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Remedial Investigation Work Plan

Buffalo Central Terminal
495 Paderewski Drive, Buffalo, New York
BCP Site No. C915414

Prepared for:
Central Terminal Restoration Corp.
P.O. Box 51
Buffalo, New York 14212

July 2026

C&S Project No. AS3.001.002

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Prepared for:
Central Terminal Restoration Corp.
P.O. Box 51
Buffalo, New York 14212

Prepared by:
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I, H. Nevin Bradford, III, P.E., certify that I am currently a NYS Registered Professional Engineer and that this Remedial Investigation Work Plan was prepared in accordance with applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

H. Nevin Bradford III, P.E.
State of New York Professional Engineer No. 086008

July 29, 2026

C&S Project#: AS3.001.002

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ACRONYMS

AGV – Air Guidelines Value

ASP – Analytical Services Protocol

AST – Aboveground Storage Tank

ASTM – American Society for Testing Materials

AUL – Activity and Use Limitation

BCP – Brownfield Cleanup Program

BGS – Below Ground Surface

CP-51 – Commissioner Policy 51

DER – Department of Environmental Remediation

DUSR – Data Usability Summary Report

BTEX – Benzene, Toluene, Ethylbenzene, Xylene

EDD – Electronic Data Deliverable

ELAP – Environmental Laboratory Accreditation Program

EP – Environmental Professional

FEMA – Federal Emergency Management Agency

GIS – Geographic Information System

GPR – Ground Penetrating Radar

GPS – Global Positioning Satellite

HASP – Health and Safety Plan

HFM – Historic Fill Material

HREC – Historical Recognized Environmental Condition

IRM – Interim Remedial Measure

MS / MSD – Matrix Spike / Matrix Spike Duplicate

MSL – Mean Sea Level

MW – Monitoring Well

NAPL – Non-Aqueous Phase Liquid

NFA – No Further Action

NYSDEC – New York State Department of Environmental Conservation

NYSDOH – New York State Department of Health

PAH – Polycyclic Aromatic Hydrocarbon

PBS – Petroleum Bulk Storage

PCB – Polychlorinated biphenyl

PCE – Tetrachloroethene

PFAS – Per- and polyfluoroalkyl substances

Phase I ESA – Phase I Environmental Site Assessment

Phase II ESA – Phase II Environmental Site Assessment

PID – Photoionization Detector

PPB – Parts Per Billion

PPM – Parts Per Million

PVC – Polyvinyl Chloride

QA/QC – Quality Assurance / Quality Control

REC – Recognized Environmental Condition

SC – Site Characterization

SCO – Soil Cleanup Objective

SCWP – Site Characterization Work Plan

Site – 495 Paderewski Drive

Buffalo, New York

SSDS – Sub-Slab Depressurization System

SVOC – Semi-volatile Organic Compound

TAL – Target Analyte List

TCE – Trichloroethene

TCL – Target Compound List

TCLP – Toxicity Characteristic Leaching Procedure

TOGS – Technical and Operational Series Guidance

TPH – Total Petroleum Hydrocarbon

ug/l – Micrograms per liter

µg/M³ – Micrograms per Cubic Meter

USDA – United States Department of Agriculture

USEPA – United States Environmental Protection Agency

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USGS – United States Geological Service

UST – Underground Storage Tank

VI – Vapor Intrusion

VIA – Vapor Intrusion Assessment

VOC – Volatile Organic Compound

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EXECUTIVE SUMMARY

This document presents the Remedial Investigation (RI) Work Plan for the Buffalo Central Terminal Brownfield Cleanup Program Site located at 495 Paderewski Drive, City of Buffalo, New York (the "Site"). The project details are summarized below:

Contaminant Source and Constituents

Environmental information currently exists for the Site from a Phase I Environmental Site Assessment (ESA) dated October 2021 and a Phase II Environmental Site Assessment completed in August 2024. The subsurface investigations identified semi-volatile organic compounds (SVOCs) and metals at elevated concentrations in soil. The elevated concentrations appear to be related to the following sources:

- Historical use of the Site for train operations.
- The placement of historic fill material (HFM) across the Site.

Extent of Known Contamination

Based on the information gathered to date, contaminants having elevated concentrations primarily consist of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, and lead in the surface soil across the Site and lead, barium, manganese, benzo(a)anthracene, and benzo(b)fluoranthene in subsurface soils at depths from four to eight feet below ground surface (bgs) across the Site.

PCB contaminated oil leaked onto the concrete floor of the Switchboard and Transformer Room located on the Track Level of the Main Terminal Building due to vandalism.

Four in-floor automobile hydraulic lifts located in the Parking Garage contained a release of petroleum hydraulic oil. Oil was observed floating on top of standing water inside each of the lifts.

Proposed Site Redevelopment

The anticipated post remediation use of the Site is a mixed-use complex. Anticipated uses include childcare and childhood education service; mixed-income rental housing; attainable home ownership opportunities; a variety of community gardens and gardening educational space; activation of the entry plaza, Historic Lawn, and civic commons with entertainment, events, and programming activities; culinary education space; light industrial and maker space, co-working and collaborative spaces, workforce development, a food hall that could be linked to the nearby Broadway Market, neighborhood retail spaces; and mobility options and transportation linkages.

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Additionally, renewable energy use at the Site is anticipated post remediation, utilizing both geothermal energy and solar.

Remedial Investigation

To characterize Site conditions a RI will be implemented. The RI will include the collection and analysis of surface soil, native soil, fill material, and groundwater samples. PCB wipe sampling will be conducted in the vicinity of where PCB containing transformer oil leaked onto the concrete floor of the transformer room and in the vicinity of where containers of capacitor cables with oil and spillage were observed on the concrete floor of the Switch Room in Main Terminal Building.

Interim Remedial Measures

Interim Remedial Measures (IRM) may be proposed based on the results of the RI and the Lawn Area Sampling Work Plan which was approved on March 26, 2026.

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1.0 INTRODUCTION

This Remedial Investigation (RI) Work Plan provides a description of the procedures that will be implemented to characterize the nature and extent of contamination at the Buffalo Central Terminal (the "Site") and the proposed methods to address that contamination. This RI Work Plan has been prepared consistent with Division of Environmental Remediation "Technical Guidance for Site Investigation and Remediation" (DER-10). To effectively characterize the environmental conditions, this RI Work Plan discusses the following:

- Current and historic site conditions
- Contaminants of concern and the extent of the contamination
- Extent of RI activities
- Quality controls and protocols for analytical sampling
- Health and safety procedures to protect site workers and the local community
- Community participation activities

On July 17, 2025, Buffalo Central Terminal Restoration Corp., as a Brownfield Cleanup Program (BCP) Participant, submitted a complete BCP Application to investigate and remediate the Site. A fully executed Brownfield Agreement (BCA) was provided on February 6, 2026.

The Site has previously been developed and consists of several buildings in various states of disrepair. The Site is vacant; however, the Site is used for seasonal community events such as outdoor concerts, movie nights, fitness activities, car shows, seasonal festivals, vendor markets, art activations, and arts and cultural performances. These events occur periodically, primarily between late spring and fall, and are temporary. Seasonal community events requiring use of the lawn area have been postponed until the completion of remedial activities, if deemed necessary, on the lawn. The completed project is expected to include many uses including mixed-income rental housing, a daycare, child education programs, culinary education space, light industrial space, a food hall, neighborhood retail spaces, mobility options and transportation linkages, and outdoor recreational uses such as picnic areas and playgrounds.

An RI will be implemented to further evaluate the extent of the contamination and to aid in the preparation of an Alternatives Analysis Report (AAR) and a Remedial Work Plan (RWP). **Section 4.0** describes the scope of the investigation during remediation.

1.1 Site Description

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The Buffalo Central Terminal Site (Site) is located at 495 Paderewski Drive in the City of Buffalo, Erie County, New York. The Site consist of a single tax parcel with SBL 112.09-1-1.1. The Site is approximately 12.54 acres and includes one large Building called the Main Terminal Building, which can further be sub-divided into the Parking Garage, The Plaza, Passenger Concourse, and The Tower; the Mail & Baggage Building; and a 5.7-acre green space known as "The Historic Lawn". The buildings were constructed sometime between 1926 and 1929. The buildings on the Site have been vacant since 1993, but the portion of the Site containing the Historic Lawn is used for community events such as outdoor concerts, movie nights, fitness activities, car shows, seasonal festivals, vendor markets, art activations, and arts and cultural performances.

The Site is located in the City of Buffalo's Broadway-Fillmore residential neighborhood. To the north and west of the Site is residential, while to the east and south are former freight and passenger rails, concourses, platforms, and terminals. Several of the adjacent residential parcels have fences. There are no additional barriers which exist around the Site.

Figure 1 shows the location of the Site and **Figure 2** shows the Project Area and Site Boundaries.

1.2 Site History

According to historical records and past assessments, prior to 1926 the BCT complex included a section of the Broadway-Fillmore residential neighborhood (residential houses and streets), a city park (Polonia Park), New York Central Railroad freight and stock yards, and the former West Shore Railroad embankment.

These structures were demolished before the construction of the BCT complex and on March 29, 1926, the New York Central Railroad broke ground on the BCT complex.

In addition to demolition, preliminary work included clearing and grading, installing a drainage system, enlarging a viaduct on William Street, reconstructing water mains and sewers, revising the street system in the project area, and laying tracks. Compacted "cinder fill" was used as backfill, and catch basins were installed to facilitate drainage.[1] The roadwork entailed the construction of Memorial Drive, a new street developed on the right-of-way of the West Shore Railroad, the relocation of a segment of Curtiss Street, and the widening and regrading of Paderewski Drive. Paderewski Drive was widened to 90 feet from Fillmore Avenue to the traffic circle. The new, inclined segment of Paderewski Drive, between the traffic circle and the station plaza, measured 150 feet wide and 600 feet long. It was built on a slope that ascended to meet the level of the station plaza, located roughly 20 feet above grade. Peckham Street, one block south of Paderewski Drive, was also widened and repaved east of Fillmore Avenue. A segment of Curtiss Street was moved 220 feet north. Lastly, a private street was constructed between the Memorial Drive traffic circle and Curtiss Street (currently named Franczyk Alley), and a roadway was built to access the American Railway Express depot (located offsite at 59 Memorial Drive).

[1] Cousins, "Beacon at Mile 435.9-1, A Station Too Late, Too Far," 26.

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To make room for the fourteen new tracks that would bring trains into the station, the existing New York Central freight tracks were shifted hundreds of feet, and the stock yard tracks were removed to clear the area. Other track work included relocating the easterly Belt Line connection and the construction of four new tracks, doubling the number that had previously serviced it. The two-story American Railway Express building was remodeled with a new loading platform and canopies.

The Buffalo Central Terminal was dedicated on June 22, 1929, and opened for public use the following day. At some point, possibly in the 1930s or early 1940s, a filling station was constructed along the north side of Marginal Street for taxis servicing the Central Terminal. It was an open-sided, steel-frame structure with a shed roof and a concrete floor with concrete pads for gasoline pumps. Little documentation has been found on the history of the filling station; it was out of service by at least 1974.

Other ancillary support uses (located offsite of the BCP Site) include the Railway Express Agency depot (American Railway Express became the Railway Express Agency in 1929), a power plant, two signal stations and their adjacent repair shops, two utility buildings, a one-story structure sheltering the opening to the truck ramp, a service building for Pullman cars, a coach shop with inspection pits and carpentry shops, an icehouse, the train platforms, and an 11-track coach yard.

Buffalo Central Terminal Restoration Corp. has owned the property for almost 30 years.

1.3 Site Geography, Geology, and Hydrogeology

The Site is at an elevation of 630 feet above mean sea level. The Site is generally flat. The Buffalo River is 1.96 miles south and Lake Erie is three miles to the west.

Groundwater has not been encountered in the overburden. It is assumed that groundwater exists within the bedrock (approximate top of rock may be present between 7 and 13 ft bgs). Based on the location of the Site, the Buffalo River, and Lake Erie, it is assumed that groundwater flows to the west / southwest.

The primary drinking water source for the City of Buffalo is Lake Erie. Water processed in the City of Buffalo Water Authority potable water plants for the City of Buffalo undergoes varying levels of treatment to ensure that drinking water meets NYSDEC and United States Environmental Protection Agency (USEPA) standards. Groundwater in the City of Buffalo is prohibited from being used for public drinking water supply.

The Site contains HFM with observed thickness up to approximately six feet, from five to 11 feet below ground surface (bgs). Per DER-10, historic fill is defined as: *non-indigenous or non-native material, historically deposited or disposed in the general area of, or on, a site to create useable land by filling water bodies, wetlands or topographic depressions, which is in no way connected with the subsequent operations at the location of the emplacement, and which was contaminated prior to*

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emplacement. The HFM consists of a mixture of soil types, ash, coal, gravel, and construction demolition debris. Native soil is located below the HFM and generally consists of silty clay.

2.0 SUMMARY OF ENVIRONMENTAL CONDITIONS

2.1 Environmental Reports

Environmental information currently exists via the completion of the following reports:

- Watts Architecture & Engineering, *Phase I Environmental Site Assessment,* October 2021
- C&S Engineers, Inc., *Phase II Environmental Site Assessment,* August 2024

The following summarizes those efforts. These reports are provided in **Appendix B**.

Watts Architecture & Engineering Phase I Environmental Site Assessment (October 2021)

The Phase I ESA was prepared by Barron & Associates, P.C. to identify any potential Recognized Environmental Conditions associated with previous commercial and industrial activity at the BCP Site. The Phase I investigation identified the following known or suspected sources of contamination located on the BCP Site:

- **Oil on Transformer Room Floor (Spill # 8900603 and 9002692)** – In April 1989, PCB containing transformer oil leaked onto the concrete floor of the Transformer Room located on the Track level of the Main Terminal Building due to vandalism. Floor drains in the room may lead to sumps in the basement level of the Main Terminal Building. A second spill file was opened in 1990 when the Buffalo Fire Department observed 15-20 containers of capacitor cables with oil and significant spillage on the floor. Sampling at the time indicated that oil did not contain PCBs.
- **Automobile In-Floor Hydraulic Lifts (Spill # 2404978)** – Four in-floor automobile hydraulic lifts are located in the Parking Garage resulting in the likelihood for the release of petroleum hydraulic oil. This area of the Parking Garage was formerly used by taxi cabs for service/repairs. Indeed, during the August 2024 sampling oil was observed floating on top of standing water inside each of the lifts. A spill file was opened at that time (Spill # 2404978).
- **Oil on Switchboard Floor** – Oil has leaked onto the concrete floor of the Switchboard room located on the Track level of the Main Terminal Building next to the Transformer Room. Floor drains in this room that may lead to sumps in the basement level of the Main Terminal Building. The condition, integrity and discharge points of floor drains, piping and sumps is unknown.
- **Underground Storage Tanks (USTs) and Pump Islands** – In the 1930s or early 1940s, a filling station was constructed along the north side of Marginal Street for taxis servicing the Buffalo Central Terminal. The filling station included an open sided steel frame structure with a shed roof and a concrete floor with concrete pads for the gasoline pumps. It is assumed that the filling station was out of service by at least 1974; however, it does

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not appear that these USTs are currently registered with NYSDEC Bulk Petroleum Storage. In addition, no information exists to confirm that the USTs were properly closed and taken out of service, or that any potential impacts were assessed.

- **Former Paint Booth** – A former paint booth is located in the Parking Garage at the exterior wall along Curtiss Street, resulting in the likely release of paint related solvents and lead. The condition, integrity and discharge points of floor drains near the paint booth are not known.
- **Historic Fill Materials** –HFM was observed throughout the BCP Site in August 2024, including underneath the slab of the Parking Garage. Approximately three to four feet of HFM are present in the elevated Historic Lawn, which was formerly used as a parking lot. Surface and sub-surface contamination was identified in HFM as described in Section 12.
    - Further, in October 2021, significant amounts of HFM were observed in two separate loading dock areas inside the Mail & Baggage Building. This HFM includes soil, household wastes, automobile parts, glass, loose suspected asbestos-containing pipe insulation, and concrete/metal building materials from unknown sources. There is a potential for indoor air impacts and subsurface impacts from the HFM that overlay floor drains. It should be noted that roof run-off rainwater enters the building and makes contact with the HFM and suspect asbestos-containing pipe insulation.

Known or suspected sources of contamination located offsite include the following:

- **Off-Site Heating Oil Aboveground Storage Tank (AST)** – A 200,000-gallon steel heating oil AST is located on the adjoining property owned by CSX Railroad. The offsite heating oil tank was once part of the central heating plant that was the source of steam heat for the BCT complex. The AST and the concrete secondary containment structure is suspect for potential release of petroleum to the subsurface soil and groundwater due to the apparent lack of maintenance and age of the AST.
- **Potential Vapor Encroachment and Vapor Intrusion Conditions** – There is also the potential for vapor encroachment onto the BCP Site from off-site historical bulk petroleum releases associated with the adjoining heating oil AST. The off-site railroad line and railroad yard also have the potential to cause vapor encroachment condition.
- **Conrail Amtrak Terminal (Spill # 8600441)** – On April 17, 1986, a contractor accidentally cut a #2 fuel oil transfer pipeline. Approximately 50-gallons was spilled. Drawings in the spill file are not clear on the exact location of the spill. It is assumed that this spill was off-site and adjacent to the Mail & Baggage Building.
- **Oil Spill – Central Terminal Plaza (Spill # 862794)** – On July 29, 1986, drums with oil product were removed from the corner of Newton Street and Curtiss Street (located offsite at 59 Memorial Drive). Approximately 200 gallons of oil product were removed, and pools of oil were observed on the ground. NYSDEC's Spill file does not indicate that a soil investigation was conducted. While the NYSDEC Spill file references the "Central Terminal" as the location of the spill, the spill location is currently not within the boundaries of the BCP Site.

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- **City of Buffalo: 59 Memorial Drive, EPA ID: NYC200400117** - This property consists of a 15.4-acre portion of the historic BCT complex that includes a former Post Office Building, loading docks, lawn areas, and a parking area located along the south side of Curtiss Street, but that is not currently within the boundaries of the BCP Site. This property adjoins the BCP Site along Curtiss Street. A Limited Phase II ESA and removal action was completed by the City of Buffalo with EPA oversight. This property is currently listed as an EPA Region 2 Superfund (non-NPL) Enterprise Management System (SEMS).
- **Railroad Track and Railyard at Train Platforms** – The off-site railroad track on the CXS property adjoins the BCP Site to the south. The railyard at the train platforms on the Amtrak property adjoins the CXS property to the south as well as other buildings of the BCT complex. It appears that the CXS railroad is in current operation and the former railyard was part of the BCT complex and is abandoned. There is a potential for release(s) of petroleum and other regulated products such as suspected pesticides/ herbicides to the subsurface soil and groundwater below the rail lines during over 50 years of operation.
- **Presidential Railroad Spur** – The presidential railroad spur is located at the northeast end of the BCP Site and leads directly into the Main Terminal Building. The presidential railroad spur was used to bring dignitaries and premium ticket holders to the BCT complex. Steel remnants of the overhanging roofing above the passenger concrete walkway are still present. There is a potential for HFM, rails and railroad ties that may contain metals and petroleum in addition to the suspected historical use of pesticides/herbicides on railroad track lines.

C&S Phase II Environmental Site Assessment (August 2024)

On August 27, 2024, an investigation was completed to provide limited characterization of the surface and sub-surface soil on the BCP Site. A total of six surface soil samples and 11 subsurface soil samples were collected from 15 soil borings spread across the BCP Site. The soil samples were analyzed for VOCs, SVOCs, PCBs, and metals. A total of eight of the 17 soil samples contained compounds detected at concentrations exceeding Restricted Residential Use SCOs for SVOCs and metals.

Due to degrading ACM inside the Main Terminal Building access was not possible and samples were not collected in August 2024 within the Transformer/ Switchboard rooms or inside the Mail & Baggage Building.

Acetone was the only volatile organic compound (VOC) detected above Unrestricted Use Soil Cleanup Objectives (SCOs) (0.05 ppm) in sub-surface soils. A total of 10 locations contained acetone at concentrations ranging from 0.07 ppm to 0.22 ppm.

VOC contamination is expected to be impacting the area around the Parking Garage. Four in-floor automobile hydraulic lifts are located in the Parking Garage resulting in the likelihood of the release of petroleum hydraulic oil. This area of the Parking Garage was formerly used by taxi cabs for service/repairs. Indeed, during the August 2024 sampling, oil was observed floating on top of standing water inside each of the lifts and Spill # 2404978 was opened. Detectable volatile organic

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vapors were observed in two soil borings. Highest PID reading was 376 ppm in material five feet bgs.

As expected due to the historical use for train operations, SVOCs with concentrations exceeding SCOs were detected in surface and subsurface material throughout the BCP Site. The following SVOCs were detected:

Table 2-1: Pre-BCP SVOC Sample Results

Analyte	Concentration Range (ppm)	NYSDEC SCO Exceedance	Number of Samples Exceeding SCO
Benzo(a)anthracene	1.4	Restricted Residential Use (1.4 ppm)	1
Benzo(b)fluoranthene	1.6 – 1.9	Restricted Residential Use (1.4 ppm)	2
Benzo(a)pyrene	1.2 – 1.3	Industrial Use (1 ppm)	2

Metals with concentrations exceeding SCOs were detected in surface and subsurface material throughout the BCP Site. The following metals were detected:

Table 2-2: Pre-BCP Metal Sample Results

Analyte	Concentration Range (ppm)	NYSDEC SCO Exceedance	Number of Samples Exceeding SCO
Barium	920	Commercial Use (410 ppm)	1
Cadmium	2.8	Restricted Residential (2.5 ppm)	1
Lead	590 – 1,600	Restricted Residential (400 ppm) Commercial Use (1,000 ppm)	1 2
Manganese	8,300	Restricted Residential Use (2,000 ppm)	1

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Mercury	0.35 – 0.65	Restricted Residential Use (0.30 ppm)	2

Site characterization efforts conducted to assess contaminant concentrations at the Site are summarized on **Figure 3** and **Figure 4.**

2.1.1 Prior Remedial Events

No remedial events are known to have been completed.

2.1.1.1 Historic Lawn Area Sampling

A Lawn Area Sampling Plan has been approved for the Historic Lawn Area (approximately 5.7 acres fronting Memorial Drive). The Lawn Area has historically functioned as landscaped open space and continues to serve as a grass-covered area used intermittently for community gatherings and public events.

Previous environmental investigations identified the presence of semi-volatile organic compounds (SVOCs) and metals in surface and subsurface soils at concentrations exceeding Restricted Residential Soil Cleanup Objectives (SCOs), with primary contaminants of concern including benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, and indeno(1,2,3-cd)pyrene. Historic Fill Material (HFM) was also encountered beneath the Lawn Area.

The purpose of the approved sampling plan is to further characterize soil conditions within the Lawn Area and to support decisions regarding the need for any additional interim remedial measures as part of the overall site redevelopment strategy.

The sampling program includes seven surface soil samples (0–2 inches bgs, analyzed for SVOCs and metals) and 14 soil borings advanced to 15 ft bgs or bedrock (subsurface fill samples from 2–12 inches analyzed for VOCs, SVOCs, and metals). The sampling boundary and sampling locations are shown on **Figure 5**. Field screening (PID) and QA/QC will follow DER-10 protocols.

2.2 General Summary of Past Investigations

Contamination at the Site is primarily associated with HFM placed during 1926–1929 construction of the Buffalo Central Terminal complex and with discrete historical spills and operational releases. Impacts have been identified in surface and subsurface soil, building materials, and potential on-site vapor sources. Groundwater has not yet been characterized.

To date, no surface water or sediment has been identified on-site. No surface water or sediment sampling has been performed.

Soil Vapor Intrusion (SVI) data have not yet been collected for the on-site buildings

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No off-site environmental media (including soil, groundwater, surface water, or sediment) have been sampled or characterized to date.

2.2.1.1 Soil

SVOCs (benzo(a)anthracene, benzo(b)fluoranthene and benzo(a)pyrene) and metals (barium, lead, manganese, and mercury) exceed Restricted Residential Use Soil Cleanup Objectives (RR SCOs) throughout the 12.54-acre Site. These contaminants are present in both surface soil (0–2 inches) and within the HFM layer, which extends horizontally across the entire BCP Site boundary and vertically from approximately five ft bgs to 11 ft bgs (average thickness of six ft).

The estimated in-place volume of HFM is approximately 250,000 cubic yards (calculated as 12.54 acres × 6 ft average thickness × 43,560 ft^2/acre × 1 ft/12 in). This volume will be refined during the RI using site-specific borings and survey data.

Localized VOC impacts are concentrated in the vicinity of the four in-floor automobile hydraulic lifts within the Parking Garage (Spill #2404978 opened August 2024). Oil was observed floating on standing water inside each lift; PID readings reached 376 ppm at five ft bgs. SVOC and metal exceedances are heterogeneous and not attributable to a single source; they are consistent with the mixed nature of the HFM (ash, coal, cinders, construction debris).

2.2.1.2 USTs and Product Releases

Four in-floor hydraulic lifts (anomalies) are confirmed sources of petroleum release. A former filling station constructed in the 1930s–1940s along the north side of Marginal Street is assumed to have contained unregistered underground storage tanks (USTs); no closure records exist. A former paint booth in the Parking Garage and floor drains/sumps in the Transformer Room and Switchboard Room (Spills #8900603 and #9002692, 1989–1990) represent additional anomalies.

Discrete hotspots (hydraulic lifts, transformer room) require targeted delineation.

2.2.1.3 Hazardous Building Materials

Asbestos-containing materials (ACM) and lead-based paint (LBP) are present throughout the Main Terminal Building and Mail & Baggage Building; some are damaged or significantly damaged. Access to the Transformer and Switchboard Rooms was not possible during the 2024 investigation because of ACM hazards. Interior HFM was observed in loading-dock areas of the Mail & Baggage Building, mixed with household wastes, automobile parts, and loose ACM pipe insulation.

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3.0 OBJECTIVES, SCOPE AND RATIONALE

The objectives of the scope of work described in this Work Plan are to evaluate contaminant impacts for the subsequent identification and evaluation of appropriate remedial actions necessary to redevelop the Site. The investigation work will include evaluating the nature and extent of contaminant impacts, conducting a qualitative human health exposure assessment for actual or potential exposures to contaminants at the Site and / or potentially emanating from the Site, and producing data that will support the development of an acceptable RI Report and subsequent AAR.

The RI is based on information previously gathered regarding historical operations conducted at the Site, the results of the subsurface investigations, and the project objectives. The RI will include the following:

3.1 Buried Utilities Investigation

This task will consist of using various geophysical screening methods to determine if buried features, such as dry wells, USTs, vaults, etc. are present on the exterior of the Site. The geophysical survey may include the use of an electromagnetic metal detector; ground conductivity (quad-phase); magnetic susceptibility (in-phase); and / or ground penetrating radar (GPR). The survey line spacing will be appropriate for the particular unit in use at that time.

3.2 Floor Drain Assessment

This task will consist of retaining the services of an independent underground utility locating company to employ utility tracing and/or geophysical methods to identify the locations of the conveyance piping and the associated discharge point(s) from the Transformer Room.

3.3 Soil Investigation

This task will consist of the following elements: surface soil, historic fill, and underlying native soil characterization:

- Surface soils will be characterized to assess the nature and extent of contamination in areas that are proposed to be pervious (e.g. grass and landscaped areas, or other areas not covered by pavement).

- The nature and extent of contamination within the HFM will be characterized. Soil borings will be advanced on the exterior of the Site, as well as under the existing buildings.

- The underlying native soils will be characterized to determine the depth of impacts from the overlying HFM and / or Site operations. Soil borings will be advanced on the exterior of the Site, as well as under the existing buildings.

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- The soils adjacent to and beneath the suspected USTs will be characterized to determine the extent of soil impacts, if any.

The locations of the proposed surface soil samples, soil borings, and test pits are shown in **Figure 5**.

The locations of proposed surface soil samples and test pits adjacent to abandoned USTs are shown in **Figure 6.**

The locations of the proposed soil borings within existing buildings are shown in **Figure 7**.

Soil boring logs will be prepared in accordance with the guidance provided in DER-10 Sections 3.5.2(c)(1) and 3.5.2(c)(2)

3.4 Electrical Equipment Investigation

This task will consist of collecting PCB wipe samples in the transformer vault and elevator reservoir. If stained surfaces are noted, PCB wipe samples will be collected. If it appears that releases have reached below the concrete floor, soil borings will be advanced and subsurface soil will be sampled.

3.5 Soil Vapor Investigation

A soil vapor intrusion (SVI) investigation is anticipated at the Site. However, the existing buildings are currently not weather-tight and therefore do not allow for the collection of representative indoor air samples. As a result, the collection of sub-slab soil vapor, indoor air, and outdoor air samples is not appropriate at this time.

The appropriate scope of an SVI investigation will be evaluated once building conditions are stabilized and representative occupancy conditions can be achieved. Once the required building conditions are achieved, the scope of a separate work plan for an SVI sampling approach will be discussed with the NYSDEC and NYSDOH.

3.6 Groundwater Investigation

Subsequent to completing soil investigation tasks, groundwater monitoring wells will be installed. Proposed well locations are shown on **Figure 8**. If field conditions observed during the RI require a significant change to the proposed locations, their adjusted locations will be discussed with the NYSDEC.

The RI activities will be completed consistent with NYSDEC Part 375-6 and NYSDEC Division of Environmental Remediation: Technical Guidance for Site Investigation and Remediation dated May 2010 (DER-10).

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4.0 REMEDIAL INVESTIGATION

This part of the RI Work Plan describes the scope of investigative work necessary to collect sufficient data to determine the extent of contaminated fill material which will support a subsequent AAR and RWP in achieving **Residential-Restricted Use SCOs under Track 4**. This section of the RI Work Plan includes:

- Field Investigation
- Sampling Program
- Laboratory Analysis

4.1 Field Investigation

The RI is intended to supplement the previous subsurface investigation information by advancement of soil borings, installing monitoring wells, and collecting and analyzing soil and groundwater samples.

At the time of the Phase II ESA, significant hazardous building materials, including asbestos-containing materials (ACM) and lead-based paint (LBP), were identified throughout the Main Terminal Building and Mail & Baggage Building, with some materials observed in damaged condition. Since that time, stabilization measures have been implemented in some of the affected areas. These conditions may affect the ability to collect samples without prior abatement. Sample locations may need to be adjusted based on the building floor plan or other obstructions. Any significant deviations from the approved RIWP will be discussed with the Department prior to implementation.

4.1.1 Floor Drain Assessment

If sediment or water is observed in accessible drainage structures, samples of the observed media will be collected and analyzed as described below.

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Table 4-1: Floor Drain Samples

Matrix	Sampling Locations	Depth	Analysis	No. of Samples	Sampling Location Rationale
Sediment	From floor drains or manholes.	0 to 2 inches	Full Suite*	1	Samples will only be collected from accessible floor drains or manholes. Accessibility is defined as locations where sampling equipment (e.g., bailers, sludge samplers, or pumps) can be deployed from the surface without requiring entry into the structure. Sampling will not occur from manholes or drains designated as confined spaces that require confined space entry protocols.
Water	From floor drains or manholes.	0 to 2 inches	Full Suite*	1	

* Full suite = TCL VOCs, TCL SVOCs, pesticides, herbicides, polychlorinated biphenyls (PCBs), target analyte list (TAL) metals including mercury, cyanide, and hexavalent chromium, per- and polyfluoroalkyl substances (PFAS), and 1,4-dioxane

QA / QC are not proposed for floor drain samples.

4.1.2 Surface Soil Sampling

Surface soil samples will be collected and analyzed as follows:

Table 4-2: Surface Soil Samples

Matrix	Sampling Locations	Depth	Analysis	No. of Samples	Sampling Location Rationale
Surface Soil	Spatially across the Site as shown in **Figure 5**.	0 to 2 inches	Full Suite *(excluding VOCs)	7	Areas not proposed to be "capped" with pavement or buildings.

* Full suite = TCL VOCs, TCL SVOCs, pesticides, herbicides, polychlorinated biphenyls (PCBs), target analyte list (TAL) metals including mercury, cyanide, and hexavalent chromium, per- and polyfluoroalkyl substances (PFAS), and 1,4-dioxane

Table 4-3: Subsurface Soil QA /QC Samples

No. Blind Duplicates	No. Equipment Blanks	No. Matrix Spikes (MS)	No. Matrix Spike Duplicates (MSD)
1	0	1	1

Blind Duplicates are at a rate of 1 per 10 samples (10%). Only 1 required for less than 20 samples.

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Matrix Spikes are at a rate of 1 per 20 samples (5%) per matrix.
Matrix Spike Duplicates are at a rate of 1 per 20 samples (5%) per matrix.
Equipment blanks not required when utilizing disposable sampling / sample collection equipment (macrocore liners, nitrile gloves, disposable sample spoons, etc

4.1.3 Soil Boring Program

Soil borings will be advanced across the Site (excluding the lawn area) to facilitate the sampling of HFM and native material. The soil borings will also be utilized for the construction of groundwater monitoring wells. Investigation of the Lawn Area is not included in this RAWP, as that area is being evaluated under a separate work plan. In general, boring locations have been selected to provide complete coverage of areas outside the approved Lawn Area Sampling Plan. Proposed exploration locations are shown on **Figure 5,** which includes three exterior soil borings and 20 soil borings beneath the Site buildings.

Subsurface areas showing signs of impacts (staining, odors, free product, and measurable volatile vapors) will be further investigated to attempt delineation.

Each soil boring will be advanced into native material, up to 16 feet bgs or to the top of bedrock (whichever is shallower), or at the discretion of the project geologist and with consultation from NYSDEC. Borings will be advanced to assess the full depth of HFM or other contamination of impacted soils. Exploration locations will be located with a hand-held global positioning system (GPS) device or tape measured from existing site features.

From the borings, fill and native soil samples, or soils physically impacted will be collected to document Site conditions. Soil sample collection will be biased towards material horizons that exhibit gross characteristics, discoloration, and/or odors/vapors. Where necessary, supplemental samples will be collected from borings if additional areas of concern in the soil profile are identified in the field.

Three soil boring locations will also be used for the construction of groundwater monitoring wells, as discussed in **Section 4.1.2** .

For the borings in which wells will not be installed, a direct-push drilling rig will be used to advance the borings. Each boring location will be continuously sampled in four- or five-foot intervals using a two-inch by four- or five-foot stainless steel sampling tube fitted with a disposable acetate liner. All non-disposable sampling equipment will be decontaminated between runs and between drill locations to avoid potential cross contamination of samples.

In locations where direct-push techniques are not feasible and / or groundwater wells will be constructed, a rotary drill will be used to advance 4-1/4-inch hollow stem augers. Split-spoon samples will be advanced at two-foot intervals using a 140-pound hammer ahead of the augers. The augers and drilling rods will be decontaminated prior to use via high pressure sprayer. The

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split-spoons will be decontaminated prior to use via an Alconox wash followed by a potable water rinse. Between each soil sample and soil boring, decontamination procedures will be repeated.

Soils from the split-spoons and acetate liners will be screened in the field for visible impairment (e.g. staining), olfactory indications of impairment, evidence of non-aqueous phase liquids (NAPLs), and / or indication of detectable VOCs over 10 ppm with a 10.6 eV PID. Such evidence is collectively referred to as "evidence of impairment" and the results will be recorded on boring logs. The soil boring logs will also include soil description, PID readings, etc. The boring logs will be included in the RI Report.

Subsurface areas showing signs of impacts (staining, odors, free product, and measurable volatile vapors) will be further investigated to attempt delineation. Any further investigation beyond the approved boring locations and sampling plan in this RAWP will be coordinated with and receive prior approval from the NYSDEC Project Manager. A written work plan addendum or amendment may be required prior to implementation, depending on the nature and extent of the field observations. Further investigation, when approved, will include, at a minimum:

- Collection of additional biased soil samples from the impacted horizon(s) and adjacent intervals for laboratory analysis;
- Advancement of step-out borings (horizontally and/or vertically) as directed by field observations; and,
- Continuous field screening of soils using visual, olfactory, and PID (photoionization detector) methods, with supplemental samples collected where PID readings exceed 10 ppm or other evidence of impairment is noted.

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Table 4-4: Soil Boring Locations

Soil Boring Locations	Depth	No. of Locations	Location Rationale
Main Terminal Building	16 ft or TOB*	3	Extension of Curtiss Street located underneath the Main Terminal Building. These soil borings will assess HFM under the terminal.
Parking Garage	16 ft or TOB	13	Three locations in areas of exposed HFM within the vehicle entrance and one location within the former auto repair shop. Six initial delineation locations around the former hydraulic lifts.

			Three initial delineation locations within the former paint booths.
Mail & Baggage	4 ft -8 ft	4	Four locations to assess HFM underneath the Mail & Baggage Building. It is likely that limited access may not allow drilling equipment inside the building. Smaller equipment or hand borings maybe required with reduced depth.

* TOB = Top of Bedrock.

4.1.4 Test Pit Program

Test pits will be excavated to facilitate the characterization of surface and shallow subsurface materials, including HFM and underlying native soils where present. Test pits will supplement the soil boring program by providing direct visual observation of subsurface conditions and allowing for bulk soil sampling of shallow materials.

Test pits will be excavated using a conventional track-mounted excavator. Each test pit will be advanced to a maximum depth of approximately 12 feet below ground surface (bgs) or to the top of native soil, refusal, or groundwater, whichever is encountered first. Test pits will generally extend up to approximately 10 feet in length, as necessary to allow safe observation of subsurface conditions.

During excavation, soils will be continuously evaluated by a qualified environmental professional for evidence of potential contamination. Field screening will include visual and olfactory observations for staining, discoloration, stressed soils, petroleum odors, or other indicators of contamination. In addition, soil headspace will be screened for VOCs using a calibrated PID. Positive indications identified through visual observation, odor, or elevated PID readings will be collectively referred to as evidence of impairment.

Where evidence of impairment or other areas of concern are identified, additional observations and sampling may be conducted to further characterize the impacted material. Soil sampling from test pits will be biased toward material horizons exhibiting gross contamination, staining, discoloration, odors, or elevated PID readings. Supplemental samples may also be collected where field observations indicate potential impacts within the soil profile.

Test pit locations will be documented using a hand-held GPS device or by measurement from existing Site features. Following completion of excavation and sampling activities, test pits will be

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backfilled with the excavated material in the order removed, unless field conditions require alternative management.

Detailed test pit logs will be prepared for each excavation and will include, at a minimum, soil descriptions, estimated depth to native material, field screening results (including PID readings), and documentation of any observed evidence of impairment. Test pit logs will be included in the RI Report.

Table 4-5: Test Pit Locations

Test Pit Locations	Depth	No. of Locations	Location Rationale
Site-wide	8-10 or TOB*	4	Areas not proposed to be "capped" with pavement or buildings.
UST Area	8-10 or TOB	4	

* TOB = Top of Bedrock.

If test pits advanced in the vicinity of the UST Area do not encounter the groundwater table, an additional groundwater monitoring well may be installed in this area to adequately characterize groundwater conditions and potential impacts from historical operations.

4.1.5 Sub-surface Soil Sampling Program

4.1.5.1 Fill Sampling

Fill samples will be collected from borings based on evidence of impairment and to provide characterization across the Site. Fill samples will be collected based on evidence of impairment, spatial distribution, and fill type. Representative fill samples will be collected from the Site. Additional fill samples will be collected if separate fill layers or differing soil nature is encountered in the borings. The fill samples will be collected and analyzed as shown in the table below.

4.1.5.2 Native Soil Sampling

Native soil will be visually assessed in each of the locations from its upper extent to at least 16 feet below ground surface. In order to assess the impact of fill and / or Site operations on the underlying native soil, soil samples will be collected from the top of native material. The soil samples will be collected and analyzed as shown in the table below.

4.1.5.3 Petroleum Delineation

Targeted petroleum delineation will focus on known release areas: the four in-floor hydraulic lifts in the Parking Garage (Spill #2404978 with visible oil), the former paint booth, and the historical filling station/possible UST location. If impacted soil is observed or suspected to be beyond the field characterization and sampling described in this RIWP, then soil borings and/or test pits will

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be advanced around these features through the HFM and into native soil or bedrock (maximum 16 ft bgs or top of bedrock). Field screening with PID (action level 50 ppm), plus visual and olfactory observations, will guide the sampling. Samples will be analyzed for VOCs and SVOCs. Any field adjustments will be discussed with NYSDEC prior to implementation.

4.1.5.4 Subsurface Soil Sampling Summary

Subsurface soil samples will be collected and analyzed as follows:

Table 4-6: Subsurface Soil Samples

Matrix	Sampling Locations	Depth	Analysis	No. of Samples	Sampling Location Rationale
Fill Material	Inside Main Terminal Building. Refer to **Figure 7**.	1-6 ft	Full Suite *	3	Characterize HFM underneath the Main Terminal Building.
Fill Material	Inside Parking Garage. Refer to **Figure 7**.	1-6 ft beneath floor slab	Full Suite *	4	Characterize HFM in the area of the former auto repair shop.
Fill Material	Inside Mail & Baggage Building. Refer to **Figure 7**.	1-6 ft beneath the floor slab	Full Suite *	4	Characterize HFM in under the Mail & Baggage Building.
Petroleum Impacted Soil	UST Area. Refer to **Figure 6.**	Dependent on field observations	VOCs, SVOCs, and Metals	4	Find extents of possible petroleum contamination outside the initial sampling effort.
Petroleum Impacted Soil	UST Area. Refer to **Figure 6.**	Dependent on field observations	Pesticides, PCBs, Cyanide, and hexavalent chromium, PFAS, and 1,4-dioxane	1	Find extents of possible petroleum contamination outside the initial sampling effort.
Petroleum Impacted Soil	Inside Parking Garage. Refer to **Figure 7.**	Dependent on field observations	VOCs, SVOCs, and Metals	9	Find extents of possible petroleum contamination outside the initial sampling effort.

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Native Soil	Site-wide. Refer to **Figure 5**.	6 ft – 16 ft or TOB**	Full Suite *	1	Characterize native soil conditions.
Native Soil	UST Area. Refer to **Figure 6**.	6 ft – 16 ft or TOB**	Full Suite *	2	Characterize native soil conditions around the UST area.
Native Soil	Inside Main Terminal. Refer to **Figure 7**.	6 ft – 16 ft or TOB**	Full Suite *	1	Characterize native soil conditions under the Main Terminal Building.
Native Soil	Inside Parking Garage. Refer to **Figure 7**.	6 ft – 16 ft or TOB**	Full Suite *	1	Characterize native soil conditions under the Main Terminal Building.
Native Soil	Groundwater Monitoring Wells. Refer to **Figure 8**.	Center of monitoring well screen.	Full Suite *	1	Characterize native soil conditions within the water table.

* Full suite = TCL VOCs, TCL SVOCs, pesticides, herbicides, PCBs, TAL metals including mercury, cyanide, and hexavalent chromium, PFAS, and 1,4-dioxane.
** TOB = Top of Bedrock.

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Table 4-7: Stockpile Soil Samples

Matrix	Sampling Locations	Depth	Analysis	No. of Samples	Sampling Location Rationale
Fill Material	Inside Mail & Baggage Building. Refer to **Figure 7**.	NA	Full Suite *	2	Characterize HFM piles inside the Mail & Baggage Building.

* Full suite = TCL VOCs, TCL SVOCs, pesticides, herbicides, PCBs, TAL metals including mercury, cyanide, and hexavalent chromium, PFAS, and 1,4-dioxane.

QA / QC samples will be collected, and the following describes the number and type of samples.

Table 4-8: Subsurface Soil QA /QC Samples

No. Blind Duplicates	No. Equipment Blanks	No. Matrix Spikes (MS)	No. Matrix Spike Duplicates (MSD)
2	0	2	2

Blind Duplicates are at a rate of 1 per 10 samples (10%). Only 1 required for less than 20 samples.
Matrix Spikes are at a rate of 1 per 20 samples (5%) per matrix.
Matrix Spike Duplicates are at a rate of 1 per 20 samples (5%) per matrix.
Equipment blanks not required when utilizing disposable sampling / sample collection equipment (macrocore liners, nitrile gloves, disposable sample spoons, etc

4.1.6 Wipe Sampling

Wipe samples will be collected if evidence of surficial staining is observed in the transformer vault and switchgear rooms. Wipe samples will be collected and analyzed as follows:

Table 4-9: Wipe Samples

Matrix	Sampling Locations	Depth	Analysis	No. of Samples	Sampling Location Rationale
Concrete Surface	Main Terminal: Room No.1 Switchboard and Vault Transformer	Concrete Surface	PCBs	23	The transformer vault and switchgear rooms will be sampled in a 10-foot by 10-foot grid pattern.

Quality Assurance / Quality Control (QA / QC) samples are not proposed for the wipe sampling.

4.1.7 Groundwater Monitoring

To characterize groundwater conditions at the Site, monitoring wells will be installed. The wells will be installed from soil borings discussed in **Section 4.1.3** and sampled.

Overburden wells will be constructed to intersect the top of the water table. Each well will be completed with an appropriate length of 2-inch Schedule 40 0.010-slot well screen connected to an appropriate length of schedule 40 PVC well riser to complete the well.

If groundwater is not encountered in the overburden during drilling or if the investigation determines that the overburden is not the primary water-bearing unit, C&S will notify the DEC Project Manager and submit a supplemental work plan (or amendment to this RIWP) for review and approval prior to proceeding with bedrock well installation.

The supplemental plan will provide the rationale for installing bedrock monitoring wells, supported by boring logs, field observations, regional hydrogeologic data, and preliminary analytical results. It will also identify the proposed well locations, depths, construction details, and screen placement rationale, including casing through overburden into competent bedrock, sealing methods to prevent cross-contamination between zones, and well development procedures.

Following installation, the monitoring wells will be developed through the removal of up to ten well volumes using dedicated bailers or a peristaltic or submersible pump. Additional well volumes will be extracted, if necessary to document stabilization of water quality. The effluent will be monitored for temperature, dissolved oxygen, conductivity, oxidation / reduction potential, and turbidity and the effluent will be considered stabilized per the following criteria:

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Table 4-10: Groundwater Stabilization Criteria

Parameter	Units	Stabilization Criteria
pH	Standard Units	± 0.1
Conductivity	mS/cm	± 3%
Turbidity	NTU	10% or < 10 NTU
D.O.	mg/L	10% or < 0.5 mg/L
Temperature	°F / °C	± 3%
ORP	mV	± 10

Groundwater sampling will follow well development and be conducted using low-flow purging and sampling techniques. Before purging the well, water levels will be measured using an electric water level sounder capable of measuring to the 0.01-foot accuracy. Peristaltic or bladder pumps using manufacturer-specified tubing will be used for purging and sampling groundwater. Sampling protocol and equipment will comply with the most current version of NYSDEC "Groundwater Sampling for Emerging Contaminants" guidance. In addition, calibration, purging and sampling procedures will be performed as specified by the USEPA[2] for low-flow sampling. Decontamination will be conducted after each well is sampled to reduce the likelihood of cross contamination. Calibration times, purging volumes, water levels and field measurements will be recorded in a field log and will be provided in the Remedial Investigation Report.

Groundwater flow direction will be determined using water level data collected from three monitoring wells screened within the same hydrostratigraphic unit. Depth to groundwater will be measured from surveyed reference points at each well and converted to hydraulic head elevations relative to a common datum. Water level measurements will be collected at least three times (during dewatering and the two groundwater sample events) to minimize temporal variability. Results will be used to provide an initial estimate of groundwater flow direction and gradient at the Site.

Samples will be collected and analyzed as follows:

Table 4-11: Groundwater Samples

Matrix	Sampling Location	Analysis	No. of Samples	Sampling Location Rationale
Groundwater	Refer to **Figure 8**.	Full Suite *	8 field samples (two sample events)	Well locations will be determined based on outcome of soil boring and test pit program. **Figure 8** presents one monitoring well potentially downgradient of

[2] U.S. EPA Low Stress (low-flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells, September 19, 2017.

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				the off-site AST, one monitoring well downgradient of the UST Area, one monitoring well on the western portion of the Site along Memorial Drive, and one monitoring well downgradient of the Parking Garage.

* Full suite = TCL VOCs, TCL SVOCs, pesticides, herbicides, PCBs, TAL metals including mercury, cyanide, and hexavalent chromium, PFAS, and 1,4-dioxane.
Total and dissolved metals will be analyzed if the well effluent is greater than 50 NTUs.
100% of the wells will be analyzed for these parameters during the first round of sampling. If detected above a DEC guidance value, PFAS will be tested during the second round of sampling in the respective well.

QA / QC samples will be collected, and the following describes the number and type of samples.

Table 4-12: Groundwater QA / QC Samples

No. Blind Duplicates	VOC Trip Blank	PFAS Equipment Blanks	No. Matrix Spikes (MS)	No. Matrix Spike Duplicates (MSD)
2	1 per shipment, per day	2	2	2

Blind Duplicates are at a rate of 1 per 10 samples (10%). Only 1 required for less than 20 samples.
Matrix Spikes are at a rate of 1 per 20 samples (5%) per matrix.
Matrix Spike Duplicates are at a rate of 1 per 20 samples (5%) per matrix.
Equipment blanks not required when utilizing disposable sampling / sample collection equipment.

A second round of groundwater sampling will be performed two to three months after the first round. Except as noted above, the second round of groundwater samples will be analyzed for the same analytes as in the first round.

Drilling decontamination, development, and purge fluids will be collected, containerized, sampled and disposed consistent with DER-10 (Refer to **Section 4.3**).

4.2 Laboratory Analysis and Data Validation

C&S will utilize the services of a NYSDOH Environmental Laboratory Approval Program (ELAP) certified laboratory for analytical testing. The laboratory results for the samples will be reported in a Category B deliverables package to facilitate validation of the data, and a third-party validator will review the laboratory data and prepare a Data Usability Summary Report (DUSR). The validator will evaluate the analytical results for the field samples and quality assurance / quality control samples and compare the findings to USEPA guidance to determine the accuracy and validity of the results. The EDD for all media will be uploaded to the EQuIS software application.

