup, and courier is entered on the chain of custody or attached forms.

13.0 DELIVERABLES

This section will describe laboratory requirement and procedures to be followed for laboratory analysis. Samples collected in New York State will be analyzed by a New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP)-certified laboratory. When required, analyses will be conducted in accordance with the most current NYSDEC Analytical Services Protocol (ASP). For example, ASP Category B reports will be completed by the laboratory for samples representing the final delineation of the Remedial Investigation, confirmation samples, samples to determine closure of a system, and correlation samples taken using field testing technologies analyzed by an ELAP-certified laboratory to determine correlation to field results. Data Usability Summary Reports will be completed by a third party for samples requiring ASP Category B format reports. Electronic data deliverables (EDDs) will also be generated by the laboratory in EQUIS format for samples requiring ASP Category B format reports.

NYSDEC DER-10 DUSR requirements are as follows:

a) Background. The Data Usability Summary Report (DUSR) provides a thorough evaluation of analytical data with the primary objective to determine whether or not the data, as presented, meets the site/project specific criteria for data quality and data use.

    1. The development of the DUSR must be carried out by an experienced environmental scientists, such as the project Quality Assurance Officer, who is fully capable of conducting a full data validation. The DUSR is developed from:

        i. A DEC ASP Category B Data Deliverable; or
        ii. The *USEPA Contract Laboratory Program National Functional Data Validation Standard Operating Procedures for Data Evaluation and Validation.*

    2. The DUSR and the data deliverables package will be reviewed by DER staff. If full third party data validation is found to be necessary (e.g. pending litigation) this can be carried out at a later data on the same data package used for the development of the DUSR.

b) Personnel Requirements. The person preparing the DUSR must be pre-approved by DER. The person must submit their qualifications to DER documenting experience in analysis and data validation. Data validator qualifications are available on DEC's website identified in the table of contents.
c) Preparation of a DUSR. The DUSR is developed by reviewing and evaluating the analytical data package. In order for the DUSR to be acceptable, during the course of this review the following questions applicable to the analysis being reviewed must be answered in the affirmative.

        1. Is the data package complete as defined under the requirements for the most current DEC ASP Category B or USEPA CLP data deliverables?

2. Have all holding times been met?
3. Do all the QC data; blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?
4. Have all of the data been generated using established and agreed upon analytical protocols?
5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?
6. Have the correct data qualifiers been used and are they consistent with the most current DEC ASP?
7. Have any quality control (QC) exceedances been specifically noted in the DUSR and have the corresponding QC summary sheets from the data package been attached to the DUSR?

d) Documenting the validation process in the DUSR. Once the data package has been reviewed and the above questions asked and answered the DUSR proceeds to describe the samples and the analytical parameters, including data deficiencies, analytical protocol deviations and quality control problems are identified and their effect on the data is discussed.

14.0 EQUIPMENT CALIBRATION

All instruments and equipment used during sampling and analysis will be operated, calibrated, and maintained according to the manufacturer's guidelines and recommendations as well as criteria set forth in the applicable analytical methodology references. Operation, calibration, and maintenance will be performed by personnel properly trained in these procedures. Section 11 lists the major instruments to be used for sampling and analysis. In addition, brief descriptions of calibration procedures for major field and laboratory instruments follow.

14.1 Photovac/MiniRae Photoionization Detector (PID)

Standard operating procedures for the PID require that routine maintenance and calibration be performed every six months. Field calibration will be performed on a daily basis. The packages used for calibration are non-toxic analyzed gas mixtures available in pressurized containers. All calibration procedures will follow the manufacturer recommendations.

14.2 Conductance, Temperature, and pH Tester

Temperature and conductance instruments are factory calibrated. Temperature accuracy can be checked against an NBS certified thermometer prior to field use if necessary. Conductance accuracy may be checked with a solution of known conductance and recalibration can be instituted, if necessary.

14.3 O_2/Explosimeter

The specific meter used at the time of work shall be calibrated in accordance with manufacturer recommendations. The model 260 O_2/ Explosimeter is described below.

The primary maintenance item of the Model 260 is the rechargeable 2.4 volt (V) nickel cadmium battery. The battery is recharged by removing the screw cap covering receptacle and connecting one end of the charging cable to the instrument and the other end to a 115V AC outlet.

The battery can also be recharged using a 12V DC source. An accessory battery charging cable is available, one end of which plugs into the Model 260 while the other end is fitted with an automobile cigarette lighter plug.

Recommended charging time is 16 hours.

Before the calibration of the combustible gas indicator can be checked, the Model 260 must be in operating condition. Calibration check-adjustment is made as follows:

1. Attach the flow control to the recommended calibration gas tank.
2. Connect the adapter-hose to the flow control.
3. Open flow control valve.
4. Connect the adapter-hose fitting to the inlet of the instrument; after about 15 seconds the LEL meter pointer should be stable and within the range specified on the calibration sheet accompanying the calibration equipment. If the meter pointer is not in the correct range, stop the flow; remove the right hand side cover. Turn on the flow and adjust the "S" control with a small screwdriver to obtain a reading as specified on the calibration sheet.
5. Disconnect the adapter-hose fitting from the instrument.
6. Close the flow control valve.
7. Remove the adapter-hose from the flow control.
8. Remove the flow control from the calibration gas tank.
9. Replace the side cover on the Model 260.