4.3 Investigation Derived Waste

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Investigation-derived wastes (IDW) (e.g., grossly-contaminated soil cuttings and purge water) will be containerized or stockpiled and staged on-site, pending proper disposal at an off-site facility. Soil cuttings with no apparent staining, odors, or elevated PID readings will be used to backfill boring holes except for backfilling monitoring wells. Soil to be disposed off-site will be placed in steel 55-gallon drums or on poly sheets. IDW fluids will be placed in steel 55-gallon drums with closed tops. Drums will be properly labeled, sealed, and characterized as necessary. Samples may be analyzed for toxicity characteristic leaching procedure (TCLP) VOCs, SVOCs, pesticides, herbicides, and metals; PCBs; pH (corrosivity), flash point (ignitability); reactivity; and paint filter (free liquids).

Discarded personal protective equipment (PPE) (i.e., latex gloves, Tyvek, paper towels, etc.) and disposable sampling equipment (i.e., bailers or stainless-steel spoons) will be placed in sealed plastic garbage bags and disposed of as municipal solid waste.

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5.0 QUALITY ASSURANCE AND QUALITY CONTROL PROTOCOLS

To ensure that suitable and verifiable data results are obtained from the information collected at the Site, quality assurance procedures are detailed in this section. The project Quality Assurance Project Plan (QAPP) is provided in **Appendix F**.

During the RI the NYSDEC may split any waste, soil, groundwater, or air sample.

5.1 Sampling Methods

Sampling procedures will be conducted consistent with the NYSDEC DER-10 and the attached QAPP. Collection of representative samples will include the following procedures:

- Ensuring that the sample taken is representative of the material being sampled;
- Using proper sampling, handling and preservation techniques;
- Properly identifying the collected samples and documenting their collection in field records;
- Maintaining chain-of-custody; and
- Properly preserving samples after collection.

5.1.1 Soil Sampling

Soil samples will be collected from direct-push sampling sleeves or split-spoon samplers and evaluated using field screening techniques and laboratory analytical testing. Upon recovery, soil samples will be visually examined and logged by a qualified geologist or environmental professional.

A representative portion of each soil sample designated for laboratory analysis will be immediately transferred directly from the sampling device into laboratory-supplied sample containers using appropriate sampling techniques to minimize volatilization and cross-contamination. Soil placed into laboratory containers will not be used for field screening.

A separate aliquot of soil from the same sampling interval will be placed into a new, resealable polyethylene bag for field screening purposes. The screening sample will be allowed to equilibrate within the sealed bag for a minimum of five minutes to facilitate the development of headspace vapors. Following equilibration, headspace volatile organic compound (VOC) concentrations will be measured using a photoionization detector (PID) and recorded in the field logbook. Soil placed into resealable bags for PID screening will be used solely for screening purposes and will not be submitted for laboratory analysis.

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To prevent cross-contamination, a new bag will be used for each sample interval and all bags will be properly discarded after use. PID screening results, soil observations, and other field measurements will be used to assist in sample selection and characterization of subsurface conditions.

All field screening instruments will be calibrated daily in accordance with the manufacturer's specifications and project-specific quality assurance/quality control procedures. Calibration records will be maintained as part of the field documentation.

As detailed in the DER-10, grab samples will be placed in two to 16 ounce wide-mouth, plastic or glass jars, as provided by the lab. Sample jars will immediately be placed on ice in a cooler. The soil will be analyzed on a standard turnaround time.

The following are the container and holding requirements for solids.

Table 5-1: Solid Samples – Container and Holding Requirements

Analysis	Analytical Method(s)	Sample Volume	Containers	Preservation Requirements	Maximum Holding Time
VOCs + Tentatively Identified Compounds (TICs)	Method 8260	15 grams	(3) encore samplers	meOH, Cool to 4°C	48 hours to freeze, 14 days to analyze
SVOCs + TICs	Method 8270	8 oz.	8-ounce amber glass with Teflon-lined cap	Cool to 4°C (no preservative)	7 days to extract, 40 days to analyze
Metals	Method 6010/7000	8 oz.	8-ounce amber glass with Teflon-lined cap	Cool to 4°C (no preservative)	180 days (Hg 28 days; Cr 30 days)
Cyanide	Method 9010C	4 oz	4-ounce amber glass with Teflon-lined cap	Cool to 4°C (no preservative)	14 days
Pesticides	Method 8081B	4 oz	4-ounce amber glass with Teflon-lined cap	Cool to 4°C (no preservative)	14 days to extract
PCBs	Method 8082	4 oz.	4-ounce amber glass with Teflon-lined cap	Cool to 4°C (no preservative)	14 days
PFAS	Method 1633	8 oz.	8-ounce plastic	Cool to 4°C (no preservative)	90 days

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5.1.2 Groundwater Sampling

Groundwater sampling will be conducted consistent with NYSDEC and USEPA guidance for low-flow purging and sampling, as described in **Section 4.1.7**.

Water samples will be collected via pouring directly into pre-cleaned bottles provided by the laboratory and immediately placing the bottles on ice. The bottles and associated preservatives used, if any, will be based on the requirements of the analytical methods.

The following are the container and holding requirements for aqueous samples.

Table 5-2: Aqueous Samples – Container and Holding Requirements

Analysis	Analytical Method(s)	Sample Volume	Containers	Preservation Requirements	Maximum Holding Time
VOCs	Method 8260D	80 ml	(2) 40 ml VOA vials with HCL	HCL, pH < 2 Cool to 4°C	14 days
SVOCs	Method 8270E	500 ml	(2) 250 ml amber glass, Teflon lined	Cool to 4°C (no preservative)	7 days to extract
Pesticides	Method 8081B	500 ml	(2) 500 ml amber glass, Teflon lined	Cool to 4°C (no preservative)	7 days
PCBs	Method 8082	1 liter	1-Liter amber glass, Teflon lined	Cool to 4°C (no preservative)	14 days
Metals	Methods 200.7, 200.8, 6010D, 6020B, 7000A	500 ml	500 ml plastic with nitric acid	Nitric acid, pH < 2 Cool to 4°C	180 days
Cyanide	Method 9010C	250 ml	250 ml plastic	Sodium hydroxide, pH > 12 Cool to 4°C	14 days
PFAS	Method 1633	250 ml	(2) 250 ml plastic	Cool to 4°C (no preservative)	28 days

5.2 Analytical Procedures

Laboratory analysis will be conducted by a third-party laboratory that is accredited by the NYSDOH ELAP. Laboratory analytical methods will include the most current NYSDEC Analytical Services Protocol (ASP).

Soil, groundwater, SVI and wipe samples sent to a certified laboratory will be analyzed in accordance with EPA SW-846 methodology. A combination of the following contaminants will be analyzed:

- TCL VOCs + TICs (EPA Method 8260);
- TCL SVOCs + TICs (EPA Method 8270);
- TCL Pesticides (USEPA 8081);
- PCBs (USEPA 8082);
- TAL Metals (EPA Method 6010);
- Cyanide (EPA 9010C / 9012B)
- Hexavalent Chromium (EPA 7196A)
- 1,4-Dioxane (EPA Method 8270-SIM)

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- PFAS (EPA Method 1633)

Category B deliverables will be requested to be used in a third-party data validation. A DUSR will be prepared by a third-party data consultant using the most recent methods and criteria from the USEPA. The DUSR will assess all sample analytical data, blanks, duplicates and laboratory control samples and evaluate the completeness of the data package. Waste characterization samples will not be validated.

5.3 Documentation

5.3.1 Custody Procedures

As outlined in NYSDEC *Sampling Guidelines and Protocols*, a sample is in custody under the following conditions:

- It is in your actual possession;
- It is in your view after being in your physical possession;
- It was in your possession and then you locked or sealed it up to prevent tampering; or
- It is in a secure area.

The environmental professional will maintain all chain-of-custody documents that will be completed for all samples that will leave the Site to be tested in the laboratory.

5.3.2 Community Air Monitoring

Air monitoring will be conducted to support on and off-site risk management during intrusive investigation and remedial activities, including soil boring advancement, monitoring well installation, excavation, and soil handling activities. Monitoring will include real-time measurements of particulate matter and VOCs in accordance with the project CAMP.

Air monitoring locations will be established in the field and adjusted as necessary based on prevailing wind conditions to maintain representative upwind and downwind monitoring stations. CAMP monitoring results will be documented and submitted to the NYSDEC and NYSDOH on at least a weekly basis while ground-intrusive and soil handling activities are occurring.

Any exceedance of CAMP action levels will be documented and reported to the NYSDEC and NYSDOH Project Managers as soon as practicable, but no later than one business day following the exceedance. Notifications will include the monitoring results, a description of the exceedance, the corrective actions implemented, and the duration of those actions. Response actions will

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remain in effect until monitoring results indicate that conditions have returned below the applicable action levels.

The specific air monitoring procedures, action levels, and response requirements are provided in the CAMP (**Appendix D**) and HASP (**Appendix E**). If particulate concentrations exceed CAMP action levels, or if visible dust emissions, nuisance odors, or elevated VOC readings are observed, corrective measures will be immediately implemented to minimize off-site migration and worker exposure.

- Dust and odor suppression measures will include, but not be limited to:
- Application of water to exposed soil surfaces, excavation areas, stockpiles, and haul roads using dedicated water trucks and spray equipment;
- Limiting the size and duration of open excavation and exposed soil areas;
- Conducting clearing and grubbing activities in phases to minimize unvegetated surfaces susceptible to wind erosion;
- Placement and maintenance of gravel on temporary access roads and work areas to reduce dust generation;
- Minimizing the total area of temporary roadways and disturbed surfaces requiring dust control;
- Prompt stabilization or covering of stockpiled materials, as necessary; and
- Implementation of additional dust and odor control measures whenever field conditions warrant.

These measures will be implemented throughout intrusive activities to maintain compliance with CAMP requirements and minimize potential impacts to on-site personnel and surrounding receptors.

Odors generated from RI activities, which are discernable off-site are not expected. The proposed intrusive work is minor and limited to soil borings and groundwater monitoring well installation. The maximum exposed area is approximately 4.5 inches in diameter for the monitoring well borehole. After extraction and initial screening, soil will be stored in Ziploc bags for further screening and then be placed in sampling glassware. Excess soil will be containerized. The boring will be backfilled. As such, soil causing odors will be quickly addressed and mitigated as part of routine handling procedures. If needed, odor neutralizing sleeves such as Atmos RusScent Sleeves or equivalent will be placed at the Site perimeter.

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6.0 HEALTH AND SAFETY

To verify the safety of the workers and the local community during the performance of the work, monitoring practices of the work environment will be in place during all phases of RI activities. A Health and Safety Plan (HASP) was prepared that details procedures for maintaining safe working conditions and minimizing the potential for exposure to hazardous material. The HASP is provided in **Appendix E**.

Air monitoring during RI activities will be conducted using a PID and an aerosol particle meter. Details on air monitoring are provided in the CAMP, which includes special considerations for working near exposed populations. The CAMP is provided in **Appendix D**.

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7.0 FISH AND WILDLIFE RESOURCES IMPACT ANALYSIS

The Site is located in a densely developed urban portion of the City of Buffalo and comprises 12.54 acres of the former Buffalo Central Terminal complex. The area was developed beginning in 1926 with construction of the terminal and associated rail facilities, which operated until 1979. The Site currently includes the Main Terminal Building, Mail & Baggage Building, and the 5.7-acre Historic Lawn (a green space used for community events).

The NYSDEC Online EAF Mapper was reviewed to identify significant natural communities, endangered, or threatened species within one-quarter mile of the Site. Results indicated the Peregrine Falcon may be present in the area. A nesting pair had occupied the tower of the Main Terminal Building. On November 26, 2025, NYSDEC relocated the pair to Corpus Christi Church in Buffalo.

Appendix G provides the FWRIA Decision Key.

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8.0 REPORTING

Based on the results of the work described above, a report will be prepared to describe the methodologies and results of the RI. The RI Report will describe:

- Investigative methods;
- Observations and findings;
- Comparison of soil sample results to SCO's;
- Comparison of groundwater sample results to USEPA Technical and Operational Guidance Series (TOGS) values;
- Comparison of SVI sample results to NYSDOH air guideline values;
- Results of the community air monitoring program;
- Analytical results;
- A qualitative human health exposure assessment ;
- Map providing all public and private drinking water sources if emerging contaminant concentrations exceed TOGS values;
- Fate and transport analysis of contaminants; and
- Conceptual Site model.

The document will be submitted to the NYSDEC for review and approval.

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9.0 SCHEDULE

It is assumed that NYSDEC will promptly review and provide comments on this RI Work Plan within 45 days of submission. Below is an anticipated schedule of milestones for the remediation of the Site.

9.1 Estimated Project Schedule

April 2026	Remedial Investigation Work Plan (RIWP) Submission
August 2026	RIWP Approved
September 2026	Remedial Investigation (RI) commenced
December 2026	RI Report Submission
March 2027	RI Report Approval
January 2027	Alternative Analysis Report (AAR) and Remedial Action Work Plan (RAWP) Submission
April 2027	AAR / RAWP Approval
June 2027	Decision Document

The schedule does not account for the possibility of Interim Remedial Measures (IRMs). If during the RI, impacts are identified that can readily be addressed by IRMs, the schedule will be updated accordingly.

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Figures

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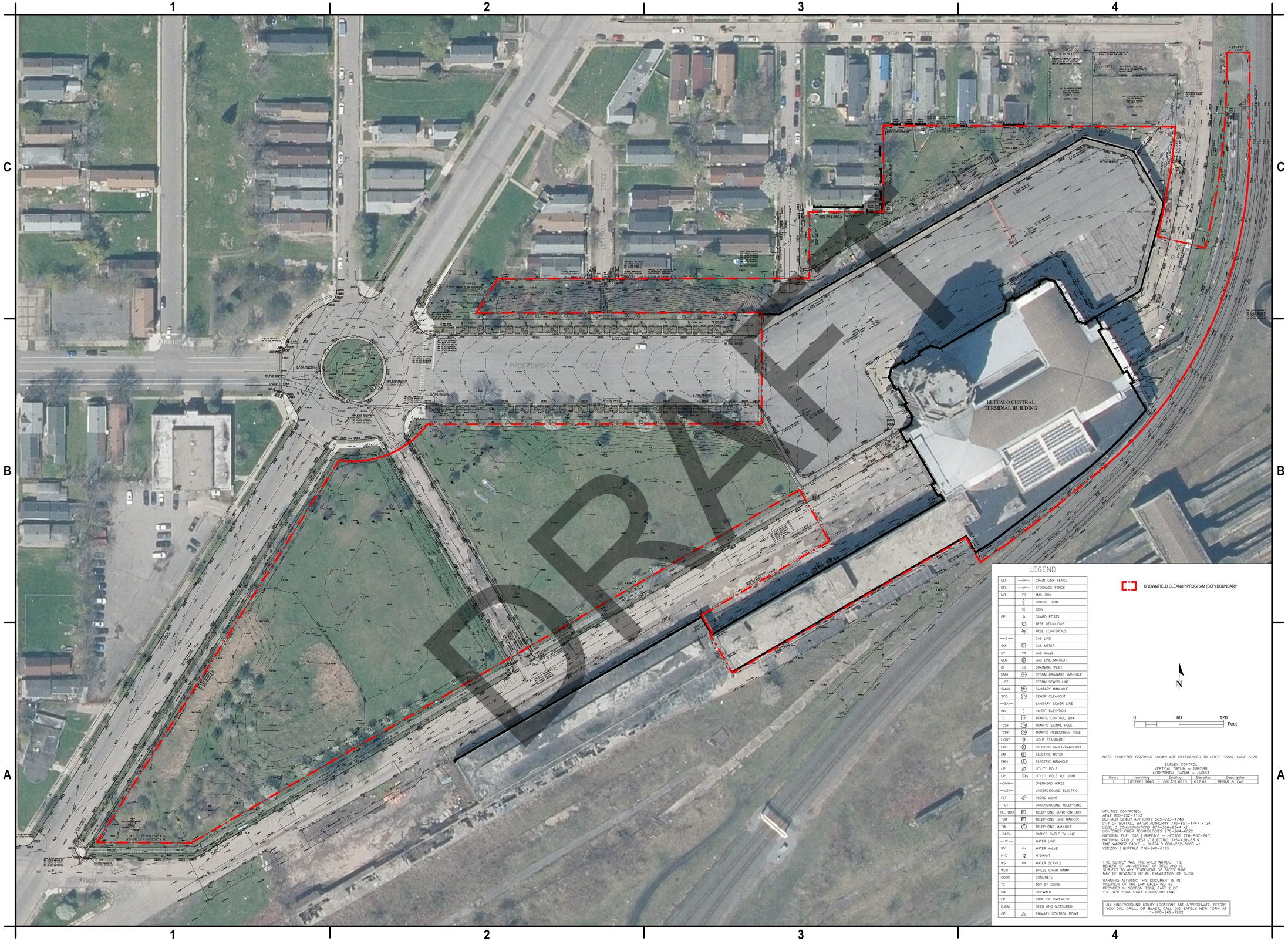
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DESIGNED BY:	C. MARTIN
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SITE LOCATION

FIGURE 1

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LEGEND

CLF	—o—o—	CHAIN LINK FENCE
SFL	—o—o—	STOCKADE FENCE
MB		MAIL BOX
		DOUBLE SIGN
		SIGN
GP		GUARD POSTS
		TREE DECIDUOUS
		TREE CONIFEROUS
—G—		GAS LINE
GM	GM	GAS METER
GV		GAS VALVE
GLM	GLM	GAS LINE MARKER
DI		DRAINAGE INLET
DMH		STORM DRAINAGE MANHOLE
—ST—		STORM SEWER LINE
SAMH	SAN	SANITARY MANHOLE
SCO	SCO	SEWER CLEANOUT
—SA—		SANITARY SEWER LINE
INV		INVERT ELEVATION
TC	TR	TRAFFIC CONTROL BOX
TCSP	TR	TRAFFIC SIGNAL POLE
TCPP	TR	TRAFFIC PEDESTRIAN POLE
LIGHT		LIGHT STANDARD
EHH	E	ELECTRIC VAULT/HANDHOLE
EM	E	ELECTRIC METER
EMH	E	ELECTRIC MANHOLE
UP		UTILITY POLE
UPL		UTILITY POLE W/ LIGHT
—OHW—		OVERHEAD WIRES
—UE—		UNDERGROUND ELECTRIC
FLT		FLOOD LIGHT
—UT—		UNDERGROUND TELEPHONE
TEL BOX	T	TELEPHONE JUNCTION BOX
TLM	T	TELEPHONE LINE MARKER
TMH	T	TELEPHONE MANHOLE
—CATV—		BURIED CABLE TV LINE
— W —		WATER LINE
WV		WATER VALVE
HYD		HYDRANT
WS		WATER SERVICE
WCR		WHEEL CHAIR RAMP
CONC		CONCRETE
TC		TOP OF CURB
SW		SIDEWALK
EP		EDGE OF PAVEMENT
D.&M.		DEED AND MEASURED
CP	△	PRIMARY CONTROL POINT

BROWNFIELD CLEANUP PROGRAM (BCP) BOUNDARY

0 60 120 Feet

NOTE: PROPERTY BEARINGS SHOWN ARE REFERENCED TO LIBER 10920, PAGE 7325

SURVEY CONTROL
VERTICAL DATUM = NAVD88
HORIZONTAL DATUM = NAD83

Point	Northing	Easting	Elevation	Description
1	1052661.6640	1081359.6510	612.82	REBAR & CAP

UTILITIES CONTACTED:
AT&T 800-252-1133
BUFFALO SEWER AUTHORITY 585-733-1748
CITY OF BUFFALO WATER AUTHORITY 716-851-4747 x124
LEVEL 3 COMMUNICATIONS 877-366-8344 x2
LIGHTOWER FIBER TECHNOLOGIES 978-264-4022
NATIONAL FUEL GAS | BUFFALO – NFG101 716-857-7431
NATIONAL GRID // WEST // ELECTRIC 315-428-6319
TIME WARNER CABLE – BUFFALO 800-262-8600 x1
VERIZON | BUFFALO 716-840-6165

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DESIGNED BY:	C. MARTIN
CHECKED BY:	M. WALKER

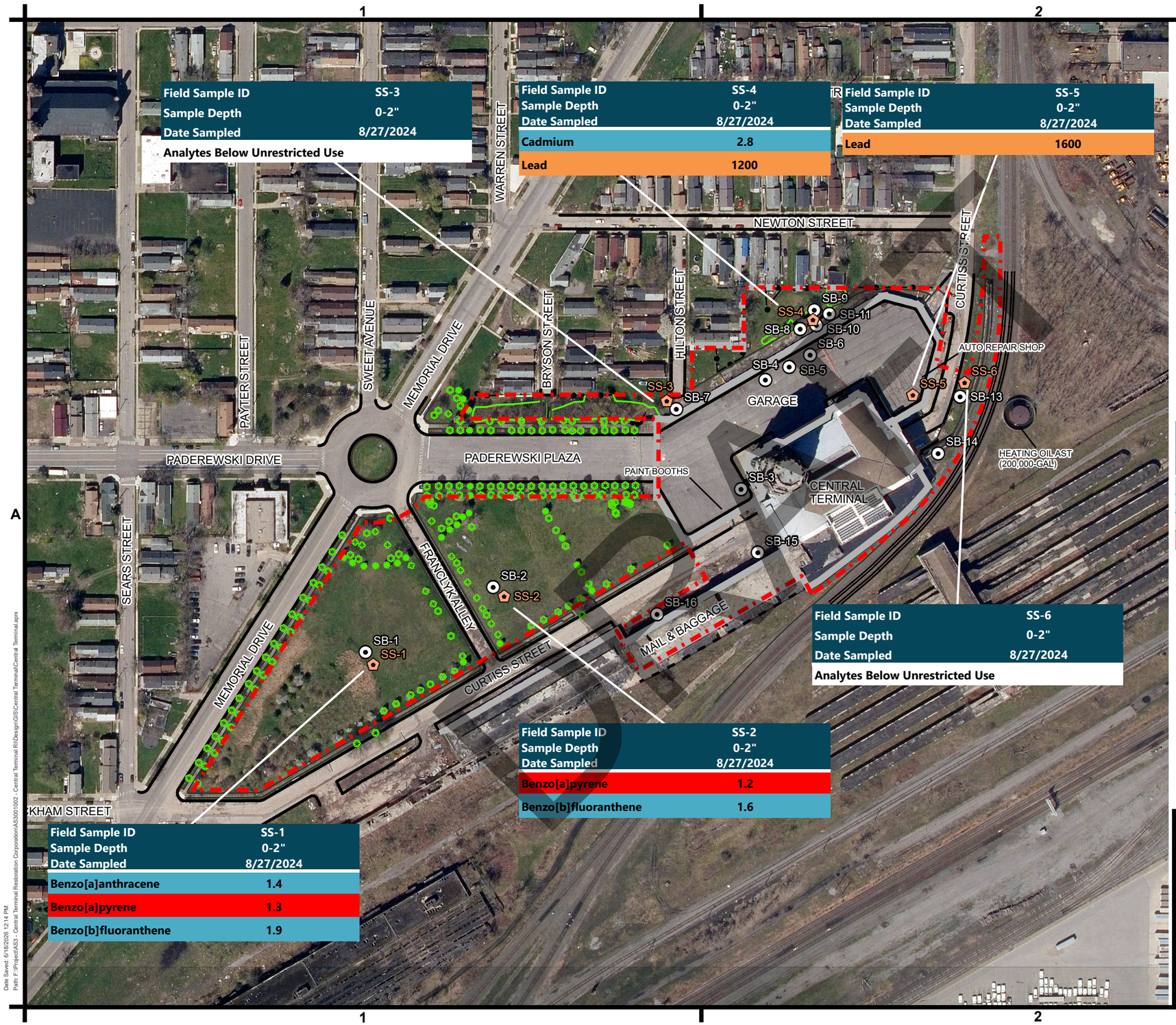
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SITE MAP

FIGURE 2

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LEGEND

- Brownfield Cleanup Program (BCP) Boundary

2024 Soil Investigation

- Soil Boring Location
- Surface Soil Location

Field Sample ID	
Sample Depth	
Date Sampled	
Analyte	mg/kg
Restricted Residential Use	
Commercial Use	
Indsutrial Use	

N

0 100 200 US Feet

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PRE-BCP

SURFACE SOIL SAMPLE RESULTS

FIGURE 2

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Field Sample ID	SB-8
Sample Depth	5'
Date Sampled	8/27/2024
Analytes Below Unrestricted Use	

Field Sample ID	SB-9
Sample Depth	3'
Date Sampled	8/27/2024
Analytes Below Unrestricted Use	

Field Sample ID	SB-10
Sample Depth	3'
Date Sampled	8/27/2024
Analytes Below Unrestricted Use	

Field Sample ID	SB-4
Sample Depth	5'
Date Sampled	8/27/2024
Analytes Below Unrestricted Use	

Field Sample ID	SB-3
Sample Depth	4'
Date Sampled	8/27/2024
Analytes Below Unrestricted Use	

Field Sample ID	SB-2
Sample Depth	4'
Date Sampled	8/27/2024
Mercury	0.35

Field Sample ID	SB-1
Sample Depth	8'
Date Sampled	8/27/2024
Mercury	0.65

Field Sample ID	SB-13
Sample Depth	5'
Date Sampled	8/27/2024
Analytes Below Unrestricted Use	

Field Sample ID	SB-14
Sample Depth	4'
Date Sampled	8/27/2024
Barium	920
Lead	590

Field Sample ID	SB-16
Sample Depth	6'
Date Sampled	8/27/2024
Analytes Below Unrestricted Use	

Field Sample ID	SB-15
Sample Depth	5'
Date Sampled	8/27/2024
Manganese	8300

LEGEND

- Brownfield Cleanup Program (BCP) Boundary

2024 Soil Investigation

- Soil Boring Location
- Surface Soil Location

Field Sample ID	
Sample Depth	
Date Sampled	
Analyte	mg/kg
Restricted Residential Use	
Commercial Use	
Indsutrial Use	

N

0 100 200 US Feet

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SUB-SURFACE SOIL SAMPLE RESULTS

FIGURE 3

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ID	Environmental Concern
1	Historic fill material
2	In-floor Hydraulic Lifts (NYSDEC Spill #2404978)
3	Underground Storage Tanks and Pump Islands
4	Oil on Transformer Room Floor (NYSDEC Spill #9002692 and 8900603)
5	Offsite Heating Oil Aboveground Storage Tank

LEGEND

- Brownfield Cleanup Program (BCP) Boundary

Remedial Investigation

- Soil Boring Location (Sub-surface Sample)
- Surface Soil Sample Location
- Test Pit Location
- Groundwater Monitoring Well Location
- PCB Wiple Sample Location
- Stockpile Sample Location

N

0 50 100 200 US Feet

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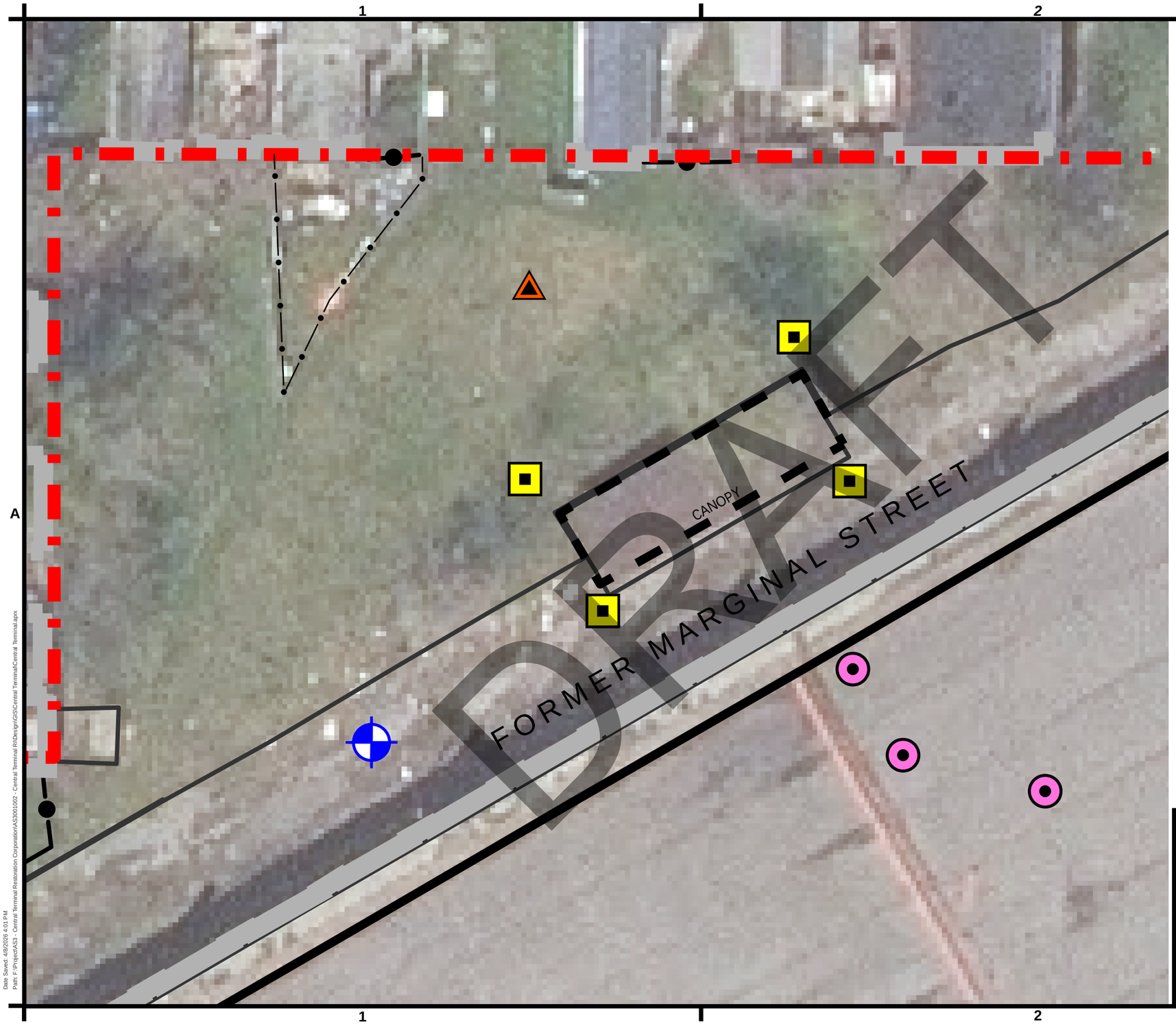
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PROPOSED REMEDIAL INVESTIGATION LOCATIONS

FIGURE 5

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LEGEND

- Brownfield Cleanup Program (BCP) Boundary
- Soil Boring Location (Sub-surface Sample)
- Surface Soil Sample Location
- Test Pit Location
- Groundwater Monitoring Well Location

N

0 10 20

US Feet

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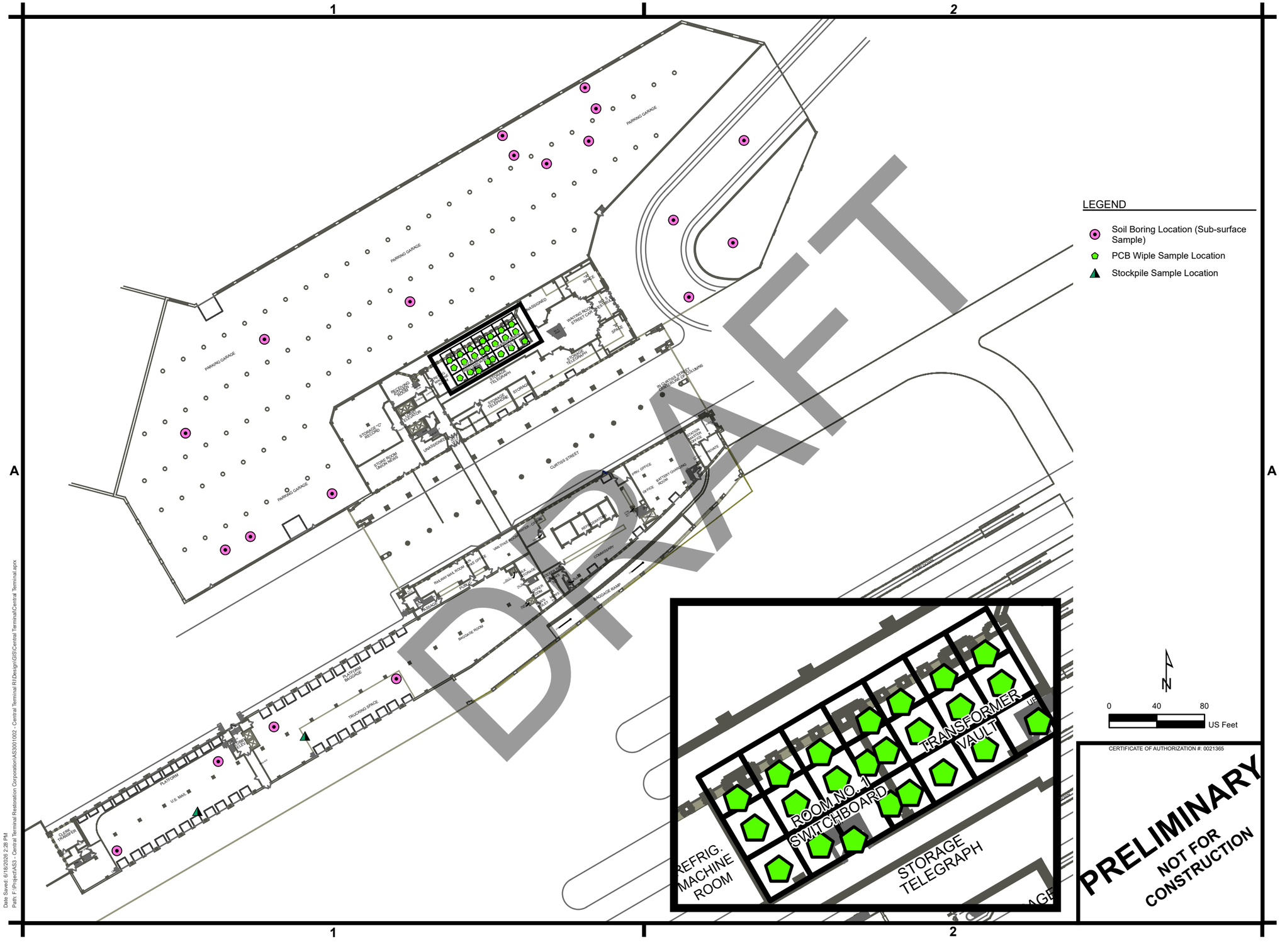
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PROPOSED UST SAMPLE LOCATIONS

FIGURE 6

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PROPOSED INTERIOR SAMPLE LOCATIONS

FIGURE 7

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- Brownfield Cleanup Program (BCP) Boundary
- Groundwater Monitoring Well Location

N

0 100 200

US Feet

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PROPOSED GROUNDWATER SAMPLE LOCATIONS

FIGURE 8

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Tables

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Table 1 – Proposed Remedial Investigation Sampling Program			
Task	**Location**	**Number of Field Samples**	**Lab Analysis**
Floor Drain Samples	From floor drains or manholes	2	TCL VOCs+TIC, SVOCs+TIC, and pesticides, PCBs, TAL Metals, Cyanide, Hex Chromium, PFAS / 1,4-dioxane
Surface Soil Samples	Site-wide for areas proposed to be pervious (i.e. without asphalt or buildings)	7	TCL VOCs+TIC, SVOCs+TIC, and pesticides, PCBs, TAL Metals, Cyanide, Hex Chromium, PFAS / 1,4-dioxane
Historic Fill Samples	Site-wide	13	TCL VOCs+TIC, SVOCs+TIC, and pesticides, PCBs, TAL Metals, Cyanide, Hex Chromium, PFAS / 1,4-dioxane
Native Soil Samples	Site-wide	6	TCL VOCs+TIC, SVOCs+TIC, and pesticides, PCBs, TAL Metals, Cyanide, Hex Chromium, PFAS / 1,4-dioxane
Petroleum Impacted Soil Samples	Anomaly Areas (if present)	13	TCL VOCs+TIC, SVOCs+TIC, TAL Metals
Petroleum Impacted Soil Samples	Anomaly Areas (if present)	1	Pesticides, PCBs, Cyanide, Hex Chromium, PFAS / 1,4-dioxane
Groundwater Samples	Site-wide	8	TCL VOCs+TIC, SVOCs+TIC, and pesticides, PCBs, TAL Metals (total and filtered), Cyanide, Hex Chromium 1,4-dioxane and PFOS 1st round (2nd round sampling contingent on 1st round results)
PCB Wipe Samples	Switchboard and Transformer Vault	23	PCBs

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Appendices

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Appendix A

Key Project Personnel and Qualifications

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Project Contacts		
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Professional Engineer Nevin Bradford	499 Col. Eileen Collins Blvd. Syracuse, NY 13212	(315) 703-4284 (Direct) nbradford@cscos.com
Project Manager Cody Martin	141 Elm Street, Suite 100 Buffalo, NY 14203	(716) 955-3021 (Direct) cmartin@cscos.com
Field Staff Jesse Alt-Winzig	141 Elm Street, Suite 100 Buffalo, NY 14203	(716) 427-6383 (Direct) jaltwinzig@cscos.com
Brian Wasilewski	141 Elm Street, Suite 100 Buffalo, NY 14203	(716) 474-9092 (Direct) Bwasilewski@cscos.com
Natalie O'Brien	141 Elm Street, Suite 100 Buffalo, NY 14203	(716) 955-3022 (Direct) nobrien@cscos.com
Margaret Coughlin	141 Elm Street, Suite 100 Buffalo, NY 14203	(716) 804-7792 (Direct) MCoughlin@cscos.com
Sub-Contractors		
Drilling Contractor		
Unknown at this time		
Test Pit Contractor		
Unknown at this time		
Analytical Laboratory		
Unknown at this time		
Data Usability Summary		
Unknown at this time		
GPR Contractor		
Unknown at this time		

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Daniel E. Riker, PG

Service Group Manager

Daniel Riker has more than 33 years of experience with expertise in environmental services including preliminary site assessments, Phase I and II Environmental Site Assessments, treatment technology assessments, site characterization, remedial investigations, alternatives analysis, remedial design, and brownfield redevelopment projects. Dan has also developed a community planning specialty that includes brownfield, comprehensive, and waterfront planning projects. His responsibilities include client management, projects, and staff, and coordination with state and federal regulatory agencies.

Total Experience
33 years

With C&S Since
2014

Education
Master of Science, Duke University, 1994

Bachelor of Arts, Colgate University, 1991

Registrations
Professional Geologist — NY, 2018

Professional Geologist — PA, 2000

Organizations
Buffalo Niagara River Land Trust, Immediate Past Board President

NAIOP Vice President, Board of Directors

WNY Land Conservancy, Former Board of Directors

Buffalo Association of Professional Geologists, Past President

Experience

Expert Witness Project, Fill Material at Confidential Site, Southern Tier, New York—Project manager for addressing fill material illegally placed at an unpermitted disposal site. Responsibilities include the review of existing legal and site characterization information; identification of permanent placement locations; evaluation of potential remedies; and estimation of costs for each potential remedy.

BCP Redevelopment Project, Buffalo Central Terminal, Buffalo, NY—Working for a non-profit agency, acted as the Principal-in-Charge for the assessment and remedial planning of a former rail terminal that is an iconic historic structure. C&S summarized existing information and conducted additional sampling to demonstrate the site's eligibility for the NYSDEC Brownfield Cleanup Program. C&S used the information to apply to the BCP to obtain tax credits and a liability release for private redevelopment.

BCP Redevelopment Project, Cannabis Site, Buffalo, NY—Project manager for the investigation, remediation and redevelopment of a former manufacturing facility slated for redevelopment as a cannabis growth and processing facility. Due to the presence of SVOCs and metals in site-wide fill, this project was entered into the NYSDEC's Brownfield Cleanup Program (BCP). The fill material also contains TENORM slag, so additional radiological assessment and handling were part of the project.

BCP Redevelopment Project, Mentholatum Site, Buffalo, NY—Project principal for the investigation, remediation and redevelopment of a former manufacturing facility. Due to the presence of SVOCs and metals in site-wide fill and of VOCs in groundwater from an adjacent site, this project was entered into the NYSDEC's Brownfield Cleanup Program (BCP). The mixed-use redevelopment includes first floor commercial space and 50 residential apartments.

BCP Redevelopment Project, Heritage Point Site, Buffalo, NY—Project principal for the remediation and redevelopment of a property in Buffalo's Canalside area. Due to the presence of SVOCs and metals in site-wide fill, this project was entered into the NYSDEC's Brownfield Cleanup Program (BCP). The remediation efforts achieved a Track 1 Cleanup status. The mixed-use redevelopment includes first floor commercial space and residential apartments.

BCP Redevelopment Project, 1200 Jefferson Site, Buffalo, NY—Project manager for the investigation, remediation, and redevelopment of a former dry cleaner and auto repair

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facility. Due to the presence of VOCs, SVOCs and metals in site-wide fill and groundwater, this project was entered into the NYSDEC's Brownfield Cleanup Program (BCP).

BCP Redevelopment Project, Campus Square, Buffalo, NY—Project principal for the investigation, remediation, and redevelopment of an 8-acre parcel that is located immediately north of the Buffalo Niagara Medical Campus. Under the NYSDEC's Brownfield Cleanup Program (BCP), the project is undergoing remediation to address contaminated fill soils. The new building is an eight-story, mixed-use residential and commercial (medical office space) structure. The first floor is used for commercial space and the remaining seven floors for residential space. The remediation achieved Unrestricted Use status.

Brownfield Redevelopment Project, Westwood Country Club, Amherst, NY—Project principal for the investigation, remediation and redevelopment of a 170-acre former golf course. Due to the presence of metals from years of pesticide and fungicide use in surficial soils, this property will require careful management of site soils.

BCP Redevelopment Project, Conventus Site, Buffalo, NY—Project manager for the ongoing groundwater monitoring and remediation at a former gasoline station. Due to the presence of petroleum in soils and groundwater, this project on the Buffalo Niagara Medical Campus was entered into the NYSDEC's Brownfield Cleanup Program (BCP). Remedial efforts included the removal of contaminated soil to a depth of 40 feet below grade and the extraction of over a million gallons of petroleum and contaminated groundwater.

BCP Redevelopment Project, 211 Main Street, North Tonawanda, NY—Project manager for the remediation at a former lumber facility. This project included the remediation of SVOCs, metals, and radiological contaminants in on-site soils to facilitate the redevelopment of the property for professional offices. The project was funded privately as well as through a USEPA Revolving Loan Fund Grant.

BCP Redevelopment Project, Lakefront Boulevard, Buffalo, NY—Project principal for the investigation, remediation and redevelopment of a vacant parcel along the Erie Basin Marina in downtown Buffalo. This project was undertaken under the auspices of the NYSDEC's Brownfield Cleanup Program (BCP). The redevelopment activities included remediation of contaminated soil and construction of 20 high-end townhomes, open green space, and parking.

BCP Redevelopment Project, Pierce Arrow Site, Buffalo, NY—Project principal for the investigation, remediation and redevelopment of a 2.85-acre parcel that comprises of a portion of the former Pierce Arrow facility under the auspices of the NYSDEC's Brownfield Cleanup Program (BCP). The redevelopment activities included remediation of contaminated soil and construction of a mixed use residential and commercial structure. The significant historic building was repurposed into a quality residential facility with traditional apartments, residential and work studios, and loft style apartments.

BCP Redevelopment Project, MOD-PAC Site, Buffalo, NY—Project manager for the remediation and redevelopment of a former industrial parcel that comprises a portion of the MOD-PAC facility. This project was undertaken under the auspices of the NYSDEC's Brownfield Cleanup Program (BCP). The redevelopment activities included remediation of contaminated soil and the construction of turf athletic fields for a local, private high school.

BCP Redevelopment Project, ANSCO Site, Binghamton, NY—Quality assurance officer for the remediation of a former camera manufacturing facility. The remediation included the removal of hazardous and non-hazardous wastes; the construction of a clean cover across the site; and the installation of vapor mitigation systems. The project was completed to allow for the adaptive reuse of the building for approximately 100 market rate apartments.

BCP Redevelopment Project, Health Professions Hub at D'Youville College, Buffalo, NY—Quality assurance officer for the NYSDEC Track 1 remediation of a former gas station and adjacent properties to provide a safe

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location for the development of a $25M Health Professions Hub at D'Youville College. The new 60,000 SF facility houses educational and training facilities as well as health clinics for the surrounding community.

BCP Redevelopment Project, South Salina Street Site, Syracuse, NY—Quality assurance officer for the remediation of a former location of various commercial entities, including a large, manufactured gas storage tank. The project is being completed to allow for the construction of a mixed-use building that includes commercial and residential opportunities.

BCP Application, Dona Street, Lackawanna, NY—On behalf of the City of Lackawanna, prepared a successful application for entrance into New York State's Brownfield Cleanup Program. The intent of the project was to generate developer interest in the property by demonstrating its eligibility for the BCP while also eliminating the six month or longer process of gaining entrance into the BCP for developers.

BCP Redevelopment Project, 4435 Military Road, Niagara, NY—On behalf of the Town of Niagara, project manager for the remediation of a former gas station and dry cleaner. The Town entered into the BCP to remediate the site under a structured program and to obtain the release of liability from New York State. Remedial elements included contaminated soils and TENORM slag removal and cover placement. The work was completed under a USEPA brownfield grant.

Groundwater Remediation and Monitoring Program, Kaleida Health, 1001 Main Street Spill Site, Buffalo, NY—Project manager for the performance of groundwater treatment and quarterly groundwater monitoring to address a gasoline release from an underground storage tank. The project site is immediately adjacent to the recently remediated Conventus Site and the remediation efforts take into account the conditions on that site.

Environmental Consulting Services, Amherst, NY—Under a term contract, project manager providing consulting services to the Town of Amherst and its economic development agencies regarding environmental issues associated with various properties throughout the Town.

Multi-property Phase I Environmental Site Assessments, Utica, NY—Project manager responsible for conducting Phase I ESAs at 30 parcels in an area of the City of Utica slated for redevelopment. The Phase I ESAs were performed in accordance with ASTM E-1527-13 and included site reconnaissance, records review, interviews and the preparation of 11 ESA reports. The work was completed on a short timeframe (2.5 weeks).

Various Phase I Environmental Site Assessments, Western New York, NY—Project manager responsible for conducting Phase I ESAs on behalf of the Western New York Land Conservancy. The Phase I ESAs were performed at properties being considered for agricultural easements, environmental easements, and/or acquisition.

Multi-property Phase I Environmental Site Assessments, Rockford, IL—Project manager responsible for conducting Phase I ESAs at five medical buildings including a hospital. The Phase I ESAs were performed in accordance with ASTM E-1527-13 and included site reconnaissance, records review, interviews and the preparation of five ESA reports.

Downtown Revitalization Initiative Project, City of North Tonawanda, NY—Project manager for the planning portion of North Tonawanda's $10M DRI award. The project included Local Planning Commission coordination; public outreach program implementation; project sponsor meetings and assistance; proposed project development; Downtown Profile and Assessment development; and Strategic Investment Plan preparation.

Downtown Revitalization Initiative Project, Village of Homer, NY—Project principal for the planning portion of Homer's $10M DRI award. The project includes Local Planning Commission coordination; public outreach program implementation; project sponsor meetings and assistance; proposed project development; Downtown Profile and Assessment development; and Strategic Investment Plan preparation.

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Downtown Re-Zoning Project, Fulton, NY—Project manager for the rezoning of the City of Fulton's downtown area. Previous zoning was out-of-date and did not account for waterfront greenspace and did not allow for mixed-use development, as well as other issues. The project is being completed under the City's NYS Downtown Revitalization Initiative grant.

Step 1 Brownfield Opportunity Area Project, Village of Gowanda, NY—Project manager for the completion of a Pre-Nomination Study to address brownfield sites throughout the community. Gowanda was once home to the largest glue factory in the world, as well as associated businesses including tanneries. These historical uses left legacies of contamination and blight, so the Step 1 BOA project was completed to create economic and public benefit opportunities out of these impacted properties.

Step 2 Brownfield Opportunity Area Project, Village of Gowanda, NY—Project manager for the completion of a Nomination Study to advance redevelopment planning for the community. Unique attributes of the Study Area include waterfront access, large former industrial properties, a quaint Village downtown, and an active community.

Step 2 Brownfield Opportunity Area Project, Village and Town of Canton, NY—Project manager for the identification of appropriate redevelopment strategies for the Village's waterfront. The project includes an extensive, innovative outreach program; analysis tasks including utilities, transportation, and economic markets; as well as inventorying and prioritizing brownfield sites within the Study Area.

Step 2 Brownfield Opportunity Area Project, City of Jamestown, NY—Project manager for the identification of appropriate redevelopment strategies for the western portion of the city. The project includes an extensive, innovative outreach program intended to obtain the community's true vision for revitalization. The analysis tasks include utilities, transportation, and economic markets, as well as inventorying and prioritizing brownfield sites within the Study Area.

Step 2 Brownfield Opportunity Area Projects, City of Amsterdam, NY—Project manager for the identification of appropriate redevelopment strategies for the two portions of the city. The project includes simultaneously completing two BOA projects under two separate grants. Unique attributes of the two study areas include waterfront access, large former industrial buildings and tracts of land, industrial sites interwoven with residential properties, and poor housing stock, but active community members and support agencies.

Step 2 Brownfield Opportunity Area Project, City of Cortland, NY—Project manager for the environmental and engineering aspects of the identification of appropriate redevelopment strategies for the southern portion of the city. The project includes an extensive, innovative outreach program intended to obtain the community's true vision for revitalization of the community. The analysis tasks include utilities and transportation, as well as inventorying and prioritizing brownfield sites within the Study Area.

Step 3 Brownfield Opportunity Area Project, City of Lackawanna, NY—Project manager for the creation of a visionary yet realistic implementation strategy for the conceptual planning previously created during the Step 2 BOA project. The work includes engineering design and cost benefit analyses to help identify the most appropriate steps to achieve redevelopment, as well as Phase I and II Environmental Site Assessments at four strategic sites to obtain private developer interest in the properties.

Brownfield Opportunity Area Marketing Project, City of Dunkirk, NY—Project manager for the performance of a marketing project designed to obtain developer interest in priority brownfield sites in the City of Dunkirk. Work included the development and dissemination of solicitations for Expressions of Interest; coordination and performance of a developer's forum; and creation of other marketing documents and materials.

Chadakoin River Strategic Business Plan, City of Jamestown, NY—Project manager for the identification of economic and engineering studies and projects necessary to redevelop the Chadakoin River. The project includes identifying projects to enhance the navigability of the river, provide access to the water, and create

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excitement and bring people to the waterfront. The plan includes proposed projects, priority and timing strategies, cost estimates, and potential funding sources.

Comprehensive Plan, Olean, NY—Project principal for the characterization, analysis and planning related to the development of the City's Comprehensive Plan. Project activities included inventory & analysis of existing conditions, public outreach, and creation of the draft and final Comprehensive Plan.

Comprehensive Plan and Local Waterfront Revitalization Program (LWRP) Update, North Tonawanda, NY—Project principal for the characterization, analysis and planning related to the development of the City's Comprehensive Plan and an update to its LWRP. Project activities included inventory & analysis of existing conditions, public outreach, and creation of the draft and final Comprehensive Plan and LWRP.

Comprehensive Plan and Zoning Code Update, Jamestown, NY—Project principal for the characterization, analysis and planning related to the development of the City's Comprehensive Plan and updates to its Zoning Code. Project activities included inventory & analysis of existing conditions, public outreach, and creation of the draft and final Comprehensive Plan and Zoning Code Updates.

Local Waterfront Redevelopment Program (LWRP) Project, Williamsville, NY—Project manager for subconsultant for characterization, analysis and planning of waterfront opportunities within the Village of Williamsville. Project tasks included inventory & analysis of existing conditions, map creation, aid with public outreach, and creation of Draft LWRP.

Local Waterfront Redevelopment Program (LWRP) Project, Oswegatchie River, North Country, NY—Project manager for the characterization, analysis and planning of water-related development opportunities along the waterfront of four communities in New York's North Country, including the Towns of Canton, Oswegatchie, and DeKalb and the Villages of Huevelton, Rensselaer Falls and Richville. Part 1 LWRP project activities included inventory & analysis of existing conditions, map creation, public outreach, and creation of Draft LWRP.

Cost Estimating, Peter Cooper Site, Gowanda, NY—Assisted the Gowanda Area Redevelopment Corporation (GARC) with estimating long-term costs associated with Operations, Maintenance, and Monitoring of the remediated brownfield site. The results of the work were used to negotiate with Potentially Responsible Parties.

Creekside Improvement Project, Gateway and Creekside Parks, Village of Gowanda, NY—Project manager for the performance of the environmental permitting and construction oversight of park improvements at two public parks along Cattaraugus Creek. The project includes improved access to the Creek, a new overlook, and repairs to sections of eroded streambank.

USEPA Brownfield Coalition Planning and Assessments, Niagara County, NY—Project manager for the performance of the redevelopment planning phases of the Niagara County Brownfield Coalition USEPA grant project. The coalition is comprised of North Tonawanda, Niagara Falls, and Lockport. C&S's roles include public outreach, inventory development, priority site selection, reuse planning, and grant administration.

USEPA Phase I/II Environmental Site Assessments, Gowanda, NY—Project principal for the performance of Phase I and II ESAs at priority brownfield sites within the Village of Gowanda. The work is funded by a USEPA Brownfield Assessment Grant. Responsibilities include identifying appropriate sites for assessment, creating application forms for approval by USEPA, coordinating and managing the assessments, and grant administration.

USEPA Phase II Environmental Site Assessments, Niagara County, NY—Project manager for the performance of Phase II ESAs at three priority brownfield sites within Niagara County, including 211 Main Street, North Tonawanda and 4445 Military Road and the Weber Property in the Town of Niagara. The work is funded by a

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USEPA Brownfield Assessment Grant. Responsibilities include coordinating, managing and implementing the assessments, and grant administration.

USEPA Phase I/II Environmental Site Assessments, Jamestown, NY—Project manager for the performance of Phase I and II ESAs at priority brownfield sites within the City of Jamestown. The work is funded by a USEPA Brownfield Assessment Grant. Responsibilities include identifying appropriate sites for assessment, creating application forms for approval by USEPA, coordinating and managing the assessments, and grant administration.

USEPA Phase I/II Environmental Site Assessments, Cortland, NY—Project principal for the performance of Phase I and II ESAs at priority brownfield sites within the City of Cortland. The work is funded by a USEPA Brownfield Assessment Grant. Responsibilities include identifying appropriate sites for assessment, creating application forms for approval by USEPA, coordinating and managing the assessments, and grant administration.

USEPA Phase I/II Environmental Site Assessments, Lackawanna, NY—Project principal for the performance of Phase I and II ESAs at priority brownfield sites within the City of Lackawanna. The work is funded by a USEPA Brownfield Assessment Grant. Responsibilities include identifying appropriate sites for assessment, creating application forms for approval by USEPA, coordinating and managing the assessments, and grant administration.

Site Remediation, Arthur Kill Correctional Facility, Staten Island, NY—Project manager for the performance of a remedial investigation and remedial actions at a closed correctional facility on behalf of the New York State Department of Corrections and Community Supervision (NYSDOCCS) and the New York State Office of General Services (NYSOGS). The work focused on impacted soil and groundwater proximal to heating fuel oil storage tanks and an abandoned firing range. The project included the design of the treatment of petroleum impacts and the removal of lead impacted soils and bullet trap materials.

Site Remediation, Niagara Falls State Park, Niagara Falls, NY—Project manager for the performance of a remedial investigation and remedial actions at a public park. The project is being conducted under C&S's term contract with New York State Office of Parks, Recreation, and Historic Preservation in response to the discovery of drums of pesticides in fill material within the park.

USEPA Brownfields Program, Gowanda, NY—On behalf of the Village of Gowanda, prepared a successful $300,000 USEPA Brownfields Grant application for the completion of assessments at sites throughout the Village.

USEPA Brownfields Program, Lackawanna, NY—On behalf of the City of Lackawanna, prepared a successful $300,000 USEPA Brownfields Grant application for the completion of assessments at sites throughout the city.

USEPA Brownfields Program, Jamestown, NY—On behalf of the City of Jamestown, prepared a successful $200,000 USEPA Brownfields Grant application for the completion of assessments at sites throughout the city.

USEPA Brownfields Program, Cortland, NY—On behalf of the City of Cortland, prepared a successful $200,000 USEPA Brownfields Grant application for the completion of assessments at sites throughout the city.

NYS Environmental Restoration Program, Cortland, NY—On behalf of the City of Cortland, prepared a successful $115,000 ERP Remediation Grant application for the completion of cleanup activities at the Noss Park Site.

NYS Environmental Restoration Program, Syracuse, NY—On behalf of the City of Syracuse, prepared a successful $1.5M ERP Remediation Grant application for the completion of cleanup activities at the Syracuse Rigging Site.

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NYS Environmental Restoration Program, Clay, NY—On behalf of the Town of Clay, prepared a successful $3.0M ERP Remediation Grant application for the completion of cleanup activities at the Maider Road Site.

Brownfield Opportunity Area and Brownfield Planning

The projects below were performed for a previous employer.

Brownfield Opportunity Area, Step 1 Pre-Nomination Study, Chadakoin River Corridor, Jamestown, NY—Project manager for characterization and preliminary analysis of redevelopment opportunities within a 600-acre segment of the Chadakoin River corridor, which extends through the industrial spine of Jamestown. The project was funded by a NYSDOS Brownfield Opportunity Area Program grant.

Combined Brownfield Opportunity Area (BOA) Step 1 and Step 2, Local Waterfront Redevelopment Program (LWRP) Project, Chadakoin River Corridor, Jamestown, NY—Project manager for characterization, analysis and planning of redevelopment opportunities within a 1,400-acre segment of the Chadakoin River corridor. The study area includes extensive wetlands, a portion of the City's downtown core, and the City's industrial center. The project was funded by two NYSDOS BOA Program grants and one LWRP grant.

Brownfield Opportunity Area Step 1 Nomination Study, Batavia Central Corridor, Batavia, NY—Project Hydrogeologist for the characterization and analysis of environmental conditions and redevelopment opportunities within a 250-acre area in the center of the City of Batavia.

Lockport Brownfield Opportunity Area, City of Lockport, NY—Project manager for the Pre-Nomination Study BOA project that focuses on the two primary watercourses in the City: the Erie Canal and 18-Mile Creek.

Dunkirk Brownfield Opportunity Area, City of Dunkirk, NY—Project manager for the Pre-Nomination Study BOA project that focuses on the former Al-Tech site within the City of Dunkirk.

Olean Brownfield Opportunity Area, City of Olean, NY—Project manager for the Pre-Nomination Study BOA project that focuses on the former industrial northwestern portion of the city.

Brownfield Opportunity Area Step 2 Nomination Study, Highland Area, City of Niagara Falls, NY—Project manager for the environmental and infrastructure characterization and analysis portion of an area-wide redevelopment planning study of the Highland Area of Niagara Falls.

Brownfield Opportunity Area Step 1 Pre-Nomination Study, Chadakoin River Corridor, City of Jamestown, NY—Project manager for characterization and preliminary analysis of redevelopment opportunities within a 600- acre segment of the Chadakoin River corridor, which extends through the industrial spine of the City of Jamestown.

Brownfield Opportunity Area Step 2 Nomination Study, First Ward, City of Lackawanna, NY—Project manager for the Nomination Study of the 2,000-acre First Ward of Lackawanna.

Site Investigation and Remediation

The projects below were performed for a previous employer.

Site Remediation, Rail Yard Site, Salamanca, NY—On behalf of the Seneca Nation of Indians, provided project management, field oversight and reporting of soil excavation and biocell construction activities. The work was funded by a USEPA Brownfield Cleanup Grant.

Site Remediation, Buffalo Basic Ingredients Site, Buffalo, NY—Provided field oversight and reporting of underground storage tank closure and soil excavation activities.

Brownfield Redevelopment Project, Covanta Rail-to-Truck Intermodal Facility Site, Niagara Falls, NY—Project Hydrogeologist for the accelerated investigation, remediation and redevelopment of a 15-acre former industrial site under the Brownfield Cleanup Program (BCP). Conducted a Remedial Investigation (RI) of the

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site prior to acquisition in order to satisfy the dual objectives of pre-acquisition due diligence and advancing the BCP process. Responsible for the evaluation of site information and the preparation of technical documents.

Remedial Investigation/Alternatives Analysis (RI/AA), Interim Remedial Measures (IRMs), Randolph Foundry, Randolph, NY—As a subconsultant on the RI/AA and IRM project, project manager for the design of IRMs that include the removal of contaminated foundry sand and the demolition of the dilapidated structure.

Remedial Investigation/Alternatives Analysis (RI/AA), Interim Remedial Measures (IRMs), Electruk Site Town of Lockport, NY—Project manager for the implementation of an RI/AA program and IRMs at a former battery manufacturing facility completed under the New York State Environmental Restoration Program (ERP).

Remedial Investigation/Alternatives Analysis (RI/AA), Interim Remedial Measures (IRMs), Bristol Avenue Site City of Lockport, NY—Project manager for the implementation of an RI/AA program and IRMs at a vacant, former retail facility containing USTs that was advanced under the New York State Environmental Restoration Program (ERP). Petroleum contamination was delineated and addressed via the IRM.

Remedial Investigation/Alternatives Analysis (RI/AA) Program, Youngstown Cold Storage, Youngstown, NY—Project manager for the RI/AA of a former apple storage facility adjacent to a public park completed under the New York State Environmental Restoration Program (ERP).

Remedial Investigation/Alternatives Analysis (RI/AA), Interim Remedial Measures (IRMs), C&B Cleaners Jamestown, NY—Project manager for the RI/AA of a former dry-cleaning facility advanced under the New York State Environmental Restoration Program (ERP).

Remedial Investigation/Alternatives Analysis (RI/AA) Program, Edgewood Warehouse, Dunkirk, NY—Project manager for the RI/AA of a former locomotive manufacturing and later warehouse facility advanced under the New York State Environmental Restoration Program (ERP).

Remedial Investigation/Alternatives Analysis (RI/AA), Interim Remedial Measures (IRMs), Former Niagara Motors Site, Dunkirk, NY—Project manager for the RI/AA of a four-acre former engine manufacturing facility. The RI identified localized petroleum contamination that was addressed via the IRM, which involved UST and soil removal.

Remedial Investigation/Alternatives Analysis (RI/AA), Interim Remedial Measures (IRMs), Former Felmont Oil Site, Olean, NY—Project manager for the RI/AA of a 22-acre former oil refining, storage, and distribution facility. RI identified widespread petroleum contamination and IRM involved UST and piping removal, as well as soil remediation.

Remedial Investigation, Former Steel Manufacturing Facility, Buffalo, NY—Conducted an investigation of stained discharge emanating from an inactive industrial facility in South Buffalo.

Remedial Investigation, Contaminated Municipal Well Site, Lewis Run, PA—Deputy project manager who implemented the investigation of multiple properties in the Borough of Lewis Run to assess the source of chlorinated solvents impacting a municipal supply well.

Remedial Investigation, Former Dry Cleaner Facility, Wysox, PA—Deputy project manager that implemented the investigation of a former dry-cleaning facility to assess the source of chlorinated solvents impacting groundwater.

Remedial Investigation, Insulator Manufacturing Facility, Leroy, NY—Deputy project manager that implemented the investigation of a manufacturing facility to characterize the source and extent of chlorinated solvent contamination.

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Remedial Investigation, Chemical Repackaging Facility, Fair Lawn, NJ—Performed an investigation to assess potential migration paths and receptors of the groundwater contaminant plume and assisted with remedial planning to address chlorinated solvent contamination in soil and groundwater.

Site Investigation, Commercial Property, West Seneca, NY—Planned and implemented a site investigation of a commercial property that is known to contain fill materials including purifier waste from a manufactured gas plant.

Supplemental Site Investigation, Former Service Station, Cheektowaga, NY—Planned and implemented a supplemental investigation of a former service station.

Site Investigation/Remedial Alternatives Report (SI/RAR), Brownfield Site, Buffalo, NY—Project manager for the SI/RAR of a 16-acre former fertilizer manufacturing facility later developed as a public park.

Sediment Sampling Program, Fort Drum, Watertown, NY—Field staff responsible for the collection of sediment samples from a small lake within the fort complex that is used for recreational purposes.

Site Investigation, Commercial Site, Ripley, NY—In response to petroleum contamination concerns at a motel/gasoline sales facility, completed an evaluation of soil and groundwater contamination to characterize and delineate the impacted media as well as identify remedial options.

Remedial Investigation, Contaminated Domestic Well, Alinda, PA—Deputy Project manager that implemented the investigation of a service station and adjacent properties to assess the source of gasoline constituents impacting indoor air quality and a domestic drinking water well.

Waste Characterization Program, Fort Drum, Watertown, NY—Field staff responsible for the collection of waste samples from the various waste streams throughout the fort complex.

New York Power Authority, NAPL Investigation, NYPA Right-of-Way, Niagara Falls, NY—Project manager for the delineation of non-aqueous phase liquids (NAPL) within the NYPA Lewiston Power Project conduit right-of-way in the vicinity of Royal Avenue.

Site Investigation, Former Industrial Site, Utica, NY—Under NYSDEC's Standby Contract for engineering services, Project Leader responsible for implementing an investigation at a screw machine shop for an immediate investigation work assignment.

Site Investigation, USEPA Superfund Site, Logan Township, NJ—Acting on behalf of the USEPA, provided field oversight of monitoring well drilling and installation activities in preparation for the performance of pumping tests to aid in the design of a remediation system to contain on-site groundwater contamination.

Phase I and II Environmental Site Assessments

The projects below were performed for a previous employer.

USEPA Phase I Environmental Site Assessments, Niagara County, NY—Project manager for the performance of 16 Phase I ESAs at priority brownfield sites across Niagara County. The work was funded by a USEPA Brownfield Assessment Grant.

USEPA Phase II Environmental Site Assessments, Niagara County, NY—Project manager for the performance of three Phase II ESAs at priority brownfield sites in Niagara County. The work was funded by a USEPA Brownfield Assessment Grant.

Phase II Environmental Site Assessment, Carr's Warehouse Site, Batavia, NY—Project manager for the performance of a Phase II ESA at a priority brownfield site in the City of Batavia. The work was funded by a NYSDOS Brownfield Opportunity Area Program Grant.

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Phase II Environmental Site Assessment, Della Penna Site, Batavia, NY—Project manager for the performance of a Phase II ESA at a priority brownfield site in the City of Batavia.

USEPA Phase I/II Environmental Site Assessment, Philadelphia Furniture Site, Salamanca, NY—On behalf of the Seneca Nation of Indians, acted as the Project manager for a Phase I and II ESA at a priority brownfield site. The work was funded by a USEPA Brownfield Assessment Grant.

Phase I and II Environmental Site Assessment, Four Sites, Jefferson County, NY—Project manager responsible for conducting a Phase I and II ESAs at tax delinquent automobile repair and gasoline sales facilities on behalf of Jefferson County in association with potential foreclosure actions. The Phase I ESAs identified concerns and the subsequent Phase II ESAs also identified evidence of contamination. The resulting reports included an identification and analysis of potential remedial options and costs.

Phase I/II Environmental Site Assessment and Site Remediation, SUNY Fredonia Technology Incubator, Dunkirk, NY—Project manager for the assessment of vacant property within the City of Dunkirk for the potential acquisition of and development as a technology incubator. Following the discovery of an underground storage tank and associated soil contamination, worked with the city to obtain support from Chautauqua for excavation services and reduced landfill tipping fees.

Phase I and II Environmental Site Assessment, 5077 Transit Road, Depew, NY—Project manager responsible for conducting a Phase I and II ESA at an active recreational vehicle sales and service facility on behalf of a potential purchaser. The Phase I ESA was performed in accordance with ASTM E-1527-05 and included site reconnaissance, records review, interviews and the preparation of an ESA report. The Phase II ESA was conducted to evaluate concerns related to discharges from floor drain and included the sampling of sediment in peripheral drainage ditches. The work identified petroleum contamination that is expected to be remediated prior to the completion of the property transaction.

Phase I Environmental Site Assessments, North Tonawanda and Lockport, NY—Project manager responsible for performing two Phase I ESAs in accordance with ASTM Practice 1527-05, which meets the requirements for the recently adopted All Appropriate Inquiry rule. The Phase I ESAs were performed under Niagara County's USEPA Brownfield Assessment Pilot Grant at two separate sites including a 2.1-acre inactive / vacant industrial site and a 1.8-acre multiple tenant commercial building. Responsibilities included task management and coordination, presentation of findings at public meetings, and the review of ESA reports that were submitted to and accepted by USEPA Region 2.

Phase I and II Environmental Site Assessment, 377 Delaware Avenue, Tonawanda, NY—Project manager responsible for conducting a Phase I and II ESA at an inactive automobile dealership.

Phase I and II Environmental Site Assessment, River Road Properties, Tonawanda, NY—Project manager responsible for conducting Phase I ESAs at multiple vacant properties along River Road that have been identified as priority sites for redevelopment. The Phase I ESA was performed in accordance with ASTM E-1527-05 and included site reconnaissance, records review, interviews and the preparation of an ESA report. The work identified a number of environmental concerns associated with the subject properties, as well as adjacent properties, including decaying drums of fluids and fill of unknown origin and composition.

Phase I Environmental Site Assessment, Inducon Corporate Drive, Sanborn, NY—Project manager responsible for conducting a Phase I ESA at 14 vacant parcels within the Vantage Center.

Phase I and II Environmental Site Assessment, Warehouse Development Site, Cheektowaga, NY—Project manager for a Phase I ESA of vacant property that was slated for development as warehousing space.

Phase II Environmental Site Assessment, Equipment Rental Facility, Dewitt, NY—Conducted a Phase II Environmental Site Assessment at an equipment rental facility.

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Phase II Environmental Site Assessment, Retail Property, Ithaca, NY—Project Hydrogeologist that conducted a Phase II Environmental Site Assessment at a potential retail property.

Phase I Environmental Site Assessment, Mulberry and Maple Streets, Buffalo, NY—Project manager for a Phase I ESA at residential properties slated for demolition and redevelopment for continued residential use.

Phase I Environmental Site Assessment, Mississippi Street, Buffalo, NY—Project manager for a Phase I ESA at a former warehouse slated for redevelopment as residential apartments.

Phase I Environmental Site Assessment, Lockport Junction Road, Lockport, NY—Project manager for a Phase I ESA at a town-owned 60- acre agricultural property in support of a possible property transaction.

Phase I and II Environmental Site Assessment, Seven Public Schools, North Tonawanda, NY—Project manager for a Phase I ESA of seven schools as part of a major renovation project.

Phase I Environmental Site Assessments, Two Properties, Fort Edward, NY—Project manager responsible for performing two Phase I ESAs in accordance with ASTM Practice 1527-05.

Phase I and II Environmental Site Assessment, Ohio, Street Properties, Buffalo, NY—Project manager responsible for conducting a Phase I and II ESA at three adjoining vacant industrial parcels.

Phase I and II Environmental Site Assessment, 219 Brigham Road, Dunkirk, NY—Project manager for the performance of a Phase I and II ESA at an active warehouse facility in support of a property transaction on behalf of the purchaser.

Phase I and II Environmental Site Assessment, Preston Auto, Wellsville, NY—Project manager for the performance of a Phase I and II ESA at the active Preston Auto dealership in support of a property transaction.

Phase I and II Environmental Site Assessment, 1180 Abbott Road, Lackawanna, NY—Project manager for the performance of a Phase I and II ESA at the active Preston Auto dealership in support of a property transaction.

Phase I and II Environmental Site Assessments and Property Transaction Screens, On-Call Agreement, Citizens Bank, Various Sites, NY—Project manager responsible for conducting Property Transaction Screens and Phase I and II ESAs at various properties on behalf of Citizens Bank.

Phase I Environmental Site Assessment (ESA) Niagara Falls, NY—Project manager for the Phase I ESA of commercial office building that was historically operated as a tire sales/ service facility and a gasoline filling station with six gasoline tanks.

Phase I and II Environmental Site Assessments, NYPA Surplus Parcels, St. Lawrence County, NY—Project manager for the implementation of Phase I and II ESA activities along a corridor adjacent to the St. Lawrence River for the New York Power Authority and Kleinschmidt Associates.

Phase I and II Environmental Site Assessment, Ripley Selection Site, Ripley, NY—Project manager for the implementation of Phase I and II ESA activities at a site slated for development.

Phase II Environmental Site Assessment, Retail Property, Ithaca, NY—Project Hydrogeologist that conducted a Phase II Environmental Site Assessment at a potential retail property.

Phase I Environmental Site Assessment, Equipment Rental Facilities, Ontario, Canada—Deputy Project manager that conducted Phase I Environmental Site Assessments at two equipment rental facilities in accordance with ASTM standards, including site inspections, historic land use and records review, interviews with on-site employees, and preparing the resulting assessment report.

Phase II Environmental Site Assessment, Equipment Rental Facility, Dewitt, NY—Conducted a Phase II Environmental Site Assessment at an equipment rental facility.

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Phase I Environmental Site Assessment, Wetlands Permitting, Rail Spur, Buffalo, NY—Deputy Project manager that performed a Phase I Environmental Site Assessment of an active rail yard, rail line and applied for and obtained the permits required to construct a rail spur in a wetland area.

Phase I Environmental Site Assessments, Two Railyards, Western New York—Deputy Project manager in support of the acquisition of Conrail, and performed Phase I Environmental Site Assessments at two active rail yards in Western New York.

Phase II Environmental Site Assessment, Former Service Station and Equipment Storage Facility, Northbrook, IL—Conducted a Phase II Environmental Site Assessment of a former service station and adjacent equipment storage facility.

Environmental Review, Mike Basil Toyota, Inc. Lockport, NY—Senior Hydrogeologist for a project involving the evaluation of information generated during due diligence activities relative to a property transaction at an automobile dealership.

Hydrogeologic Studies/Drinking Wells

The projects below were performed for a previous employer.

Hydrogeologic Review, Petroleum Contamination Plume, Rochester, NY—As Project Hydrogeologist, provided third-party evaluation of groundwater elevation information to identify groundwater flow direction and potential contaminant migration pathways.

Hydrogeologic Study, Municipal Supply Well, Lewis Run, PA—Deputy Project manager who characterized the existing hydrogeologic resources in the area of Lewis Run to determine a suitable location for a new municipal supply well to replace a supply well contaminated by chlorinated solvents.

Hydrogeologic Study, Chemical Repackaging Facility, Fair Lawn, NJ—In response to the detection of chlorinated solvents in downgradient municipal supply wells, tested and evaluated aquifer characteristics at a chemical repackaging facility.

Supply Well Installation, Public Park, Buffalo, NY—Project Hydrogeologist that participated in the design and execution of a drilling, well installation and pump test program to supply water to a pond and creek created as part of a public park.

Watershed Management Project, Chautauqua Lake Watershed, Chautauqua County, NY—Project manager for the development of a management program for the Chautauqua Lake watershed.

Water Quality Monitoring Program, Fort Drum, Watertown, NY—Field staff responsible for the collection of water quality monitoring samples from the area known as Gasoline Alley as well as other areas throughout the fort complex.

Remediation

The projects below were performed for a previous employer.

Brownfield Investigation/Remedial Plan Development, Iron Manufacturing Facility, Buffalo, NY—Deputy Project manager that implemented the investigation of two parcels of the Hanna Furnace brownfield site and developed a Remedial Action Work Plan for the first parcel.

Evaluation of Remedial Technologies, Brownfield Site, Tonawanda, NY—Deputy Project manager who evaluated remedial technologies to address various types of contamination at a 42-acre former specialty plastics manufacturing facility.

Remedial Design and Oversight, Youngstown Cold Storage Site, Youngstown, NY—Project manager responsible for the preparation of the Remedial Action Work Plan, contract documents, and technical

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specifications and the oversight and administration of the remediation under a USEPA Brownfield Cleanup Grant.

Groundwater Remediation and Quarterly Monitoring Program, Lakeside Beach State Park, Waterport, NY—Project manager for the performance of groundwater treatment and quarterly groundwater monitoring in response to a gasoline release from an underground storage tank.

Groundwater Remediation System Maintenance and Monitoring, Jamestown Savings Bank Ice Arena Jamestown, NY—Project manager for the maintenance and monitoring of two separate groundwater treatment systems at the Ice Arena installed to address petroleum contamination in groundwater underlying the site. Systems included air sparging and ORC injection.

Remedial Design and Oversight, Roblin Steel Site, Dunkirk, NY—Project manager responsible for the preparation of the Remedial Action Work Plan, contract documents, and technical specifications and the oversight and administration of the remediation of this 12-acre brownfield site. The project was funded using a combination of USEPA, NYS ERP, and local funds.

Remedial Construction Administration and Oversight, Former Welch Foods Site, Brocton, NY—Project manager responsible for the administration and oversight of the remediation at a former food processing facility.

Remedial Design and Oversight, Franczyk Park, Buffalo, NY—Project manager responsible for the implementation of a Pre-Design Investigation; the preparation of the Remedial Action Work Plan, contract documents, and technical specifications; and the oversight and administration of the remediation of this 16-acre brownfield site.

PCB Investigation and Remediation, Residential Property, Buffalo, NY—Planned and implemented a remedial investigation and remediation of a residential property containing PCB- contaminated wastes.

Site Remediation, Former Service Station and Equipment Storage Facility, Northbrook, IL—Implemented the removal of five underground storage tanks and contaminated soil at a former service station and equipment storage facility.

Site Remediation, USEPA Superfund Site, Sidney, NY—Acting on behalf of the USEPA, provided field oversight of monitoring well drilling and installation, quarterly groundwater quality monitoring, and fractured bedrock trench installation activities.

Underground Storage Tank Removal Assistance, Fort Drum, Watertown, NY—Field staff responsible for providing assistance relative to the removal of USTs formerly used to store heating oil for individual barracks.

Demolition

The projects below were performed for a previous employer.

Building Demolition, Former Roblin Steel Plant, Dunkirk, NY—Project manager for the design and bidding phases of a building demolition project involving a 90,000-SF former steel mill building.

Building Demolition, Former Alumax Extrusion Facility, Dunkirk, NY—Project manager for the design, bidding and construction phases of a building demolition project involving a 143,000-SF former industrial complex.

Building Demolition, Former Edgewood Warehouse, Dunkirk, NY—Project manager for the design phases of a building demolition project involving a 165,000-SF former industrial building.

Demolition Design, Canning Plant and Residential Structure, Ripley, NY—Project manager responsible for planning the demolition of two adjacent structures that included a residential building and a cherry canning plant.

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Brownfield Consulting

The projects below were performed for a previous employer.

Term Environmental Services, Various Locations, Chautauqua County, NY—Project manager for environmental services provided under consecutive one-year term contracts.

USEPA Showcase Community Grant Manager, Niagara Region Brownfields Coalition, Niagara, NY—Project manager for the management of the Niagara Region Brownfields Coalition USEPA Showcase Community Grant.

Petroleum Brownfields Inventory, Niagara County, NY—Project manager for the preparation of an inventory of petroleum Brownfield sites throughout Niagara County under a USEPA assessment grant.

Chautauqua County Brownfield Assessment Demonstration Pilot Program, Chautauqua County, NY—Senior hydrogeologist responsible for the implementation of programmatic and technical services provided in support of this EPA Brownfield Pilot Program under a multi-year contract.

Brownfield Consulting Services, Buffalo, NY—Deputy Project manager who provided consulting services to the City of Buffalo and its economic development agencies regarding environmental issues associated with the South Buffalo Redevelopment Plan and other Brownfield sites.

On-Call Brownfield Consulting Services, City of Dunkirk, NY—Project manager for a variety of environmental services provided under an On-Call Agreement.

On-Call Brownfield Consulting Services, City of Olean, NY—Project manager for a variety of environmental services provided under an On-Call Agreement.

Transportation

The projects below were performed for a previous employer.

Soil/Fill Management Plan Clarifications, Tasks for the Installation of Roads and Infrastructure, Buffalo Lakeside Commerce Park, Buffalo, NY—Technical advisor responsible for coordinating the performance of an investigation to evaluate subsurface conditions along a proposed road and utility right-of-way.

Pre-Design Environmental Screenings and Permit Applications, Pearson Road Bridge, Niagara County, NY—Project manager responsible for coordinating environmental aspects of a bridge demolition and replacement project.

Environmental and Hazardous Waste/Contaminated Materials Screening, South Shore Boulevard Bridge Project, Buffalo, NY—Senior Hydrogeologist who managed the environmental screening and hazardous waste/contaminated materials screening for a locally administered bridge replacement project in NYSDOT Region 5.

SPDES

The projects below were performed for a previous employer.

SPDES Monitoring Program, Steel Manufacturing Site, Lackawanna, NY—Project manager responsible for the implementation of a weekly SPDES monitoring program at a large, active steel manufacturing facility.

SPDES Monitoring Program, County Maintenance Shop, Sherman, NY—Project manager responsible for the implementation of a monthly SPDES monitoring program at an active County maintenance garage.

Landfills

The projects below were performed for a previous employer.

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Niagara County Refuse Disposal District Monitoring, Lockport, NY—As Project manager, Mr. Riker is responsible for the implementation of the quarterly monitoring program at NCRDD's active and closed landfills. The work includes the performance of gas monitoring, leachate and groundwater sampling, data summary and evaluation, and quarterly and annual reporting. His work also includes interfacing with the NCRDD on a regular basis and acting as the regulatory liaison.

Water Quality Monitoring Program, City of Olean, NY—Project manager responsible for the collection and reporting of quarterly water quality monitoring samples from the Ischua Landfill.

Water Quality Monitoring Reporting, Cattaraugus County, NY—Project manager for the reporting of quarterly water quality monitoring results from the Farwell and Five Points Landfills.

Post-Closure Water Quality Monitoring, Dal-Tile International, Olean, NY—Performed the role of Project manager for the post- closure water quality monitoring at the Dal-Tile International inactive solid waste facility.

Landfill Closure, Municipal Solid Waste Landfill, Angelica, NY—Project manager responsible for the design, oversight, and reporting for the closure of two cells of an operating 24-acre municipal solid waste landfill in accordance with 6 NYCRR Part 360.

Water Quality Monitoring Program, Municipal Solid Waste Landfill, Angelica, NY—Project manager responsible for the generation and evaluation of quarterly and annual groundwater, surface water, sediment, leachate and landfill gas data pursuant to 6 NYCRR Part 360 for a 24-acre municipal solid waste landfill.

Municipal Waste Landfill Waste Removal, Allegany State Park, Allegany, NY—Project manager responsible for the planning and oversight of the removal of waste from and closure of a former landfill located within Allegany State Park.

On-Call Services, Municipal Solid Waste Landfill, Angelica, NY—Project manager for the various tasks completed under an on-call agreement for engineering services at a municipal landfill.

Landfill Cover Performance Evaluation, Gowanda, NY—Deputy Project manager responsible for creation of the proposal for the project, coordination and implementation of the evaluation tasks, and preparation of the final report.

Preliminary Site Assessments, Four Landfills, Western NY—Deputy Project manager for the implementation of preliminary site assessments (PSAs) at four Western New York former landfills designated as Class 2A inactive hazardous waste sites.

Hazardous Waste Landfill Study, OH—Project Hydrogeologist that completed an evaluation of a source of water that pooled below a recently constructed hazardous waste landfill liner.

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Landfill Cover Performance Evaluation, Gowanda, NY—Deputy project manager who was responsible for creation of the proposal for the project, coordination and implementation of the evaluation tasks, and preparation of the final report.

Preliminary Site Assessments, Four Landfills, Western NY—Deputy Project manager for the implementation of preliminary site assessments (PSAs) at four Western New York former landfills designated as Class 2A inactive hazardous waste sites.

Hazardous Waste Landfill Study, OH—Project Hydrogeologist that completed an evaluation of a source of water that pooled below a recently constructed hazardous waste landfill liner.

Various Projects/SEQR

The projects below were performed for a previous employer.

Southern Tier Brewing Feasibility Study, Chautauqua County Industrial Development Agency, Busti, NY—Project manager for the evaluation of a potential location for the expansion of the Southern Tier Brewery within the General George Stoneman Industrial Park.

Draft Environmental Impact Statement (DEIS), Quarry Permit Modification, Cheektowaga, Erie County, NY—Senior Project Hydrogeologist for DEIS pursuant to SEQRA for a proposed mining permit modification.

Evaluation of Waste Water Treatment Plant Discharges, Wellsville, NY—Project manager for the evaluation of wastewater treatment plant influent consisting of sanitary sewage and leachate and the resulting discharges from the plant.

Geotechnical Investigations

The projects below were performed for a previous employer.

Geotechnical and Environmental Investigation, Iron Manufacturing Facility, Buffalo, NY—Deputy Project manager and field geologist for the implementation of a geotechnical and environmental investigation of the 100-acre Hanna Furnace brownfield site. The results of the geotechnical investigation were used to evaluate potential development constraints and help inform foundation design considerations and the results of the environmental investigation were used to identify remedial actions to address contamination present at the site.

Geotechnical Investigation, Proposed Wastewater Treatment Plant Site, Standing Stone, PA—Project manager and field geologist for the evaluation of geotechnical conditions for a 20-acre parcel slated for the development of a wastewater treatment plant that will be used to treat water generated during the exploration for and production of natural gas.

Geotechnical and Hydrogeologic Investigation, Proposed Port Marina, Rochester, NY—Senior Hydrogeologist for the evaluation of geotechnical and hydrogeologic conditions associated with the development of a marina at a site containing slag fill materials.

Expert Witness

The projects below were performed for a previous employer.

Expert Witness Testimony, Litigation Case, Wales, NY—Project manager for the evaluation of damages caused by an adjacent owner to property conserved via an environmental easement.

Expert Witness Testimony, Litigation Case, Middleport, NY—Project manager for the evaluation of costs for construction of a pond and a wetland habitat that were subject of an unfulfilled contract.

Expert Witness Testimony, Litigation Case, Lancaster, NY—Expert Witness for the evaluation of the responsibility for petroleum contamination at an active filling station.

Grant Applications

The projects below were performed for a previous employer.

USEPA Brownfields Cleanup Program, Chautauqua County, NY—On behalf of the Chautauqua County Department of Public Facilities, prepared a successful grant application and supporting technical information for the completion of the remediation of the Former Roblin Steel Site in Dunkirk, New York.

USEPA Brownfields Cleanup Program, Village of Youngstown, NY—On behalf of the Village of Youngstown, prepared a successful grant application and supporting technical information for the completion of the remediation of the Youngstown Cold Storage Site.

USEPA Brownfields Program, Erie County, NY—On behalf of the coalition of the City of Buffalo, the Buffalo Urban Redevelopment Agency, Erie County, and Erie County Industrial Development Agency, prepared a

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coalition grant application and supporting technical information for the completion of assessments at sites throughout Erie County.

USEPA Brownfields Program, Niagara County, NY—On behalf of the coalition of Niagara County and the Cities of North Tonawanda, Lockport, and Niagara Falls, prepared a coalition grant application and supporting technical information for the completion of assessments at sites throughout Niagara County.

USEPA Brownfields Program, Chautauqua County, NY—On behalf of the coalition of Chautauqua County, the Town of Ripley, and the Villages of Silver Creek, Falconer, and Westfield, prepared a coalition grant application and supporting technical information for the completion of assessments at sites throughout Chautauqua County.

USEPA Brownfields Assessment Demonstration Pilot Program, City of Lackawanna, NY—Assisted the City of Lackawanna with the preparation of a successful grant application under this Federal brownfield redevelopment initiative to fund the development of a city- wide brownfield inventory, develop a site evaluation process, and investigate and perform remedial planning for three high priority Brownfield sites.

NYSDEC Environmental Restoration Program, Investigation Grant Application, Chautauqua County, NY—On behalf of the Chautauqua County Department of Public Facilities, prepared a successful grant application and supporting technical information for the completion of the investigation of the former C&B Cleaners site in Jamestown, New York.

NYSDEC Environmental Restoration Program, Remediation Grant Application, Chautauqua County, NY—On behalf of the Chautauqua County Department of Public Facilities, prepared a grant application and supporting technical information for the completion of the remediation of the former Roblin Steel site in Dunkirk, NY.

NYSDEC Environmental Restoration Program, Investigation Grant Application, Angola, NY—On behalf of the Village of Angola, prepared a grant application and supporting technical information for the completion of the investigation of the former Emblem Bicycle Plant.

NYSDEC Environmental Restoration Program, Investigation Grant Application, Dunkirk, NY—On behalf of the City of Dunkirk, prepared a successful grant application and supporting technical information for the completion of the investigation and interim remedial measures of the former Niagara Motors site.

NYSDEC Environmental Restoration Program, Investigation Grant Application, Lockport, NY—Worked with the City of Lockport to prepare a successful grant application and supporting technical information for the completion of the investigation and interim remedial measures of the One Bristol Avenue site.

NYSDOS/NYSDEC Brownfield Opportunity Area, Program Grant Applications, Dunkirk, NY—Worked with the City of Dunkirk to prepare a successful grant application and supporting technical information for the completion of Step 1 BOA activities as part of a City-wide Brownfield study.

NYSDOS/NYSDEC Brownfield Opportunity Area, Program Grant Application, Niagara Falls, NY—Worked with the City of Niagara Falls to prepare a successful grant application and supporting technical information for the completion of Step 1 BOA activities for the Buffalo Avenue Corridor.

NYSDOS/NYSDEC Brownfield Opportunity Area, Program Grant Application, Jamestown, NY—Worked with the City of Jamestown to prepare a successful grant application and supporting technical information for the completion of Step 1 BOA activities for a corridor along the Chadakoin River.

NYSDOS/NYSDEC Brownfield Opportunity Area Program, Grant Application, Olean, NY—Worked with the City of Olean to prepare a successful grant application and supporting technical information for the completion of Step 1 BOA activities for the northwest portion of the City.

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NYSDOS/NYSDEC Brownfield Opportunity Area Program, Grant Application, City of Lockport, NY—Worked with the City of Lockport to prepare a successful grant application and supporting technical information for the completion of Step 1 BOA activities for the entire City.

NYSDOS Local Waterfront Development Program, Grant Application, Jamestown, NY—Worked with the City of Jamestown to prepare a successful grant application and supporting technical information for the completion of LWRP activities for the portion of the City along the Chadakoin River.

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H. Nevin Bradford, PE

Department Manager

Nevin Bradford is a New York State licensed professional engineer with over 37 years of experience in the environmental consulting industry. His expertise spans a variety of technical matters, including environmental due diligence assessments, remedial investigation, remedial design, remedial construction management, vapor intrusion assessment and mitigation, petroleum and chemical bulk storage compliance, facility decommissioning and demolition management, asbestos surveys and abatement design, hazardous materials and waste management.

Total Experience
37+ years

With C&S Since
2021

Education
A.A.S., SUNY Canton, 1988

B.A.,
SUNY Potsdam, 1990

Registrations
Professional Engineer—NY, 2008

Certifications
NYS Certified Asbestos Designer

NYS Certified Asbestos Building Inspector

NYS Certified Asbestos Management Planner

OSHA 40-Hour HAZWOPER

OSHA HAZWOPER Supervisor

Certified NORM/TNORM Surveyor

Professional Associations
Central New York Air and Waste Management Association

Brownfield Coalition of the Northeast

Genesee Finger Lakes Air and Waste Management Association

Experience

Environmental Assessments

Phase I and II Environmental Site Assessments—Planned, performed, and managed the completion of Phase I and II Environmental Site Assessments at hundreds of active and abandoned commercial, industrial, medical, agricultural, and residential facilities throughout the northeastern United States. Representative properties have included retail gasoline service stations, dry cleaning facilities, automobile dealerships, pulp and paper mills, automotive and auto body repair shops, retail shopping centers, hydroelectric facilities, machine shops, marinas, textile manufacturing mills, metals processing facilities, plating facilities, metals machining operations, steel fabrication plants, large agricultural properties (dairy, vegetables), medical facilities, former railyards, salvage yards, junkyards, funeral homes, concrete and asphalt batch plants, golf courses, and foundries.

Remediation Management, Sale of Active Paper Production Mill, St. Lawrence County, NY—Served as owner's environmental consultant in conjunction with the sale of an active paper product mill in northern New York State. Responsibilities included reviewing the findings of a Phase I and II Environmental Site Assessment and Facility Audit that was completed by the prospective buyer's environmental consultant and conducting additional/supplementary sampling and investigation into the nature and extent of existing environmental concerns. These concerns included petroleum- and solvent/VOC-impacted soil and sediments at the facility's storage tank farm and in a down gradient drainage basin, an inactive 15,000-gallon fuel oil storage tank that required in-place closure due to site access limitations, extensive asbestos-containing materials throughout facility, PCB-containing electrical equipment, and low-level PCB soil contamination in the vicinity of an abandoned transformer building. Provided recommendations on remedial options, provided remediation phase construction management, prepared closure documents required for regulatory review, and assisted legal counsel in drafting closing documents that allowed the property transfer to occur prior to completion of the remedial activities

In-Situ Chemical Oxidation, Historic Gasoline Contamination Beneath Public School Building, Oneida County, NY—Provided investigation, remedial design, and implementation of in-situ chemical oxidation process to address gasoline impacted soil and groundwater beneath and surrounding public school building and multiple buried utility corridors.

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Brownfields

Remedial Investigation, Remedial Alternatives Analysis, Remedial Design, and Remedial Construction Management, New York State Environmental Restoration Program, Former 112-Acre Petroleum Bulk Storage and Distribution Facility, Village of Sackets Harbor, Sackets Harbor, NY—Served as consultant to Village of Sackets Harbor in connection with remediation of former large-scale petroleum bulk storage and distribution facility under New York State's Environmental Restoration Program (ERP). Prepared grant application securing funding from New York State and provided site-wide investigation and remedial design and management throughout project. Site remediation employed source area excavation, underground storage tank closures, off-site soil disposal, and on-site soil treatment using mechanical aeriation with an Allu bucket.

Remedial Investigation, Remedial Alternatives Analysis, Remedial Design, and Remedial Construction Management, New York State Environmental Restoration Program, Abandoned Automotive Repair Garage and Retail Gasoline Station, Town of Alexandria, Redwood, NY—Served as consultant to the Town of Alexandria in connection with remediation of former gasoline service station and automobile repair garage under New York State's Environmental Restoration Program (ERP). Prepared grant application securing funding from New York State and provided site-wide investigation and remedial design and management throughout project. Site remediation involved hazardous building material abatement, building demolition, and excavation and off-site soil disposal of petroleum-impacted soil beneath and downgradient of the former structure.

NYSDEC Brownfield Cleanup Program Site, Former Mixed Commercial Property, Confidential Client, Buffalo, NY, —Represented private developer with the investigation and remediation planning for a former commercial property under the NYSDEC Brownfield Cleanup Program. Contaminants of concern included heavy metals and semi-volatile organic compounds associated with extensive historic urban fill.

NYSDEC Brownfield Cleanup Program Site, Former Smith Restaurant Supply Site, Confidential Client, Syracuse, NY, —Represented private developer with the investigation and remediation of former industrial property under the NYSDEC Brownfield Cleanup Program. Contaminants of concern included heavy metals, semi-volatile organic compounds, and volatile organic compounds (vapor intrusion concern).

NYSDEC Brownfield Cleanup Program Site, Former Ithaca Gun Factory Site, 121-125 Lake Street, LLC, Ithaca NY, 2022-Present—Represented private developer with the remediation of former industrial property under the NYSDEC Brownfield Cleanup Program. Contaminants of concern included heavy metals, semi-volatile chlorinated solvents. Remedial work included removal, on-site stabilization, and disposal of contaminated soil, TSCA Self-Implementing Cleanup of PCB-contaminated soil, and in-situ enhanced bioremediation (by biotic and abiotic reductive dechlorination) of chlorinated ethenes in bedrock groundwater.

NYSDEC Brownfield Cleanup Program Site, Former Will & Baumer Candle Company Site, Confidential Client, Syracuse, NY, —Represented private developer with the investigation and remediation of former industrial property under the NYSDEC Brownfield Cleanup Program. Contaminants of concern included heavy metals, semi-volatile organic compounds, and petroleum products.

NYSDEC Brownfield Cleanup Program Site, Former Industrial Facility, Confidential Client, Johnson City, NY, —Represented private developer with the investigation and remediation of former industrial property under the NYSDEC Brownfield Cleanup Program. Contaminants of concern included heavy metals, semi-volatile organic compounds, and volatile organic compounds (vapor intrusion concern).

NYSDEC Brownfield Cleanup Program Site, Former Penfield Manufacturing Company Site, Confidential Client, Syracuse, NY, —Represented private developer with the investigation and remediation of former industrial property under the NYSDEC Brownfield Cleanup Program. Contaminants of concern included chlorinated industrial solvents (groundwater contamination and vapor intrusion concern).

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Site Remediation

Indoor Shooting Range Decommissioning and Lead Hazard Control Project, St. Lawrence County, NY, — Served as the principal consultant to the architect and school district on a $3M decommissioning and lead hazard control project involving an indoor shooting range and 50,000 S.F. of basement and crawlspace affected by lead-containing dust at a public-school facility. This work was undertaken as part of a larger capital improvement project at the district.

PCB-Contaminated HVAC Duct Assessment and Mitigation Planning and Oversight, Lakeland Central School District, Westchester County, NY, —Project involved the rapid assessment and field design of measures to address an HVAC ductwork system within the school that was found to contain PCBs during sampling by others. The issue was discovered two weeks prior to the opening date of school for the fall semester, posing extreme logistical challenges with scheduling and directing an environmental contractor, scoping the removal of the affected duct system, scoping and coordinating the installation of a replacement duct system once clearance was achieved. Served as the primary liaison between the Westchester County Health Department and the District. Project execution allowed school to open on schedule.

Site-Wide Hydrogeologic Investigation and Groundwater Remediation System Optimization and Operation, Abandoned Hazardous Waste Treatment Facility, NYSDEC, Madison County, NY, —Served as principal consultant to the New York State Department of Environmental Conservation following revocation of a Hazardous Waste Treatment, Storage, and Disposal (TSD) facility permit due to extensive non-compliance on part of facility operator. Provided evaluation of an existing groundwater pump-and-treat (air stripper/carbon polishing) system and two (2) soil vapor extraction systems that were previously constructed to control/remediate soil and groundwater contaminated by chlorinated volatile organic compounds; provided recommendations for modification and optimization of existing systems to improve plume control; provided on-going monitoring and maintenance of remediation systems; and developed and implemented site-wide hydrogeologic investigation and source area delineation. Site was subsequently transferred to New York State Superfund Program.

11,000-Gallon Tanker Release/Gasoline Spill Remediation, Steuben County, NY, —Served as the principal technical consultant to a petroleum transporter and their insurance company in connection with the assessment and remediation of an 11,000-gallon release of gasoline from a tank truck resulting from a vehicle accident. The accident occurred on an interstate highway, adjacent to the Cohocton River. Due to the nature of the incident and risk posed to the river, the work involved a rapid field assessment/investigation, and field design and immediate implementation of remedial measures. Provided investigation, remedial design, and remedial management. Remedial techniques included high vacuum extraction and catalytic oxidation, followed by air sparging/soil vapor extraction, and final oxygen injection.

Voluntary Cleanup-Heavy Metal and VOC Contaminated Soil-Former Agricultural Disposal Site, Jefferson County Industrial Development Agency, Watertown, NY,—Served as principal consultant on behalf of the Jefferson County Industrial Development Agency in connection with the development and execution of a remedial investigation and corrective action to address an historic solid/agricultural waste disposal area on an abandoned farm acquired for the purposes of expanding the Jefferson County Industrial Park. The disposal area was adjacent to the Black River, within a large sinkhole in karst terrain. The underlying bedrock contained caves used as wintering habitat by the Indiana Brown Bat, an endangered species.

Landfill Cover Design and Construction Oversight Services, Former Hazardous Waste Landfill, Syracuse, NY, — Provided design and construction observation services for a regional utility company for the repair of a hazardous waste landfill cover system that was inadvertently breached during a utility line upgrade project.