CAUTION: Calibration gas tank contents are under pressure. Use no oil, grease, or flammable solvents on the flow control or the calibration gas tank. Do not store calibration gas tank near heat or fire or in rooms used for habitation. Do not throw in fire, incinerate, or puncture. Keep out of reach of children. It is illegal and hazardous to refill this tank. Do not attach the calibration gas tank to any other apparatus than described above. Do not attach any gas tank other than MSA calibration tanks to the regulator.

14.4 Nephelometer (Turbidity Meter)

LaMotte 2020WE Turbidity Meter is calibrated before each use. The default units are set to NTU and the default calibration curve is formazin. A 0 NTU Standard (Code 1480) is included with the meter. To calibrate, rinse a clean tube three times with the blank. Fill the tube to the fill line with the blank. Insert the tube into the chamber, close the lid, and select “scan blank”.

TABLE 14-4
List of Major Instruments
for Sampling and Analysis

- MSA 360 0_2 /Explosimeter
- Geotech Geopump II AC/DC Peristaltic Pump
- QED MP50 Controller and QED Sample Pro MicroPurge Bladder Pimp
- Horiba U-53 Multi-Parameter Water Quality Meter
- LaMotte 2020WE Turbidity Meter
- EM-31 Geomics Electromagnetic Induction Device
- Mini Rae Photoionization Detectors (3,000, ppbRAE, etc.)

15.0 INTERNAL QUALITY CONTROL CHECKS

QC data are necessary to determine precision and accuracy and to demonstrate the absence of interferences and/or contamination of field equipment. Field-based QC will comprise at least 10% of each data set generated and will consist of standards, replicates, spikes, and blanks. Field duplicates and field blanks will be analyzed by the laboratory as samples and will not necessarily be identified to the laboratory as duplicates or blanks. For each matrix, field duplicates will be provided at a rate of one per 10 samples collected or one per shipment, whichever is greater. Field blanks which may consist of trip, routine field, and/or rinsate blanks will be provided at a rate of one per 20 samples collected for each media, or one per shipment, whichever is greater. Frequency of QC data may vary from project to project; refer to the project-specific work plan for QC requirements.

Calculations will be performed for recoveries and standard deviations along with review of retention times, response factors, chromatograms, calibration, tuning, and all other QC information generated. All QC data, including split samples, will be documented in the site logbook and/or appropriate field logs. QC records will be retained and results reported with sample data.

15.1 Field Blanks

Various types of blanks are used to check the cleanliness of field handling methods. The following types of blanks may be used: the trip blank, the routine field blank, and the field equipment blank. They are analyzed in the laboratory as samples, and their purpose is to assess the sampling and transport procedures as possible sources of sample contamination. Field staff may add blanks if field circumstances are such that they consider normal procedures are not sufficient to prevent or control sample contamination, or at the direction of the project manager. Rigorous documentation of all blanks in the site logbooks is mandatory.

- **Routine Field Blanks** or bottle blanks are blank samples prepared in the field to access ambient field conditions. They will be prepared by filling empty sample containers with deionized water and any necessary preservatives. They will be handled like a sample

and shipped to the laboratory for analysis.

- **Trip Blanks** are similar to routine field blanks with the exception that they are **not** exposed to field conditions. Their analytical results give the overall level of contamination from everything except ambient field conditions. For the RI/FS, one trip blank will be collected with every shipment of water samples for VOC analysis. Each trip blank will be prepared by filling a 40-ml vial with deionized water prior to the sampling trip, transported to the site, handled like a sample, and returned to the laboratory for analysis without being opened in the field. Trip blanks may be provided by the laboratory, shipped with the bottleware, and kept with the sampling containers until analysis.
- **Field Equipment Blanks** are blank samples (sometimes called transfer blanks or rinsate blanks) designed to demonstrate that sampling equipment has been properly prepared and cleaned before field use, and that cleaning procedures between samples are sufficient to minimize cross contamination. If a sampling team is familiar with a particular site, they may be able to predict which areas or samples are likely to have the highest concentration of contaminants. Unless other constraints apply, these samples should be taken last to avoid excessive contamination of sampling equipment.

15.2 Duplicates

Duplicate samples are collected to check the consistency of sampling and analysis procedures. The following types of duplicates may be collected.

- **Blind duplicate** samples consist of a set of two samples collected independently at a sampling location during a single sampling event. Blind duplicates are designed to assess the consistency of the overall sampling and analytical system. Blind duplicate samples should not be distinguishable by the person performing the analysis.
- **Matrix Spike and Matrix Spike Duplicates (MS/MSDs)** consist of a set of three samples collected independently at a sampling location during a single sampling event. These samples are for laboratory quality control checks.