Hazardous Building Materials (Secondary Education)

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Asbestos Abatement Design, Allen Loop Reconstruction and Utility Upgrade Project, SUNY Brockport, Brockport, NY, —Provided asbestos design services in support of State University Construction Fund civil and utility design project.

Asbestos Abatement Design, Mackin Steam Line, SUNY Oswego, Oswego, NY,—Provided asbestos design services in connection with the removal and replacement of steam lines under State University Construction Fund design project.

Asbestos Abatement Design, Campus-Wide Utility Upgrade, SUNY Alfred, Alfred, NY, —Provided asbestos design services in support of State University Construction Fund campus-wide civil and utility design project.

Asbestos Abatement Design, Road and Utility Upgrade, SUNY Geneseo, Geneseo, NY, —Provided asbestos design services in support of State University Construction Fund civil and utility design project.

Asbestos Survey and Abatement Design, Administration Building Renovation, Clinton Community College, Plattsburgh, NY, —Provided asbestos survey and design services in support of two separate facility renovation projects at the Clinton Community College Main Administration Building and Student Center.

Asbestos Survey and Abatement Design, McVean Student Center and Dewey Library, Jefferson Community College, Watertown, NY, —Provided asbestos survey and design services in support of several facility renovation projects at the Jefferson Community College's McVean Student Center and Dewey Library buildings.

Asbestos Abatement Design, Corey Union Facility Improvements, SUNY Cortland, Cortland, NY, —Provided asbestos design services in support of facility renovation at Corey Union.

Asbestos Abatement Design, Veterinary Research Tower, Cornell University, Ithaca, NY, —Provided asbestos design services in support of facility renovation at Cornell University's Veterinary Research Tower.

Asbestos Abatement Design, Veterinary Research Tower, Cornell University, Ithaca, NY, —Provided asbestos design services in support of facility renovation at Cornell University's Balch Hall student residence building.

Hazardous Building Materials (K-12 Schools)

Hazardous Building Material Abatement Design, Capital Improvement Project and Crawlspace Cleanup Project, Delaware Academy at Delhi, Delhi, NY, —Provided full hazardous building material abatement design services in support of capital improvement project and large-scale crawlspace abatement program at K-12 public school.

Hazardous Building Material Abatement Design, Capital Improvement Project, Pine Bush Central School District, Pine Bush, NY, —Provided full hazardous building material abatement design services in support of capital improvement project involving multiple schools at K-12 public school.

Hazardous Building Material Abatement Design, Capital Improvement Project, Auburn Enlarged City School District, Auburn, NY,—Provided full hazardous building material abatement design services in support of several capital improvement projects involving multiple schools at K-12 public school.

Hazardous Building Material Abatement Design, Capital Improvement Project, Tri-Valley Central School District, Grahamsville, NY, —Provided full hazardous building material abatement design services in support of capital improvement project involving multiple schools at K-12 public school.

Hazardous Building Material Abatement Design, Capital Improvement Project, Rondout Valley School District, Accord, NY, —Provided full hazardous building material abatement design services in support of capital improvement project involving multiple schools at K-12 public school.

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Hazardous Building Material Abatement Design, Capital Improvement Project, Walton Central School District, Accord, NY, —Provided full hazardous building material abatement design services in support of capital improvement project involving two schools at K-12 public school.

Hazardous Building Material Abatement Design, Capital Improvement Project, Andes Central School District, Andes, NY,—Provided full hazardous building material abatement design services in support of capital improvement project.

Pre-Renovation Hazardous Building Material Surveys, Capital Improvement Project, Syracuse City School District, Syracuse, NY, —Provided full pre-renovation hazardous building material survey services in support of planned capital improvement projects at Shea and Clary Middle School facilities.

Pre-Renovation Hazardous Building Material Surveys and Abatement Design, Capital Improvement Project, Lakeland Central School District, Lakeland, NY, —Provided full pre-renovation hazardous building material survey and design services in support of planned capital improvement projects at all District buildings.

Pre-Renovation Hazardous Building Material Surveys, Capital Improvement Project, Plattsburgh City School District, Plattsburgh, NY, —Provided full pre-renovation hazardous building material survey services in support of planned capital improvement projects at all District buildings.

Pre-Renovation Hazardous Building Material Surveys, Capital Improvement Project, Peru Central School District, Peru, NY, —Provided full pre-renovation hazardous building material survey services in support of planned capital improvement projects at all District buildings.

Pre-Renovation Hazardous Building Material Surveys, Capital Improvement Project, Schroon Lake Central School District, Schroon Lake, NY, —Provided full pre-renovation hazardous building material survey services in support of planned capital improvement project.

Pre-Renovation Hazardous Building Material Surveys, Capital Improvement Project, Clinton Central School District, Clinton, NY, —Provided full pre-renovation hazardous building material survey services in support of planned capital improvement projects at all District buildings.

Pre-Renovation Hazardous Building Material Surveys, Capital Improvement Project, Chateauguay Central School District, Chateauguay, NY,—Provided full pre-renovation hazardous building material survey services in support of planned capital improvement projects at all District buildings.

Pre-Renovation Hazardous Building Material Surveys, Capital Improvement Project, Mexico Academy, Mexico, NY, —Provided full pre-renovation hazardous building material survey services in support of planned capital improvement projects at all District buildings.

Pre-Renovation Hazardous Building Material Surveys, Capital Improvement Project, Jordan Central School District, Jordan, NY, —Provided full pre-renovation hazardous building material survey services in support of planned capital improvement projects at all District buildings.

Pre-Renovation Hazardous Building Material Surveys, Capital Improvement Project, Skaneateles High School, Skaneateles Central School District, Skaneateles, NY, —Provided full pre-renovation hazardous building material survey services in support of planned capital improvement projects at high school building.

Pre-Renovation Hazardous Building Material Surveys, Renovations and Additions, Lisbon Central School District, Lisbon, NY, —Provided full pre-renovation hazardous building material survey services in support of planned renovation project.

Pre-Renovation Hazardous Building Material Surveys, Capital Improvement Project, Fonda-Fultonville Central School District, Fultonville, NY, —Provided full pre-renovation hazardous building material survey services in support of planned capital improvement project.

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Pre-Renovation Hazardous Building Material Surveys, Capital Improvement Project, Warwick Valley Central School District, Warwick, NY, —Provided full pre-renovation hazardous building material survey services in support of planned capital improvement projects at all District buildings.

Underground Storage Tank Closures, Bus Maintenance Facility, Chateauguay Central School District, Chateauguay, NY, —Provided field observation, soil screening, post-removal soil sampling, and tank closure report preparation for the closure of several underground petroleum storage tanks at the district's bus maintenance facility.

Underground Storage Tank Closure, Former Heating Oil Tank, La Fargeville Central School District, La Fargeville, NY, —Provided field observation, soil screening, post-removal soil sampling, and tank closure report preparation for the closure of former underground fuel oil storage tank.

Hazardous Building Materials (Federal)

Pre-Demolition Hazardous Building Material Surveys, 150 Structures, Fort Drum Military Installation, Watertown, NY, —Provided field surveys of 150 buildings scheduled for demolition under the US Army Corps of Engineers' Facility Reduction Program.

Pre-Demolition Hazardous Building Material Surveys, 75 Structures, Picatinny Arsenal, Dover, NJ, —Provided field surveys of 75 buildings scheduled for demolition under the US Army Corps of Engineers' Facility Reduction Program.

Hazardous Building Material Surveys, Central Energy Plant, US Military Academy, West Point, NY, —Provided field surveys of central energy plant in preparation for turbine replacement project.

Hazardous Building Materials (Residential and Commercial)

Hazardous Building Material Abatement Design, Former Penfield Manufacturing Building, Syracuse, NY, —Provided design services associated with asbestos abatement, structure demolition, lead-based paint management, universal waste management, and radon mitigation for a residential conversion of an abandoned industrial facility.

Hazardous Building Material Surveys and Contamination Assessments, Former Nestle Chocolate & Confections Facility, Oswego County Industrial Development Agency, Fulton, NY, 2005—Provided pre-demolition hazardous material surveys and contamination assessments of 1.1 million square feet of abandoned industrial facility in preparation of facility demolition.

Hazardous Building Material Survey and Abatement Design, Former West Middle School Building, Auburn, NY, —Provided facility-wide regulated building material survey and design services associated with asbestos abatement, lead-based paint management, and universal waste management for a residential conversion of a former public-school building.

Hazardous Building Material Survey and Abatement Design, Former Public-School Building, Waterloo, NY, —Provided facility-wide regulated building material survey and design services associated with asbestos abatement, lead-based paint management, and universal waste management for a residential conversion of a former public-school building.

Hazardous Building Material Survey and Abatement Design, Former Public-School Building, Watkins Glen, NY, —Provided facility-wide regulated building material survey and design services associated with asbestos abatement, lead-based paint management, universal waste management, and crawlspace asbestos cleanup for a residential conversion of a former public-school building.

Pre-Renovation Hazardous Building Material Surveys and Abatement Design, Adaptive Re-Use of Former School Facility, Sidney, NY, —Provided facility-wide regulated building material survey and hazardous building

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material surveys and abatement design services in support of large-scale renovation project resulting in the conversion of a former public-school building into offices and housing.

Pre-Renovation Hazardous Building Material Surveys and Abatement Design, Adaptive Re-Use of Former School Facility, East Syracuse, NY, —Provided facility-wide regulated building material survey and hazardous building material surveys and abatement design services in support of large-scale renovation project resulting in the conversion of a former public-school building into senior housing.

Pre-Renovation Hazardous Building Material Surveys and Abatement Design, Adaptive Re-Use of Former Commercial Buildings, Wellsville, NY, —Provided hazardous building material surveys and abatement design services in support of large-scale renovation project which resulted in the conversion of a series of interconnected commercial buildings into mixed use (offices and housing).

Vapor and Radon Mitigation

Radon Mitigation System Design, Adaptive Reuse of Former Industrial Building, Elmira, NY, —Provided design services for multiple radon mitigation systems to address high indoor radon levels in connection with the residential conversion of a former industrial building. Systems included sub-slab depressurization systems (basement areas) and sub-membrane depressurization systems (crawlspaces).

Vapor and Radon Mitigation System Design, Adaptive Reuse of Former Industrial Building, Syracuse, NY, — Provided design services for multiple sub-slab depressurization systems to address soil vapor and radon intrusion concerns in connection with the residential conversion of a former industrial building at a site contaminated by chlorinated solvents.

Radon Mitigation System Design, Redevelopment of Former Industrial Properties Contaminated by TENORM, Buffalo, NY, —Provided design services for multiple sub-slab depressurization systems to address radon intrusion concerns in connection with the design of new commercial buildings constructed on two former industrial properties on which slag and fill material containing technologically enhanced radioactive material (TENORM) was present.

Vapor Intrusion Mitigation System Design, Redevelopment of Former Industrial Property, Cortland, NY, — Provided design services for sub-slab depressurization systems to address vapor intrusion concerns in connection with the design of new manufacturing building constructed on a former industrial property where vapor intrusion concerns were present because of subsurface contamination by chlorinated solvents. System design incorporated a Cupolex® sub-floor structural dome system that integrated slab design and load bearing capacity with enhanced sub-slab air flow.

Facility Decommissioning

Former McIntyre Paper Mill Decommissioning and Demolition, Mill Street Partners, LLC, Fayetteville, NY, — Served as the principal consultant to the purchaser/proposed developer of an abandoned paper mill facility in Onondaga County, New York. Provided a Phase II and II Environmental Site Assessment, waste inventory and profiling for proper disposal/management, underground storage tank assessment, aboveground storage tank compliance and closure planning, pre-demolition asbestos building survey, facility demolition planning, storm water management, and site restoration planning.

Former Tube Mill Decommissioning and Demolition, Industrial Facility, Rome, NY, —Provided pre-demolition hazardous material surveys, universal and miscellaneous waste characterization and management, and abatement and cleanup design for 400,000 square feet of unutilized industrial facility in preparation of facility demolition.

Former Apex Tool Building Debris Cleanup, Cortland county Industrial Development Agency, Cortland, NY, — Provided design and oversight services to the Cortland County Industrial Development Agency in support of

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the cleanup of asbestos-containing building debris left at the site following material salvage and building demolition activities conducted by a salvage company. Debris was widespread over seven-acre property.

Environmental Due Diligence & Petroleum Bulk Storage Compliance

Petroleum Bulk Storage Compliance—Advised private, commercial, public, and industrial facility owners throughout New York State on state and federal petroleum bulk storage compliance issues and spill incidents from 1990 to the present. Representative work has included performance of facility audits (both prior to and following NYSDEC regulatory audits), to identify compliance deficiencies and provide corrective action recommendations; preparation of plans and specifications for storage system corrective actions, upgrades and installations; coordination of corrective actions with tank contractors on facility owner behalf; oversight and field direction of corrective action measures; assisting facility owners with regulatory negotiations with orders on consent and regulatory fines; preparation of Spill Prevention, Containment and Countermeasure Plans to satisfy federal regulatory requirements; preparation of storage tank closure plans, oversight and direction of storage tank closures, and preparation of storage tank closure reports involving countless petroleum USTs; forensic field investigations to identify sources of product loss and/or spills; and development and implementation of spill response actions for failed tanks systems.

Spill Prevention, Control & Countermeasure Planning

Fibermark, Brownville, NY, —Prepared facility-wide Spill Prevention, Control, and Countermeasure Plan and Chemical Bulk Storage Spill Prevention Plan for active paper production facility located along the Black River in Brownville, New York.

State University of New York, Canton, NY, —Prepared facility-wide Spill Prevention, Control, and Countermeasure Plan for active college campus and related support facilities.

Plattsburgh International Airport, Plattsburgh, NY, —Prepared Spill Prevention, Control, and Countermeasure Plan for active airport and ancillary facilities.

Syracuse University, Syracuse, NY, —Prepared updated facility-wide Spill Prevention, Control, and Countermeasure Plan for active university campus and related support facilities.

Tripp Fuels, LLC, Gouverneur, NY, —Prepared Spill Prevention, Control, and Countermeasure Plan for petroleum distribution facility and retail gasoline service station and convenience store.

Storm Water Pollution Prevention Planning

Ronald McDonald House, Syracuse, NY, —Prepared hydraulic model, Site Plan, Utility Plan, Landscaping Plan, Grading Plan, and Storm Water Pollution Prevention Plan for planned redevelopment of commercial property with new regional Ronald McDonald House facility. Provided site-related construction inspections and storm water compliance inspections throughout duration of construction.

Northeast Utilities Development Site, Van Buren, NY, —Prepared pre- and post-construction hydraulic model, Storm Water Pollution Prevention Plan, and storm water management design for planned development of undeveloped agricultural property with new commercial office park.

Proposed Solar Array, Clayton, NY, —Prepared pre- and post-construction hydraulic model, Storm Water Pollution Prevention Plan, and storm water management design for planned development of undeveloped agricultural property with new solar array.

Permitting and Compliance

Ronald McDonald House, Syracuse, NY, 2026—Prepared engineering report and application for a surface water withdrawal permit for proposed Willowdale Golf Course in Erie County, New York. hydraulic model, Site Plan, Utility Plan, Landscaping Plan, Grading Plan, and Storm Water Pollution Prevention Plan for planned

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redevelopment of commercial property with new regional Ronald McDonald House facility. Provided site-related construction inspections and storm water compliance inspections throughout duration of construction.

Northeast Utilities Development Site, Van Buren, NY, —Prepared pre- and post-construction hydraulic model, Storm Water Pollution Prevention Plan, and storm water management design for planned development of undeveloped agricultural property with new commercial office park.

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Cody Martin

Senior Project Environmental Scientist

Cody has over 17 years of experience in the environmental consulting industry, supporting projects involving environmental due diligence, remedial investigations, remedial design, and remedial and construction management. He has extensive experience supporting NYSDEC Brownfield Cleanup Program (BCP) sites, including site characterization, remedial action oversight, soil and groundwater management, and documentation required under DER-10. As a GIS technician, Cody applies advanced geospatial analysis, data management, and mapping to support technical decision-making and project coordination. Prior to joining C&S, he provided GIS and analytical support for renewable energy development (wind and solar) and environmental cleanup projects, performing spatial evaluations of environmental and non-environmental constraints for project developers.

Total Experience
17 years

With C&S Since
2012

Education
Master of Geography
State University of New York at Buffalo

B.A.,
Anthropology, State University of New York at Buffalo

Certifications
OSHA 40-Hour HAZWOPER

10-Hour OSHA Construction

Certified NORM/TNORM Surveyor
2023

NYS DEC Erosion and Sediment Control
2026

Experience

New York State Brownfield Cleanup Program

Buffalo Salvation Army, Buffalo, NY, Ongoing—Lead Project Manager for investigation, remediation, and redevelopment of the Salvation Army's Buffalo campus, impacted by site-wide SVOC- and metal-contaminated fill. The project is enrolled in the NYSDEC Brownfield Cleanup Program (BCP) and supports major capital improvements, including a new emergency shelter, a seven-story 147-unit apartment building, and two 17-unit townhomes. Responsibilities include preparing the BCP application, coordinating with property owners, NYSDEC, and contractors, managing field activities, and preparing and reviewing all technical submittals. Remediation is targeted for Unrestricted Use by December 2027. Cost $100,000,000.

Buffalo Central Terminal, Buffalo, NY, Ongoing—Project Manager for a high-visibility assessment and remedial planning effort at the historic Buffalo Central Terminal. Directed environmental due diligence, evaluation of historic data, and supplemental investigation to demonstrate eligibility for the NYSDEC BCP. Led preparation of the BCP application to secure tax credits and liability relief in support of future private redevelopment. Cost $300,000,000.

Marine Drive Apartments, Buffalo, NY, Ongoing—Project Manager for the investigation and remediation of the 616-unit Marine Drive Apartments, a key component of the Buffalo Municipal Housing Authority's public housing revitalization initiative. Enrolled in the NYSDEC BCP to support redevelopment into an affordable, mixed-income, mixed-use community. Responsibilities include preparing the BCP application, coordinating with BMHA, NYSDEC, and contractors, and directing technical documentation. Remediation is targeted to achieve Unrestricted Use by December 2026. Cost $240,000,000.

Shaffer Village, Buffalo Municipal Housing Authority, Buffalo, NY, Ongoing—Project Manager for the investigation and remediation of the 217-unit Shaffer Village complex, also enrolled in the NYSDEC BCP under BMHA's revitalization program. Redevelopment includes townhouses, duplexes, and three-story apartment buildings ranging from one- to five-bedroom units. Responsibilities include application preparation, agency and owner coordination, and production of technical documents.

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Remediation is expected to achieve Restricted Residential or Unrestricted Use by December 2027. Cost $150,000,000.

Campus Square, Buffalo Niagara Medical Campus, Buffalo, NY, Ongoing—Environmental Scientist for the investigation and remediation of an 8-acre parcel supporting future medical office development. Work under the NYSDEC BCP addresses contaminated fill requiring cleanup to support redevelopment. Remediation is expected to achieve Unrestricted Use by December 2027.

Cannabis Site, Buffalo, NY, 2024—Quality Assurance Manager for the investigation, remediation and redevelopment of a former manufacturing facility slated for redevelopment as a cannabis growth and processing facility. Due to the presence of SVOCs and metals in site-wide fill, this project was entered into the NYSDEC's Brownfield Cleanup Program (BCP). The fill material also contains TENORM slag, so additional radiological assessment and handling were part of the project.

Heritage Point, Buffalo, NY, 2022—Project Manager for the BCP investigation, remediation, and redevelopment of a 103,000-square-foot mixed-use building at the former Memorial Auditorium site in Canalside. Efforts included deep soil remediation (up to 20 feet bgs) and coordination with multiple stakeholders. Responsibilities included BCP application preparation, NYSDEC and owner coordination, and development and review of technical documents. Remediation achieved Unrestricted Use. Cost $40,000,000.

4435 Military Road, Town of Niagara, Niagara, NY, 2022—Environmental Scientist for the remediation of a former gas station and dry cleaner on behalf of the Town of Niagara. This project, entered into the NYSDEC Brownfield Cleanup Program (BCP) and partially funded through a USEPA Revolving Loan Fund Sub-grant, addressed metal-contaminated and radiologically impacted soils. Redevelopment activities included soil remediation, demolition, and asbestos abatement to prepare the site for resale as commercial property. Responsibilities included conducting fieldwork, coordinating with site owners, NYSDEC, and contractors, and preparing and reviewing technical documents. The work was successfully completed under a USEPA Brownfields Grant.

Westwood Country Club, Amherst, NY, 2021—Environmental Scientist for the investigation, remediation and redevelopment of a 170-acre former golf course. Due to the presence of metals from years of pesticide and fungicide use in surficial soils, this project was entered into the NYSDEC's Brownfield Cleanup Program (BCP). The planned mixed-use redevelopment includes single family and patio homes, condominiums, senior housing, a neighborhood center, a medical and office park, a small hotel, and green space. Project responsibilities include field work. Cost $238,000,000.

Dona Street, Lackawanna, NY, 2020—On behalf of the City of Lackawanna, prepared a successful application for entrance into New York State's Brownfield Cleanup Program. The intent of the project was to generate developer interest in the property by demonstrating its eligibility for the BCP while also eliminating the six month or longer process of gaining entrance into the BCP for developers.

201 Ellicott Street, Buffalo, NY, 2020—Project Manager for the investigation, remediation, and redevelopment of an underutilized parcel in downtown Buffalo's Central Business District. This high-profile project, conducted under the NYSDEC Brownfield Cleanup Program (BCP), involved soil remediation and the construction of a multistory mixed-use complex. The development includes approximately 200 affordable housing units, green space, parking, and a food access component. Responsibilities included preparing the BCP application, coordinating with subcontractors, conducting fieldwork, and drafting technical documents. The remediation successfully achieved Unrestricted Use status. Cost $76,000,000.

Lakefront Boulevard, Buffalo, NY, 2020—Environmental Scientist for the investigation, remediation and redevelopment of a vacant parcel along the Erie Basin Marina in downtown Buffalo. This project was undertaken under the auspices of the NYSDEC's Brownfield Cleanup Program (BCP). The redevelopment

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activities include remediation of contaminated soil and construction of 20 high-end townhomes, open green space, and parking. Responsibilities include preparation of the BCP Application; subcontractor coordination; field work, and preparation of technical documents. The remediation achieved Restricted Residential Use status. Cost $20,000,000.

Health Professions Hub at D'Youville College, Buffalo, NY, 2020—Environmental Scientist for the investigation, remediation and redevelopment of a former auto repair garage and vacant school building located adjacent to D'Youville College. This high-profile project was undertaken under the auspices of the NYSDEC's Brownfield Cleanup Program (BCP). The redevelopment activities include remediation of contaminated soil and construction of a 59,860 square-foot education, training and community health center. The D'Youville HUB creates a unique and innovative learning environment for students, while offering families in the Buffalo's West Side neighborhood greater access to high quality primary care services. Responsibilities include preparation of the BCP Application; subcontractor coordination; field work, and preparation of technical documents. The remediation achieved Unrestricted Use status. Cost $26,000,000.

Pierce Arrow, Buffalo, NY, 2019—Environmental Scientist for the investigation, remediation and redevelopment of a 2.85-acre parcel that comprise a portion of the former Pierce Arrow facility. This project was undertaken under the auspices of the NYSDEC's Brownfield Cleanup Program (BCP). The redevelopment activities include remediation of contaminated soil and construction of a mixed use residential and commercial structure. The significant historic building was repurposed into a quality residential facility with traditional apartments, residential and work studios, and loft style apartments. Responsibilities include preparation of the BCP Application; subcontractor coordination; field work, and preparation of technical documents. Cost $30,000,000.

Mentholatum, Buffalo, NY, 2017—Environmental Scientist for the investigation, remediation and redevelopment of a former manufacturing facility. Due to the presence of SVOCs and metals in site-wide fill and of VOCs in groundwater from an adjacent site, this project was entered into the NYSDEC's Brownfield Cleanup Program (BCP). The mixed-use redevelopment includes first floor commercial space and 50 residential apartments. Project responsibilities include preparation of the BCP Application; coordination with the site owners, NYSDEC, and contractors; and preparation and review of technical documents. The remediation achieved Unrestricted Use status. Cost $19,000,000.

Harbor Center, Buffalo, NY, 2014—Environmental Scientist for the investigation, remediation and redevelopment of the HARBOR center facility, a multi-use building that includes aboveground parking, two ice rinks, restaurants and hotel. Due to metal contamination in the soil this project was entered into the NYSDEC's Brownfield Cleanup Program (BCP). Remediation consisted of over ten feet of soil removal across the 2.43 acre site. The remediation achieved Unrestricted Use status. Cost $170,000,000.

Conventus Site, Buffalo Niagara Medical Campus, Buffalo, NY, 2014—Lead Environmental scientist for the investigation, remediation and redevelopment of a 2 acre former gasoline station spill. Due to the presence of petroleum in soils and groundwater, this project on the Buffalo Niagara Medical Campus was entered into the NYSDEC's Brownfield Cleanup Program (BCP). Remedial efforts included the removal of contaminated soil to a depth of 40 feet below grade and the extraction of over a million gallons of petroleum product and contaminated groundwater. Not only did the remedial efforts result in the removal of the contaminant source, but the space also left by the excavation activities provided an excellent opportunity to construct much needed underground parking. The Conventus redevelopment is complete and use of this this center for collaborative medicine is underway. The remediation achieved Unrestricted Use status. Cost $100,000,000.

Site Investigation and Remediation

Great Lakes Industrial Development Site, Lackawanna, NY, Ongoing—Lead Environmental Scientist and GIS technician for the preparation of the Remedial Action Work Plan and remediation 1.56-acre historic Number 6

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fuel oil spill. Developed and monitors recovery trench system for long term remediation of the fuel oil plume. Trimble GeoXH GPS was used to survey underground utilities marked out by a sub-contractor.

Marine Drive Underground Storage Tank Closure, Buffalo Municipal Housing Authority, Buffalo, NY, 2016— Environmental Scientist responsible for the preparation of the Remedial Action Work Plan, contract documents, and technical specifications and the oversight and administration of the in-place closure for multiple fuel oil storage tanks for the Buffalo Municipal Housing Authority (BMHA). Three 25,000-gallon (each) Number 6 fuel oil tanks were closed in-place at the BMHA Marine Drive Apartment Complex in June 2017 and two 25,000-gallon (each) Number 6 fuel oil tanks were closed in-place at the BMHA Commodore Perry Complex in August 2017.

Commodore Perry Underground Storage Tank Closure Buffalo Municipal Housing Authority, Buffalo, NY, 2017— Environmental Scientist responsible for the planning and oversight of the closure of two underground No. 2 fuel oil storage tanks serving the BMHA Commodore Perry Boiler House. The project involved tanks installed in 1974 within a constrained servicing yard constructed above grade with reinforced concrete walls and adjacent to active infrastructure, including the Boiler House, an asphalt parking area, and the Interstate 190 access ramp owned by the New York State Thruway Authority. The two steel tanks, each with a capacity of 25,000 gallons (10 feet in diameter by 38 feet long), were registered in the NYSDEC Bulk Storage Database (Site No. 9-067164) and were used for facility-wide heating operations. Responsibilities included coordination with site stakeholders, evaluation of site conditions, and regulatory compliance associated with the tank closure activities. Cost $60,000.

Hazardous Waste Screening, Various Clients, NY, Ongoing—Prepared Hazardous Waste Screening Reports for approximately half-a-dozen clients across the public and private sector. The projects included site investigation, reconnaissance, and historical document review per the NYSDOT document TEM section 4.4.20.

Environmental Consulting Services, Amherst, NY, Ongoing—Under a term contract, Project Manager providing consulting services to the Town of Amherst and its economic development agencies regarding environmental issues associated with various properties throughout the Town. The following projects were completed under the term contract:

- Amherst Central Park
  Water Pollution Control Facility Underground Storage Tank Closure, Amherst, NY—Project Manager responsible for managing and delivering an NYSDEC-coordinated investigation to support the permanent closure of three fuel oil underground storage tanks at the Town of Amherst Water Pollution Control Facility. Led project planning, scope development, budget control, and scheduling; coordinated subconsultants for geophysical utility surveys, environmental drilling, laboratory analysis, and waste management; and served as the primary point of contact with the client and regulators. Oversaw preparation and NYSDEC approval of an Investigation Work Plan, supervised subsurface soil borings and groundwater monitoring well installation, and ensured compliant sampling, documentation, and data quality. Directed preparation of the Limited Site Investigation Report, including evaluation of petroleum impacts relative to NYSDEC standards and development of actionable recommendations to support regulatory closure decisions. Cost TBD.

Buffalo Public Schools Commissary, Buffalo, NY, 2025—Project manager supporting a 66,686-square-foot school district infrastructure project through completion of Phase I and Phase II Environmental Site Assessments and construction-phase soils management. Conducted environmental due diligence to evaluate recognized environmental conditions, supported subsurface investigations to characterize soil conditions, and assisted with interpretation of analytical results. Provided soils management support during site redevelopment to ensure compliant handling, documentation, and disposition of excavated materials, contributing to the

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successful construction of a centralized commissary kitchen designed to serve approximately 28,000 students across 60 schools. Cost $44,000,000.

Erie County Water Authority Water Systems Improvements, Tonawanda, NY, 2025—Project Manager responsible for the preparation, coordination, and implementation of a site-specific Health and Safety Plan (HASP) to support environmental investigation and field activities at the Tonawanda Landfill. Managed project scope, schedule, and internal technical reviews to ensure compliance with OSHA, NYSDEC, and company health and safety requirements. Coordinated with field staff and subcontractors to integrate hazard identification, exposure controls, personal protective equipment requirements, air monitoring protocols, and emergency response procedures. Served as the primary point of contact for health and safety compliance, supporting safe execution of field operations and regulatory-aligned project delivery. Cost $484,000,000.

230 Grider Street Superfund Site Characterization, Buffalo, NY, Ongoing—Project manager leading the development of a site characterization program for 4.7-acre industrial property in Buffalo, NY, addressing NYSDEC concerns regarding potential VOC contamination migration to adjacent remediated Brownfield site. Coordinated multi-phase investigation including regulatory work plan preparation, groundwater monitoring, soil sampling and soil vapor sampling. Managed multi-disciplinary team including drilling subcontractors, and laboratory services, while providing regulatory liaison services and developing potential pathway for entry into New York State Brownfield Cleanup Program.

Groundwater Remediation and Monitoring

Kaleida Health, 1001 Main Street Spill Site, Buffalo, NY, Ongoing—Environmental Scientist for the performance of groundwater treatment and quarterly groundwater monitoring in response to a gasoline release from an underground storage tank. The project site is immediately adjacent to the recently remediated Conventus Site and, as such, the remediation efforts consider the conditions on that site. Cost $50,000.

Former Dowcraft Facility, Falconer, NY, Ongoing—Environmental Scientist for the performance of groundwater treatment and quarterly groundwater monitoring in response to a trichloroethylene release from former metal fabrication facility. Recent treatment activities include evaluation of alternative treatments options to reduce groundwater contamination. Recent activities include further investigation using high-resolution site characterization techniques and injection of in-situ chemical reduction (ISCR) and zero-valent iron products. Sampling results indicate over 90% reduction in contaminants. Cost $500,000.

Buffalo Business Park Site, Buffalo, NY, Ongoing—Served as Principal Consultant responsible for the preparation of the Periodic Review Reports, Remedial Action Work Plans, and technical specifications for an existing groundwater pump-and-treat system and two (2) soil vapor extraction systems that were previously constructed to control/remediate soil and groundwater contaminated by chlorinated volatile organic compounds; provided recommendations for modification and optimization of existing systems to improve plume control; provided on-going monitoring and maintenance of remediation systems; and developed and implemented site-wide hydrogeologic investigation and source area delineation. $60,000.

Soil Waste Management

Beneficial Use Compliance, Various Locations, NY, Ongoing—Provided guidance to private, commercial, and public clients across New York State on compliance with 6NYCRR Part 360 beneficial use regulations. Representative work included collecting representative samples, developing materials management plans and specifications, coordinating with the NYSDEC on clients' behalf, overseeing and directing materials management in the field, and preparing comprehensive reports.

Former Bethlehem Steel Public Sanitary Sewer & Waterline Extensions, Lackawanna, NY, 2024—Environmental scientist responsible for monitoring the construction of public water and sanitary sewer improvements at the former Bethlehem Steel Plant on behalf of the Erie County Industrial Development Agency. The project

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involves the installation of 1,600 linear feet of 12- and 16-inch water main, including a bore and jack under NYS Route 5; 4,400 linear feet of 8-, 12-, and 18-inch gravity sanitary sewer; and the cured-in-place lining of 150 linear feet of 18-inch sewer. Cost $6,000,000.

Niagara Falls State Park, Niagara Falls, NY—Project manager for the performance of a remedial investigation and remedial actions at a public park. The project is being conducted under C&S's term contract with New York State Office of Parks, Recreation, and Historic Preservation in response to the discovery of drums of pesticides in fill material within the park. The following projects were completed under the term contract:

- Niagara Falls Visitor Center Soils Reuse, Niagara Falls, NY, 2023—Led comprehensive soil characterization and volume assessment for 9,928 cubic yards of construction spoils from the Niagara Falls Visitor Center, coordinating multi-phase environmental testing and regulatory compliance evaluation. Managed field operations including topographic surveying, comprehensive soil sampling and laboratory analysis contaminants per 6 NYCRR Part 360 regulations. Successfully demonstrated that stockpiled material qualified as "General Fill" under New York State environmental standards, enabling beneficial reuse at Buffalo Harbor State Park while ensuring compliance with NYCRR Part 360 and Part 375 regulations for material transportation and placement.
- Beaver Island Marina Improvements, Grand Island, NY, 2023—Managed comprehensive sediment characterization study for New York State Parks involving up to 10,000 cubic yards of dredged material from marina improvements at Beaver Island State Park. Coordinated two-day field sampling program with six vibracore locations following NYSDEC TOGS 5.1.9 protocols and overseeing collection and analysis of sediment samples. Successfully classified sediment as Class B material and provided regulatory pathway recommendations for beneficial reuse as fill material at the golf course, ensuring compliance with 6 NYCRR Part 360 regulations and developing framework for Beneficial Use Determination petition to support sustainable material management practices.

New York Power Authority #1191 North Utility Corridor Upgrade, Lewiston, NY, 2020—Provided environmental support to a New York State Power Authority utility upgrade project, including assistance with a Phase I Environmental Site Assessment and preparation of the contractor's soil management plan. Responsibilities included evaluating environmental conditions associated with subsurface utility installation, supporting compliance with applicable regulatory and materials management requirements, and coordinating environmental considerations for the installation of a new fire main installed parallel to new process and potable water mains. Cost $500,000.

Erie County Water Authority Sturgeon Point Sludge Reuse, Derby, NY, 2020—Environmental scientist responsible for conducting sludge and sediment sampling in support of Beneficial Use Determination (BUD) compliance for water treatment plant residuals. Performed field sampling and coordination on behalf of the contractor to characterize sediment intended for offsite reuse under NYSDEC BUD #455-9-15. Responsibilities included collecting representative samples, supporting laboratory analysis to verify compliance with BUD concentration limits, and documenting results to support regulatory approval for reuse in turf farming and topsoil blending applications. Cost $400,000.

USEPA Site Assessments

USEPA Phase II Environmental Site Assessments, Niagara County, NY, 2020—Environmental Scientist for the performance of Phase II ESAs at two priority brownfield sites within Niagara County, including 4445 Military Road and the Weber Property in the Town of Niagara. The work was funded by a USEPA Brownfield Assessment Grant. Responsibilities include coordinating, managing and implementing field work, and preparing technical documents.

USEPA Phase I/II Environmental Site Assessments, Jamestown, NY, 2019—Quality assurance manager for the performance of Phase I and II ESAs at priority brownfield sites within the City of Jamestown. The work is

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funded by a USEPA Brownfield Assessment Grant. Responsibilities include identifying appropriate sites for assessment, creating application forms for approval by USEPA, coordinating and managing the assessments, and grant administration.

Construction/Environmental Management

Gowanda Creekside Improvement Project, Village of Gowanda, NY, 2021—Performed construction management and environmental monitoring of a multi-site amphitheater construction project along Cattaraugus Creek. Responsibilities included the daily construction management and environmental oversight of the construction of amphitheaters at the former Peter Cooper Glue Factory Superfund Site (Gateway Park) and Creekside Park within the Village of Gowanda. The park improvements were funded by the New York State Empire State Development Corporation through an approximately $1.8 million Smart Growth Waterfront Development grant.

GIS Development

Multiple Environmetntal Projects—Lead technician with over 17 years of experience delivering GIS services to support environmental projects. Key competencies demonstrated throughout these projects include:

- Proficient in ESRI software suite (ArcGIS Pro, ArcMap, ArcGIS Online)
- Spatial data analysis, geoprocessing, and cartography
- Database management (geodatabases, SQL, and spatial joins)
- Integration of GIS with CAD and GPS technologies
- Proficient in AutoCAD (2D and 3D) and AutoCAD Civil 3D
- Web mapping application development and maintenance
- Project planning, stakeholder coordination, and technical reporting

Innovative and Healthy Placemaking Master Plan, Buffalo Niagara Medical Campus, Buffalo, NY,—Lead Technician providing GIS services to support the development of recreational and artistic installations across BNMC's 120-acre medical campus. Responsibilities included creating and managing spatial data for various factors influencing placemaking, such as open space, tree condition surveys, pedestrian traffic, and existing amenities. Additional tasks involved integrating GIS and CAD file formats, producing a cloud-based web mapping application to visualize GIS data, and facilitating BNMC review.

Transmission Line Connection, Upstate NY Power Corp, NY, —Supported the development of a 50-mile transmission line connecting the proposed Hounsfield Wind Farm on Galloo Island to the New York State power grid. The project included 9 miles of sub-aquatic cable, 41 miles of overhead transmission, substations, access roads, and transition structures. Responsibilities included creating and managing spatial data for 24 alternative transmission lines, conducting spatial analyses to calculate disturbance acreages, and preparing technical maps illustrating environmental impacts for review by the NYSDEC and U.S. Fish and Wildlife Service.

Wind Energy Project, Invenergy Wind, LLC, Stonybrook, NY, —GIS Technician for a wind energy project involving 59 turbines and associated transmission lines across 14,500 acres in Wyoming County, NY. Key tasks included creating and managing spatial data for environmental impact analysis, employing ArcPad applications and Trimble GeoXH GPS units for wetland delineation, developing a digital terrain model for stormwater erosion and sediment control, integrating GIS and CAD data, and producing technical maps for U.S. Army Corps of Engineers review.

Senior Housing Development, Clover Construction, Various Locations,—Managed GIS mapping for senior housing developments nationwide. Created maps displaying major retail areas and competitor locations within a 5-mile radius of proposed sites to assist site selection and planning.

Solar Energy Development, Lincoln Renewable Energy LLC,—GIS Technician supporting solar energy development. Responsibilities included identifying optimal solar panel placement by analyzing solar intensity

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and spatial constraints such as wetlands, FEMA flood zones, topography, sensitive habitats, roads, transmission lines, and substations. Additional work involved geo-referencing and editing parcel data using GIS tools.

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Jesse Alt-Winzig, EIT

Project Environmental Engineer

Jesse Alt-Winzig has experience with environmental monitoring, assessment, and remediation. He handles all phases of Brownfield Cleanup Programs from application, investigation, reporting, EQuIS data processing, GIS software, and post-remediation site management. Jesse has performed investigative fieldwork and oversight of BCP projects and Phase II Environmental Site Assessments (ESAs), including sampling of soil, groundwater, and soil vapor intrusion; air monitoring; and soil management. Jesse has also produced Phase I and Phase II ESAs; prepared Remedial Investigation Reports, Site Management Plans, and Final Engineering Reports; and assisted with Subsurface Utility Characterization Surveys using ground-penetrating radar (GPR) equipment. Additional experience areas include environmental compliance of air emissions and environmental grant writing.

Total Experience
7 years

With C&S Since
2019

Education
B.S., Environmental Engineering, University at Buffalo, 2017

Registrations
Intern Engineer (EIT) Certification, January 2018

40 Hour OSHA HAZWOPER, February 2025

10 Hour OSHA Construction, January 2021

Experience

Site Investigation and Remediation

Brownfield Clean Up Program Redevelopment Project, 1803 Elmwood Avenue / MOD-PAC Corporation Site, Buffalo, NY, Ongoing— Project Manager for the remediation and redevelopment of a parcel approximately 0.655 acres that comprises a 14,400 square foot warehouse connected to an active paperboard manufacturing facility. This project was under the auspices of the NYSDEC's Brownfield Cleanup Program (BCP). The redevelopment activities included remediation of contaminated soil and soil vapor, as well as the installation of a sub-slab depressurization system in the warehouse. Responsibilities also include soil, groundwater, and soil vapor sampling; subcontractor coordination; field work; and preparation of technical documents. The remediation targeted the achievement of a Track 4 Commercial-Use cleanup status.

Brownfield Cleanup Program Redevelopment, Marine Drive Apartments, Buffalo, NY, Ongoing—Assisted in the investigation, remediation, and redevelopment of a 616-unit apartment complex owned by the Buffalo Municipal Housing Authority (BMHA) in Buffalo's Inner Harbor. As part of BMHA's initiative to revitalize public housing in Buffalo, the project was enrolled in the NYSDEC Brownfield Cleanup Program (BCP). Plans include reimagining the Marine Drive layout to create an affordable mixed-income, mixed-use development. Responsibilities included preparing the BCP application, coordinating with site owners, NYSDEC, and contractors, and drafting and reviewing technical documents. The remediation targeted achievement of a Track 1 Unrestricted-Use status by December 2026.

Brownfield Cleanup Program Redevelopment, Heritage Point, Buffalo, NY, 2022— Assisted in the investigation, remediation, and redevelopment of a 103,000-square-foot mixed-use building at the former Memorial Auditorium site at Canalside in Buffalo, NY. This high-profile project, conducted under the NYSDEC Brownfield Cleanup Program (BCP), involved soil remediation up to twenty feet below ground and the construction of a multistory mixed-use building. Responsibilities included preparing the BCP application, coordinating with site owners, NYSDEC, and contractors, and drafting and reviewing technical documents. The remediation successfully achieved a Track 1 Unrestricted Use status.

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Brownfield Clean Up Program Redevelopment Project, 211 Main Street, North Tonawanda, NY, 2021—Environmental engineer for the investigation, remediation, and redevelopment of a 17,000 square-foot, vacant, former industrial building. This high-profile project was under the auspices of the NYSDEC's Brownfield Cleanup Program (BCP). The redevelopment activities included remediation of contaminated soil and redevelopment of a multistory Class A office space structure. Responsibilities included soil and groundwater sampling, field work, and preparation of technical documents. The remediation achieved a Track 1 Unrestricted Use cleanup status.

Brownfield Clean Up Program Redevelopment Project, 301 Connecticut Street, Buffalo, NY, 2020—Environmental engineer for the investigation, remediation and redevelopment of a former auto repair garage and vacant school building located adjacent to D'Youville College. This high-profile project was under the auspices of the NYSDEC's Brownfield Cleanup Program (BCP). The redevelopment activities included remediation of contaminated soil and construction of a 59,860 square-foot education, training, and community health center. The D'Youville HUB creates a unique and innovative learning environment for students, while offering families in the Buffalo's West Side neighborhood greater access to high quality primary care services. Responsibilities included soil and groundwater sampling; subcontractor coordination; field work, and preparation of technical documents. The remediation achieved a Track 1 Unrestricted Use cleanup status.

Brownfield Clean Up Program Redevelopment Project, MOD-PAC Corporation Site, Buffalo, NY, 2019—Environmental Engineer for the remediation and redevelopment of a parcel approximately 20-acres in size that included a vacant field which was formerly a manufacturing facility. This project was under the auspices of the NYSDEC's Brownfield Cleanup Program (BCP). The redevelopment activities included remediation of contaminated soil, groundwater, and soil vapor, in addition to the construction of athletic fields for Nardin Academy. The vacant area was repurposed into two quality softball/soccer fields with new parking and a restroom/locker room building. Responsibilities included groundwater injections and sampling; subcontractor coordination; field work; and preparation of technical documents. The remediation achieved a Track 4 Commercial Use cleanup status.

Brownfield Clean Up Program Redevelopment Project, Campus Square, Buffalo, NY, Ongoing—Environmental engineer for the investigation, remediation, and redevelopment of an 8-acre parcel that is located immediately north of the Buffalo Niagara Medical Campus. Under NYSDEC's Brownfield Clean-up Program (BCP), the project is undergoing remediation to address contaminated fill soils. The new building being constructed will be an eight-story, mixed-use residential and commercial (medical office space) structure. The first floor of the building will be commercial space, and the remaining seven floors will be residential space. The planned remediation expects to achieve Unrestricted-Use status.

USEPA Site Assessments

USEPA Phase I/II Environmental Site Assessments, Gowanda, NY, Ongoing—Project manager for the performance of Phase I and II ESAs at priority brownfield sites within the Village of Gowanda. USEPA Brownfield Assessment Grant is funding the work. Responsibilities include identifying appropriate sites for assessment, creating application forms for approval by USEPA, coordinating, and managing the assessments, Automated Standard Application for Payments (ASAP) payment reimbursement point of contact, Assessment Cleanup and Redevelopment Exchange System (ACRES) reporting, and grant administration.

USEPA Phase I/II Environmental Site Assessments, Lackawanna, NY, Ongoing—Project manager for the performance of Phase I and II ESAs at priority brownfield sites within the City of Lackawanna. A USEPA Brownfield Assessment Grant funded the work. Responsibilities include identifying appropriate sites for assessment, creating application forms for approval by USEPA, coordinating, and managing the assessments, Automated Standard Application for Payments (ASAP) payment reimbursement point of contact, Assessment Cleanup and Redevelopment Exchange System (ACRES) reporting, and grant administration.

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Environmental Monitoring

Emission Monitoring, Cascades/Greenpac, Niagara Falls, NY, 2019-2023—Environmental engineer assisting in the monitoring and reporting of monthly and annual Volatile Organic Compound (VOC) air emissions for two manufacturing businesses in the City of Niagara Falls. Responsibilities included chemical supplier coordination and preparation of technical documents.

Air Monitoring, 255 Delaware Avenue, Buffalo, NY, 2019—Environmental engineer assisting in the monitoring and collection of air samples from the basement of a building in City of Buffalo. Air quality was monitored though the collection of ambient air as well as sub-slab vapor intrusion.

Brownfield Clean Up Program Remedial Oversight, 201 Ellicott Street, Buffalo, NY, 2019—Responsible for oversight of field operations for remedial excavation work. Documented and advised the contractor in proper removal and handling of onsite soils to comply with IRM Work Plan.

Construction/Environmental Management

Houghton Park Improvement Project, Buffalo, NY, Ongoing—Managed the construction management and inspection components of a park improvement project in the Kaisertown neighborhood in the City of Buffalo. Responsibilities included the construction observation and inspection of the 56-acre Houghton Stachowski Park improvements. The park improvements were funded by a $2.34 million investment through the American Rescue Plan.

Former Bethlehem Steel Public Sanitary Sewer & Waterline Extensions, Lackawanna, NY, 2023-2025—On behalf of the Erie County Industrial Development Agency, performed environmental observation for monitoring of the construction of public water & sanitary sewer improvements at the former Bethlehem Steel Plant. The project consists of 1,600 linear feet of 12 and 16-inch water main including bore and jack under NYS Route 5; 4,400 linear feet of eight-inch, twelve-inch, and eighteen-inch gravity sanitary sewer and cured-in-place lining of 150 linear feet of eighteen-inch sewer.

Gowanda Creekside Improvement Project, Village of Gowanda, NY, 2021—Managed the construction management and environmental monitoring components of a multi-site amphitheater construction project along Cattaraugus Creek. Responsibilities included the daily construction management and environmental oversight of the construction of amphitheaters at the former Peter Cooper Glue Factory Superfund Site (Gateway Park) and Creekside Park within the Village of Gowanda. The park improvements were funded by the New York State Empire State Development Corporation through an approximately $1.8 million Smart Growth Waterfront Development grant.

Grant Writing

2020 US EPA Brownfield Assessment Grant, Village of Gowanda, Gowanda, NY, 2019—Prepared a community-wide Assessment Grant Application for the Village of Gowanda under the EPA Brownfields Program.

Environmental Reporting & Planning

Water Withdrawal Permit Application, Cascades Containerboard Packaging & Greenpac Mill, City of Niagara Falls, NY, 2021—Prepared the engineering report to accompany a Water Withdrawal Permit Application for Cascades Containerboard Packaging & Greenpac Mill.

Water Withdrawal Permit Application, Alliance Energy, Batavia Power Plant, City of Batavia, NY, 2021—Prepared the engineering report to accompany a Water Withdrawal Permit Application for the Batavia Power Plant owned by Alliance Energy in the City of Batavia.

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Site Management Plan, 117 Fairmount Avenue, City of Jamestown, NY, 2021—Prepared a Site Management Plan for the property located at 117 Fairmount Avenue in the City of Jamestown for future use after a site cover system is placed on the property.

Quality Assurance Project Plan, Porter Road Properties, Town of Niagara, NY, 2021—Prepared a Quality Assurance Project Plan for two properties located along Porter Road in the Town of Niagara for a Phase II Environmental Site Assessment that would be occurring at the site.

Large Area Site Assessments

Phase I Environmental Site Assessment, Upper Peninsula, Michigan, 2022—Managed the completion of a Phase I Environmental Site Assessment for Bluesource for hundreds of parcels comprising approximately 30,000 acres in the remote Upper Peninsula, Michigan. The parcels included hundreds of acres of managed forest and logging activities. The site reconnaissance included traveling hundreds of miles in off-road vehicles and on foot. The Phase I ESA Report was completed in accordance with the ASTM E2247-16 standard.

Phase I Environmental Site Assessment, West Virginia, 2022—Assisted in the completion of a Phase I Environmental Site Assessment for Bluesource for hundreds of parcels comprising approximately 30,000 acres in a mountainous area of northern West Virginia. The parcels included hundreds of former and active oil and gas wells. The site reconnaissance included multiple staff members who logged hundreds of miles in off-road vehicles and on foot. The Phase I ESA Report was completed in accordance with the ASTM E2247-16 standard.

Other Site Assessments

Phase I & II Environmental Site Assessment, Urban Eco Center, Buffalo, NY, 2024-2025—Prepared a Phase I Environmental Site Assessment on a multi-parcel area in East Buffalo as part of a property acquisition by Open Buffalo for a proposed Urban Eco Center. Multiple Phase II Assessments ensued to further investigate former industrial operations that occurred at the site.

Phase I Environmental Site Assessment, Niagara Falls Redevelopment, Niagara Falls, NY, 2025—Prepared a Phase I Environmental Site Assessment on a multi-parcel area in the City of Niagara Falls as part of a potential data center construction.

Phase I Environmental Site Assessment, 1061 Allen Street, Jamestown, NY, 2024—Prepared a Phase I Environmental Site Assessment on a single parcel in the City of Jamestown following a fire which destroyed a former furniture factory.

Hazardous Waste Screening, Various Clients, NY, Ongoing—Prepared Hazardous Waste Screening Reports for approximately one dozen clients across the public and private sector. The projects included site investigation, reconnaissance, and historical document review per the NYSDOT document TEM section 4.4.20.

Phase I Environmental Site Assessment, Otto Solar Site (Dunkleman Hill Road), Town of Otto, NY, 2022—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of Otto as part of a property acquisition by Dimension Energy for a proposed solar array.

Phase II Environmental Site Assessment, 5272 South Park Avenue, Town of Hamburg, NY, 2022—Managed the investigative efforts on a single parcel in the Town of Hamburg to determine contamination resulting from past site activities. Project included the characterization of soils on site through the collection of surface soil samples.

Phase I Environmental Site Assessment, Sheridan Solar Site (Werle Road), Town of Sheridan, NY, 2022—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of Sheridan as part of a property acquisition by Dimension Energy for a proposed solar array.

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Phase I Environmental Site Assessment, South Valley Property, West Perimeter Road, Town of South Valley, NY, 2022—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of South Valley as part of a property acquisition by Western New York Land Conservancy.

Phase I Environmental Site Assessment, 630 Linwood Avenue, City of Buffalo, NY, 2022—Prepared a Phase I Environmental Site Assessment on the former Gates Hospital property in the City of Buffalo as part of a property acquisition by Belmont Housing.

Phase I & II Environmental Site Assessment, 182 Washington Avenue, City of Elmira, NY, 2022—Prepared a Phase I & Phase II Environmental Site Assessment on a single parcel in the City of Elmira as part of pre-Brownfield Application work for Arc Building Partners for a new Salvation Army location.

Phase I Environmental Site Assessment, 302 East 2nd Street, City of Jamestown, NY, 2021—Prepared a Phase I Environmental Site Assessment on a single parcel in the City of Jamestown that was a former dry cleaner as part of property redevelopment.

Phase I Environmental Site Assessment, Hartley Dealership Properties (Washington Street), City of Jamestown, NY, 2021—Prepared a Phase I Environmental Site Assessment for multiple parcels in the City of Jamestown that were part of a former automobile dealership and service center. This Phase I ESA was associated with a property acquisition by the City of Jamestown for a proposed new Department of Public Works facility.

Phase I Environmental Site Assessment, Mammoser Farm (Hardt/Winkelman Road), Town of Eden, NY, 2021—Prepared a Phase I Environmental Site Assessment for Western New York Land Conservancy on a single parcel in the Town of Eden for the purpose of placing an easement on the property.

Phase I Environmental Site Assessment, William Henry Farmland Farm (Hickman Road), Town of Eden, NY, 2021—Prepared a Phase I Environmental Site Assessment for Western New York Land Conservancy on a single parcel in the Town of Eden for the purpose of placing an easement on the property.

Phase I Environmental Site Assessment, Riverview Solar Technology Park (River Road), Town of Tonawanda, NY, 2021—Prepared a Phase I Environmental Site Assessment for multiple parcels along River Road in the Town of Tonawanda as part of property redevelopment by TM Montante Development.

Phase I Environmental Site Assessment, 7595 Genesee Road, Town of Concord, NY, 2021—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of Concord as part of a property acquisition by OYA Solar for a proposed solar array.

Phase I Environmental Site Assessment, Chautauqua Lake KOA (Thum Road), Hamlet of Dewittville, Town of Chautauqua, NY, 2021—Prepared a Phase I Environmental Site Assessment on a single campground parcel in the Hamlet of Dewittville as part of a property acquisition by Land Lease America.

Phase I Environmental Site Assessment, 5810 South Transit Road, Town of Lockport, NY, 2021—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of Lockport as part of a property acquisition by Cornerstone Community Federal Credit Union for a new branch.

Phase I Environmental Site Assessment, West Saile Drive Properties, Town of Batavia, NY, 2021—Prepared a Phase I Environmental Site Assessment for two parcels in the Town of Batavia as part of property acquisition by New York Bus Sales.

Phase I Environmental Site Assessment, Alt Preserve, 2489 Whitehaven Road, Town of Grand Island, NY, 2021—Prepared a Phase I Environmental Site Assessment for Western New York Land Conservancy on a single parcel in the Town of Grand Island for the purpose of placing a conservation easement on the property.

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Phase I Environmental Site Assessment, Funk Preserve, 2500 Staley Road, Town of Grand Island, NY, 2021—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of Grand Island as part of a property acquisition by Western New York Land Conservancy.

Phase I Environmental Site Assessment, 500 Commerce Drive, Town of Amherst, NY, 2021—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of Batavia for due diligence purposes for property acquisition by Deal partners, LLC.

Phase I Environmental Site Assessment, 51 Botsford Place, City of Buffalo, NY, 2021—Prepared a Phase I Environmental Site Assessment on a single parcel in the City of Buffalo for environmental approval purposes for Botsford Property, LLC.

Phase I Environmental Site Assessment, 3490 Main Street, City of Buffalo, NY, 2021—Assisted with preparing a Phase I Environmental Site Assessment on a single parcel in the City of Buffalo for due diligence purposes for Main/Kenmore Partners, LP.

Phase I Environmental Site Assessment, 315 Stahl Road, Town of Amherst, NY, 2021—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of Amherst (Getzville) as part of a property acquisition by Cornerstone Community Federal Credit Union for a new branch.

Phase I Environmental Site Assessment, Portville Solar Site (Breeze Boulevard), Town of Portville, NY, 2021—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of Portville as part of a property acquisition by Dimension Energy for a proposed solar array.

Phase I Environmental Site Assessment, 795 Indian Church Road, Town of West Seneca, NY, 2021—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of West Seneca as part of a property acquisition by Endeavor Health Services for a new clinic location.

Limited Site Investigation, 12396 McNeeley Road, Town of Akron, NY, 2021—Managed the investigative efforts on a single parcel in the Town of Akron to determine contamination resulting from past property uses as an automotive salvage yard. Project included the characterization of soils on site through subsurface soil borings and collection of surface and subsurface soil samples.

Limited Site Investigation, Alt Preserve, 2489 Whitehaven Road, Town of Grand Island, NY, 2021—Managed the investigative efforts on a single parcel in the Town of Grand Island to determine if a release occurred from an underground gasoline storage tank located on the property. The project also investigated the possibility of contamination from a metal drum debris area. Project included the characterization of soils on site through subsurface soil borings and collection of surface and subsurface soil samples.

Phase I Environmental Site Assessment, 3325 Genesee Street, Town of Cheektowaga, NY, 2020—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of Cheektowaga as part of a property acquisition.

Phase I Environmental Site Assessment, Wheatfield Solar Site (Mapleton Road), Town of Wheatfield, NY, 2020—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of Wheatfield as part of a property acquisition by Dimension Energy for a proposed solar array.

Phase I Environmental Site Assessment, 401 Davison Road & 500 Park Lane Circle, City of Lockport, NY, 2020—Prepared a Phase I Environmental Site Assessment for two parcels in the City of Lockport as part of a property acquisition.

Phase II Environmental Site Assessment, Holy Angels Church (Fargo Avenue), City of Buffalo, NY, 2020—Managed the investigative efforts on the Holy Angels Church in the City of Buffalo to determine the possibility of contamination from former site uses. Project included the characterization of soils on site through

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subsurface soil borings and collection of soil samples as well and groundwater samples. Oversaw construction and installment of temporary groundwater monitoring wells throughout the site.

Phase II Environmental Site Assessment, 3325 Genesee Street, Town of Cheektowaga, NY, 2020—Managed investigative efforts on a single parcel in the Town of Cheektowaga to determine the possibility of petroleum contamination migrating from a neighboring site. Project included the characterization of soils on site through subsurface soil borings and collection of soil samples as well and groundwater samples. Oversaw construction and installment of temporary groundwater monitoring wells throughout the site.

Phase I Environmental Site Assessment, Niagara Escarpment Preserve Addition (Sunset Drive), Town of Lockport, NY, 2020—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of Lockport as part of a property acquisition by Western New York Land Conservancy for a preserve addition.

Phase I Environmental Site Assessment, Industrial Drive, Village of Solvay, NY, 2019—Prepared a Phase I Environmental Site Assessment for multiple parcels in the Village of Solvay as part of a property acquisition by the Village of Solvay for a new village office.

Phase I Environmental Site Assessment, Southwestern Boulevard, Town of Evans, NY, 2019—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of Evans as part of a property acquisition by the Town of Evans.

Limited Site Characterization, Pilgrim Village (Ellicott/East North Street), City of Buffalo, NY, 2019—Managed the investigative efforts to determine Brownfield Cleanup Program (BCP) eligibility of parcels at Pilgrim Village in the city of Buffalo. Project included the characterization of soils on site through subsurface soil borings and the collection of soil samples.

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Brian Wasilewski

Environmental Scientist

Brian Wasilewski has an education in geology with a focus on hydrogeology and planetary geosciences. He has experience in all phases of Brownfield Cleanup Programs from application, investigation, reporting, EQuIS data processing, GIS software, and post remediation site management. Brian has performed investigative field work and oversight on BCP projects and Phase II Environmental Site Assessments (ESAs), including sampling of soil, groundwater, and soil vapor intrusion; air monitoring; and soils management. Brian has also produced Phase I and Phase II ESAs; prepared Remedial Investigation Reports, Site Management Plans, and Final Engineering Reports; and assisted in Subsurface Utility Characterization Surveys using ground penetrating radar equipment (GPR). He also has a background in transportation construction from his time spent working with the New York State Department of Transportation.

Total Experience
3 years

With C&S Since
2023

Education
M.S. Geology, State University of New York at Buffalo, 2022

B.S. Geology, State University of New York at Buffalo, 2019

Registrations
NYS Certified Intern Geologist 00126
May 2023

OSHA 40-Hour HAZWOPER
December 2025

OSHA 10-Hour Construction
March 2023

Experience

Site Investigation and Remediation

BCP Redevelopment Project, Marine Drive Apartments Site, Buffalo, NY, Ongoing — Environmental Scientist for the investigation, remediation, and redevelopment of a 616-family unit apartment complex owned by Buffalo Municipal Housing Authority (BMHA) in Buffalo's Inner Harbor. This redevelopment is part of the BMHA's initiative to reshape public housing in the City of Buffalo. This project will be entered into the NYSDEC's Brownfield Cleanup Program (BCP). The developer proposes to rethink the entire layout of Marine Drive and create a mixed-income, mixed use development. Project responsibilities included preparation of the BCP Application; coordination with the site owners, NYSDEC, and contractors; and preparation and review of technical documents.

Westwood Country Club Redevelopment Project, Amherst, NY, Ongoing— Environmental Scientist for the investigation, remediation, and redevelopment of the former Westwood Country Club. Due to the presence of metals from years of pesticide and fungicide use in surficial soils, this site was entered and then removed from the NYSDEC's Brownfield Cleanup Program (BCP). This work consisted of delineating hot spots to achieve Soil Cleanup Objectives for the future development of Willowdale Park. Project responsibilities include field work and the preparation of technical documents.

BCP Redevelopment Project, Buffalo Salvation Army Site, Buffalo, NY Ongoing— Environmental Scientist for the investigation, remediation, and redevelopment of the Salvation Army's Buffalo facility. Due to the presence of SVOCs and metals in site-wide fill this project will be entered into the NYSDEC's Brownfield Cleanup Program (BCP). The redevelopment improves the community service capabilities of the Salvation Army by replacing the existing emergency shelter, constructing a new seven-story 147-unit apartment building, and two 17-unit townhomes. Project responsibilities will include preparation of the BCP Application; coordination with the site owners, NYSDEC, and contractors; and preparation and review of technical documents.

BCP Redevelopment Project, Cannabis Site, Buffalo, NY, 2024—Environmental Scientist for the remediation and redevelopment of a former manufacturing facility slated for

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redevelopment as a cannabis growth and processing facility. Due to the presence of SVOCs and metals in site-wide fill, this project was entered into the NYSDEC's Brownfield Cleanup Program (BCP). The fill material also contains TENORM slag, so additional radiological assessment and handling was part of the project.

Environmental Monitoring

Health and Safety Oversight, Tonawanda Landfill Air Monitoring, Tonawanda, NY, 2025 – Environmental scientist performed the oversight for the placement of a new 48" water main along the boundary of the former Tonawanda Landfill. Oversight required air monitoring within the trench and upwind / downwind of the excavation using multiple toxic gas detectors.

Remedial Oversight, Bethlehem Steel Utilities Installation, Lackawanna, NY, 2023—Environmental scientist performed the oversight on the removal and separation of slag layer on the former Bethlehem Steel site. Monitored groundwater removal and treatment throughout the jobsite.

Remedial Oversight, Great Lakes Industrial Development Site, Lackawanna, NY—Environmental scientist performed the oversight of the removal of Number 6 fuel oil in designed recovery trenches on a 1.56-acre parcel of land. Monitors recovery trench system for long-term remediation of the fuel oil plume.

Site Assessment

Limited Site Assessment, Jordan Place, Buffalo, NY, 2025 – Prepared a Limited Site Assessment for a section of land downgradient from a former gas station and adjacent to the Buffalo River. Soil borings and groundwater monitoring wells were utilized to identify any potential contamination that may be on site.

Limited Site Assessment, 412 East Main Street, Fredonia, NY, 2024 – Prepared a Limited Site Assessment on a former vineyard used for pesticide research. Soil borings were utilized to identify areas of contamination and delineate any remaining hotspots for remediation prior to the construction of a medical facility.

Phase I Environmental Site Assessment, Portville CSG, Portville, NY, 2024—Prepared a Phase I Environmental Site Assessment on a solar farm in Portville for the purpose of satisfying a lender.

Phase II Environmental Site Assessment, Former St Paul School, Kenmore, NY, 2023—Environmental scientist performed soil boring evaluations and sub slab soil vapor intrusion sampling.

Phase I Environmental Site Assessment, 5467 Upper Mountain Road, Lockport, NY, 2023—Prepared a Phase I Environmental Site Assessment on land in the City of Lockport for future development.

Phase I Environmental Site Assessment, 799 Niagara Street, Tonawanda, NY, 2023—Prepared a Phase I Environmental Site Assessment on two parcels of land for the future sale of private property.

Hazardous Screening Report, Dennis Road, Orchard Park, NY, 2023—Managed the hazardous screening investigation of an area along Dennis Road in Orchard Park, New York for the installation of a new culvert. The project included the investigation of an area on Dennis Road observing and documenting any potential areas for hazardous impacts.

Phase I Environmental Site Assessment, DeMink Floating Fen, Stockton, NY, 2023—Prepared a Phase I Environmental Site Assessment on 11 parcels of land for the Western New York Land Conservancy.

Phase I Environmental Site Assessment, 5594 Camp Road, Hamburg, NY, 2023—Prepared a Phase I Environmental Site Assessment on one parcel of land in Hamburg for the future sale of Automotive Plus.

Phase I/II Environmental Site Assessment, 1016 & 1044 East Delavan Avenue, Buffalo, 2023—Prepared a Phase I Environmental Site Assessment on three parcels of land for the future expansion of the Buffalo Public Schools Commissary. The Phase II ESA utilized soil borings, test pits, and groundwater to delineate hotspots from former USTs.

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Phase I Environmental Site Assessment, 1864 Electric Avenue, Lackawanna, 2023—Prepared a Phase I Environmental Site Assessment on a single parcel in the City of Lackawanna for future development.

Phase I Environmental Site Assessment, 15 Jetview Drive, Chili, NY, 2023—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of Chili as a part of a property acquisition by BASCO USA

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Natalie O'Brien

Staff Engineer

As an Environmental Engineer, Natalie brings a strong technical background and hands-on experience in environmental consulting and site assessment. Natalie is highly skilled in preparing Phase I and Phase II Environmental Site Assessments (ESAs), with a portfolio that includes due diligence for property transactions, conservation easements, and redevelopment projects. She has successfully authored numerous Brownfield Cleanup Program (BCP) applications for both single- and multi-parcel sites, demonstrating a thorough understanding of regulatory requirements and site eligibility criteria. Natalie is proficient in the use of GIS software for site mapping and data analysis, supporting comprehensive environmental reporting and decision-making.

Total Experience
2 years

With C&S Since
2024

Education
M.S. in Environmental and Water Resources Engineering, State University of New York at Buffalo, 2024

B.S. in Environmental Science, State University of New York Binghamton, 2022

Registrations
40 Hour OSHA HAZWOPER, September 2024

Fit for Half-face Air Purifying Respirator and N95 use

2025

Experience

Site Investigation and Remediation

Former Mobil Service Station 99-MST Periodic Review Reporting, Kaleida Health, Buffalo, NY, 2024 - 2026—Conduct semiannual groundwater sampling and reporting for seven groundwater wells on site and one groundwater well adjacent off site, for the 1.72 acre BCP Site located on Main Street in the City of Buffalo.

Central Terminal BCP, Central Terminal Restoration LLC, Buffalo NY, 2026— Collected surface and subsurface soil samples and conducted air monitoring for the Lawn Area of the Central Terminal.

Detroit Metropolitan Wayne County Airport Taxiway K South Reconstruction, Wayne County Airport Authority, Wayne County Airport, Livonia, MI, 2026 – Conducted concrete and soil sampling at 18 locations across Taxiway K at the DTW Airport for the purpose of taxiway reconstruction.

BCP Redevelopment Project, The Habitat Company, Marine Drive Apartments, Buffalo NY, 2025 - 2026—Aided in soil sampling, groundwater monitoring well development, and groundwater sampling of the site for the purpose of remediating the BCP site to Track 1 cleanup standards. Conducted oversight, soil sampling, air monitoring, and preparation of daily work reports for submittal to NYSDEC during remedial excavation.

Buffalo Business Periodic Review Reporting, Buffalo Business Park, Buffalo, NY, 2026— Conduct semiannual groundwater sampling and reporting for two adjacent off site groundwater monitoring wells, for the 1.4 acre VCP Site located on Broadway Street in City of Buffalo.

Soil Vapor Intrusion Sampling, Canal Lofts LLC, 76 Adam Street, Tonawanda, NY, 2026- Conducted sub-slab, indoor air, and outdoor air sampling at a 0.48 acre property in the City of Tonawanda to determine if the air on site was impacted by an adjacent former dry cleaner. Cost: $7,000.

1803 Elmwood Avenue BCP Remedial Investigation, MOD-PAC, Buffalo, NY, 2025 - 2026—Conducted subsurface investigation including soil boring advancement, subsurface soil sampling, the installation of groundwater monitoring wells, and groundwater sampling; and oversight during the removal of a concrete slab,

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contaminated soil, and installation of a sub slab depressurization system at the 0.65 acre BCP Site located at 1803 Elmwood Avenue in the City of Buffalo.

215 East Third Street Tank Removal Project, City of Jamestown, Jamestown, NY 2025—Conducted oversight and subsurface investigation including soil boring advancement, subsurface soil sampling, temporary groundwater monitoring well installation, and groundwater sampling for the removal of four underground storage tanks at a former gas station in the City of Jamestown. Cost: $36,925.

310 Ship Canal BCP Site Radon Sampling, Laborers Way 1 LLC, Buffalo, NY, 2025—Aided in radon sampling in the 70,000 square foot manufacturing building located at the 310 Ship Canal Parkway BCP Site in Buffalo, NY.

BCP Redevelopment Project, Arc Building Partners, Hope on Main Buffalo NY, 2025—Aided in oversight, soil sampling, air monitoring, and preparation of daily work reports for submittal to NYSDEC during remedial excavation.

Brownfield Cleanup Program Applications

Central Terminal BCP, Central Terminal Restoration LLC, Buffalo NY, 2025—Prepared the application for the single parcel property in the City of Buffalo.

Shaffer Village BCP, Buffalo Municipal Housing Authority LLC, Buffalo NY, 2025—Prepared the application for the two-parcel property in the City of Buffalo. Due to the presence of SVOCs and metals in surface and subsurface soil, this site was entered into the BCP.

Tonawanda Island BCP, Nostra Development, Tonawanda NY, 2024—Conducted pre-application groundwater sampling and preparation of the BCP application for a single parcel in the City of North Tonawanda. Due to the presence of SVOCs and metals in surface and subsurface soil, this site was entered into the BCP. The site is planned for redevelopment of multiple phases of waterfront market-rate apartment complexes.

2 Bailey Avenue BCP, Uniland Development, Buffalo, NY, 2024—Prepared the application for the three-parcel site in the City of Buffalo. Due to the presence of SVOCs and metals in surface and subsurface soil, the site was entered into the BCP. The site is planned for redevelopment as the new Department of Public Works for the City of Buffalo.

Site Assessment

Phase I Environmental Site Assessment, Chautauqua Region Economic Development Corporation, Blackstone-Ney Ultrasonics, Jamestown, New York 2026 – Prepared a Phase I Environmental Site Assessment on the two parcel Blackstone-Ney Ultrasonics property in the City of Jamestown, New York for environmental due diligence purposes.

Phase I Environmental Site Assessment, Chautauqua Region Economic Development Corporation, El Greco Woodworking, Jamestown, New York 2026 – Prepared a Phase I Environmental Site Assessment on the seven parcel El Greco Woodworking property in the City of Jamestown, New York for environmental due diligence purposes.

Phase II Environmental Site Assessment, Village of Gowanda, Thatcher Brook Diversion, Gowanda, New York 2026 – Assisted in the collection of surface soil samples, soil boring evaluation, collection of groundwater sampling, and report writing for the xx-parcel property in the Village of Gowanda.

Phase I Environmental Site Assessment, The Habitat Company, Former Eastman Kodak Company Properties, Rochester, New York 2026 – Prepared a Phase I Environmental Site Assessment on the eight parcel former Eastman Kodak Company property in the City of Rochester, New York for environmental due diligence purposes. Cost: $3,500.

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Phase I Environmental Site Assessment, Kanaka Partners, LLC, 39 and 45 Victoria Boulevard, Kenmore, New York 2026 – Prepared a Phase I Environmental Site Assessment on the two parcel former St. Paul's School property in the Village of Kenmore, New York for the purpose of satisfying a prospective lender with respect to property acquisition. Cost: $2,500.

Phase I Environmental Site Assessment, Paesano Akkashian, PC, 3685 Lockport Road, Sanborn, New York 2026 – Prepared a Phase I Environmental Site Assessment on the two parcel property in the Town of Sanborn, New York for the purpose of satisfying a prospective lender with respect to property acquisition. Cost: $3,500.

Phase I Environmental Site Assessment, Western New York Land Conservancy, 3692 and a portion of 3462 Worden Road, Birdsall, New York 2026 – Prepared a Phase I Environmental Site Assessment on a three parcel property in the Town of Birdsall, New York for environmental due diligence purposes. Cost: $,3400.

Phase I Environmental Site Assessment, Lippes Mathias LLP, 122 Hirt Drive, Bellevue, Ohio, 2026—Prepared a Phase I Environmental Site Assessment on a three parcel property in the Town of Bellevue, Ohio for pre-acquisition environmental diligence purposes. Cost: $4,900.

Phase I Environmental Site Assessment, Lippes Mathias LLP, 560 Goodrich Road, Bellevue, Ohio, 2026—Prepared a Phase I Environmental Site Assessment on a three parcel property in the Town of Bellevue, Ohio for pre-acquisition environmental diligence purposes. Cost: $4,900.

Phase I Environmental Site Assessment, Greater Syracuse Land Bank, 1732 Erie Boulevard East, Syracuse NY, 2025—Prepared a Phase I Environmental Site Assessment on a single parcel in the City of Syracuse for due diligence purposes. Cost: $5,149.

Phase I Environmental Site Assessment, Greater Syracuse Land Bank, 155 Edison Street, Syracuse NY, 2025—Prepared a Phase I Environmental Site Assessment on a single parcel in the City of Syracuse for environmental due diligence purposes. Cost: $4,950.

Phase I Environmental Site Assessment, Chobani, "The Triangle" at the former Griffiss Air Force Base, Rome NY, 2025—Prepared a Phase I Environmental Site Assessment on two parcels at the former Griffiss Air Force Base in the City of Rome for due diligence purposes. Cost: $6,500.

Phase I Environmental Site Assessment, Canal Lofts LLC, St. Francis Properties, Seymour, Adam, and Broad Streets, Tonawanda, NY, 2025—Prepared a Phase I Environmental Site Assessment on portions of five parcels on Seymour, Adam, and Broad Streets in the City of Tonawanda for due diligence purposes. Cost: $2,850.

Phase I Environmental Site Assessment, 366 West Onondaga Street, LLC, 366 West Onondaga Street, Syracuse NY, 2025—Prepared a Phase I Environmental Site Assessment on a single parcel in the City of Syracuse for due diligence purposes. Cost: $2,500.

Phase I Environmental Site Assessment, Kanaka Partners LLC, 1507 Jefferson Avenue, Buffalo NY, 2025—Prepared a Phase I Environmental Site Assessment on a single parcel in the City of Buffalo for construction / building financing purposes. Cost: $4,500.

Phase I Environmental Site Assessment, Girardin Group, New York Bus Sales Property, 4450 West Saile Drive, Batavia NY, 2025—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of Batavia for the purpose of satisfying a prospective lender with respect to property acquisition.

Phase I Environmental Site Assessment, Chobani, Mohawk Glen Golf Course, 295 Perimeter Road, Rome, NY, 2025—Prepared a Phase I Environmental Site Assessment on single parcel in the City of Rome for due diligence purposes. Cost: $8,000.

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Phase I Environmental Site Assessment, City of Lackawanna, Bethlehem Park, 0 Birch Street and 0 Elm Street, Lackawanna, NY, 2025—Prepared a Phase I Environmental Site Assessment on two parcels in the City of Lackawanna for due diligence purposes. Cost: $5,750.

Phase I Environmental Site Assessment, Western New York Land Conservancy, Fitzgerald Property, 10073 Hooker Hill Road, Perrysburg NY, 2025—Prepared a Phase I Environmental Site Assessment on five rural parcels in the Town of Perrysburg for the purpose of placing an easement on the property. Cost: $3,250.

Phase I Environmental Site Assessment, Western New York Land Conservancy, Golden Hill State Park, Humphrey, NY, 2025—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of Humphrey for the purpose of placing an easement on the property. Cost: $2,900.

Phase I Environmental Site Assessment, TRM Architects, NFR Data Center, Niagara Falls NY, 2025—Prepared a Phase I Environmental Site Assessment on 199 parcels in the City of Niagara Falls for environmental due diligence purposes.

Phase I Environmental Site Assessment, Western New York Land Conservancy, Hoey Property, Wales, NY, 2025—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of Wales for the purpose of placing a conservation easement on the property. Cost: $2,600.

Phase I Environmental Site Assessment, Western New York Land Conservancy, Bush Property, Holland, NY 2025—Prepared a Phase I Environmental Site Assessment on a single parcel in the Town of Holland for the purpose of placing a conservation easement on the property. Cost: $2,800.

Phase I Environmental Site Assessment update, Dimension Energy LLC, ASD Baldwin NY Site, Volney, NY, 2024— Prepared a Phase I Environmental Site Assessment update for a single parcel in the Town of Volney for a proposed solar array.

Phase I Environmental Site Assessment, Amp Solar Development Inc., Macedon CSG Site, Palmyra, NY, 2024—Prepared a Phase I Environmental Site Assessment update for a single parcel in the Town of Palmyra for a proposed solar array.

Phase I Environmental Site Assessment, Western New York Land Conservancy, 10560 Youngs Road, Cold Spring NY, 2024—Prepared a Phase I Environmental Site Assessment for the two-parcel property in the Town of Cold Spring for the purpose of placing a conservation easement on the property. Cost: $3,400.

Phase I Environmental Site Assessment, Village of Gowanda, 1 West Main Street, Gowanda, NY, 2024— Prepared a Phase I Environmental Site Assessment on a single parcel in the Village of Gowanda for environmental due diligence purposes. Cost: $5,000.

Phase I Environmental Site Assessment, Village of Gowanda, 37 West Main Street, Gowanda, NY, 2024— Prepared a Phase I Environmental Site Assessment on a single parcel in the Village of Gowanda for environmental due diligence purposes. Cost: $5,000.

Phase I Environmental Site Assessment, Village of Gowanda, Buffalo Turbine West Site, Gowanda, NY, 2024— Prepared a Phase I Environmental Site Assessment on a single parcel in the Village of Gowanda for environmental due diligence purposes. Cost: $5,000.

Phase I Environmental Site Assessment, Village of Gowanda, Buffalo Turbine East Site, Gowanda, NY, 2024— Prepared a Phase I Environmental Site Assessment on a single parcel in the Village of Gowanda for environmental due diligence purposes. Cost: $5,000.

Phase I Environmental Site Assessment, Village of Gowanda, Every Thayer Site, Gowanda, NY, 2024— Prepared a Phase I Environmental Site Assessment on a single parcel in the Village of Gowanda for environmental due diligence purposes. Cost: $5,000.

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Phase I Environmental Site Assessment, Western New York Land Conservancy, Singer Farms, Newfane NY, 2024—Prepared a Phase I Environmental Site Assessment on a three-parcel property in the Town of Newfane for the purpose of placing a conservation easement on the property. Cost: $3,200.

Phase I Environmental Site Assessment, Western New York Land Conservancy, Springhill Farm, Darien and Alexander, NY, 2024—Prepared a Phase I Environmental Site Assessment on a four-parcel property in the Towns of Darien and Alexander for the purpose of placing a conservation easement on the property. Cost: $4,150.

Phase I Environmental Site Assessment, Kaleida Health, 412 East Main Street, Fredonia, NY, 2024—Prepared a Phase I Environmental Site Assessment on a single parcel former pesticide testing facility in the Village of Fredonia for due diligence purposes.

Phase I Environmental Site Assessment, Arc Building Partners, Buffalo Salvation Army, Buffalo, NY, 2024— Prepared a Phase I Environmental Assessment for the two-parcel Salvation Army located at 954 – 1000 Main Street for the purpose of construction / building financing for a new Salvation Army.

Phase I Environmental Site Assessment, Open Buffalo, Urban Ecology Center, Buffalo, NY, 2024—Prepared a Phase I Environmental Site Assessment for a 35-parcel property in the City of Buffalo for the purpose of due diligence with respect to property acquisition.

Desktop Review, Steward Lending, Cottonwood Farm, Pavilion, NY, 2024—Prepared a Desktop Review for a 10-parcel property in the Town of Pavilion for due diligence purposes.

Desktop Review, Genesee Valley Conservancy, Sugar Creek Forest, Ossian, NY, 2024—Prepared a Desktop Review for a two-parcel property in the Town of Ossian for due diligence purposes. Cost: $2,400.

Phase II Environmental Site Assessment, City of Jamestown, 65 River Street, Jamestown, NY, 2024—Assisted in the collection of surface soil samples, soil boring evaluation, collection of groundwater sampling, and report writing for the single parcel property in the City of Jamestown. Cost: $10,000.

Phase II Environmental Site Assessment, City of Jamestown, 40 Winsor Street, Jamestown, NY, 2024—Assisted in the collection of surface soil samples, soil boring evaluation, collection of groundwater sampling, and report writing for the seven-parcel property in the City of Jamestown. Cost: $12,700.

Hazardous Waste Screenings

Contaminated Materials & Hazardous Substances Screening, St. Lawrence County, County Route 14, Madrid, NY 2025— Prepared a Contaminated Materials & Hazardous Substances Screening for the County Route 14 bridge over Line Creek in the Town of Madrid, New York to determine if environmental concerns would be encountered during the replacement of the bridge.

Contaminated Materials & Hazardous Substances Screening, St. Lawrence County, County Route 49, Winthrop, NY 2025— Prepared a Contaminated Materials & Hazardous Substances Screening for the County Route 149 bridge over the East Branch of St. Regis River in the Town of Stockton, Hamlet of Winthrop, New York to determine if environmental concerns would be encountered during the replacement of the bridge.

Contaminated Materials & Hazardous Substances Screening, St. Lawrence County, County Route 14, Madrid, NY 2025— Prepared a Contaminated Materials & Hazardous Substances Screening for the County Route 14 bridge over Line Creek in the Town of Madrid, New York to determine if environmental concerns would be encountered during the replacement of the bridge.

Contaminated Materials & Hazardous Substances Screening, Chemung County, Benjamin Road, Portage, NY 2025—Prepared a Contaminated Materials & Hazardous Substances Screening for the Benjamin Road bridge

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over N. Branch Newton Creek in the Town of Horseheads, New York to determine if environmental concerns would be encountered during the replacement of the bridge.

Contaminated Materials & Hazardous Substances Screening, Genesee County, Ellinwood Road, Pembroke, NY 2025—Prepared a Contaminated Materials & Hazardous Substances Screening for the Ellinwood Road Bridge over Murder Creek in the Town of Pembroke, New York to determine if environmental concerns would be encountered during the replacement of the bridge.

Contaminated Materials & Hazardous Substances Screening, Wayne County, Joy Road, Sodus, NY 2025— Prepared a Contaminated Materials & Hazardous Substances Screening for the Joy Road bridge over Salmon Creek in the Town of Sodus, New York to determine if environmental concerns would be encountered during the replacement of the bridge.

Contaminated Materials & Hazardous Substances Screening, Livingston County, Cheese Factory Road, Portage, NY 2025—Prepared a Contaminated Materials & Hazardous Substances Screening for the Cheese Factory Road bridge over Keshequa Creek in the Town of Portage, New York to determine if environmental concerns would be encountered during the replacement of the bridge.

Contaminated Materials & Hazardous Substances Screening, Erie County, Jennings Road Culvert 487-03, Collins, NY, and Lein Road Culvert 154-01, West Seneca, NY, 2025—Prepared a Contaminated Materials & Hazardous Substances Screening for the Jennings Road Culvert located in Collins, NY, and the Lein Road Culvert located in West Seneca, NY, as a part of the Large Culvert Management System to determine if environmental concerns would be encountered during the replacement of the two culverts.

Contaminated Materials & Hazardous Substances Screening, Onondaga County, 7th North Street, Salina, NY, 2024—Prepared a Contaminated Materials & Hazardous Substances Screening for the 7th North Street Paving Project to determine if environmental concerns would be encountered during transportation work.

Contaminated Materials & Hazardous Substances Screening, City of Buffalo, Gates Circle, Buffalo, NY, 2024— Prepared a Contaminated Materials & Hazardous Substances Screening for the Gates Circle to determine if environmental concerns would be encountered during reconstruction of the traffic circle.

GIS

Niagara County Brownfield Coalition Grant Project, Niagara County Department of Economic Development, Niagara County, NY, 2025 – 2026 – On call to provide GIS for projects related to the Niagara County Brownfield Coalition Grant.

Detroit Metropolitan Wayne County Airport Reconstruction Project, Wayne County Airport Authority, Detroit, MI, 2025 – 2026 – On call to provide GIS assistance for sampling events during the reconstruction of the Detroit Metropolitan Wayne County Airport.

City of Jamestown Comprehensive Plan, City of Jamestown, Jamestown, NY, 2026 – On call to provide GIS assistance for the City of Jamestown Comprehensive Plan.

Willowdale Park Planning, Erie County, Amherst, NY, 2025— On call to provide GIS assistance for the planning of Willowdale Park.

Arcade Local Waterfront Revitalization Program, Village of Arcade, Arcade, NY, 2025— On call to provide GIS assistance for the Village of Arcade Local Waterfront Revitalization Program.

Coventry Commons Remediation, Housing Visions ADHV Redevelopment, Syracuse, NY, 2025— On call to provide GIS assistance for the site characterization and Brownfield Cleanup Program Application for the Coventry Commons site.

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Miscellaneous Projects

Soil and Groundwater Management Plan, New York State Office of Parks, Recreation and Historic Preservation, Earl W. Brydges Artpark State Park – 450 South 4th Street, Lewiston, NY, 2026 – Prepared a Soil and Groundwater Management Plan to address how to properly handle soil and groundwater potentially impacted with residual heavy metals and pesticides should they be encountered during future construction or maintenance activities at the approximately 167 acre site.

Materials Management Plan, DiDonato Associates Engineering and Architecture, P.C., Houghton Park – 1675 Clinton Street, City of Buffalo, 2026 – Prepared a Materials Management Plan to address how to properly handle soil potentially impacted with historic fill material, petroleum, and slag-like material containing Technologically Enhanced Naturally Occurring Radioactive Material during construction and redevelopment activities at the 61.5 acre site.

1789 David Drive Oversight, Hodgson Russ LLP, City of Olean, NY, 2025— Oversaw the removal of approximately 320 tons of improperly deposited anthropogenic fill material, and the placement of approximately 1,000 tons of clean fill material. Cost: $1,500.

Niagara County Brownfield Inventory Windshield Surveys, Niagara County, Cities of Lockport, Niagara Falls, and North Tonawanda, NY, 2025— Developed an online survey through GIS which was used to document conditions while conducting site visits at over 130 potential brownfield sites across the cities of Lockport, Niagara Falls, and North Tonawanda in Niagara County, New York to aid Niagara County in creating a user-friendly, dynamic, and publicly accessible database highlighting different attributes of potentially developable sites across Niagara County.

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Margaret Coughlin

Environmental Field Technician

As an Environmental Field Technician, Margaret brings strong technical skills and hands-on experience in environmental consulting, monitoring, site assessement, remedial investigations. She is a detail oriented, reliable, and a safety focused professional. Margaret is skilled in collecting/analyzing soil, water and air samples, operating field monitoring equipment, identifying environmental risks and reporting. She is proficient in GIS software, GPS/remote sensing equipment, and EQUIS. Additonally, Margaret has some experience and training in Wetland delineations and wetland plant/ soil identification.

Total Experience
1 Year

With C&S Since
2025

Education
B.S. in Environmental Science, John Carroll University, 2025

Registrations
Basic Wetland Identification & Delineation Course, November 2025

Plant Identification for Wetland Delineators Course, November 2025

Respirator and HAZMAT Fit-tested, October 2025

40 Hour OSHA HAZWOPER, September 2025

Experience

Site Investigation and Remediation

BCP Redevelopment Project, The Habitat Company, Marine Drive Apartments, Buffalo NY, 2026—Conducted oversight, soil sampling, air monitoring, and preparation of daily work reports for submittal to NYSDEC during the BCP Track 1 cleanup remedial excavation. Expected completion: Spring 2026 Cost: $778,016.

Soil Vapor Intrusion Sampling, Canal Lofts LLC, 76 Adam Street, Tonawanda, NY, 2026- Conducted sub-slab, indoor air, and outdoor air sampling at a 0.48 acre property in the City of Tonawanda to determine if the air on site was impacted by an adjacent former dry cleaner. Cost: $7,000.

412 East Main Street-Cornell University Vineyard Research Lab FER, Kaleida Health, Fredonia, NY 2025—Revised FER according to NYDEC's "*Letter of Correspondence*" comments and prepared a "Response to Comments Letter". Cost: $38,600.

1803 Elmwood Avenue BCP Remedial Investigation, MOD-PAC, Buffalo, NY 2025— Helped conduct subsurface investigation including installation of groundwater monitoring wells and subsurface soil sampling the 0.65-acre BCP Site located at 1803 Elmwood Avenue in the City of Buffalo. Cost: $146,200.

WYE Yard Relocation Project-Bethlehem Water & Sewer, Erie County, Buffalo, NY 2025—Revised GIS maps based on updated DEC info Locator "Closed Sites" of BCP parcels that have cover systems. Approximate Total Project Cost: $3,500.

130-132 Harrison Street Site Characterization-Housing Visions ADHV Redevelopment, Coventry Commons, Newark, NY 2025— Created an EQUIS report of the site investigation samples and lab results for the NYDEC. Approximate Total Project Cost: $120,000.

160 Center Street BCP Remedial Investigation-Housing Visions ADHV Redevelopment, Old Erie Commons, Canastota, NY 2025—Created an EQUIS report of the site investigation samples and lab results for the NYDEC. Approximate Total Project Cost: $120,000.

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Remedial Oversight, Arc Building Partners, Buffalo Salvation Army, Buffalo, NY, 2025—Performed the sampling and oversight of the excavation and removal of PFAS contaminated soils for Salvation Army located at 954 – 1000 Main Street.

Environmental Monitoring

Tonawanda Landfill Air Monitoring, CATCO., Tonawanda, NY 2025—Preformed environmental health and safety air monitoring tasks for the Town of Tonawanda Water System Improvements-Transmission Main Installation project at the former Tonawanda Landfill. Cost: $53,311.

Remedial Oversight, Great Lakes Industrial Development Site, Lackawanna, NY 2025—Preformed the oversight of the removal of Number 6 fuel oil in designed recovery trenches on a 1.56-acre parcel of land. Monitors recovery trench system for long-term remediation of the fuel oil plume. Cost: $7,000.

Hazardous Waste Screenings

65 River Street BCP, Ramsay Agriculture/65 River LLC, Buffalo NY, 2026— Prepared the pre-application for the one-parcel property in the City of Buffalo. Cost: $13,100.

Site Assessments

Phase I Environmental Site Assessment, Western New York Land Conservancy, Patrick Easement, West Almond NY, 2025—Aided in preparing a Phase I Environmental Site Assessment on a single-parcel property in the Towns of West Almond for the purpose of placing a conservation easement on the property. Approximate Total Project Cost: $3,300.

Phase I Environmental Site Assessment, Canal Lofts LLC, St. Francis Properties, Seymour, Adam, and Broad Streets, Tonawanda, NY, 2025—Aided in preparing a Phase I Environmental Site Assessment on portions of five parcels on Seymour, Adam, and Broad Streets in the City of Tonawanda for due diligence purposes. Cost: $2,850.

Hazardous Waste Screenings

Contaminated Materials & Hazardous Substances Screening, Broome County, Powder House Road, Vestal, NY 2025—Prepared a Contaminated Materials & Hazardous Substances Screening for the three bridge maintenance project on Powder House Road over Sugar Creek in the Town of Vestal, New York to determine if environmental concerns would be encountered. Approximate Total Project Cost: $498,657.

Contaminated Materials & Hazardous Substances Screening, Chemung County, Benjamin Road, Horseheads, NY 2025—Prepared a Contaminated Materials & Hazardous Substances Screening for the Benjamin Road bridge over N Newton Creek in the Town of Horseheads, New York to determine if environmental concerns would be encountered during the replacement of the bridge. Approximate Total Project Cost: $275,956.

Wetland Delineations

Pomfret Wetland Delineation, Dunkirk, NY 2025—Aided in the wetland delineation process and GPS coordinates tracking of soil test pits and delineation boundaries for the Pomfret Solar Panel Installation project.

Miscellaneous Projects

Niagara Frontier Transportation Authority Chemical Inventory, Frontier, NY 2026— Aided in chemical inventory and SDS repository for a NFTA bus garage location. Cost: $3,800

Niagara Frontier Transportation Authority Chemical Inventory, Cold Spring, NY 2026— Aided in chemical inventory and SDS repository for a NFTA bus garage location. Cost: $4,600

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Niagara County Brownfield Inventory Windshield Surveys, Niagara County, Cities of Lockport, Niagara Falls, and North Tonawanda, NY 2025— Helped conduct site visits at brownfield sites across Niagara Falls to aid Niagara County in creating a user-friendly, dynamic database highlighting different attributes of brownfield sites across Niagara County.

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Appendix B

Environmental Reports

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Appendix C

Citizen Participation Plan

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NEW YORK STATE | Department of Environmental Conservation

Brownfield Cleanup Program

Community Participation Plan
for
Buffalo Central Terminal Site

February 2026

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C915414
495 Paderewski Dr.
City of Buffalo
Erie County, New York

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Note: The information presented in this Community Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Community Participation Plan may be revised during the site's investigation and cleanup process.
Applicant: **Central Terminal Restoration Corporation ("Applicant")**
Site Name: **Buffalo Central Terminal ("Site")**
Site Address: **495 Paderewski Drive, Buffalo, New York**
Site County: **Erie**
Site Number: **C915414**

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1. What is New York's Brownfield Cleanup Program?

New York's Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and developed. These uses include recreation, housing, and business.

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants who conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at: https://dec.ny.gov/environmental-protection/site-cleanup/brownfield-and-state-superfund-programs/brownfield.

2. Community Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable communities to participate more fully in decisions that affect their health, environment, and social well-being. NYSDEC provides opportunities for public involvement and encourages early two-way communication with communities before decision makers form or adopt final positions.

Involving communities affected and interested in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment

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- Improving public access to, and understanding of, issues and information related to a particular site and that site's investigation and cleanup process

- Providing communities with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process

- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community

- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision making.

This Community Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC web site. If this occurs, NYSDEC will inform the public in fact sheets distributed about the site and by other means, as appropriate.

Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that

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provide updates about the status of the project. These will include notifications of upcoming activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods.
The site contact list includes, at a minimum:

- chief executive officer and planning board chairperson of each county, city, town and village in which the site is located;
- residents, owners, and occupants of the site and properties adjacent to the site;
- the public water supplier which services the area in which the site is located;
- any person who has requested to be placed on the site contact list;
- the administrator of any school or day care facility located on or near the site for purposes of posting and/or dissemination of information at the facility;
- location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

Note: The first site fact sheet (usually related to the draft Remedial Investigation Work Plan) is distributed both by paper mailing through the postal service and through DEC Delivers, its email listserv service. The fact sheet includes instructions for signing up with the appropriate county listserv to receive future notifications about the site. See https://dec.ny.gov/environmental-protection/site-cleanup/regional-remediation-project-information/environmental-cleanup-email-newsletters.

Subsequent fact sheets about the site will be distributed exclusively through the listserv, except for households without internet access that have indicated the need to continue to receive site information in paper form. Please advise the NYSDEC site project manager identified in Appendix A if that is the case. Paper mailings may continue during the investigation and cleanup process for some sites, based on public interest and need.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the site's investigation and cleanup program. The flowchart in Appendix D shows how these CP activities integrate with the site investigation and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program.

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Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.

- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site's investigation and cleanup.

The public is encouraged to contact project staff at any time during the site's investigation and cleanup process with questions, comments, or requests for information.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the site contact list and changes in planned community participation activities.

Technical Assistance Grant

NYSDEC must determine if the site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the site, as described in Section 5.

If the site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the site.

As of the date the declaration (page 2) was signed by the NYSDEC project manager, the significant threat determination for the site had not yet been made.

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To verify the significant threat status of the site, the interested public may contact the NYSDEC project manager identified in Appendix A.

For more information about TAGs, go online at https://dec.ny.gov/regulatory/regulations/technical-assistance-grant-tag-guidance-handbook-der-14

Note: The table identifying the community participation activities related to the site's investigation and cleanup program follows on the next page:

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Community Participation Activities	Timing of CP Activity(ies)
Application Process:	
• Prepare site contact list • Establish document repository(ies)	At time of preparation of application to participate in the BCP.
• Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period	When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement (BCA):	
• Prepare Community Participation (CP) Plan	Before start of Remedial Investigation **Note:** Applicant must submit CP Plan to NYSDEC for review and approval within 20 days of the effective date of the BCA.
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
• Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes Remedial Investigation:	
• Distribute fact sheet to site contact list that describes RI results	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
• Distribute fact sheet to site contact list about draft RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period	Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action:	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
• Distribute fact sheet to site contact list that announces that cleanup action has been completed and that NYSDEC is reviewing the Final Engineering Report • Distribute fact sheet to site contact list announcing NYSDEC approval of Final Engineering Report and issuance of Certificate of Completion (COC)	At the time the cleanup action has been completed. **Note:** The two fact sheets are combined when possible if there is not a delay in issuing the COC.

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3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the site. Additional major issues of public concern may be identified during the course of the site's investigation and cleanup process.

The proposed Brownfield Cleanup Program (BCP) Site consists of approximately 12.54 acres of the historic Buffalo Central Terminal (former New York Central Terminal train complex) located at 495 Paderewski Drive in the City of Buffalo, Erie County, New York. The Site is located within the Broadway-Fillmore neighborhood, a residential community that includes homes, schools, day care facilities, and community gathering spaces within one mile of the property.

The Site is also located within a frontline and overburdened community, designated within an Environmental Zone (En-Zone) (Census Tracts with a poverty rate of at least 20% according to the 2016-2020 American Community Survey 5-year estimates and an unemployment rate of at least 125% of the New York State average, or a poverty rate of at least double the rate for the county in which the tract is located.) and is located in an EPA Potential Environmental Justice Area (Cenus Tracts with at least 52.42% of the population in an urban area reported themselves to be members of minority groups; or at least 22.82% of the population in an urban area had household incomes below the federal poverty level.). As well as a Disadvantaged Community (a complex methodology that identifies Census Tracts across NYS comprised of frontline and overburdened communities by looking at 45 different indicators that represent the environmental burdens or climate change risks within a community, or population characteristics and health vulnerabilities that can contribute to more severe adverse effects of climate change).

Based on Site history, recent environmental investigations, and anticipated redevelopment, the following major issues of public concern have been identified:

Soil Contamination

Recent environmental sampling identified certain contaminants in surface and subsurface soils, including:

- Polycyclic aromatic hydrocarbons (PAHs), which are chemicals commonly associated with historic coal, cinders, fuel combustion, and railroad operations.
- Metals such as lead, manganese, barium, arsenic, and others.
- Petroleum-related impacts associated with former vehicle maintenance activities in the Parking Garage.

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- Historic fill material.

Some of these contaminants were detected at concentrations exceeding levels established for restricted residential use, which impacts planned future uses which include childcare, educational space, and outdoor recreational activities.

Community concerns may include:

- Potential exposure to contaminated surface soil.
- Protection of future residents and occupants.
- Management of soil during excavation and redevelopment activities.

Petroleum and Historical Spills

Historic petroleum releases have been documented, including:

- Transformer oil releases in 1989 and 1990 within the Main Terminal Building.
- Petroleum hydraulic oil observed in vehicle lift systems in the Parking Garage.
- A former gasoline filling station historically located near Marginal Street.
- Off-site petroleum storage tanks and railroad operations adjacent to the Site.

Community concerns may include:

- Potential migration of petroleum contamination.
- Vapor intrusion risks into on-site buildings.

4. Site Information

Site Description

The Site is located at 495 Paderewski Drive in the City of Buffalo, Erie County, New York. The property consists of approximately 12.54 acres and is part of the larger historic Buffalo Central Terminal complex.

The Site is located in an urban residential neighborhood (Broadway-Fillmore).

Surrounding land uses include:

- North: Residential properties along Bryson, Hilton, and Newton Streets.
- East: Portions of the remaining Buffalo Central Terminal complex and railroad infrastructure.
- South: Former train concourse and platform areas.

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- West: Memorial Drive and additional residential areas.

The Site includes:

- The Main Terminal Building (including Tower, Concourse, Garage, and Plaza areas).
- The Mail & Baggage Building.
- The Historic Lawn (approximately 5.7 acres of green space).

History of Site Use, Investigation, and Cleanup

Prior to 1926, the property included residential homes, a public park (Polonia Park), and railroad yards.

Construction of the Buffalo Central Terminal began in 1926 and the facility opened in 1929. The Site operated as a major railroad passenger terminal and associated support facilities until passenger rail service ended in 1979. The Site continued to be used for various commercial purposes until approximately 1993.

Historic activities that may have contributed to contamination include:

- Railroad operations involving coal-fired locomotives and fuel handling.
- Use of coal cinders as fill material.
- Vehicle maintenance activities (including hydraulic lifts).
- Transformer and electrical equipment operations.
- A former gasoline filling station for taxis.
- Paint booth operations.

Since 1997, the property has been owned by the Central Terminal Restoration Corp. and used periodically for community events.

A Phase I Environmental Site Assessment was completed in October 2021. This assessment reviewed historical records and identified potential environmental concerns, including historic oil spills, former fuel storage, and historic fill material.

In August 2024, a limited soil investigation was conducted. Soil samples were analyzed for:

- Petroleum-related compounds.
- Chemicals associated with historic combustion (such as PAHs).
- Metals.
- PCBs (chemicals formerly used in electrical equipment).

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Results indicated:

- Certain PAHs and metals in surface and subsurface soil above restricted residential standards.
- Petroleum-related impacts in the Parking Garage area associated with hydraulic lifts.
- Historic fill material containing mixed debris and soil across portions of the Site.

Groundwater has not yet been evaluated.

Due to deteriorated asbestos-containing materials, certain interior areas (Transformer and Switchboard rooms and portions of the Mail & Baggage Building) were not accessible during the August 2024 investigation and will require further evaluation following asbestos abatement.

5. Investigation and Cleanup Process

Application

The Applicant has applied for and been accepted into New York's Brownfield Cleanup Program as a Participant. This means that the Applicant was the owner of the site at the time of the disposal or discharge of contaminants or was otherwise liable for the disposal or discharge of the contaminants. The Participant must fully characterize the nature and extent of contamination onsite, as well as the nature and extent of contamination that has migrated from the site. The Participant also must conduct a "qualitative exposure assessment," a process that characterizes the actual or potential exposures of people, fish and wildlife to contaminants on the site and to contamination that has migrated from the site.

The Applicant in its Application proposes that the site will be used for restricted purposes.

To achieve this goal, the Applicant will conduct investigation activities at the site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement executed by NYSDEC and the Applicant sets forth the responsibilities of each party in conducting these activities at the site.

Investigation

The Applicant will conduct an investigation of the site officially called a "remedial investigation" (RI). This investigation will be performed with NYSDEC oversight. The

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Applicant must develop a remedial investigation workplan, which is subject to public comment.

The site investigation has several goals:

1) define the nature and extent of contamination in soil, surface water, groundwater and any other parts of the environment that may be affected;
2) identify the source(s) of the contamination;
3) assess the impact of the contamination on public health and the environment; and
4) provide information to support the development of a proposed remedy to address the contamination or the determination that cleanup is not necessary.

The Applicant submits a draft “Remedial Investigation Work Plan” to NYSDEC for review and approval. NYSDEC makes the draft plan available to the public review during a 30-day public comment period.

When the investigation is complete, the Applicant will prepare and submit a report that summarizes the results. This report also will recommend whether cleanup action is needed to address site-related contamination. The investigation report is subject to review and approval by NYSDEC.

NYSDEC will use the information in the investigation report to determine if the site poses a significant threat to public health or the environment. If the site is a “significant threat,” it must be cleaned up using a remedy selected by NYSDEC from an analysis of alternatives prepared by the Applicant and approved by NYSDEC. If the site does not pose a significant threat, the Applicant may select the remedy from the approved analysis of alternatives.

Interim Remedial Measures

An Interim Remedial Measure (IRM) is an action that can be undertaken at a site when a source of contamination or exposure pathway can be effectively addressed before the site investigation and analysis of alternatives are completed. If an IRM is likely to represent all or a significant part of the final remedy, NYSDEC will require a 30-day public comment period.

Remedy Selection

When the investigation of the site has been determined to be complete, the project likely would proceed in one of two directions:

1. The Applicant may recommend in its investigation report that no action is necessary

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at the site. In this case, NYSDEC would make the investigation report available for public comment for 45 days. NYSDEC then would complete its review, make any necessary revisions, and, if appropriate, approve the investigation report. NYSDEC would then issue a "Certificate of Completion" (described below) to the Applicant.

or

2. The Applicant may recommend in its investigation report that action needs to be taken to address site contamination. After NYSDEC approves the investigation report, the Applicant may then develop a cleanup plan, officially called a "Remedial Work Plan". The Remedial Work Plan describes the Applicant's proposed remedy for addressing contamination related to the site.

When the Applicant submits a draft Remedial Work Plan for approval, NYSDEC would announce the availability of the draft plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy. The selected remedy is formalized in the site Decision Document.

The Applicant may then design and perform the cleanup action to address the site contamination. NYSDEC and NYSDOH oversee the activities. When the Applicant completes cleanup activities, it will prepare a final engineering report that certifies that cleanup requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the site, it will approve the final engineering report. NYSDEC then will issue a Certificate of Completion (COC) to the Applicant. The COC states that cleanup goals have been achieved, and relieves the Applicant from future liability for site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the site after it receives a COC.

Site Management

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The purpose of site management is to ensure the safe reuse of the property if contamination will remain in place. Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

An *institutional control* is a non-physical restriction on use of the site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup action leaves some contamination that makes the site suitable for some, but not all uses.

An *engineering control* is a physical barrier or method to manage contamination. Examples include: caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system that pumps and treats groundwater. Site management continues until NYSDEC determines that it is no longer needed.

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Appendix A -
Project Contacts and Locations of Reports and Information

Project Contacts

For information about the site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

Jason Kryszak
Project Manager
NYSDEC Region 9
Division of Environmental Remediation
700 Delaware Avenue
Buffalo, New York 14209
(716) 851-7220

Sarah Whiteway
Public Participation Specialist
NYSDEC Region 9
Division of Communication, Education and Engagement
700 Delaware Avenue, Buffalo, New York 14209
(716) 851-7192

New York State Department of Health (NYSDOH):
Aaron Keegan
Project Manager
Bureau of Environmental Exposure Investigation
NYSDOH
Empire State Plaza – Corning Tower
Room #1787
Albany, New York 12237

Locations of Reports and Information

The facilities identified below are being used to provide the public with convenient access to important project documents:

Buffalo & Erie County Public Library (Central)
1 Lafayette Square
Buffalo, NY 14203-1887
Attn: April Tompkins
Phone: (716) 858-8900

Hours:

Sunday	12:00 PM – 5:00 PM
Monday	8:00 AM – 6:00 PM
Tuesday	8:00 AM – 6:00 PM
Wednesday	8:00 AM – 8:00 PM

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Thursday	8:00 AM – 8:00 PM
Friday	9:00 AM – 5:00 PM
Saturday	9:00 AM – 5:00 PM
Winter/Spring Sunday hours run from January 4, 2026 through June 14, 2026 with the exceptions of April 5th (Easter) and May 24th (Sunday before Memorial Day).	

NYSDEC Region 9
700 Delaware Avenue
Buffalo, New York 14209

Attn: Jason Kryszak
Phone: (716) 851-7220**}**
Hours: (call for appointment)

Appendix B - Site Contact List

Owner / Operator
Monica Pellegrino Faix
Executive Director
Central Terminal Restoration Corp.
P.O. Box 51
Buffalo, New York 14212

James Morrell
Board Chair
Central Terminal Restoration Corp.
P.O Box 51
Buffalo, NY 14223
James.Morrell@nfta.com

Local Government – City of Buffalo
Christopher P. Scanlon
City of Buffalo Mayor
201 City Hall, 65 Niagara Square
Buffalo, NY 14202

James Morrell
City of Buffalo Planning Board Chair
901 City Hall, 65 Niagara Square
Buffalo, NY 14202

Mark Poloncarz
Erie County Executive
95 Franklin Street
Buffalo, NY 14202

Daniel Castle, AICP
Erie County Commissioner of
Environment and Planning
95 Franklin Street, 10th Floor
Buffalo, NY 14202

Residents, Owners and Occupants of Property and Property Adjacent to Proposed BCP Site:

SBL # 111.60-6-5
City of Buffalo
65 Niagara Square
Buffalo NY, 14206

SBL # 112.09-1-3
City of Buffalo
65 Niagara Square
Buffalo NY, 14202
SBL # 112.45-3-7
Edoh, Wilson
196 Miami Street
Buffalo NY, 14204

SBL # 112.13-1-1.2
City of Buffalo
65 Niagara Square
Buffalo NY, 14202

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SBL # 112.45-3-6
City of Buffalo
65 Niagara Square
Buffalo NY, 14202

SBL # 112.37-4-25
City of Buffalo
65 Niagara Square
Buffalo NY, 14202

SBL # 112.37-6-15
Maria Serena LLC
77 Bryson Street
Buffalo NY, 14212

SBL # 112.37-6-14
85 Group LLC
145 Lewis Street
Buffalo NY, 14215

SBL # 112.37-6-25
Hussein, Asseil
891 Clinton Street
Buffalo NY, 14210

SBL # 112.37-5-33
Chelsea & Brandon LLC
109 Croy Avenue
Buffalo NY, 14215

SBL # 112.38-3-1
Hasan, Mahdi
65 Young Street
Buffalo NY, 14212

SBL # 112.38-3-2
Bhuiyan, Salam
32-45 69Th Street
Woodside NY, 11377

SBL # 112.38-3-3
Bazlur & Shirin Property Inc.
31 Honduras Lane
Cheektowaga NY, 14225

SBL # 112.37-6-22.1
A 2 Won Contracting Inc.
90 Bryson Street
Buffalo NY, 14212

SBL # 112.38-3-4
Arbogast Pamela
80 Hilton Street
Buffalo NY, 14212

SBL # 112.38-3-15.11
City of Buffalo
65 Niagara Square
Buffalo NY, 14202

SBL # 112.38-3-15.13
Cellino Real Estate LLC
631 Bullis Road
Elma NY, 14059

SBL # 112.38-3-15.12
City of Buffalo
65 Niagara Square
Buffalo NY, 14202

SBL # 112.38-3-10
Budniewski, Michael
96 Cochrane Sreet
Buffalo NY, 14206

SBL # 112.38-3-11
Johnson, Jomanda
47 Gibson Street
Buffalo NY, 14206

SBL # 112.38-3-12

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Heart Of The City
191 North Street
Buffalo NY, 14201

SBL # 112.38-3-8
Jarmuz, Nancy
31 Newton Street
Buffalo NY, 14212

SBL # 112.38-3-9
Budniewski, Michael
96 Cochrane Street
Buffalo NY, 14206

SBL # 112.38-3-7
Plifs Inc
3842 Harlem Road
Buffalo NY, 14215

SBL # 112.38-3-13.1
Siddiqueea Market Inc
615 Broadway Street
Buffalo NY, 14212

Local Media:

Local Newspaper:

Buffalo News
1 News Plaza
Buffalo NY 14240
(716) 849-3434
http://www.buffalonews.com/classifieds/

Local Television:

WGRZ – TV Channel 2
259 Delaware Avenue
Buffalo, NY 14202
(716) 849-2200
http://www.wgrz.com/news/default.aspx

WIVB – TV Channel 4
2077 Elmwood Avenue
Buffalo, NY 14207
(716) 874-4410
http://www.wivb.com/subindex/news

WKBW – TV Channel 7
7 Broadcast Plaza
Buffalo, NY 14202
(716) 840-7777
http://www.wkbw.com/

Radio:

WBEN 930 AM Radio
500 Corporate Pkwy
Amherst, NY 14226
(716) 843-0600
http://www.wben.com

WHLD 1270 AM Radio
50 James E. Casey Drive
Buffalo, NY 14206
(716) 888-9735
http://www.talk1270.com

WEBR 1440 AM Radio
1580 Kenmore Avenue
Buffalo, NY 14216
(716) 267-1440
http://www.webrradio.com

WBFO 88.7 FM Radio
3435 Main Street
Buffalo, NY 14214
(716) 829-6000
http://www.wbfo.org/

Local Water Supplier:
City of Buffalo Water Board/Division of Water
281 Exchange Street

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Buffalo, NY 14204

School and Day Care Facilities:

PS 59 Dr. Charles R. Drew Science Magnet Annex
Mark Shoemaker
50 A Street
Buffalo, NY 14211
(716) 816-4120

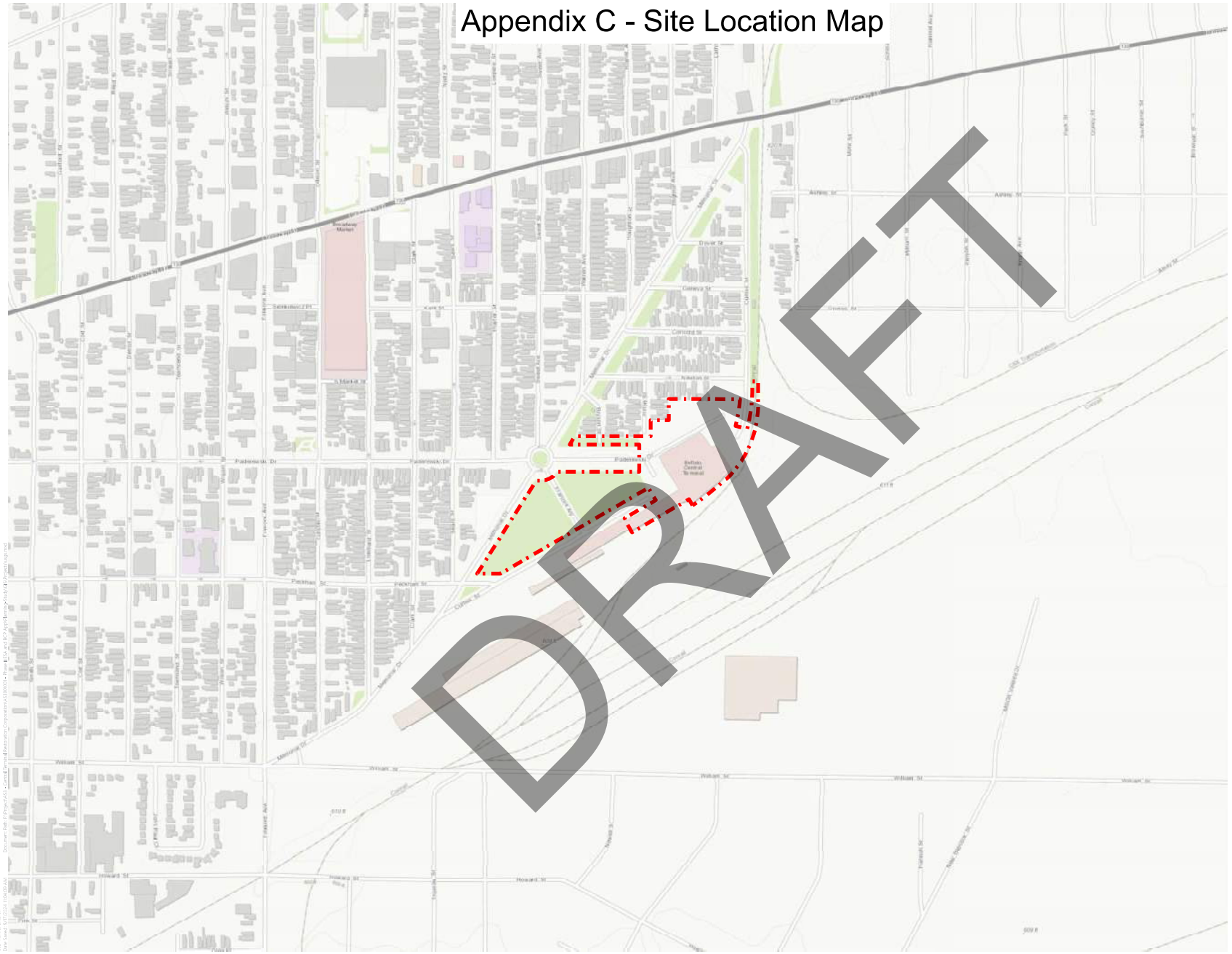
Buffalo Public Schools: #31 Harriet Ross Tubman School
Kim Nixon-Williams
212 Stanton Street
Buffalo, NY 14212
(716) 816-3780

Buffalo Academy of Science Charter School
Maria Ruiz
89 Clare Street
Buffalo, NY 14206
(716) 415-2302

Peace-Mind Quality Child Care
Anjana D. Cole-Hall
690 Broadway
Buffalo, NY 14212
(716) 854-5464

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Appendix C - Site Location Map



Brownfield Cleanup Program (BCP) Boundary

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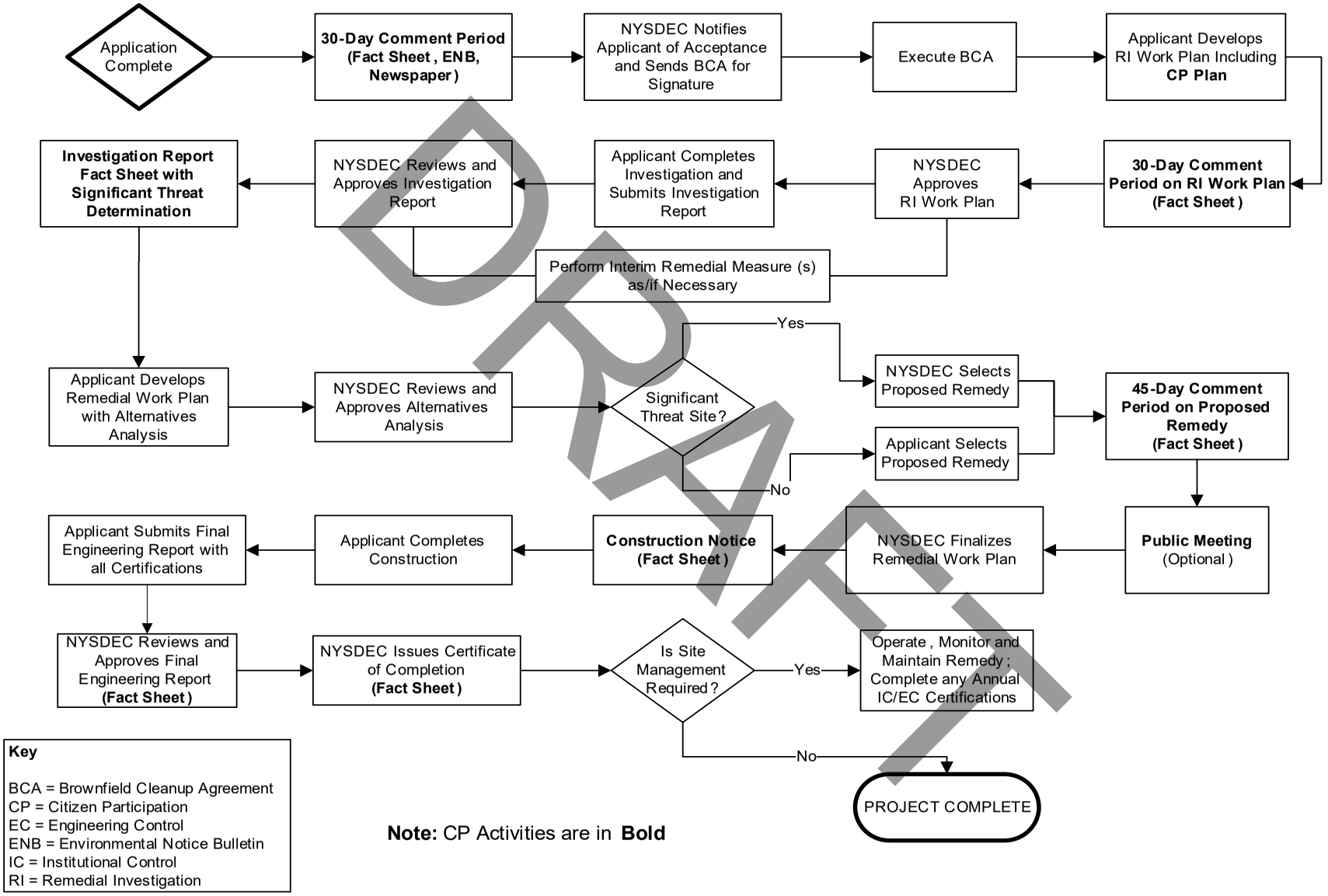
0 250 500 1,000 Feet

1 in. = 500 feet
When printed at 11 in. by 17 in.

Central Terminal Site
Brownfield Cleanup Program

Sources: . Created by C&S Engineers, Inc.

Appendix D– Brownfield Cleanup Program Process



Key

BCA = Brownfield Cleanup Agreement
CP = Citizen Participation
EC = Engineering Control
ENB = Environmental Notice Bulletin
IC = Institutional Control
RI = Remedial Investigation

Note: CP Activities are in **Bold**

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Appendix D

Community Air Monitoring Plan

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Community Air Monitoring Plan

for

Buffalo Central Terminal Site
495 Paderewski Drive
Buffalo, Erie County, New York

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February 2026

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.

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.

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.

<u>VOC Monitoring, Response Levels and Actions</u>

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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, such as isobutylene. 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.

<u>Particulate Monitoring, Response Levels, and Actions</u>

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

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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.

Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the

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excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number;
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50o C (14 to 122o F); and
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record-keeping plan.

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5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative, this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM-10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will

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prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

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Appendix E

Health and Safety Plan

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C&S Engineers, Inc.
141 Elm Street
Buffalo, New York 14203

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Health and Safety Plan

Buffalo Central Terminal
495 Paderewski Drive, Buffalo, New York
BCP Site No. C915414

Prepared for:
Central Terminal Restoration Corporation
P.O. Box 51
Buffalo, New York 14212

March 2026

C&S Project No. AS3.001.002

Health and Safety Plan

Buffalo Central Terminal
495 Paderewski Drive
BCP Site No. C915414

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Prepared for:
Central Terminal Restoration Corporation
P.O. Box 51
Buffalo, New York 14212

Prepared by:
C & S Engineers, Inc.
141 Elm Street
Buffalo, New York 14203

March 2026

C&S Project#: AS3.001.002

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Appendix A Map and Directions to Hospital
Appendix B Guidance on Incident Investigation and Reporting

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EMERGENCY PHONE NUMBERS

Emergency Service	911
Police: Buffalo Police Department	(716) 851-4444
Fire: Buffalo Fire Department	(716) 851-5333
Hospital: Buffalo General Hospital: Emergency Room	(716) 859-5600
Hospital: Mercy Hospital of Buffalo: Emergency Room	(716) 826-7000
Department of Public Works	(716) 851-5636
National Response Center	(800) 424-8802
Poison Control Center	(800) 222-1222
Center for Disease Control	(800) 311-3435
NYSDEC Region 9 (Buffalo, New York)	(716) 851-7000
C&S Engineers	(315) 455-2000
Monica Pellegrino Faix	(716) 754-6142

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1.0 GENERAL INFORMATION

This Health and Safety Plan (HASP) addresses health and safety considerations for the activities that personnel employed by C&S Engineers, Inc., may be engaged in during site investigation and remedial activities at the Buffalo Central Terminal Site located at 495 Paderewski Drive, City of Buffalo, Erie County, New York; hereby, referred to as (Site). This HASP will be implemented by the Health and Safety Officer (HSO) during site work. All personnel engaged in the Remedial Investigation are required to maintain current HAZWOPER training, including initial 40-hour training, on-the-job training, and consistent annual 8-hour refresher training, as per the requirements of 29 CFR 1910.120.

Compliance with this HASP is required of C&S personnel who enter this Site. The content of the HASP may change or undergo revision based upon additional information made available to the health, safety, and training (H&S) committee, monitoring results or changes in the technical scope of work. Any changes proposed must be reviewed by the H&S committee.

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1.1 Responsibilities

Project Manager.....Cody Martin
Phone: (716) 955-3021
Cell: (716) 864-3752

C&S Health and Safety Director.....Mike Sherlock
Phone: (315) 703-4210
Cell: (315) 420-3455

Site Health and Safety Officer.....H. Nevin Bradford, III, P.E.
Phone: (315) 703-4284
Cell: (315) 529-0482

Emergency Coordinator.....Cody Martin
Phone: (716) 955-3021
Cell: (716) 864-3752

1.2 Applicable Standards and Regulations References

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. Where a conflict or overlap among regulations and/or these specifications exist, the most stringent requirements shall apply. C&S's Project Manager will determine which requirements are most stringent.

- **AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)**
  - ANSI Z89.1, Personnel Protective Equipment-Protective Headwear for Industrial Workers-Requirements (Latest Revision)

- ANSI Z87.1, Occupational and Educational Personal Eye and Face Protection Devices
- ANSI Z9.2, Fundamentals Governing the Design and Operation of Local Exhaust Systems
- ANSI Z88.2-80, Practices for Respiratory Protection

- **CODE OF FEDERAL REGULATIONS (CFR)**
  - 29 CFR Subpart D Walking-Working Surfaces
  - 29 CFR 1910 Occupational Safety and Health Standards-All Sections
  - 29 CFR 1926 Safety and Health Regulations for Construction-All Sections
  - 40 CFR 50.6 National Primary and Secondary Ambient Air Quality Standards for Particulate Matter
  - 40 CFR 61 National Emissions Standards for Hazardous Air Pollutants (NESHAPS)-Subpart A-General Provisions
  - 49 CFR 172 Hazardous Material Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements

- **NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)**
  - Publication Number 87-108 Respiratory Decision Logic
  - NIOSH/OSHA Booklet 3142 Lead in Construction
  - Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (NIOSH Publication 85-115)

- **U.S. DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)**
  - PUB 3126 Working with Lead in the Construction Industry
  - 29 CFR 1910, Subpart I, Appendix B-Non-Mandatory Compliance Guidelines for Hazard Assessment and Personal Protective Equipment Selection

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2.0 HEALTH AND SAFETY PERSONNEL

The following information briefly describes the health and safety designations and general responsibilities for this Site.

2.1 Project Manager (PM)

The PM is responsible for the overall project including the implementation of the HASP. Specifically, this includes allocating adequate manpower, equipment, and time resources to conduct Site activities safely.

2.2 Health and Safety Manager

- Has the overall responsibility for coordinating and reporting health and safety activities and the health and safety of Site Workers.
- Must have completed, at a minimum, the OSHA 30-Hour Construction Safety Training, and either the 24-Hour training course for the Occasional Hazardous Waste Site Worker or the 40-Hour training course for the Hazardous Waste Operations Worker that meets OHSA 29 CFR 1910.
- Must have completed the 8-Hour Site supervisor/manager's course for supervisors and managers having responsibilities for hazardous waste Site operations and management.
- Directs and coordinates health and safety monitoring activities.
- Ensures that field teams utilize proper personal protective equipment (PPE).
- Conducts initial on-site specific training prior to Site Workers commencing work.
- Conducts and documents daily and periodic safety briefings.
- Ensures that field team members comply with this HASP.
- Immediately notifies the Project Manager of all accident / incidents.
- Determines upgrading or downgrading of PPE based on Site conditions and/or real time monitoring results.
- Ensures that monitoring instruments are calibrated daily or as the manufacturer's instructions determine.
- Provides daily summaries of field operations and progress to the Project Manager.

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- Submits and maintains all documentation required in this HASP and any other pertinent health and safety documentation.

2.3 Health and Safety Officer (HSO)

- Must be designated by the Health and Safety Manager and at a minimum, have the OSHA 10-Hour Construction Safety Training.

- Must schedule and attend a Pre-Construction Safety Meeting with the Health and Safety Manager to discuss the Subcontractor Safety Requirements and must attend the Weekly Subcontractor Coordination Meeting.

- Responsible for ensuring subcontractors and their lower tier contractors comply with project safety requirements.

- Must make frequent and regular inspections of their work areas and activities and ensure hazards that are under their control are corrected immediately and all other hazards are reported to the Project Manager and Health and Safety Manager.

- Must report all work-related injuries, regardless of severity, to the Project Manager and the Health and Safety Manager within 24 hours after they occur.

2.4 Emergency Coordinator

- The Emergency Coordinator or his on-site designee will, in coordination with the Authority / Agency having Jurisdiction, implement the emergency response procedures outlined in Section 12 whenever conditions at the Site warrant such action.

- The Emergency Coordinator or his on-site designee will be responsible for assuring the evacuation, emergency treatment, emergency transport of C&S personnel as necessary, and notification of emergency response units (refer to phone listing in the beginning of this HASP) and the appropriate management staff.

2.5 Site Workers

- Report any unsafe or potentially hazardous conditions to the HSO and the Health and Safety Manager.

- Maintain knowledge of the information, instructions, and emergency response actions contained in the HASP.

- Comply with rules, regulations, and procedures as set forth in this HASP, including any revisions that are instituted.

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- Prevent unauthorized personnel from entering work Site.

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3.0 SITE HAZARDS EVALUATION

3.1 Chemical Hazards

3.1.1 Nature of Chemical Hazards

Knowledge of the nature and extent of contamination in the site soils is limited to the following:

Media	Contaminant Class	Identified Compounds
Soil	VOCs	
	SVOCs	Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene
	Pesticides	
	Herbicides	
	PCBs	
	Metals	Lead, Barium, Manganese
	PFAS	

3.1.2 Common Routes of Exposure

The contaminants at the Site may enter the human body in a variety of ways. Based on the nature of site contaminants, the chemical routes of exposure anticipated from the remedial activities at this site include:

Table 3-1: Routes of Exposure

Route	Mechanism	Control
Absorption	Dermal (skin) contact with impacted soil on-site resulting in absorption of chemicals of concern through the skin and into the blood stream.	Proper use of PPE will minimize risks of exposure at the site.
Ingestion	Chemicals / materials of concern can come in direct contact with the mouth from soil or other contaminated areas (PPE, skin, tools, etc.) and enter the bloodstream through the stomach lining.	Proper care in handling PPE and tools, refraining from eating and drinking at the Site, and frequent hand washing with soap and water will minimize risks of exposure.
Inhalation	Volatile vapors and/or contaminants attached to dust and particulates can be entrained by wind and become airborne across the site and be subsequently inhaled through the nose and / or mouth. This exposure route is the most likely way for worker exposure to occur.	Conduct monitoring of air quality for VOCs in worker breathing zones. Employ methods that minimize the creation of dust and utilize dust suppression techniques to minimize dust and particulates. Respirators with appropriate filtration and organic adsorption cartridges should be

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Route	Mechanism	Control
		available to on-site workers in case volatile compounds become a nuisance or health hazard.

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3.2 Physical Hazards

Based upon the anticipated field activities, the following potential physical hazardous conditions may exist:

Table 3-2: Physical Hazards

Category	Mechanism	Control
Mechanical Equipment	The use of typical mechanical equipment such as drill rigs and sampling vehicles can create a potential for crushing and pinching hazards due to movement and positioning of the equipment, movement of lever arms and hydraulics, and entanglement of clothing and appendages in exposed drives and tracks. Mechanical equipment can also create a potential for impact of steel tools, masts, and cables should equipment rigging fail, or other structural failures occur during hydraulic equipment operation.	Heavy equipment work must be conducted only by trained, experienced personnel. If possible, personnel must remain outside the turning radius of large, moving equipment. At a minimum, personnel must maintain visual contact with the equipment operator. When not operational, equipment must be set and locked so that it cannot be activated, released, dropped, etc. The mechanical equipment stated above represents typical equipment that is ordinarily used during this scope of work, but is not meant to be an all-inclusive list. Similar precautions should be used around other mechanical equipment deployed to the Site that is not listed above.
Excavations and Trenches	The use of excavation/trenching such as removal of overburden soils, installation of utilities, and site grading operations can cause potential for suffocation, crushing, or other injury from falling material. Advancement of excavation and trenches can also create possible damage/failure of any installed underground utility services and create hazards. Other hazards created can included tripping, slipping, or falling. Entering an excavation or trench could have the possibility of an explosive, flammable, toxic, or oxygen-deficient atmosphere within the excavation or trench.	Ensure compliance with OSHA's construction standard for excavations (29 CFR 1926 Subpart P). Designate a Competent Person responsible for selecting and implementing the appropriate protective system(s), assuring appropriate means of access and egress for excavations greater than four (4) feet in depth, and for ensuring that potential atmospheric and physical hazards associated with any excavation / trenching activities are completed in accordance with Subpart P and other applicable OSHA Standards.
Noise	Work around large equipment often creates excessive noise. Noise can cause workers to be startled, annoyed, and/or distracted; as well as causing pain, physical damage to the ear, and temporary and/or permanent hearing loss; and can interfere with communication.	If workers are subjected to noise exceeding an 8-hour time-weighted average sound level of 85 dBA, hearing protection will be required with an appropriate noise reduction rating to comply with 29 CFR 1910.95 and to reduce noise levels below levels of concern.

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Category	Mechanism	Control
Slips/Trips/Falls	Personnel may encounter slip, trip, and fall hazards associated with excavations, manways, and construction debris and materials. Precautionary measures should be taken by identifying and removing slip, trip, and fall hazards prior to commencing work.	In the event slip, trip, and fall hazards cannot be removed or minimized, site workers will be shown the location of the physical hazard and be asked to avoid it during work activities.
Fire/Explosion	The potential for fire and/or explosion emergencies is always present on the Site.	Field vehicles will be equipped with a fire extinguisher. Employees, contractors and workers must be trained in the proper use of fire suppression equipment. However, large fires that cannot be controlled with a fire extinguisher shall be handled by professionals. The proper authorities shall be notified in these instances, as well as the HSO and Health and Safety Manager.
Cold Exposure	Persons working in the outdoors in temperatures at or below freezing may be subject to frostbite. Extreme cold for a short time may cause injury to exposed body surfaces or result in a profound generalized cooling which can cause death. Areas of the body such as fingers, toes, and ears, are the most susceptible to cold stress. Ambient air temperature and wind velocity are two factors which influence the development of a cold weather injury. Local injury resulting from exposure to cold temperatures is known as "frostbite." There are several degrees of damage in which frostbite of the extremities can be categorized, as follows: • Frost nip or incipient frostbite is characterized by sudden bleaching or whitening of the skin. • Superficial frostbite occurs when the skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient. • Deep frostbite is characterized by tissues that are cold, pale, and solid; this is an extremely serious injury.	Wear several layers of dry clothes so that you can vary the amount of clothing to match the conditions. If there is wind, wear a windbreaker, since wind increases the effects of cold air and in turn lowers your body's core temperature even faster. Don't get overheated. Sweat can dampen clothing and in turn lead to over-cooling. Keep hands, feet, ears, and face warm. These are the areas of the body where frostbite tends to strike first. Heart disease and the use of sedatives or excessive alcohol will make you more susceptible to cold stress. If you feel chilly or sleepy, or have pain in your extremities, go to a warm shelter to recover.

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Category	Mechanism	Control
Heat Exposure/Stress	Heat stress can result from a number of contributing factors, including environmental conditions, clothing, and workload as well as the physical condition of the individual. Since heat stress is one of the most common injuries / symptoms associated with outdoor work conducted with direct solar load, and, in particular, because wearing PPE can increase the risk of developing heat stress, workers must be capable of recognizing the signs and symptoms of heat-related illnesses. Signs and symptoms of heat-related illnesses which all on-site personnel should be aware, include the following: • Heat rash may result from continuous exposure to heat or humid air. • Heat cramps are caused by heavy sweating and may include muscle spasms and pain in the hands, feet, and abdomen. • Heat exhaustion is indicated by pale, cool, and moist skin; heavy sweating; dizziness; nausea; and fainting. • Heat stroke is indicated by red, hot, and unusually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; rapid pulse; and coma. Immediate action must be taken to cool the body before serious injury or death occurs.	The following will steps will be taken to limit heat exposure: adjust schedules, take breaks, limit heavy work in protective clothing or in a hot environment may require more time resting than working. Schedule heavy work in the coolest part of the day. Have shaded rest shelters with chairs or benches. Drink Fluids. Sweating cools the body, but it also robs the body of fluid. Drink enough fluids to replace what you lose. You may not feel thirsty until you've become dehydrated. Drink regularly throughout the day. Don't wait until you're thirsty. Monitor for signs of potential heat exposure and stress through use of the "buddy system', with frequent communication between site personnel. Take scheduled breaks and hydrate frequently throughout the day. Maintain an adequate supply of cold water and electrolyte containing drinks in support zone of site. In the event that personnel are observed to exhibit dizziness, disorientation, heat rash, slurred speech, dry mouth, heat cramps, or other symptoms of heat stress, discontinue work immediately and move affected person(s) to a location that is free from direct sunlight and provide fluids (preferably "Gatorade" or similar product that will replenish electrolytes). Monitor condition during to evaluate whether there is notable improvement in their condition.
Utilities	Overhead and underground utilities may exist within the Work Area, which may expose workers to electrocution hazards, explosive hazards, and volatile vapors.	Dig Safely New York shall be contacted a minimum of three business days prior to initiating the field activities, to arrange for the identification and markout of buried utilities at the site. The contact number for Dig Safely New York is 1-800-962-7962. In the event of inadvertent damage to buried utilities, all work shall cease, and the situation shall be evaluated by the HSO.

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3.3 Environmental Hazards

Based upon the anticipated field activities, the following potential environmental hazardous conditions may exist:

Table 3-3: Environmental Hazards

Category	Hazard	Control
Biological	Ticks, bees/wasps, mosquitos, spiders, snakes, rabid animals	There are no known species of poisonous spiders or snakes common to the area. Minimize potential exposure to by wearing wear long pants and safety shoes. Change clothing and carefully examine for evidence of insects and ticks upon undressing, immediately following return from the site. Avoid contact with any animals, either wild or domestic, that may be encountered while conducting the field activities, and notify the local office of the New York State Department of Health (NYSDOH) in the event that animals are observed to elicit strange behavior. In the event of contact with an animal that is behaving in a strange manner, the NYSDOH should be contacted immediately.
Biological	Poison Ivy, Poison Oak	Familiarize yourself with the characteristics and appearance of poison ivy and poison oak. Be cognizant of vegetation while conducting work activities. Minimize potential exposure to by wearing wear long pants and safety shoes. Change clothing immediately following return from the site.
Weather	Wet surfaces, lighting, high winds (falling objects, contaminated dust), hail, excessive heat, extreme cold, snow and ice.	Remain cognizant of weather conditions, forecasts, and changing weather conditions. Exercise extra caution during wet and inclement site conditions to minimize risk of slips and falls. Avoid work during periods of high winds to reduce risk of injury from falling objects and airborne contaminant migration. Cease work and monitor conditions in the event that lightning is observed or suspected in the area, or in the event that other weather conditions pose a health or safety hazard.

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4.0 TRAINING

4.1 Site-Specific Training

Training will be provided that specifically addresses the activities, procedures, monitoring, and equipment for the Site operations prior to going on Site. Training will include familiarization with Site and facility layout, known and potential hazards, and emergency services at the Site, and details all provisions contained within this HASP. This training will also allow Site Workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity.

4.2 Task-Specific Training

For projects involving asbestos sampling, personnel will be trained to collect bulk asbestos samples using the requirements set forth in 40 CFR Part 763.92(a) (1) and (2) and 40 CFR Part. 763, Subpart. E, App. C. The training incorporates many sections of 40 CFR Part 763, but should focus on the sampling method listed in 40 CFR Part 763.86. The training includes inspection planning, bulk sampling, personal protection, and reporting. Personnel must demonstrate proficiency by identifying areas where asbestos may be found and properly collecting a bulk sample using proper methodology.

4.3 Safety Briefings

C&S project personnel will be given briefings by the HSO on a daily or as needed basis to further assist Site workers in conducting their activities safely. Pertinent information will be provided when new operations are to be conducted. Changes in work practices must be implemented due to new information made available, or if Site or environmental conditions change. Briefings will also be given to facilitate conformance with prescribed safety practices. When conformance with these practices is not occurring or if deficiencies are identified during safety audits, the project manager will be notified.

4.4 Daily Tailgate Safety Meeting

The HSO or the HSO designee will be responsible for conducting a daily tailgate safety meeting prior to start of any work activities. The contractor and workers will be responsible for attending daily tailgate safety meetings, as well as providing any additional insight into any possible hazards which might be anticipated or encountered throughout the day on the Site. The meeting will discuss any measures which will be implemented throughout the day to mitigate any hazards. The meetings are designed to create awareness of any hazards and their associated mitigation measures at the Site. If conditions at the Site change and new hazards are determined to be present, work will be stopped and an additional safety meeting will be conducted. The daily tailgate meetings discussions will be logged, as well as all who attended.

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5.0 COMMUNICATIONS

A phone will be located on Site to be utilized by personnel conducting investigation. Cell phones will be the primary means of communicating with emergency support services/facilities.

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6.0 PERSONAL PROTECTIVE EQUIPMENT

6.1 Personal Protective Equipment – General

The level of protection to be worn by field personnel will be defined and controlled by the HSO. Depending upon the type and levels of material present or anticipated at the site, varying degrees of protective equipment will be needed. If the possible hazards are unknown, a reasonable level of protection will be taken until sampling and monitoring results can ascertain potential risks. The levels of protection listed below are based on USEPA Guidelines. A list of the appropriate clothing for each level is also provided.

- Level A protection must be worn when a reasonable determination has been made that the highest available level of respiratory, skin, eye, and mucous membrane protection is needed. It should be noted that while Level A provides maximum available protection, it does not protect against all possible hazards. Consideration of the heat stress that can arise from wearing Level A protection should also enter into the decision-making process. Level A protection includes:
    - Open circuit, pressure-demand self-contained breathing apparatus (SCBA)
    - Totally encapsulated chemical resistant suit
    - Gloves, inner (surgical type)
    - Gloves, outer, chemical protective
    - Boots, chemical protective

- Level B protection must be used when the highest level of respiratory protection is needed, but hazardous material exposure to the few unprotected areas of the body (e.g., the back of the neck) is unlikely. Level B protection includes:
    - Open circuit, pressure-demand SCBA or pressure airline with escape air bottle
    - Chemical protective clothing: Overalls and long sleeved jacket; disposal chemical resistant coveralls; coveralls; one or two piece chemical splash suit with hood
    - Gloves, inner (surgical type)
    - Gloves, outer, chemical protective
    - Boots, chemical protective

- Level C must be used when the required level of respiratory protection is known, or reasonably assumed to be, not greater than the level of protection afforded by air purifying respirators; and hazardous materials exposure to the few unprotected areas of the body (e.g. the back of the neck) is unlikely. Level C protection includes:
    - Full or half face air-purifying respirator
    - Chemical protective clothing: Overalls and long-sleeve jacket; disposable chemical resistant coveralls; coveralls; one- or two-piece chemical splash suit
    - Gloves, inner (surgical type)
    - Gloves, outer, chemical protective
    - Boots, chemical protective

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- Level D is the basic work uniform. It cannot be worn on any site where respiratory or skin hazards exist. Level D protection includes:
    - Safety boots/shoes
    - Safety glasses
    - Hard hat with optional face shield

Note that the use of SCBA and airline equipment is contingent upon the user receiving special training in the proper use and maintenance of such equipment.

6.2 Personal Protective Equipment – Site Specific

Level D with some modification will be required when working on this Site. In addition to the basic work uniform specified by Level D protection, Nitrile gloves will be required when contact with soil and/or groundwater is likely. Hearing protection will be worn when power equipment is used to perform subsurface work. An upgrade to a higher level (Level C) of protection may occur if determined necessary by the HSO.

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7.0 MONITORING PROCEDURES

7.1 Monitoring During Site Operations

All Site environmental monitoring should be accompanied by periodic meteorological monitoring of appropriate climatic conditions.

7.1.1 Surface Soil Operation

Monitoring will be performed by the HSO or field personnel during the conduct of work. A photoionization detector (PID) equipped with a 10.6 eV lamp will be utilized to monitor for the presence of volatile organic vapors within the breathing zone, the surface soil holes, and subsurface samples upon their retrieval. The PID will be field checked for calibration accuracy three times per day (morning, lunch, and end of day).

7.1.2 Drilling / Test Pit Operations

Monitoring will be performed by the HSO or drilling observer during the conduct of work. A photoionization detector (PID) equipped with a 10.6 eV lamp will be utilized to monitor for the presence of volatile organic vapors within the breathing zone, the borehole, and subsurface samples upon their retrieval. Drill cuttings and excavation spoils will also be monitored by use of the PID. The PID will be field checked for calibration accuracy three times per day (morning, lunch, and end of day. If subsurface conditions warrant, a combustible gas indicator (CGI) with oxygen alarm may also be used to monitor the borehole for the presence of combustible gases. Similar monitoring of fluids produced during well development will also be conducted.

Well development and purge water will be containerized until characterized for proper management.

7.1.3 Soil Excavation and Trenching Operation

Monitoring will be performed by the HSO or remedial observer during the conduct of work. A photoionization detector (PID) equipped with a 10.6 eV lamp will be utilized to monitor for the presence of volatile organic vapors within the breathing zone, the excavation or trench, and any subsurface samples upon their retrieval. Excavation and trenching spoils will also be monitored by use of the PID. The PID will be field checked for calibration accuracy three times per day (morning, lunch, and end of day. If subsurface conditions warrant, a CGI with oxygen alarm may also be used to monitor the borehole for the presence of combustible gases.

7.2 Action Levels

If readings on the PID exceed 10 ppm for more than fifteen minutes consecutively, then personal protective equipment should be upgraded to Level C. The air purifying respirator used with

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Level C protective equipment must be equipped with organic vapor cartridges. If readings on the explosive gas meter are within a range of 10%-25% of the lower exposure limit (LEL) then continuous monitoring will be implemented. Readings above 25% of the LEL indicate the potential for an explosive condition. Sources of ignition should be removed and the Site should be evacuated.

7.3 Personal Monitoring Procedures

Personal monitoring shall be performed as a contingency measure in the event that VOC concentrations are consistently above the 10-ppm action level as detected by the PID. If the concentration of VOCs is above this action level, then amendments to the HASP must be made before work can continue at the Site.

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8.0 SECTION 8 – SAFETY CONSIDERATIONS FOR SITE OPERATIONS

8.1 General

Standard safe work practices that will be followed include:

- Do not climb over/under drums, or other obstacles.
- Do not work on the Site alone.
- Practice contamination avoidance, on and off-site.
- Plan activities ahead of time, and use caution when conducting concurrently running activities.
- No eating, drinking, chewing or smoking is permitted on the Site.
- Due to the unknown nature of waste placement at the Site, extreme caution should be practiced during excavation activities.
- Apply immediate first aid to any and all cuts, scratches, abrasions, etc.
- Be alert to your own physical condition. Watch your buddy for signs of fatigue, exposure, etc.
- A work/rest regimen will be initiated when ambient temperatures and protective clothing create a potential heat or cold stress situation.
- No work will be conducted without adequate natural light or without appropriate supervision.
- Task safety briefings will be held prior to onset of task work.
- Ignition of flammable liquids within or through improvised heating devices (barrels, etc.) or space heaters is forbidden.
- Entry into areas of spaces where toxic or explosive concentrations of gases or dust may exist without proper equipment is prohibited.
- Any injury or unusual health effect must be reported to the Site HSO.
- Prevent splashing or spilling of potentially contaminated materials.
- Use of contact lenses is prohibited while on site.

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- Beards and other facial hair that would impair the effectiveness of respiratory protection are prohibited if respiratory protection is necessary.

- Field crew members should be familiar with the physical characteristics of investigations, including but not limited to:
    - Wind direction in relation to potential sources
    - Accessibility to co-workers, equipment, and vehicles
    - Communication
    - Hot zones (areas of known or suspected contamination)
    - Site access
    - Nearest water sources

- The number of personnel and equipment in potentially contaminated areas should be minimized consistent with site operations.

8.2 Field Operations

The HSO or designee will be present on-site during all intrusive work, e.g., drilling operations, excavations, trenching, and will provide monitoring to oversee that appropriate levels of protection and safety procedures are utilized by C&S Engineers, Inc., personnel. The use of salamanders or other equipment with an open flame is prohibited and the use of protective clothing, especially hard hats and boots, will be required during drilling or other heavy equipment operations.

8.3 General Asbestos Safety

Asbestos exposure is primarily an inhalation hazard. OSHA compliant respiratory protection should be worn if there is risk of asbestos becoming airborne. Personal Protective Equipment including protective clothing (suits/gloves, etc.) may be necessary to avoid contaminating the worker and/or the site.

Procedural Precautions - The sampler should be aware that disruption of asbestos-containing materials can create the potential for cross contamination when conducting bulk asbestos sampling.

The Sampler should take the following precautions to avoid cross contamination as well as disruption of material while sampling:

- The sampling tool must be cleaned with amended water after every sample is collected, or a different clean tool must be used.

- The sampler must avoid touching the material being sampled (utilize gloves).

- The area being sampled must be sufficiently wet before collecting the sample.

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- The space left after sampling must be sealed with repair/patch material to reduce the chance of airborne exposure.

The object or material sampled should be minimally disturbed during the sampling process.

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9.0 SECTION 9 – DECONTAMINATION PROCEDURES

9.1 General Decontamination

Decontamination involves physically removing contaminants and/or converting them chemically into innocuous substances. Only general guidance can be given on methods and techniques for decontamination. Decontamination procedures are designed to:

- Remove contaminant(s).
- Avoid spreading the contamination off Site.
- Avoid exposing unprotected personnel off Site to contaminants.

9.2 Contamination Avoidance

Contamination avoidance is the first and best method for preventing spread of contamination from a hazardous site. Each person involved in site operations must practice the basic methods of contamination avoidance listed below. Additional precautions may be required in the HASP.

- Know the limitations of all protective equipment being used.
- Use the proper tools necessary to safely conduct the work.

9.3 Reducing Contamination

Specific methods that may reduce the chance of contamination are:

- Use of remote sampling techniques.
- Opening containers by non-manual means.
- Bagging monitoring instruments.
- Use of drum grapplers.
- Watering down dusty areas.

9.4 Equipment Decontamination

Equipment which will need to be decontaminated includes tools, monitoring equipment, and personal protective equipment. Items to be decontaminated will be brushed off, rinsed, and dropped into a plastic container supplied for that purpose. They will then be washed with a detergent solution and rinsed with clean water. Instrumentation that is contaminated during field

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operations will be carefully wiped down. Heavy equipment, if utilized for operations where it may be contaminated, will have prescribed decontamination procedures to prevent contaminant materials from potentially leaving the Site. On-site contractors, such as drillers or backhoe operators, will be responsible for decontaminating all construction equipment prior to demobilization.

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10.0 DISPOSAL PROCEDURES

All discarded materials, waste materials, or other objects shall be handled in such a way as to reduce or eliminate the potential for spreading contamination, creating a sanitary hazard, or causing litter to be left on-site. All potentially contaminated materials, e.g., clothing, gloves, etc., will be bagged or drummed as necessary and segregated for proper disposal. All contaminated waste materials shall be disposed of as required by the provisions included in the contract and consistent with regulatory provisions. All non-contaminated materials shall be collected and bagged for appropriate disposal.

Investigation derived waste (IDW) that is free from physical indications of contamination such as odors, staining, and sheens will be placed back into the borehole of origin or in the case of well water allowed to infiltrate the Site surface. In cases where physical indications of contamination are evident, the affected media will be containerized per NYSDOT requirements pending proper disposal. Samples may be analyzed for toxicity characteristic leaching procedure (TCLP) VOCs, SVOCs, pesticides, herbicides, and metals; PCBs; pH (corrosivity), flash point (ignitability); reactivity; and paint filter (free liquids).

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11.0 EMERGENCY RESPONSE PROCEDURES

As a result of the hazards at the Site, and the conditions under which operations are conducted, there is the possibility of emergency situations. This section establishes procedures for the implementation of an emergency plan.

11.1 Emergency Coordinator

Emergency Coordinator:..... Cody Martin..... Work Phone: (716) 955-3021

The Emergency Coordinator or his on-site designee will, in coordination with the Authority / Agency having Jurisdiction, implement the emergency response procedures whenever conditions at the site warrant such action. The Emergency Coordinator or his on-site designee will be responsible for assuring the evacuation, emergency treatment, emergency transport of C&S personnel or workers as necessary, and notification of emergency response units (**refer to phone listing** in the beginning of this HASP) and the appropriate management staff.

11.2 Evacuation

In the event of an emergency situation, such as fire, explosion, significant release of toxic gases, etc., all personnel will evacuate and assemble in a designated assembly area. The Emergency Coordinator or his on-site designee will have authority to contact outside services as required. Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been given. The Emergency Coordinator or his on-site designee must see that access for emergency equipment is provided and that all ignition sources have been shut down once the emergency situation is established. Once the safety of all personnel is established, the Fire Department and other emergency response groups will be notified by telephone of the emergency.

11.3 Potential / Actual Fire or Explosion

Immediately evacuate the Site and notify local fire and police departments, and other appropriate emergency response groups, if LEL values are above 25% in the work zone or if an actual fire or explosion has taken place.

11.4 Environmental Incident (Spread or Release of Contamination)

Control or stop the spread of contamination if possible. Notify the Emergency Coordinator and the Project Manager. Other appropriate response groups will be notified as appropriate.

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11.5 Personnel Injury

Emergency first aid shall be applied on-site as necessary. Then, decontaminate (en route if necessary) and transport the individual to nearest medical facility if needed. The ambulance/rescue squad shall be contacted for transport as necessary in an emergency. A map of directions to the nearest hospital is shown in **Appendix A**.

11.6 Personnel Exposure

- Skin Contact: Use copious amounts of soap and water. Wash/rinse affected area thoroughly, and then provide appropriate medical attention. Eyes should be thoroughly rinsed with water for at least 15 minutes.
- Inhalation: Move to fresh air and/or, if necessary, decontaminate and transport to emergency medical facility.
- Ingestion: Decontaminate and transport to emergency medical facility.
- Puncture Wound/Laceration: Decontaminate, if possible, and transport to emergency medical facility.

11.7 Adverse Weather Conditions

In the event of adverse weather conditions, the HSO will determine if work can continue without sacrificing the health and safety of field workers.

11.8 Incident Investigation and Reporting

In the event of an incident, procedures discussed in the Medical Emergency/Incident Response Protocol, presented in **Appendix B** of this HASP, shall be followed.

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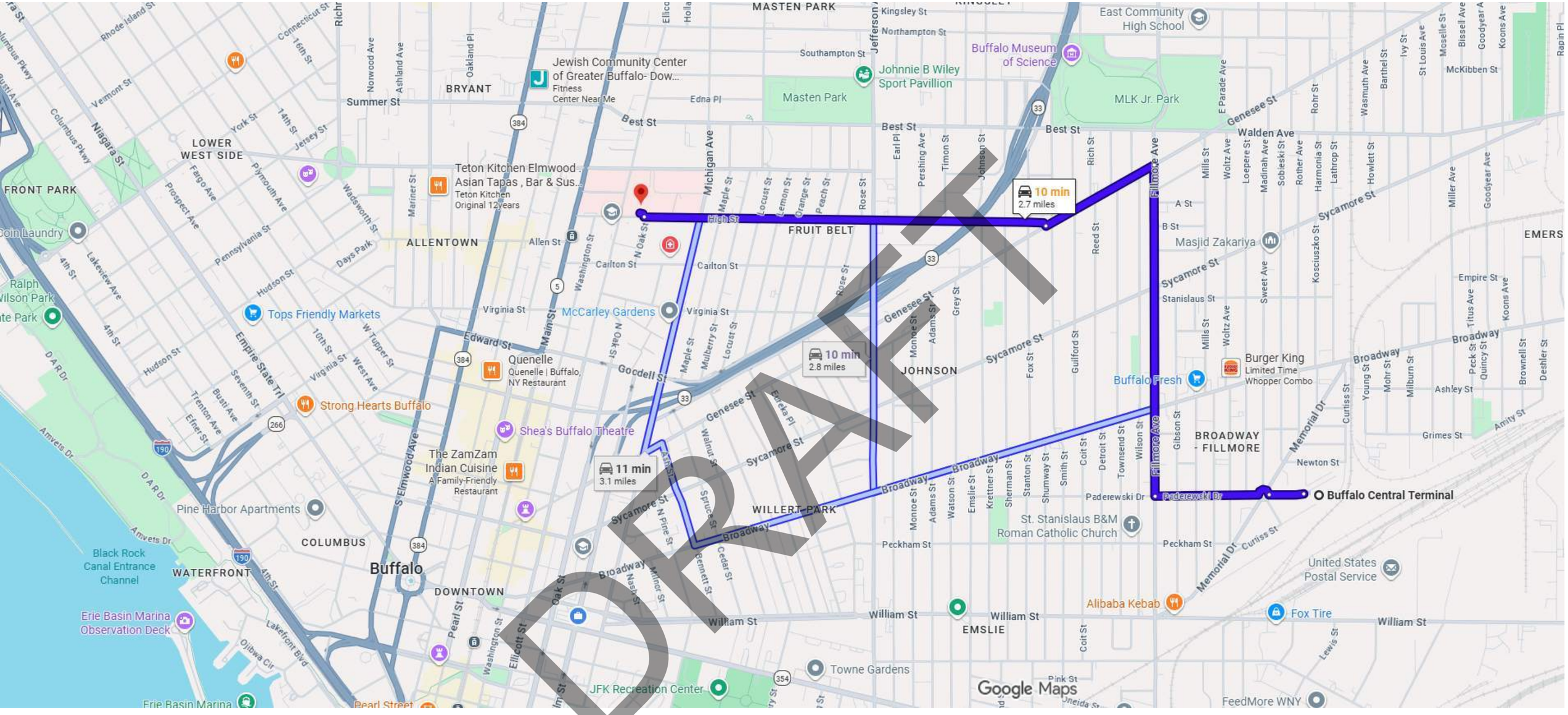
Appendices

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Appendix A

Map and Directions to Hospital

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Map data ©2026 Google 1000 ft

via Fillmore Ave and High St — 10 min
Fastest route, despite the usual traffic — 2.7 miles

via Broadway and Jefferson Ave — 10 min
Some traffic, as usual — 2.8 miles

via Broadway — 11 min
3.1 miles

Appendix B

Guidance on Incident Investigation and Reporting

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Medical Emergency / Incident Response Protocol

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Prepared by:

C&S Engineers, Inc.
141 Elm Street, Suite 100
Buffalo, New York 14203

SECTION 1 – PURPOSE

From time to time employees of C&S Engineers, Inc. will sustain an injury while working on the job. While every effort is being made to prevent this, in the event of an injury or illness on the job, the following procedures will be implemented. This format may also be utilized in the event of a property damage incident.

SECTION 2 – SCOPE

This guideline applies to all C&S Engineers, Inc. job sites and employees.

SECTION 3 – GUIDELINES

3.1 First Response Procedures

Upon notification or awareness of an incident/accident with injuries or illness the Emergency Coordinator or his On-Site Designee will:

1. Ensure that the injured employee is receiving immediate first aid and medical care.
2. Notify Emergency Services (911) if injuries are severe.
3. Stabilize the work area; ensure that no one else can be injured.
4. Notify the Project Manager at the earliest possible convenience**.**
5. Notify the Owner/Client at the earliest possible convenience.

To assist the Health and Safety Manager in the root cause analysis, the Emergency Coordinator or his On-Site Designee will also make an attempt to:

1. Obtain the names and phone numbers of witnesses.
2. Preserve the accident scene if possible for analysis.

3.2 Injury Management

1. If the patient is stable with non-life threatening injuries, the foreman will ensure the employee is transported to the emergency medical facility listed in Section 1 of the HASP. Directions to the nearest emergency medical facility are located in **Attachment A** of the HASP.

At no time will an injured employee drive themselves to medical care.

2. If the patient has serious or life threatening injuries, the emergency coordinator or his on- site designee will notify the emergency services for the area for treatment and transport to a hospital or emergency room. Serious injuries can be considered but not limited to head injuries, loss of consciousness, severe laceration or amputation, fractured bones, burns and eye injuries.

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3. Following the treatment and care of the injured employee, the emergency coordinator or his on-site designee and the project manager will initiate the completion of the first injury report. The Health & Safety Manager will assist.

3.3 Project Manager

1. Upon notification of a personal injury or illness on the job site, will notify C&S Engineers, Inc, President and Corporate Legal and C&S Companies Health and Safety Manager.
2. Will report to the worksite to initiate the first injury report.
3. Will report to the treatment facility to check on the well being of the injured employee.
4. The project manager will ensure that the treatment facility is aware that this is a workers compensation case.
5. Will assist the Health and Safety Manager in the analysis of the incident.

3.4 Health & Safety Manager

1. Upon notification of the personal injury will determined if it is necessary to report to the treatment facility or the accident site, depending on the nature of the injuries and the circumstances of the accident.
2. Will report to the worksite to begin a root cause analysis investigation of the accident.
3. The investigation may include interview of witnesses, field crew , and project manager, the photographing of the scene, reconstruction of the accident scene, using test instruments and taking measurements. The Health and Safety Manager may draw diagrams from the information learned.
4. The Health and Safety Manager will work with the owner/client as necessary to investigate the accident.
5. The Health & Safety manager will ensure that the site is safe to resume work.
6. The Health & Safety Manager shall initiate the New York State Compensation form requirements (C-2) and forward a copy of the C-2 to the C & S Engineers, Inc. controller for transmittal to the Compensation Carrier within 8 hrs of notification of the incident or by the end of the next business day.
7. The Health and Safety manager, upon completion of the investigation, will provide the
8. Project Manager with a written investigative report (copy to the President)
9. The accident will be reviewed at the next Project Managers meeting with the intent to prevent further or similar events on other projects.
10. The Health & Safety Manager will assess the incident to determine OSHA record ability and make record if necessary on the OSHA 300 form, within five working days.

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SECTION 4 - INCIDENT RESPONSE

3.1 Purpose

To prevent the occurrence of accidents on C&S Engineers, Inc., work sites and to establish a procedure for investigation and reporting of incidents occurring in, or related to C&S work activities.

3.2 Scope

Applies to all incidents related to C&S Engineers, Inc. work activities.

3.3 Definitions

Accident - An undesired event resulting in personal injury and/or property damage, and/or equipment failure.

Fatality - An injury or illness resulting in death of the individual.

Incident - Any occurrence which results in, or could potentially result in, the need for medical care or property damage. Such incidents shall include lost time accidents or illness, medical treatment cases, unplanned exposure to toxic materials or any other significant occurrence resulting in property damage or in "near misses."

Incidence Rate - the number of injuries, illnesses, or lost workdays related to a common exposure base of 100 full-time workers. The rate is calculated as:

N/EH x 200,000

N = number of injuries and illnesses or lost workday cases; EH = total hours worked by all associates during calendar year. 200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year).

Injury - An injury such as a cut, fracture, sprain, amputation, etc. which results from a work accident or from a single instantaneous event in the work environment.

Lost Workday Case - A lost workday case occurs when an injured or ill employee experiences days away from work beginning with the next scheduled work day. Lost workday cases do not occur unless the employee is effected beyond the day of injury or onset of illness.

Recordable Illness - An illness that results from the course of employment and must be entered on the OSHA 300 Log and Summary of Occupational Injuries and Illnesses. These illnesses require medical treatment and evaluation of work related injury. For example, dermatitis, bronchitis, irritation of eyes, nose, and throat can result from work and non-work related incidents.

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Recordable Injury - An injury that results from the course of employment and must be entered on the OSHA 300 Log and Summary of Occupational Injuries and Illnesses. These injuries require medical treatment; may involve loss of consciousness; may result in restriction of work or motion or transfer to another job; or result in a fatality.

Near Miss - An incident which, if occurring at a different time or in a different personnel or equipment configuration, would have resulted in an incident.

3.4 Responsibilities

Employees - It shall be the responsibility of all C&S Engineers, Inc. employees to report all incidents as soon as possible to the HSC, regardless of the severity.

Human Resources - has overall responsibility for maintaining accident/ incident reporting and investigations according to current regulations and recording injuries/ illness on the OSHA 300 log, and posting the OSHA 300 log.

Emergency Coordinator - It is the responsibility of the Emergency Coordinator to investigate and prepare an appropriate report of all accidents, illnesses, and incidents occurring on or related to C&S Engineers, Inc. work. The Emergency Coordinator shall complete Attachment A within 24 hours of the incident occurrence.

Health and Safety Manager (HSM) - It is the responsibility of the HSM to investigate and prepare an appropriate report of all lost time injuries and illnesses and significant incidents occurring on or related to C&S Companies. The HSM shall maintain the OSHA 300 form.

Project Managers (PM) - It shall be the PM's responsibility to promptly correct any deficiencies in personnel, training, actions, or any site or equipment deficiencies that were determined to cause or contribute to the incident investigated.

SECTION 5 – GUIDELINES

3.5 Incident Investigation

The Project Manager will immediately investigate the circumstances surrounding the incident and will make recommendations to prevent recurrence. The HSM shall be immediately notified by telephone if a serious accident/ incident occurs. The incident shall be evaluated to determine whether it is OSHA recordable. If the incident is determined to be OSHA 300 recordable, it shall be entered on the OSHA 300 form.

The Project Manager with assistance from the HSM must submit to the office an incident report form pertaining to any incident resulting in injury or property damage.

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3.6 Incident Report

The completed incident report must be completed by the Project Manager within 12 hours of the incident and distributed to the HSM, and Human Resources. This form shall be maintained by Human Resources for at least five years for all OSHA recordable cases. This form serves as an equivalent to the OSHA 101 form.

3.7 Incident Follow-up Report

The Incident Follow-Up Report (Attachment B) shall be distributed with the Incident Report within one week of the incident. Delay in filing this report shall be explained in a brief memorandum.

3.8 Reporting of Fatalities or Multiple Hospitalization Accidents

Fatalities or accidents resulting in the hospitalization of three or more employees must be reported to OSHA verbally or in writing within 8 hours. The report must contain 1) circumstances surrounding the accident(s), 2) the number of fatalities, and 3) the extent of any injuries.

3.9 OSHA 300A Summary Form

Recordable cases must be entered on the log within six workdays of receipt of the information that a recordable case has occurred. The OSHA log must be kept updated to within 45 calendar days.

OSHA 300 forms must be updated during the 5 year retention period, if there is a change in the extent or outcome of an injury or illness which affects an entry on a log. If a change is necessary, the original entry should be lined out and a corrected entry made on that log. New entries should be made for previously unrecorded cases that are discovered or for cases that initially weren't recorded but were found to be recordable after the end of the year. Log totals should also be modified to reflect these changes.

3.10 Posting

The log must be summarized at the end of the calendar year and the summary must be posted from February 1 through May 31.

3.11 OSHA 300A

Facilities selected by the Bureau of Labor Statistics (BLS) to participate in surveys of occupational injuries and illnesses will receive the OSHA 300A. The data from the annual summary on the OSHA 300 log should be transferred to the OSHA 300A, other requested information provided and the form returned as instructed by the BLS.

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3.12 Access to OSHA Records

All OSHA records (accident reporting forms and OSHA 300 logs) should be available for inspection and copying by authorized Federal and State government officials.

Employees, former employees, and their representatives must be given access for inspection and copying to only the log, OSHA No. 300, for the establishment in which the employee currently works or formerly worked.

SECTION 6 – REFERENCES

29 CFR Part 1904

7.0 ATTACHMENTS

Attachment A - Incident Investigation Form
Attachment B - Incident Follow-Up Report
Attachment C - Establishing Recordability

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ATTACHMENT A

INCIDENT INVESTIGATION FORM

Accident investigation should include:

Location: _____

Time of Day: _____

Accident Type: _____

Victim: _____

Nature of Injury: _____

Released Injury: _____

Hazardous Material: _____

Unsafe Acts: _____

Unsafe Conditions: _____

Policies, Decisions: _____

_____

Personal Factors: _____

_____

Environmental Factors: _____

_____

_____

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ATTACHMENT B

INCIDENT FOLLOW-UP REPORT

Date _____

Foreman: _____

Date of Incident: _____

Site: _____

Brief description of incident: _____

_____

_____

_____

_____

Outcome of incident: _____

_____

_____

_____

Physician's recommendations: _____

_____

_____

_____

Date the injured returned to work: _____

Project Manager Signature: _____

Date: _____

ATTACH ANY ADDITIONAL INFORMATION TO THIS FORM

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ATTACHMENT C

ATTACHMENT ESTABLISHING RECORDABILITY

1. Deciding whether to record a case and how to classify the case.

Determine whether a fatality, injury or illness is recordable.

A fatality is recordable if:

- Results from employment

An injury is recordable if:

- Results from employment and
- It requires medical treatment beyond first aid or
- Results in restricted work activity or job transfer, or
- Results in lost work day or
- Results in loss of consciousness

An illness is recordable if:

- It results from employment

2. Definition of "Resulting from Employment"

Resulting from employment is when the injury or illness results from an event or exposure in the work environment. The work environment is primarily composed of: 1) The employer's premises, and 2) other locations where associates are engaged in work- related activities or are present as a condition of their employment.

The employer's premises include company rest rooms, hallways, cafeterias, sidewalks and parking lots. Injuries occurring in these places are generally considered work related.

The employer's premises EXCLUDES employer controlled ball fields, tennis courts, golf courses, parks, swimming pools, gyms, and other similar recreational facilities, used by associates on a voluntary basis for their own benefit, primarily during off work hours.

Ordinary and customary commute, is not generally considered work related.

Employees injured or taken ill while engaged in consuming food, as part of a normal break or activity is not considered work related. Employees injured or taken ill as the result of smoking, consuming illegal drugs, alcohol or applying make up are generally not considered work related. Employee injured by un authorized horseplay is generally not considered work related, however, an employee injured as a result of a fight or other

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workplace violence act, may be considered work related. Associates who travel on company business are considered to be engaged in work related activities all the time they spend in the interest of the company. This includes travel to and from customer contacts, and entertaining or being entertained for purpose of promoting or discussing business. Incidents occurring during normal living activities (eating, sleeping, recreation) or if the associate deviates from a reasonably direct route of travel are not considered OSHA recordable.

3. Distinction between Medical Treatment and First Aid.

First aid:

Any one-time treatment, and any follow up visit for the purpose of observation, of minor scratches, cuts, burns, splinters, etc., which do not ordinarily require medical care. Such one time treatment, and follow up visit for the purpose of observation, is considered first aid even though provided by a physician or registered professional personnel.

Medical Treatment (recordable):

a) Must be treated only by a physician or licensed medical personnel.
b) Impairs bodily function (i.e. normal use of senses, limbs, etc.).
c) Results in damage to physical structure of a non-superficial nature (fractures).
d) Involves complications requiring follow up medical treatment.

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Appendix F

Quality Assurance Project Plan

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C&S Engineers, Inc.
141 Elm Street
Buffalo, New York 14203

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Quality Assurance Project Plan

Buffalo Central Terminal Site
Site #C915414
495 Paderewski Drive

City of Buffalo, Erie County, New York

Prepared for:
Central Terminal Restoration Corporation
P.O. Box 51
Buffalo, New York 14212

February 2026

C&S Project No. AS3001002

Quality Assurance Project Plan

Buffalo Central Terminal
495 Paderewski Drive
BCP Site No. C915414

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Prepared for:
Central Terminal Restoration Corporation
P.O. Box 51
Buffalo, New York 14212

Prepared by:
C & S Engineers, Inc.
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Buffalo, New York 14203

February 2026

C&S Project#: AS3001002

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Appendix B NYSDOH Indoor Air Quality Questionnaire and Building Inventory Form

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1.0 INTRODUCTION

C&S' Quality Control (QC) Program is a vital part of its approach to remedial investigations. Through our thorough QC program, our firm is able to provide accurate and dependable data. QC also provides safe working conditions for field staff.

The QC program contains procedures, which provide for collected data to be properly evaluated, and which document that quality control procedures have been followed in the collection of samples. The QC program represents 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 practices.

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

This QC program has been organized into the following areas:

- QC Objectives
- Field Sampling Techniques
  - Procedures
  - Preparation
  - Measurement
  - Decontamination
- Sample Management

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2.0 QUALITY CONTROL OBJECTIVES

2.1 Data Quality Objectives

Data Quality Objectives (DQOs) are statements which describe the desired quality of data necessary to meet the objectives of the sampling program. The DQOs for the site sampling program were formulated during the scoping effort and developed as part of this Plan. The general steps followed in preparation of the DQOs were as follows:

- Identification of the media to be sampled – Identifies the media being investigated (e.g., ground water, surface soil).

- Identification of the data uses – Identifies the intended use of the data according to the following:
    - Site Characterization – Data are used to determine the composition, nature, and extent of contamination.
    - Risk Assessment – Data are used to evaluate the actual or potential risks posed by contaminants determined to be present on-site. Particular attention is given to sampling at locations where human exposure is possible.
    - Health and Safety Plan (HASP) – Data are used to establish the level of protection needed for on-site workers during site characterization activities.
    - Monitoring – Data are used during the monitoring of the remedial action to access the effectiveness of such action.
    - PRP Enforcement – Data are used to help establish potentially responsible parties (PRP's).
    - Evaluation of Alternatives – Data are used to evaluate various proposed remedial technologies and assist in proper design of alternatives.

- Identification of the data types – Identifies what types of analyses are to be performed.

- Sample Collected – Describes the sample types to be collected.
    - Environmental – Refers to a specific media sampled such as water, soil, air, or biological.
    - Source – Refers to sampling an actual contamination source.
    - Grab – A discrete sample representative of a specific location.
    - Composite – A sample that represents a mixture of a number of grab samples that represents the average properties over the extent of areas sampled.
    - Biased – Sampling that focuses on a specific area of expected contamination or uncontaminated area (background).

- Identification of the data quality needs – Identifies the analytical options available to support data collection activities and are identified as follows:
    - Level I: Field Screening – portable type instruments which provide real-time data.
    - Level II: Field Analysis – portable analytical instruments in an on-site lab or

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transported to the site.
    - Level III: Standard Analytical Protocols – standard analytical protocols or without the NYSDEC Analytical Services Protocol (ASP) (2000) deliverables / reportables documentation.
    - Level IV: NYSDEC ASP Reportables / Deliverables – rigorous QA / QC protocols and reportables / deliverables documentation; NYSDEC ASP (2000) Category B deliverables.
    - Level V: Non-Standard – methods which have been modified to meet specific site study or remediation needs or by use of some other specialized analytical methods that cannot be obtained through standard or typical avenues of analytical support.

- Identification of Data Quality Factors – Describes factors which influence the quality or quantity of data to be collected. Primary contaminants and associated levels of concern are identified concerning ARARs or potential risks. The required detection limit are also given or referenced.

- Identification of QA / QC Samples – Specifies additional samples to be collected to support Quality Assurance / Quality Control (QA / QC) procedures. Additional samples to be collected could include:
    - Matrix Spike/Matrix Spike Duplicates – Matrix spike and matrix spike duplicate samples are collected as a duplicate sample to which the analytical laboratory will add known amounts of target analytes. These QA / QC samples are intended to assess the extraction procedure used by the laboratory.
    - Blind Duplicates – Blind duplicates are a duplicate of another sample submitted for analysis. The location of the sample is recorded in the field book and not disclosed on the chain of custody. These QA / QC samples are intended to assess the repeatability of analysis by the laboratory.
    - Field Blanks – Field (equipment) blanks are samples which are obtained by running analyte-free water through the sample collection equipment in a way that is identical to the sample collection procedures. Field blanks may be used during QA / QC procedures to evaluate if sampling equipment has contributed contaminants to the samples.
    - Trip Blanks – Trip blanks are samples which are prepared prior to the sampling event in the same type of sample container and are kept with the collected samples throughout the sampling event unit analysis. Trip blank vials are not opened in the field and are analyzed for volatile organics only.

2.2 Sampling Procedures

All sampling objectives, locations, and procedures have been included as the Remedial Investigation Work Plan (RIWP) and are further described in **Section 3.0**. Items including Field Measurement Techniques, General Field Decontamination, and Sample Management have also been included in **Section 3.0** and **Section 4.0**.

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2.3 Laboratory Certification and Coordination

The Environmental Laboratory Approval Program (ELAP) certification is an accreditation issued by the New York State Department of Health (NYSDOH). Such laboratories have demonstrated that they consistently ensure the accuracy and reliability of samples analyzed. All chemical analyses for samples from the site will be completed by an ELAP laboratory capable of performing project specific analyses as indicated in this QA / QC plan. The project QA / QC Officer will also be responsible for all project related laboratory coordination.

Supporting documentation related to per- and polyfluoroalkyl substances (PFAS) analysis, such as standard operating procedures (SOPs), analyte lists, and method detection limits (MDLs) are provided in **Appendix A**.

2.4 Analytical Methodologies

Sampling and analysis will be performed for the Target Compound List (TCL) parameters including volatiles. The specific analyses will be conducted according to the following NYSDEC ASP 2000 methodologies:

Table 2-1: ASP 2000 Methodologies

Parameter Group	USEPA Analysis Method
Volatiles	8260C or TO-15 for air
Semivolatiles	8270D
PCBs	8082A
Pesticides	8081B
Herbicides	8151A
Metals / Inorganics	6010D, 7471B, 9010C/9012B, 7196A
PFOA/PFOS	1633

Samples will be analyzed by Eurofins or Pace and the data will be presented in Category B reportables / deliverables format.

2.5 Analytical Quality Control

Analytical quality control for this Project will be consistent with the methodology and quality assurance/quality control requirements in the NYSDEC ASP 2000.

The tables on the following page detail sample volumes, containers, preservation, and holding time for typical analytes.

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2.6 Data Usability Summary Report

A Data Usability Summary Report (DUSR) will be prepared by Environmental Data Usability (EDU) consistent with NYSDECs Guidance for the Development of Quality Assurance Plans and Data Usability Summary Reports as given in DER-10. The main objective of the DUSR is to determine whether the data presented meets the project specific needs for data quality and data use.

Table 2-2: Water Samples

Type of Analysis	Type and Size of Container	Number of Containers and Requirements	Preservation	Holding Time Until Extraction / Analysis
VOCs	40-mL VOA vial	Three (3); fill completely; no headspace	HCl, pH<2 Cool to 4°C	14 days
SVOCs	250-mL amber glass jar, Teflon lined	Two (2); fill completely	Cool to 4°C	7 days to extraction
PCBs	125-mL amber glass jar, Teflon lined	Two (2); fill completely	Cool to 4°C	365 days to extraction
Pesticides	125-mL amber glass jar, Teflon lined	Two (2); fill completely	Cool to 4°C	7 days to extraction
Herbicides	1,000-mL amber glass jar, Teflon lined	Two (2); fill completely	Cool to 4°C	7 days to extraction
Total Metals, including Hg	250-mL plastic	One (1); fill completely	HNO_3, pH<2 Cool to 4°C	180 days (28 days for mercury)
Dissolved Metals, including Hg	250-mL plastic	One (1); fill completely; filtered	HNO_3, pH<2 Cool to 4°C	180 days (28 days for mercury)
Hexavalent Chromium	500-mL plastic	One (1); fill completely	Cool to 4°C	24 hours
Cyanide	250-mL plastic	One (1); fill completely	NaOH, pH>12 Cool to 4°C	14 days
1,4-Dioxane	250-mL amber glass jar, Teflon lined	Two (2); fill completely	Cool to 4°C	7 days to extraction
PFAS	250-mL plastic	Two (2); fill completely	Cool to 4°C	28 days to extraction

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

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Table 2-3: Soil Samples

Type of Analysis	Type and Size of Container	Number of Containers and Requirements	Preservation	Holding Time Until Extraction / Analysis
VOCs	40-mL VOA vial and Terracore	One (1); 5-15 grams	MeOH Cool to 4°C	14 days
	40-mL VOA vial and Terracore	Two (2); 5 grams each	Water Cool to 4°C	48 hours to freeze 14 days to analysis
SVOCs	4-oz amber glass jar, Teflon lined	One (1); fill completely	Cool to 4°C	14 days to extraction
PCBs	4-oz amber glass jar, Teflon lined	One (1); fill completely	Cool to 4°C	365 days to extraction
Pesticides	4-oz amber glass jar, Teflon lined	One (1); fill completely	Cool to 4°C	14 days to extraction
Herbicides	4-oz amber glass jar, Teflon lined	One (1); fill completely	Cool to 4°C	14 days to extraction
Metals, including Hg	4-oz amber glass jar	One (1); fill completely	Cool to 4°C	180 days (28 days for mercury)
Hexavalent Chromium	4-oz amber glass jar	One (1); fill completely	Cool to 4°C	30 days
Cyanide	4-oz amber glass jar	One (1); fill completely	Cool to 4°C	14 days
1,4-Dioxane	4-oz amber glass jar, Teflon lined	One (1); fill completely	Cool to 4°C	14 days to extraction
PFAS	8-oz plastic	One (1); fill completely	Cool to 4°C	90 days to extraction

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

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3.0 FIELD SAMPLING PLAN

3.1 Sampling Procedures

The following sections provide procedures for collecting a variety of samples, not all of which will be needed at this site.

3.1.1 Preparation for Sampling

The sample collection technique is of prime importance to assure the integrity of the collected sample. The following techniques include provisions so that:

- A representative sample is obtained;
- Contamination of the sample is minimized;
- The sample is properly preserved; and
- An acceptable Chain-of-Custody record is maintained.

The QA / QC Sampling Component of the Plan includes:

- Incorporation of accepted sampling techniques referenced in the sampling plan;
- Procedures for documenting any field actions contrary to the QA / QC Plan;
- Documentation of all preliminary activities such as equipment check-out, calibrations, and container storage and preparation;
- Documentation of field measurement quality control data (quality control procedures for such measurements shall be equivalent to corresponding QC procedures);
- Documentation of field activities;
- Documentation of post-field activities including sample shipment and receipt, field team debriefing, and equipment check-in;
- Generation of quality control samples including duplicate samples, field blanks, equipment blanks, and trip blanks;
- The use of these samples in the context of data evaluation with details of the methods employed (including statistical methods) and of the criteria upon which the information generated will be judged; and

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- The number of QA / QC samples generally required are shown in the following table. When there is a disagreement with QA / QC sample numbers and types, between this document and a Work Plan, the Work Plan shall prevail.

Table 3-1: QA / QC Samples

Sample Type	Analysis	Number	Note
MS / MSD	Full Suite	Every sample batch, or minimum of 5% (1 per 20)	Two additional samples at a given location
Trip Blank	VOC	One per day or 5% (1 per 20), whichever is more frequent	Vials of clean water provided by laboratory. Packed with collected samples.
Field Blank	PFAS	One per day or 5% (1 per 20), or whichever is more frequent	Clean water passed through / over decontaminated sample collection equipment / tubing
Blind Duplicate	Same as field sample	Every sample batch, or minimum of 5% (1 per 20)	An additional sample at a given location

The personnel responsible for collection of groundwater, soil, air, miscellaneous media, and petroleum spill remediation / verification samples will be familiar with standard sampling procedures and follow the appropriate protocol. Field records will be maintained in bound notebooks with numbered pages to document daily instrument calibration, locations sampled, field observations, and weather conditions. Each page will be dated and signed by the sampler. Each notebook will be numbered and a log of notebooks will be maintained by the project manager.

Prior to sampling, all equipment must be procured and accommodations for sample container delivery, and sample shipment must be made. The following is a list of general equipment that would be on hand for sampling events. Special equipment for each sampling event is presented in the section describing that specific sampling event.

- Field Data Sheets
- Chain-of-Custody forms
- Engineers tape and folding ruler with 0.01-foot intervals
- Field Record Sheets
- Latex gloves
- Face-safety shield
- Tyvek coveralls
- Respirators
- Photoionization detector
- Bio-degradable phosphate free detergent
- Coolers and ice (no blue ice)
- Drums
- Sample bottles
- Aluminum foil
- Duct and filament tape
- Tap water
- Distilled water
- Laboratory grade methanol and hexane
- Wash buckets
- Decontamination towels / cloths
- Large disposal containers
- Large plastic sheets

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3.2 Sample Collection Techniques

3.2.1 Surface Soil Sampling

Surface soil samples will be collected at the locations and depths indicated in the Work Plan. When sampling is conducted in areas where a vegetative turf has been established, a pre-cleaned trowel or shovel will be used to remove the turf so that it may be replaced at the conclusion of sampling. Samples will then be collected using a pre-cleaned, stainless steel spoon. When the sample is obtained, it will be deposited into a pre-cleaned stainless steel bowl or plastic pail for mixing prior to filling the sample containers. The soil will be mixed thoroughly until the material is homogenized. At that point, the soil will be placed into the laboratory provided containers.

Once removed from the ground the soil will immediately be observed for soil characteristics, including general soil type (sand, silt, clay), moisture, and evidence of impairment ((e.g. petroleum or chemical odors, staining, volatile organic vapors as measured by a photoionization detector (PID)). The PID will be calibrated daily (and more often as required by the manufacturer's data) prior to use in the field, using calibration test gases.

When PFAS sampling / testing is required, no sampling equipment components or sample containers should come into contact with aluminum foil, LDPE, glass, or Teflon tape. Acceptable equipment includes stainless steel spoons and bowl, HDPE containers, and steel shovels or augers that are not coated.

3.2.2 Subsurface Soil Sampling

3.2.2.1 Direct Push Drilling

Generally, 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 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

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special consideration and agreement from NYSDEC. The use of lubricants is also not allowed unless approved by the NYSDEC representative.

3.2.2.2 Hollow Stem Auger

The drilling and installation of monitoring wells will be performed using a rotary drill rig which will have sufficient capacity to perform 4 1/4-inch ID hollow-stem auger drilling in the overburden, retrieve Macrocore or split-spoon samples. 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, 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.

Hollow stem auger advanced groundwater-monitoring wells typically utilize minimum 2-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 wood cap or plastic 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.

3.2.2.3 Subsurface Soil Sample Screening and Collection

When polyethylene sleeves or split spoons are removed from borings, the soil will immediately be observed for soil characteristics, including general soil type (sand, silt, clay), moisture, confining layers, and evidence of impairment (e.g. petroleum or chemical odors, staining, volatile organic vapors as measured by a PID – ex-situ and headspace). Generally, sample selection is based on evidence of impairment, depth, spatial distribution, or for delineation purposes. Normally, sample locations will not be known until the end of each day in the field. Therefore, samples for potential analysis will be placed in new Ziploc bags and placed on ice until they are placed into laboratory provided glassware.

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When PFAS sampling / testing is required, no sampling equipment components or sample containers should come into contact with aluminum foil, LDPE, glass, or Teflon tape. Acceptable equipment includes stainless steel spoons and bowl, HDPE containers, and steel tools that are not coated.

3.2.3 Groundwater Monitoring Well Construction / Completion

3.2.3.1 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-inch 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 feet above the top of the screen. A pre-packed well screen may be used if pre-approved by the NYSDEC.

3.2.3.2 Bentonite Seal

A minimum 2-foot 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-foot seal (e.g., only 1-foot of space remains between the top of the sand pack and ground surface), the remaining space in the annulus will be filled with bentonite.

3.2.3.3 Grout Mixture

Upon completion of the bentonite seal, the well may be grouted with a 30% solids pure bentonite grout, a non-shrinking cement grout, a cement / bentonite grout mix, or a bentonite / soil mix as indicated in the Work Plan. The grout will be placed from the top of the bentonite seal to the ground surface.

3.2.3.4 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.

3.2.3.5 Surveying

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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.

3.2.3.6 Well Development

After completion of the well, but not sooner than 48 hours after grouting is completed, development will be accomplished using pumping, bailing, and / 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).

Water elevations will be taken on all wells prior to development, purging, and sampling. All measurements will be taken within a 24-hour period to obtain consistent elevations and recorded on well data sheets. The procedure for measuring water levels in the monitoring wells is:

- Unlock and remove well cap;
- Test the atmosphere of the well with the calibrated PID. If the gases from the well have caused the air in the breathing zone to read greater than 5 ppm, stop work and refer to the HASP;
- Measure water level to nearest 0.01 foot with a water level indicator (electronic);
- Water level indicators will be decontaminated before moving to next well. The tape and cable are decontaminated by washing in a bucket of distilled water-biodegradable phosphate free-detergent solution, followed by a rinse with distilled water.

Development water will either be 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), and when water quality monitoring demonstrates stabilization of the effluent. The water quality meter will be calibrated prior to each sampling event (and more often as required by the manufacturer's data), using calibration fluids. Stabilization criteria is shown in the table below. In the event that limited recharge does not allow for the recovery of all drilling water lost in the well or three 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

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confirmed with the NYSDEC prior to sampling.

Table 3-2: Well Development Stabilization Criteria

Parameter	Units	Stabilization Criteria
pH	Standard Units	± 0.1
Conductivity	mS/cm	± 3%
Turbidity	NTU	10% or < 10 NTU
D.O.	mg/L	10% or < 0.5 mg/L
Temperature	°F / °C	± 3%
ORP	mV	± 10

3.2.3.7 Groundwater Sample Collection

Groundwater samples will be collected using a dedicated low flow pump. When analysis is limited to VOCs, samples may be collected with disposable or stainless steel bailers. When PFAS sampling / testing is required, only the following equipment will be permitted:

- Stainless steel inertia pump with HDPE tubing
- Peristaltic pump with HDPE and silicone tubing
- Stainless steel bailer with stainless steel ball
- Bladder pump (identified as PFAS-free) with HDPE tubing

All sampling equipment will be properly decontaminated in the field (see **Section 3.3**). The following equipment will be available for sampling of monitoring wells in addition to the general sampling equipment list:

- Well Data Sheets
- Pump
- Electronic water level indicator
- Water Quality Meter
- Acid resistant gloves

The following activities will be completed before going into the field every day before the start of sampling:

- Fill out appropriate section on Well Data Sheet for the wells to be sampled;
- Obtain the sampling schedule for each well to be sampled;
- Calibrate the PID with the calibration gas;
- Determine the amount of sampling to be done for the day and prepare the necessary number of coolers;

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- Each well to be sampled will have designated coolers containing the pre-labeled, certified clean, sample bottles. The groundwater samples will be placed in the cooler labeled for the well from which they were taken. The bottle shall be labeled with large distinguishable letters, so that the groundwater samples will be placed in the proper cooler; and

- Select the appropriate sample bottles for the day's sampling. The bottles shall be pre-marked with a sample parameter and preservatives. Reusable glass bottles will have been cleaned and prepared at the laboratory. The bottles for the various parameters to be analyzed from each well location will then be placed in a cooler.

The following steps describe the sample collection of groundwater:

- Unlock and remove the well cap;

- When VOCs are a contaminant of concern, test the air at the wellhead with the calibrated PID. If the gases from the well have caused the air in the breathing zone to read greater than 5 ppm, stop work and refer to the HASP. Record the reading on the Well Data Sheet;

- In order to obtain a representative sample of the formation water, the well must be purged of the static water within the well. Prior to purging, the static water level within the well must be measured and the measurement recorded on the Well Data Sheet. To determine the amount of water necessary to purge, find the liquid column height in the well to determine the total volume (three liquid column borehole volumes) of liquid to be purged;
- Purge the well; lower pump slowly into the well until it is below the water surface. In accordance with the Work Plan, purge waters will either be disposed within the vicinity of the respective well or containerized.

- Record the amount of water purged in the field logbook and on the Well Data Sheet.

- If the well goes dry during pumping, allow for full recovery (measure the water level) and then sample. If recovery takes more than twenty minutes, proceed to next well but return to sample within 24 hours.

- Fill the appropriate sample bottles according to the sampling schedule for each well. While filling the sample bottles, record the well number, type, volume of container, and the preservatives used on the Ground Water Sampling Analyses form.

- The preservatives for the various sampling parameters were previously added to the clean sample bottles by the laboratory. Some parameters may require additional special handling.

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- Volatile organics analyses sample vials must be free of air bubbles. When a bubble-free sample has been obtained, it must be immediately chilled.

- Collect the matrix spike duplicates, duplicates, field blanks, and trip blanks, as applicable. Take samples according to sampling schedule presented in the Work Plan.

- Record all pertinent information in field logbook and on the Well Data Sheet (include color, odor, sediment content of sample, etc.). Any situations at the site that have the potential to interfere with the analytical results should also be recorded here.

- Lock well, inspect well site, and note any maintenance required.

- Dispose of potentially contaminated materials in designated container.

3.2.4 Air Sample Collection

All activities will be conducted in accordance with the NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, October 2006, and subsequent revisions.

3.2.4.1 Soil Vapor Implant Installation

Semi-permanent soil vapor monitoring points will be installed using direct-push methods. Continuous soil sampling will be conducted at each location using Geoprobe® Systems' Macro-Core® soil samplers, to create a nominal 2.25-inch diameter borehole. The direct-push borings will be terminated at the target depth of the vapor implant placement. As consistent with NYSDOH guidance, the vapor implants will be positioned so as to allow collection of vapor samples at depths comparable to the depths of nearby foundation footings (normally +/- five feet in depth), or at least 12 inches above the water table, if groundwater is present at a depth less than six feet bgs. The groundwater depth will be determined based upon static water levels recorded in nearby wells.

Following creation of the borehole, the vapor implants will be placed at the target sampling depth. Each implant will consist of a six-inch long vapor implant with stainless steel mesh / screen. Polyethylene tubing will be affixed to the top of the stainless-steel screen and extended to the ground surface. The borehole annulus below, surrounding, and to twelve inches above the top of the screen will be filled with 00N sand or glass beads to create an inert, porous vapor sampling zone. The remainder of the borehole annulus will be filled with a bentonite slurry to minimize outdoor air from entering the sampling zone. Each vapor implant will be completed with a flush-mount protective casing.

Following installation, samples will be collected using a Summa™ canister (6-Liter capacity) equipped with a critical orifice flow regulation device sized to allow an air sample to be collected over a 24-hour sampling period.

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3.2.4.2 Sub-Slab Soil Gas Sampling

Sub-slab sampling points will be installed to collect soil gas immediately below the slab. Sub-slab samples are typically co-located with corresponding indoor air samples to allow comparison of sub-slab and nearby indoor air concentrations. Sub-slab gas samples will be collected using a Summa™ canister (6-Liter capacity) equipped with a critical orifice flow regulation device sized to allow an air sample to be collected over a 24-hour sampling period.

The sub-slab vapor points will be installed by first advancing a small diameter hole (approximately 3/8-inches in diameter) through the floor slab to determine thickness. The holes will be drilled via a hammer drill or concrete core. The hole will extend through the slab and terminate at the interface with underlying material (i.e. gravel base or soil). A length of vinyl tubing will be placed into the hole to extend to the bottom of the slab. The cored slab annulus will be sealed with clay around the tubing.

To ensure there is no connection between the sub-slab and indoor air, helium short-circuit testing will be performed at each sampling point. The helium will be introduced into a dome placed over the sealed tubing. The dome will be sealed to the concrete floor with modeling clay. A helium meter that is capable to read down to 1-2% helium will be connected to the sample tubing to measure helium concentrations in the sub-slab environment. The detection of helium in the sub-slab air indicates communication between the air inside the dome and the sub-slab, revealing a leak in the seal around the tubing. If helium is detected in the sub-slab tubing at a concentration greater than 10% of the concentration of helium in the dome, the clay seal around the tubing will be reconfigured and the tracer test will be repeated until an adequate seal is observed.

Prior to sub-slab soil gas sample collection, the sample tubing will be purged at a rate not exceeding 200 mL/min to remove three tubing volumes of air. This ensures the concentrations detected in the sample are representative of soil gas and not diluted by indoor air.

3.2.4.3 Indoor Air Sampling

Indoor air samples will be collected using a Summa™ canister (6-Liter capacity) equipped with a critical orifice flow regulation device sized to allow an air sample to be collected over a 24-hour sampling period. The sampling canister will be placed approximately three to five feet off the ground.

A NYSDOH Indoor Air Quality Questionnaire and Building Inventory Form will be completed at the time of sampling (**Appendix B**). Testing will be conducted under the following conditions:

- Air samples will be collected during the heating season. In New York State, heating season generally extends from November 15 to March 31. However, in Upstate New York, it is common to heat buildings between October and April.

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- Closed building conditions will begin at least 12 hours prior to the initiation of testing and shall be maintained throughout the test period, lasting less than four days.

- All exterior windows and doors shall be kept closed (except for momentary entry and exit by personnel). This includes areas not being tested.

- Heating and cooling systems shall be set to normal, occupied, operating temperatures; fan/blower controls shall be set to intermittent activity unless the system is designed to only run the fan continuously.

- Occupants should avoid excessive operation of clothes dryers, range hoods, bathroom fans, and other mechanical systems that draw air into and out of the building.

- Solid, liquid, or gas burning fireplaces shall not be operated unless they are the primary / normal sources of heat for the building.

- Window air-conditioning units shall only be operated in a re-circulating mode.

- Equipment that supplies fresh air to the building shall be deactivated unless it is an integral part of the HVAC system or supplies make-up air to a combustion appliance.

- Window fans shall be removed or sealed shut.

- Fans installed in attics to control only attic air and not whole-building temperature, or humidity may continue to operate.

- Normal operation of permanently installed ventilation systems such as energy recovery ventilators (also known as heat recovery ventilators or air-to-air heat exchangers) may continue during closed-building conditions so long as the system is regularly maintained and continuously operational.

Beginning 24 hours prior to test initiation and continuing throughout the duration of the test, the following activities will be avoided inside the building:

- Performing excavations or other activities that may generate particulate matter;

- Smoking;

- Painting;

- Cleaning, waxing, polishing furniture or floors with petroleum or oil-based products;

- Application of hairspray, nail polish, nail polish remover, perfume / cologne;

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- Using air fresheners or odor eliminators; and

- Using any other products or performing any activities that contain VOCs, produce odors, or may otherwise influence indoor air testing results, or that are not consistent with the NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*.

3.2.4.4 Ambient Air Sampling

Ambient air samples will be collected in the same manner as the indoor air samples. The outdoor air sample will be collected using a Summa™ canister (6-Liter capacity) equipped with a critical orifice flow regulation device sized to allow an air sample to be collected over a 24-hour sampling period. The sampling canister will be located upwind of the structure and will be placed approximately three to five feet off the ground.

3.2.4.5 Sample Canister Deployment and Retrieval

For all soil vapor, sub-slab soil vapor, and indoor and outdoor air sampling described above, sample canisters will be deployed and retrieved as described below:

- Air sample canisters will be labeled with a unique sample designation number. The sample number and location will be recorded on the field log.

- The canister vacuum will be measured using an integrated vacuum gauge immediately prior to canister deployment and recorded on the field log. The critical orifice flow controller will be installed, as supplied by the laboratory, on the canister; the canister will be opened fully at the beginning of sample collection period; and the start time will be recorded.

- The canister vacuum will be measured and recorded immediately prior to canister retrieval at the end of the sample period. Once the vacuum is measured, the canister valve will be closed fully at the end of the sample period by disconnecting the regulator from the canister and the end time will be recorded.

- The canisters will be returned to their sampling boxes for safe storage and shipping. Field data will be verified as correctly entered into field books prior to shipment and the canisters will be shipped to the laboratory under a chain-of-custody.

- Each sample will be analyzed for VOCs via USEPA Compendium Method TO-15. Five indoor air compounds (trichloroethene, cis-1,2-dichloroethene, 1,1-dichloroethene, carbon tetrachloride, and vinyl chloride) will be analyzed using USEPA Method TO-15 Select Ion Monitoring (SIM) to achieve low level laboratory reporting limits of 0.20 micrograms per cubic meter ($\mu g/m^3$) or less.

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3.3 General Decontamination

The following procedures will be performed for the decontamination of exploration equipment, sampling equipment, and personnel after each drilling/sampling event:

- *Drill rig, backhoe, and excavator* – The drill rig, direct-push rig, backhoe, and/or excavator will be cleaned prior to their entrance and exit of the site. Greases and oils will not be used on any down hole equipment during drilling or exploration activities.

- *Exploration equipment* – To avoid cross contamination, use of a PID meter and cleaning between each sampling site will be employed on backhoe arms, buckets, hollow stem augers, casing drill rods, down-hole tools, and appurtenant equipment.

- *Split spoon sampler* – The split spoon sampler will be scrubbed, cleaned, and put through a series of rinses between each sampling event. A number of split spoon samplers will be used so that one can be utilized for sampling while the others are being cleaned.

- *Reusable equipment* – The following steps will be employed to decontaminate reusable equipment:
    - Rinse equipment of soil or foreign material with potable water;
    - Immerse and scrub equipment with bio-degradable phosphate-free detergent and potable water;
    - Immerse and scrub in a potable water rinse without detergent;
    - Immerse and scrub in deionized/distilled water;
    - Saturate by spraying or immersion in laboratory-grade hexane;
    - Air dry and wrap cleaned equipment in foil to carry to next monitoring site to prevent contamination of equipment during transfer; and
    - The decontamination wash and rinse water will not be considered hazardous unless visual inspection or monitoring by the PID and other equipment indicate that contaminants may be present. The rinse waters can be discharged on-site if they are not contaminated. If contaminants are expected to be present, the rinsate waters should be placed in 55 gallon drums and stored on-site.

- *Disposable equipment* – The following steps will be employed to decontaminate disposable equipment:
    - Rinse with potable water;
    - Remove all standing liquid from the piece of equipment;
    - Dispose of the equipment in a dedicated container for contaminated solids; and
    - Dispose of rinse water in 55 gallon drums if contaminants are found to be present.

- *Sample containers* – Upon filling and capping sample bottles, the outside of the bottle will be wiped off with a clean paper towel. These towels will be disposed of in a dedicated container for contaminated solids.

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- *Personnel decontamination* – The following procedures will be used to decontaminate sampling personnel.
    - After each sampling event chemical resistant gloves will be disposed of in a dedicated container for contaminated solids;
    - At the end of each sampling day, Tyvek™ coveralls will be disposed of in a dedicated container for contaminated solids;
    - Boots will be rinsed off with water to remove mud, clay, or any other contaminants; and
    - Personnel will be required to follow procedures outlined in the HASP.

- Special Considerations for PFAS – The following procedures will be used when sampling for PFAS.
    - Clothing that contains PTFE material, including Gore-Tex or that have been water-proofed with PFAS materials should be avoided. All clothing worn by sampling personnel should first be laundered multiple times. Acceptable rain gear includes PVC, polyurethane, or rubber. If such materials are required because site conditions warrant additional protection for samplers, their use will be documented in the field notes.
    - Decontamination water shall be verified in advance to be PFAS-free through laboratory analysis or certification. Previous results of non-detect for PFAS are acceptable.

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4.0 SAMPLE MANAGEMENT PLAN

4.1 Sample Management

This Sample Management Plan provides procedures to document and track samples and results obtained during this work effort. A series of pre-printed forms with the appropriate information serves as a vehicle for documentation and tracking.

In order to accomplish this task, the documentation materials will include sample labels, sample characterization and Chain-of-Custody sheets, daily field reports, and a sample log.

- *Sample Label* – A sample label will be completed for each sample obtained and will be affixed to the sample container. The label is configured in a way to address various types of mediums. Information on the label includes, at a minimum, client name, location, sample description, sample number, date, time, grab sample, composite sample, notes, and sampler's name.

- *Sample Characterization & Chain-of-Custody Sheet* – All pertinent field information will be entered onto the sample characterization and chain-of-custody sheets including client name, sample ID, sample description, location of sample, sampling method, number of containers, container type, analysis required, and preservation. The monitoring well form has space allotted for entering information regarding the well including depth to water, well volume, sample pH, temperature, color, etc. The Chain-of-Custody section of the form will document the sample's pathway of sample shipment which will include names of persons delivering/receiving, dates, and times. The reverse side of this form will be used by the laboratory to document analysis performed on the sample. Copies of the completed forms will be retained by the Engineer and the analytical laboratory. The original sample characterization and Chain-of-Custody sheets will be submitted in the Remedial Investigation report along with the laboratory results.

- *Daily Field Reports* – Daily activities will be recorded on the Inspection Report form. The purpose of this form will be to summarize the work performed on the site each day. The completed forms will be submitted to the Project Manager on a daily basis for short term site activity and on a weekly basis for site activities of a longer duration.

- *Sample Log* – The sample log will be utilized to track each individual sample obtained at the site. The upper portion, "Field Identification" will be completed the day the sample is taken. The form will accompany the sample characterization and Chain-of-Custody form to the laboratory. Personnel at the laboratory will complete the middle section of this form and return it to the Engineer, who will use the document to track incoming results. The bottom of the sheet has space allocated to enter "Recommended Actions" based on laboratory results.

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4.2 Sample Handling

Each collected sample will be dispensed into the appropriate sample containers for the type of analysis to be performed. Sampling staff will wear nitrile gloves at all times when handling samples. Appropriate sample preservatives will be added to the sample containers by the contracted analytical laboratory prior to the delivery into the field, except in cases where the sample preservative must be added after sample collection. All samples that require cool storage will be immediately placed in coolers with appropriate packaging materials so as to protect the breakage of sample containers during shipment. The sample coolers will be filled with cubed ice (no "Blue Ice") prior to leaving the sample collection location. In the instance that a local analytical laboratory is contracted, the samples will be hand delivered to the laboratory each sampling day. The chain-of-custody forms will be signed by the laboratory personnel picking up the samples and placed within the coolers. In the instance that an analytical laboratory is contracted which is not based locally and a common carrier is used for sample shipment, the chain-of-custody forms will be signed by the sampler and the carrier personnel and placed inside of the coolers. Careful packaging techniques will be used to prevent sample containers from breakage during shipment. Materials such as cardboard, foam wrap, or Styrofoam may be used as packaging materials. All samples will be delivered to the contracted analytical laboratory on the day they were collected and will be received by the laboratory within 24 hours of sample collection. The samples will be collected with sufficient time allowed at the end of the day for the analytical laboratory to properly process the sample chain-of-custody.

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Appendices

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Appendix A

Supporting Documentation for PFAS Analysis

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NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

SAMPLING, ANALYSIS, AND ASSESSMENT OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Under NYSDEC's Part 375 Remedial Programs

April 2023

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ERRATA SHEET for

SAMPLING, ANALYSIS, AND ASSESSMENT OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) Under NYSDEC's Part 375 Remedial Programs Issued January 17, 2020

Citation and Page Number	Current Text	Corrected Text	Date
Title of Appendix I, page 32	Appendix H	Appendix I	2/25/2020
Document Cover, page 1	Guidelines for Sampling and Analysis of PFAS	Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs	9/15/2020
Data Assessment and Application to Site Cleanup Page 3	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published	Until such time as Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published	3/28/2023
Water Sample Results Page 3	PFOA and PFOS should be further assessed and considered as potential contaminants of concern in groundwater or surface water if PFOA or PFOS is detected in any water sample at or above 10 ng/L (ppt) and is determined to be attributable to the site, either by a comparison of upgradient and downgradient levels, or the presence of soil source areas, as defined below.	NYSDEC has adopted ambient water quality guidance values for PFOA and PFOS. Groundwater samples should be compared to the human health criteria of 6.7 ng/l (ppt) for PFOA and 2.7 ng/l (ppt) for PFOS. These guidance values also include criteria for surface water for PFOS applicable for aquatic life, which may be applicable at some sites. Drinking water sample results should be compared to the NYS maximum contaminant level (MCL) of 10 ng/l (ppt).Analysis to determine if PFOA and PFOS concentrations are attributable to the site should include a comparison between upgradient and downgradient levels, and the presence of soil source areas, as defined below.	3/28/2023
Soil Sample Results Page 3	Soil cleanup objectives for PFOA and PFOS have been proposed in an upcoming revision to 6 NYCRR Part 375-6. Until SCOs are in effect, the following are to be used as guidance values:	NYSDEC will delay adding soil cleanup objectives for PFOA and PFOS to 6 NYCRR Part 375-6 until the PFAS rural soil background study has been completed. Until SCOs are in effect, the following are to be used as guidance values:	3/28/2023
Protection of Groundwater Page 3	PFOA (ppb) 1.1 PFOS (ppb) 3.7	PFOA (ppb) 0.8 PFOS (ppb) 1.0	3/28/2023

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Citation and Page Number	Current Text	Corrected Text	Date
Footnote 2 Page 3	The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	The Protection of Groundwater values are based on the above referenced ambient groundwater guidance values. Details on that calculation are available in the following document, prepared for the February 2022 proposed changes to Part 375 (https://www.dec.ny.gov/docs/remediation_hudson_pdf/part375techsupport.pdf). The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	3/28/2023
Testing for Imported Soil Page 4	If the concentrations of PFOA and PFOS in leachate are at or above 10 ppt (the Maximum Contaminant Levels established for drinking water by the New York State Department of Health), then the soil is not acceptable.	If the concentrations of PFOA and PFOS in leachate are at or above the ambient water quality guidance values for groundwater, then the soil is not acceptable.	3/28/2023
Routine Analysis, page 9	"However, laboratories analyzing environmental samples…PFOA and PFOS in drinking water by EPA Method 537, 537.1 or ISO 25101."	"However, laboratories analyzing environmental samples…PFOA and PFOS in drinking water by EPA Method 537, 537.1, ISO 25101, or Method 533."	9/15/2020
Additional Analysis, page 9, new paragraph regarding soil parameters	None	"In cases where site-specific cleanup objectives for PFOA and PFOS are to be assessed, soil parameters, such as Total Organic Carbon (EPA Method 9060), soil pH (EPA Method 9045), clay content (percent), and cation exchange capacity (EPA Method 9081), should be included in the analysis to help evaluate factors affecting the leachability of PFAS in site soils."	9/15/2020

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Citation and Page Number	Current Text	Corrected Text	Date
Data Assessment and Application to Site Cleanup Page 10	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFAS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Target levels for cleanup of PFAS in other media, including biota and sediment, have not yet been established by the DEC.	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Preliminary target levels for cleanup of PFOA and PFOS in other media, including biota and sediment, have not yet been established by the DEC.	9/15/2020
Water Sample Results Page 10	PFAS should be further assessed and considered as a potential contaminant of concern in groundwater or surface water (…) If PFAS are identified as a contaminant of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.	PFOA and PFOS should be further assessed and considered as potential contaminants of concern in groundwater or surface water (…) If PFOA and/or PFOS are identified as contaminants of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.	9/15/2020

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Citation and Page Number	Current Text	Corrected Text	Date
Soil Sample Results, page 10	"The extent of soil contamination for purposes of delineation and remedy selection should be determined by having certain soil samples tested by Synthetic Precipitation Leaching Procedure (SPLP) and the leachate analyzed for PFAS. Soil exhibiting SPLP results above 70 ppt for either PFOA or PFOS (individually or combined) are to be evaluated during the cleanup phase."	"Soil cleanup objectives for PFOA and PFOS will be proposed in an upcoming revision to 6 NYCRR Part 375-6. Until SCOs are in effect, the following are to be used as guidance values. " [Interim SCO Table] "PFOA and PFOS results for soil are to be compared against the guidance values listed above. These guidance values are to be used in determining whether PFOA and PFOS are contaminants of concern for the site and for determining remedial action objectives and cleanup requirements. Site-specific remedial objectives for protection of groundwater can also be presented for evaluation by DEC. Development of site-specific remedial objectives for protection of groundwater will require analysis of additional soil parameters relating to leachability. These additional analyses can include any or all the parameters listed above (soil pH, cation exchange capacity, etc.) and/or use of SPLP. As the understanding of PFAS transport improves, DEC welcomes proposals for site-specific remedial objectives for protection of groundwater. DEC will expect that those may be dependent on additional factors including soil pH, aqueous pH, % organic carbon, % Sand/Silt/Clay, soil cations: K, Ca, Mg, Na, Fe, Al, cation exchange capacity, and anion exchange capacity. Site-specific remedial objectives should also consider the dilution attenuation factor (DAF). The NJDEP publication on DAF can be used as a reference: https://www.nj.gov/dep/srp/guidance/rs/daf.pdf. "	9/15/2020

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Citation and Page Number	Current Text	Corrected Text	Date
Testing for Imported Soil Page 11	Soil imported to a site for use in a soil cap, soil cover, or as backfill is to be tested for PFAS in general conformance with DER-10, Section 5.4(e) for the PFAS Analyte List (Appendix F) using the analytical procedures discussed below and the criteria in DER-10 associated with SVOCs. If PFOA or PFOS is detected in any sample at or above 1 µg/kg, then soil should be tested by SPLP and the leachate analyzed for PFAS. If the SPLP results exceed 10 ppt for either PFOA or PFOS (individually) then the source of backfill should be rejected, unless a site-specific exemption is provided by DER. SPLP leachate criteria is based on the Maximum Contaminant Levels proposed for drinking water by New York State's Department of Health, this value may be updated based on future Federal or State promulgated regulatory standards. Remedial parties have the option of analyzing samples concurrently for both PFAS in soil and in the SPLP leachate to minimize project delays. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.	Testing for PFAS should be included any time a full TAL/TCL analyte list is required. Results for PFOA and PFOS should be compared to the applicable guidance values. If PFOA or PFOS is detected in any sample at or above the guidance values then the source of backfill should be rejected, unless a site-specific exemption is provided by DER based on SPLP testing, for example. If the concentrations of PFOA and PFOS in leachate are at or above 10 ppt (the Maximum Contaminant Levels established for drinking water by the New York State Department of Health), then the soil is not acceptable. PFOA, PFOS and 1,4-dioxane are all considered semi-volatile compounds, so composite samples are appropriate for these compounds when sampling in accordance with DER-10, Table 5.4(e)10. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.	9/15/2020

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Citation and Page Number	Current Text	Corrected Text	Date
Footnotes	None	[1] TOP Assay analysis of highly contaminated samples, such as those from an AFFF (aqueous film-forming foam) site, can result in incomplete oxidation of the samples and an underestimation of the total perfluoroalkyl substances. [2] The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the soil cleanup objective for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	9/15/2020
Additional Analysis, page 9	In cases… soil parameters, such as Total Organic Carbon (EPA Method 9060), soil…	In cases… soil parameters, such as Total Organic Carbon (Lloyd Kahn), soil…	1/8/2021
Appendix A, General Guidelines, fourth bullet	List the ELAP-approved lab(s) to be used for analysis of samples	List the ELAP- certified lab(s) to be used for analysis of samples	1/8/2021
Appendix E, Laboratory Analysis and Containers	Drinking water samples collected using this protocol are intended to be analyzed for PFAS by ISO Method 25101.	Drinking water samples collected using this protocol are intended to be analyzed for PFAS by EPA Method 537, 537.1, 533, or ISO Method 25101	1/8/2021
Water Sample Results Page 9	"In addition, further assessment of water may be warranted if either of the following screening levels are met: a. any other individual PFAS (not PFOA or PFOS) is detected in water at or above 100 ng/L; or b. total concentration of PFAS (including PFOA and PFOS) is detected in water at or above 500 ng/L"	Deleted	6/15/2021

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Citation and Page Number	Current Text	Corrected Text	Date
Routine Analysis, Page XX	Currently, New York State Department of Health's Environmental Laboratory Approval Program (ELAP)… criteria set forth in the DER's laboratory guidelines for PFAS in non-potable water and solids (Appendix H - Laboratory Guidelines for Analysis of PFAS in Non-Potable Water and Solids).	Deleted	5/31/2022
Analysis and Reporting, Page XX	As of October 2020, the United States Environmental Protection Agency (EPA) does not have a validated method for analysis of PFAS for media commonly analyzed under DER remedial programs (non-potable waters, solids). DER has developed the following guidelines to ensure consistency in analysis and reporting of PFAS.	Deleted	5/31/2022
Routine Analysis, Page XX	LC-MS/MS analysis for PFAS using methodologies based on EPA Method 537.1 is the procedure to use for environmental samples. Isotope dilution techniques should be utilized for the analysis of PFAS in all media.	EPA Method 1633 is the procedure to use for environmental samples.	
Soil Sample Results, Page XX	Soil cleanup objectives for PFOA and PFOS will be proposed in an upcoming revision to 6 NYCRR Part 375-6	Soil cleanup objectives for PFOA and PFOS have been proposed in an upcoming revision to 6 NYCRR Part 375-6	
Appendix A	"Include in the text… LC-MS/MS for PFAS using methodologies based on EPA Method 537.1"	"Include in the text ….EPA Method 1633"	
Appendix A	"Laboratory should have ELAP certification for PFOA and PFOS in drinking water by EPA Method 537, 537.1, EPA Method 533, or ISO 25101"	Deleted	
Appendix B	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	

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Citation and Page Number	Current Text	Corrected Text	Date
Appendix C	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	
Appendix D	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	
Appendix G		Updated to include all forty PFAS analytes in EPA Method 533	
Appendix H		Deleted	
Appendix I	Appendix I	Appendix H	
Appendix H	"These guidelines are intended to be used for the validation of PFAS analytical results for projects within the Division of Environmental Remediation (DER) as well as aid in the preparation of a data usability summary report."	"These guidelines are intended to be used for the validation of PFAS using EPA Method 1633 for projects within the Division of Environmental Remediation (DER)."	
Appendix H	"The holding time is 14 days…"	"The holding time is 28 days…"	
Appendix H, Initial Calibration	"The initial calibration should contain a minimum of five standards for linear fit…"	"The initial calibration should contain a minimum of six standards for linear fit…"	
Appendix H, Initial Calibration	Linear fit calibration curves should have an R^2 value greater than 0.990.	Deleted	
Appendix H, Initial Calibration Verification	Initial Calibration Verification Section	Deleted	
Appendix H	secondary Ion Monitoring Section	Deleted	
Appendix H	Branched and Linear Isomers Section	Deleted	

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Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs

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Objective

New York State Department of Environmental Conservation's Division of Environmental Remediation (DER) performs or oversees sampling of environmental media and subsequent analysis of PFAS as part of remedial programs implemented under 6 NYCRR Part 375. To ensure consistency in sampling, analysis, reporting, and assessment of PFAS, DER has developed this document which summarizes currently accepted procedures and updates previous DER technical guidance pertaining to PFAS.

Applicability

All work plans submitted to DEC pursuant to one of the remedial programs under Part 375 shall include PFAS sampling and analysis procedures that conform to the guidelines provided herein.

As part of a site investigation or remedial action compliance program, whenever samples of potentially affected media are collected and analyzed for the standard Target Analyte List/Target Compound List (TAL/TCL), PFAS analysis should also be performed. Potentially affected media can include soil, groundwater, surface water, and sediment. Based upon the potential for biota to be affected, biota sampling and analysis for PFAS may also be warranted as determined pursuant to a Fish and Wildlife Impact Analysis. Soil vapor sampling for PFAS is not required.

Field Sampling Procedures

DER-10 specifies technical guidance applicable to DER's remedial programs. Given the prevalence and use of PFAS, DER has developed "best management practices" specific to sampling for PFAS. As specified in DER-10 Chapter 2, quality assurance procedures are to be submitted with investigation work plans. Typically, these procedures are incorporated into a work plan, or submitted as a stand-alone document (e.g., a Quality Assurance Project Plan). Quality assurance guidelines for PFAS are listed in Appendix A - Quality Assurance Project Plan (QAPP) Guidelines for PFAS.

Field sampling for PFAS performed under DER remedial programs should follow the appropriate procedures outlined for soils, sediments, or other solids (Appendix B), non-potable groundwater (Appendix C), surface water (Appendix D), public or private water supply wells (Appendix E), and fish tissue (Appendix F).

QA/QC samples (e.g. duplicates, MS/MSD) should be collected as specified in DER-10, Section 2.3(c). For sampling equipment coming in contact with aqueous samples only, rinsate or equipment blanks should be collected. Equipment blanks should be collected at a minimum frequency of one per day per site or one per twenty samples, whichever is more frequent.

Analysis and Reporting

The investigation work plan should describe analysis and reporting procedures, including laboratory analytical procedures for the methods discussed below. As specified in DER-10 Section 2.2, laboratories should provide a full Category B deliverable. In addition, a Data Usability Summary Report (DUSR) should be prepared by an independent, third-party data validator. Electronic data submissions should meet the requirements provided at: https://www.dec.ny.gov/chemical/62440.html.

DER has developed a *PFAS Analyte List* (Appendix G) for remedial programs to understand the nature of contamination at sites. It is expected that reported results for PFAS will include, at a minimum, all the compounds listed. If lab and/or matrix specific issues are encountered for any analytes, the DER project manager, in consultation with the DER chemist, will make case-by-case decisions as to whether certain analytes may be temporarily or permanently discontinued from analysis at each site. As with other contaminants that are analyzed for at a site, the *PFAS Analyte List* may be refined for future sampling events based on investigative findings.

Routine Analysis

EPA Method 1633 is the procedure to use for environmental samples. Reporting limits for PFOA and PFOS in aqueous samples should not exceed 2 ng/L. Reporting limits for PFOA and PFOS in solid samples should not exceed 0.5 µg/kg. Reporting limits for all other PFAS in aqueous and solid media should be as close to these limits as possible. If laboratories indicate that they are not able to achieve these reporting limits for the entire *PFAS Analyte List*, site-specific decisions regarding acceptance of elevated reporting limits for specific PFAS can be made by the DER project manager in consultation with the DER chemist. Data review guidelines were developed by DER to ensure data comparability and usability (Appendix H - Data Review Guidelines for Analysis of PFAS in Non-Potable Water and Solids).

Additional Analysis

Additional laboratory methods for analysis of PFAS may be warranted at a site, such as the Synthetic Precipitation Leaching Procedure (SPLP) and Total Oxidizable Precursor Assay (TOP Assay).

In cases where site-specific cleanup objectives for PFOA and PFOS are to be assessed, soil parameters, such as Total Organic Carbon (Lloyd Kahn), soil pH (EPA Method 9045), clay content (percent), and cation exchange capacity (EPA Method 9081), should be included in the analysis to help evaluate factors affecting the leachability of PFAS in site soils.

SPLP is a technique used to determine the mobility of chemicals in liquids, soils and wastes, and may be useful in determining the need for addressing PFAS-containing material as part of the remedy. SPLP by EPA Method 1312 should be used unless otherwise specified by the DER project manager in consultation with the DER chemist.

Impacted materials can be made up of PFAS that are not analyzable by routine analytical methodology. A TOP Assay can be utilized to conceptualize the amount and type of oxidizable PFAS which could be liberated in the environment, which approximates the maximum concentration of perfluoroalkyl substances that could be generated if all polyfluoroalkyl substances were oxidized. For example, some polyfluoroalkyl substances may degrade or transform to form perfluoroalkyl substances (such as PFOA or PFOS), resulting in an increase in perfluoroalkyl substance concentrations as contaminated groundwater moves away from a source. The TOP Assay converts, through oxidation, polyfluoroalkyl substances (precursors) into perfluoroalkyl substances that can be detected by routine analytical methodology.[1]

[1] TOP Assay analysis of highly contaminated samples, such as those from an AFFF (aqueous film-forming foam) site, can result in incomplete oxidation of the samples and an underestimation of the total perfluoroalkyl substances.

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Commercial laboratories have adopted methods which allow for the quantification of targeted PFAS in air and biota. The EPA's Office of Research and Development (ORD) is currently developing methods which allow for air emissions characterization of PFAS, including both targeted and non-targeted analysis of PFAS. Consult with the DER project manager and the DER chemist for assistance on analyzing biota/tissue and air samples.

Data Assessment and Application to Site Cleanup

Until such time as Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Preliminary target levels for cleanup of PFOA and PFOS in other media, including biota and sediment, have not yet been established by the DEC.

Water Sample Results

NYSDEC has adopted ambient water quality guidance values for PFOA and PFOS. Groundwater samples should be compared to the human health criteria of 6.7 ng/l (ppt) for PFOA and 2.7 ng/l (ppt) for PFOS. These human health criteria should also be applied to surface water that is used as a water supply. This guidance also includes criteria for surface water for PFOS applicable for aquatic life, which may be applicable at some sites. Drinking water sample results should be compared to the NYS maximum contaminant level (MCL) of 10 ng/l (ppt). Analysis to determine if PFOA and PFOS concentrations are attributable to the site should include a comparison between upgradient and downgradient levels, and the presence of soil source areas, as defined below.

If PFOA and/or PFOS are identified as contaminants of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.

Soil Sample Results

NYSDEC will delay adding soil cleanup objectives for PFOA and PFOS to 6 NYCRR Part 375-6 until the PFAS rural soil background study has been completed. Until SCOs are in effect, the following are to be used as guidance values:

Guidance Values for Anticipated Site Use	PFOA (ppb)	PFOS (ppb)
Unrestricted	0.66	0.88
Residential	6.6	8.8
Restricted Residential	33	44
Commercial	500	440
Industrial	600	440
Protection of Groundwater[2]	0.8	1.0

PFOA and PFOS results for soil are to be compared against the guidance values listed above. These guidance values are to be used in determining whether PFOA and PFOS are contaminants of concern for the site and for determining remedial action objectives and cleanup requirements. Site-specific remedial objectives for protection of groundwater can also be presented for evaluation by DEC. Development of site-specific remedial objectives for protection of groundwater will require analysis of additional soil parameters relating to leachability. These

[2] The Protection of Groundwater values are based on the above referenced ambient groundwater guidance values. Details on that calculation are available in the following document, prepared for the February 2022 proposed changes to Part 375 (https://www.dec.ny.gov/docs/remediation_hudson_pdf/part375techsupport.pdf). The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).

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additional analyses can include any or all the parameters listed above (soil pH, cation exchange capacity, etc.) and/or use of SPLP.

As the understanding of PFAS transport improves, DEC welcomes proposals for site-specific remedial objectives for protection of groundwater. DEC will expect that those may be dependent on additional factors including soil pH, aqueous pH, % organic carbon, % Sand/Silt/Clay, soil cations: K, Ca, Mg, Na, Fe, Al, cation exchange capacity, and anion exchange capacity. Site-specific remedial objectives should also consider the dilution attenuation factor (DAF). The NJDEP publication on DAF can be used as a reference: https://www.nj.gov/dep/srp/guidance/rs/daf.pdf.

Testing for Imported Soil

Testing for PFAS should be included any time a full TAL/TCL analyte list is required. Results for PFOA and PFOS should be compared to the applicable guidance values. If PFOA or PFOS is detected in any sample at or above the guidance values then the source of backfill should be rejected, unless a site-specific exemption is provided by DER based on SPLP testing, for example. If the concentrations of PFOA and PFOS in leachate are at or above the ambient water quality guidance values for groundwater, then the soil is not acceptable.

PFOA, PFOS and 1,4-dioxane are all considered semi-volatile compounds, so composite samples are appropriate for these compounds when sampling in accordance with DER-10, Table 5.4(e)10. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.

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Appendix A - Quality Assurance Project Plan (QAPP) Guidelines for PFAS

The following guidelines (general and PFAS-specific) can be used to assist with the development of a QAPP for projects within DER involving sampling and analysis of PFAS.

General Guidelines in Accordance with DER-10

- Document/work plan section title – Quality Assurance Project Plan
- Summarize project scope, goals, and objectives
- Provide project organization including names and resumes of the project manager, Quality Assurance Officer (QAO), field staff, and Data Validator
    - The QAO should not have another position on the project, such as project or task manager, that involves project productivity or profitability as a job performance criterion
- List the ELAP certified lab(s) to be used for analysis of samples
- Include a site map showing sample locations
- Provide detailed sampling procedures for each matrix
- Include Data Quality Usability Objectives
- List equipment decontamination procedures
- Include an "Analytical Methods/Quality Assurance Summary Table" specifying:
    - Matrix type
    - Number or frequency of samples to be collected per matrix
    - Number of field and trip blanks per matrix
    - Analytical parameters to be measured per matrix
    - Analytical methods to be used per matrix with minimum reporting limits
    - Number and type of matrix spike and matrix spike duplicate samples to be collected
    - Number and type of duplicate samples to be collected
    - Sample preservation to be used per analytical method and sample matrix
    - Sample container volume and type to be used per analytical method and sample matrix
    - Sample holding time to be used per analytical method and sample matrix
- Specify Category B laboratory data deliverables and preparation of a DUSR

Specific Guidelines for PFAS

- Include in the text that sampling for PFAS will take place
- Include in the text that PFAS will be analyzed by EPA Method 1633
- Include the list of PFAS compounds to be analyzed (*PFAS Analyte List*)
- Include the laboratory SOP for PFAS analysis
- List the minimum method-achievable Reporting Limits for PFAS
    - Reporting Limits should be less than or equal to:
        - Aqueous – 2 ng/L (ppt)
        - Solids – 0.5 µg/kg (ppb)
- Include the laboratory Method Detection Limits for the PFAS compounds to be analyzed
-
- Include detailed sampling procedures
    - Precautions to be taken
    - Pump and equipment types
    - Decontamination procedures
    - Approved materials only to be used
- Specify that regular ice only will be used for sample shipment
- Specify that equipment blanks should be collected at a minimum frequency of 1 per day per site for each matrix

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Appendix B - Sampling Protocols for PFAS in Soils, Sediments and Solids

General

The objective of this protocol is to give general guidelines for the collection of soil, sediment and other solid samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Containers

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in to contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel spoon
- stainless steel bowl
- steel hand auger or shovel without any coatings

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Sampling is often conducted in areas where a vegetative turf has been established. In these cases, a pre-cleaned trowel or shovel should be used to carefully remove the turf so that it may be replaced at the conclusion of sampling. Surface soil samples (e.g. 0 to 6 inches below surface) should then be collected using a pre-cleaned, stainless steel spoon. Shallow subsurface soil samples (e.g. 6 to ~36 inches below surface) may be collected by digging a hole using a pre-cleaned hand auger or shovel. When the desired subsurface depth is reached, a pre-cleaned hand auger or spoon shall be used to obtain the sample.

When the sample is obtained, it should be deposited into a stainless steel bowl for mixing prior to filling the sample containers. The soil should be placed directly into the bowl and mixed thoroughly by rolling the material into the middle until the material is homogenized. At this point the material within the bowl can be placed into the laboratory provided container.

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Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A soil log or sample log shall document the location of the sample/borehole, depth of the sample, sampling equipment, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

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Appendix C - Sampling Protocols for PFAS in Monitoring Wells

General

The objective of this protocol is to give general guidelines for the collection of groundwater samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including plumbers tape and sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel inertia pump with HDPE tubing
- peristaltic pump equipped with HDPE tubing and silicone tubing
- stainless steel bailer with stainless steel ball
- bladder pump (identified as PFAS-free) with HDPE tubing

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Monitoring wells should be purged in accordance with the sampling procedure (standard/volume purge or low flow purge) identified in the site work plan, which will determine the appropriate time to collect the sample. If sampling using standard purge techniques, additional purging may be needed to reduce turbidity levels, so samples contain a limited amount of sediment within the sample containers. Sample containers that contain sediment may cause issues at the laboratory, which may result in elevated reporting limits and other issues during the sample preparation that can compromise data usability. Sampling personnel should don new nitrile gloves prior to sample collection due to the potential to contact PFAS containing items (not related to the sampling equipment) during the purging activities.

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Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Collect one equipment blank per day per site and minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers
- Additional equipment blank samples may be collected to assess other equipment that is utilized at the monitoring well
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A purge log shall document the location of the sample, sampling equipment, groundwater parameters, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

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Appendix D - Sampling Protocols for PFAS in Surface Water

General

The objective of this protocol is to give general guidelines for the collection of surface water samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel cup

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Where conditions permit, (e.g. creek or pond) sampling devices (e.g. stainless steel cup) should be rinsed with site medium to be sampled prior to collection of the sample. At this point the sample can be collected and poured into the sample container.

If site conditions permit, samples can be collected directly into the laboratory container.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

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Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Collect one equipment blank per day per site and minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A sample log shall document the location of the sample, sampling equipment, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

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Appendix E - Sampling Protocols for PFAS in Private Water Supply Wells

General

The objective of this protocol is to give general guidelines for the collection of water samples from private water supply wells (with a functioning pump) for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Drinking water samples collected using this protocol are intended to be analyzed for PFAS by EPA Method 537, 537.1, 533, or ISO Method 25101. The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials (e.g. plumbers tape), including sample bottle cap liners with a PTFE layer.

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Locate and assess the pressure tank and determine if any filter units are present within the building. Establish the sample location as close to the well pump as possible, which is typically the spigot at the pressure tank. Ensure sampling equipment is kept clean during sampling as access to the pressure tank spigot, which is likely located close to the ground, may be obstructed and may hinder sample collection.

Prior to sampling, a faucet downstream of the pressure tank (e.g., washroom sink) should be run until the well pump comes on and a decrease in water temperature is noted which indicates that the water is coming from the well. If the homeowner is amenable, staff should run the water longer to purge the well (15+ minutes) to provide a sample representative of the water in the formation rather than standing water in the well and piping system including the pressure tank. At this point a new pair of nitrile gloves should be donned and the sample can be collected from the sample point at the pressure tank.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

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Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- If equipment was used, collect one equipment blank per day per site and a minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers.
- A field reagent blank (FRB) should be collected at a rate of one per 20 samples. The lab will provide a FRB bottle containing PFAS free water and one empty FRB bottle. In the field, pour the water from the one bottle into the empty FRB bottle and label appropriately.
- Request appropriate data deliverable (Category B) and an electronic data deliverable
- For sampling events where multiple private wells (homes or sites) are to be sampled per day, it is acceptable to collect QC samples at a rate of one per 20 across multiple sites or days.

Documentation

A sample log shall document the location of the private well, sample point location, owner contact information, sampling equipment, purge duration, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate and available (e.g. well construction, pump type and location, yield, installation date). Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

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Appendix F - Sampling Protocols for PFAS in Fish

This appendix contains a copy of the current SOP developed by the Division of Fish and Wildlife (DFW) entitled "General Fish Handling Procedures for Contaminant Analysis" (Ver. 8). This SOP should be followed when collecting fish for contaminant analysis. Note, however, that the Bureau of Ecosystem Health will not be supplying bags or tags. All supplies are the responsibility of the collector

Procedure Name: General Fish Handling Procedures for Contaminant Analysis

Number: FW-005

Purpose: This procedure describes data collection, fish processing and delivery of fish collected for contaminant monitoring. It contains the chain of custody and collection record forms that should be used for the collections.

Organization: Environmental Monitoring Section
Bureau of Ecosystem Health
Division of Fish and Wildlife (DFW)
New York State Department of Environmental Conservation (NYSDEC)
625 Broadway
Albany, New York 12233-4756

Version: 8

Previous Version Date: 21 March 2018

Summary of Changes to this Version: Updated bureau name to Bureau of Ecosystem Health. Added direction to list the names of all field crew on the collection record. Minor formatting changes on chain of custody and collection records.

Originator or Revised by: Wayne Richter, Jesse Becker

Date: 26 April 2019

Quality Assurance Officer and Approval Date: Jesse Becker, 26 April 2019

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NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

GENERAL FISH HANDLING PROCEDURES FOR CONTAMINANT ANALYSES

A. Original copies of all continuity of evidence (i.e., Chain of Custody) and collection record forms must accompany delivery of fish to the lab. A copy shall be directed to the Project Leader or as appropriate, Wayne Richter. All necessary forms will be supplied by the Bureau of Ecosystem Health. Because some samples may be used in legal cases, it is critical that each section is filled out completely. Each Chain of Custody form has three main sections:

   1. The top box is to be filled out **and signed** by the person responsible for the fish collection (e.g., crew leader, field biologist, researcher). This person is responsible for delivery of the samples to DEC facilities or personnel (e.g., regional office or biologist).

   2. The second section is to be filled out **and signed** by the person responsible for the collections while being stored at DEC, before delivery to the analytical lab. This may be the same person as in (1), but it is still required that they complete the section. Also important is the **range of identification numbers** (i.e., tag numbers) included in the sample batch.

   3. Finally, the bottom box is to record any transfers between DEC personnel and facilities. Each subsequent transfer should be **identified, signed, and dated**, until laboratory personnel take possession of the fish.

B. The following data are required on each **Fish Collection Record** form:

   1. Project and Site Name.

   2. DEC Region.

   3. All personnel (and affiliation) involved in the collection.

   4. Method of collection (gill net, hook and line, etc.)

   5. Preservation Method.

C. The following data are to be taken on each fish collected and recorded on the **Fish Collection Record** form:

   1. Tag number - Each specimen is to be individually jaw tagged at time of collection with a unique number. Make sure the tag is turned out so that the number can be read without opening the bag. Use tags in sequential order. For small fish or composite samples place the tag inside the bag with the samples. The Bureau of Ecosystem Health can supply the tags.

   2. Species identification (please be explicit enough to enable assigning genus and species). Group fish by species when processing.

   3. Date collected.

   4. Sample location (waterway and nearest prominent identifiable landmark).

   5. Total length (nearest mm or smallest sub-unit on measuring instrument) and weight (nearest g or

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smallest sub-unit of weight on weighing instrument). Take all measures as soon as possible with calibrated, protected instruments (e.g. from wind and upsets) and prior to freezing.

6. Sex - fish may be cut enough to allow sexing or other internal investigation, but do not eviscerate. Make any incision on the right side of the belly flap or exactly down the midline so that a left-side fillet can be removed.

D. General data collection recommendations:

1. It is helpful to use an ID or tag number that will be unique. It is best to use metal striped bass or other uniquely numbered metal tags. If uniquely numbered tags are unavailable, values based on the region, water body and year are likely to be unique: for example, R7CAY11001 for Region 7, Cayuga Lake, 2011, fish 1. If the fish are just numbered 1 through 20, we have to give them new numbers for our database, making it more difficult to trace your fish to their analytical results and creating an additional possibility for errors.

2. Process and record fish of the same species sequentially. Recording mistakes are less likely when all fish from a species are processed together. Starting with the bigger fish species helps avoid missing an individual.

3. If using Bureau of Ecosystem Health supplied tags or other numbered tags, use tags in sequence so that fish are recorded with sequential Tag Numbers. This makes data entry and login at the lab and use of the data in the future easier and reduces keypunch errors.

4. Record length and weight as soon as possible after collection and before freezing. Other data are recorded in the field upon collection. An age determination of each fish is optional, but if done, it is recorded in the appropriate “Age” column.

5. For composite samples of small fish, record the number of fish in the composite in the Remarks column. Record the length and weight of each individual in a composite. All fish in a composite sample should be of the same species and members of a composite should be visually matched for size.

6. Please submit photocopies of topographic maps or good quality navigation charts indicating sampling locations. GPS coordinates can be entered in the Location column of the collection record form in addition to or instead for providing a map. These records are of immense help to us (and hopefully you) in providing documented location records which are not dependent on memory and/or the same collection crew. In addition, they may be helpful for contaminant source trackdown and remediation/control efforts of the Department.

7. When recording data on fish measurements, it will help to ensure correct data recording for the data recorder to call back the numbers to the person making the measurements.

E. Each fish is to be placed in its own individual plastic bag. For small fish to be analyzed as a composite, put all of the fish for one composite in the same bag but use a separate bag for each composite. It is important to individually bag the fish to avoid difficulties or cross contamination when processing the fish for chemical analysis. Be sure to include the fish’s tag number inside the bag, preferably attached to the fish with the tag number turned out so it can be read. Tie or otherwise secure the bag closed. **The Bureau of Ecosystem Health will supply the bags.** If necessary, food grade bags may be procured from a suitable vendor (e.g., grocery store). It is preferable to redundantly label each bag with a manila tag tied between the knot and the body of the bag. This tag should be labeled with the project name, collection location, tag number, collection date, and fish species. If scales are collected, the scale envelope should be labeled with

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the same information.

F. Groups of fish, by species, are to be placed in one large plastic bag per sampling location. **The Bureau of Ecosystem Health will supply the larger bags.** Tie or otherwise secure the bag closed. Label the site bag with a manila tag tied between the knot and the body of the bag. The tag should contain: project, collection location, collection date, species and **tag number ranges**. Having this information on the manila tag enables lab staff to know what is in the bag without opening it.

G. Do not eviscerate, fillet or otherwise dissect the fish unless specifically asked to. If evisceration or dissection is specified, the fish must be cut along the exact midline or on the right side so that the left side fillet can be removed intact at the laboratory. If filleting is specified, the procedure for taking a standard fillet (SOP PREPLAB 4) must be followed, including removing scales.

H. Special procedures for PFAS: Unlike legacy contaminants such as PCBs, which are rarely found in day to day life, PFAS are widely used and frequently encountered. Practices that avoid sample contamination are therefore necessary. While no standard practices have been established for fish, procedures for water quality sampling can provide guidance. The following practices should be used for collections when fish are to be analyzed for PFAS:

No materials containing Teflon.
No Post-it notes.
No ice packs; only water ice or dry ice.
Any gloves worn must be powder free nitrile.
No Gore-Tex or similar materials (Gore-Tex is a PFC with PFOA used in its manufacture).
No stain repellent or waterproof treated clothing; these are likely to contain PFCs.
Avoid plastic materials, other than HDPE, including clipboards and waterproof notebooks.
Wash hands after handling any food containers or packages as these may contain PFCs.
Keep pre-wrapped food containers and wrappers isolated from fish handling.
Wear clothing washed at least six times since purchase.
Wear clothing washed without fabric softener.
Staff should avoid cosmetics, moisturizers, hand creams and similar products on the day of sampling as many of these products contain PFCs (Fujii et al. 2013). Sunscreen or insect repellent should not contain ingredients with “fluor” in their name. Apply any sunscreen or insect repellent well downwind from all materials. Hands must be washed after touching any of these products.

I. All fish must be kept at a temperature <45° F (<8° C) immediately following data processing. As soon as possible, freeze at -20° C ± 5° C. Due to occasional freezer failures, daily freezer temperature logs are required. The freezer should be locked or otherwise secured to maintain chain of custody.

J. In most cases, samples should be delivered to the Analytical Services Unit at the Hale Creek field station. Coordinate delivery with field station staff and send copies of the collection records, continuity of evidence forms and freezer temperature logs to the field station. For samples to be analyzed elsewhere, non-routine collections or other questions, contact Wayne Richter, Bureau of Ecosystem Health, NYSDEC, 625 Broadway, Albany, New York 12233-4756, 518-402-8974, or the project leader about sample transfer. Samples will then be directed to the analytical facility and personnel noted on specific project descriptions.

K. A recommended equipment list is at the end of this document.

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF FISH AND WILDLIFE
FISH COLLECTION RECORD

Project and Site Name _____ DEC Region _____

Collections made by (include all crew) _____

Sampling Method: □Electrofishing □Gill netting □Trap netting □Trawling □Seining □Angling □Other _____

Preservation Method: □Freezing □Other _____ Notes (SWFDB survey number): _____

FOR LAB USE ONLY- LAB ENTRY NO.	COLLECTION OR TAG NO.	SPECIES	DATE TAKEN	LOCATION	AGE	SEX &/OR REPROD. CONDIT	LENGTH ( )	WEIGHT ( )	REMARKS

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richter: revised 2011, 5/7/15, 10/4/16, 3/20/17; becker: 3/23/17, 4/26/19

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CHAIN OF CUSTODY

I, _____, of _____ collected the
(Print Name) (Print Business Address)

following on _____, 20____ from _____
(Date) (Water Body)

in the vicinity of _____
(Landmark, Village, Road, etc.)

Town of _____, in _____ County.

Item(s) _____

_____

Said sample(s) were in my possession and handled according to standard procedures provided to me prior to collection. The sample(s) were placed in the custody of a representative of the New York State Department of Environmental Conservation on _____, 20_____.

_____ _____
Signature Date

I, _____, received the above mentioned sample(s) on the date specified and assigned identification number(s) _____ to the sample(s). I have recorded pertinent data for the sample(s) on the attached collection records. The sample(s) remained in my custody until subsequently transferred, prepared or shipped at times and on dates as attested to below.

_____ _____
Signature Date

SECOND RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
THIRD RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
FOURTH RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
RECEIVED IN LABORATORY BY (Print Name)	TIME & DATE	REMARKS
SIGNATURE	UNIT	
LOGGED IN BY (Print Name)	TIME & DATE	ACCESSION NUMBERS
SIGNATURE	UNIT	

richter: revised 21 April 2014; becker: 23 March 2017, 26 April, 2019

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NOTICE OF WARRANTY

By signature to the chain of custody (reverse), the signatory warrants that the information provided is truthful and accurate to the best of his/her ability. The signatory affirms that he/she is willing to testify to those facts provided and the circumstances surrounding the same. Nothing in this warranty or chain of custody negates responsibility nor liability of the signatories for the truthfulness and accuracy of the statements provided.

HANDLING INSTRUCTIONS

On day of collection, collector(s) name(s), address(es), date, geographic location of capture (attach a copy of topographic map or navigation chart), species, number kept of each species, and description of capture vicinity (proper noun, if possible) along with name of Town and County must be indicated on reverse.

Retain organisms in manila tagged plastic bags to avoid mixing capture locations. Note appropriate information on each bag tag.

Keep samples as cool as possible. Put on ice if fish cannot be frozen within 12 hours. If fish are held more than 24 hours without freezing, they will not be retained or analyzed.

Initial recipient (either DEC or designated agent) of samples from collector(s) is responsible for obtaining and recording information on the collection record forms which will accompany the chain of custody. This person will seal the container using packing tape and writing his signature, the time and the date across the tape onto the container with indelible marker. Any time a seal is broken, for whatever purpose, the incident must be recorded on the Chain of Custody (reason, time, and date) in the purpose of transfer block. Container then is resealed using new tape and rewriting signature, with time and date.

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EQUIPMENT LIST

Scale or balance of appropriate capacity for the fish to be collected.

Fish measuring board.

Plastic bags of an appropriate size for the fish to be collected and for site bags.

Individually numbered metal tags for fish.

Manila tags to label bags.

Small envelops, approximately 2” x 3.5”, if fish scales are to be collected.

Knife for removing scales.

Chain of custody and fish collection forms.

Clipboard.

Pens or markers.

Paper towels.

Dish soap and brush.

Bucket.

Cooler.

Ice.

Duct tape.

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Appendix G – PFAS Analyte List

Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonic acids	Perfluorobutanesulfonic acid	PFBS	375-73-5
	Perfluoropentanesulfonic acid	PFPeS	2706-91-4
	Perfluorohexanesulfonic acid	PFHxS	355-46-4
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	Perfluorooctanesulfonic acid	PFOS	1763-23-1
	Perfluorononanesulfonic acid	PFNS	68259-12-1
	Perfluorodecanesulfonic acid	PFDS	335-77-3
	Perfluorododecanesulfonic acid	PFDoS	79780-39-5
Perfluoroalkyl carboxylic acids	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	Perfluoroheptanoic acid	PFHpA	375-85-9
	Perfluorooctanoic acid	PFOA	335-67-1
	Perfluorononanoic acid	PFNA	375-95-1
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUnA	2058-94-8
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTrDA	72629-94-8
	Perfluorotetradecanoic acid	PFTeDA	376-06-7
Per- and Polyfluoroether carboxylic acids	Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6
	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4
	Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1
	Perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5
	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6
Fluorotelomer sulfonic acids	4:2 Fluorotelomer sulfonic acid	4:2-FTS	757124-72-4
	6:2 Fluorotelomer sulfonic acid	6:2-FTS	27619-97-2
	8:2 Fluorotelomer sulfonic acid	8:2-FTS	39108-34-4
Fluorotelomer carboxylic acids	3:3 Fluorotelomer carboxylic acid	3:3 FTCA	356-02-5
	5:3 Fluorotelomer carboxylic acid	5:3 FTCA	914637-49-3
	7:3 Fluorotelomer carboxylic acid	7:3 FTCA	812-70-4
Perfluorooctane sulfonamides	Perfluorooctane sulfonamide	PFOSA	754-91-6
	N-methylperfluorooctane sulfonamide	NMeFOSA	31506-32-8
	N-ethylperfluorooctane sulfonamide	NEtFOSA	4151-50-2
Perfluorooctane sulfonamidoacetic acids	N-methylperfluorooctane sulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethylperfluorooctane sulfonamidoacetic acid	N-EtFOSAA	2991-50-6
Perfluorooctane sulfonamide ethanols	N-methylperfluorooctane sulfonamidoethanol	MeFOSE	24448-09-7
	N-ethylperfluorooctane sulfonamidoethanol	EtFOSE	1691-99-2

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Group	Chemical Name	Abbreviation	CAS Number
Ether sulfonic acids	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (F-53B Major)	9Cl-PF3ONS	756426-58-1
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (F-53B Minor)	11Cl-PF3OUdS	763051-92-9
	Perfluoro(2-ethoxyethane) sulfonic acid	PFEESA	113507-82-7

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Appendix H - Data Review Guidelines for Analysis of PFAS in Non-Potable Water and Solids

General

These guidelines are intended to be used for the validation of PFAS using EPA Method 1633 for projects within the Division of Environmental Remediation (DER). Data reviewers should understand the methodology and techniques utilized in the analysis. Consultation with the end user of the data may be necessary to assist in determining data usability based on the data quality objectives in the Quality Assurance Project Plan. A familiarity with the laboratory's Standard Operating Procedure may also be needed to fully evaluate the data. If you have any questions, please contact DER's Quality Assurance Officer, Dana Barbarossa, at dana.barbarossa@dec.ny.gov.

Preservation and Holding Time

Samples should be preserved with ice to a temperature of less than 6°C upon arrival at the lab. The holding time is 28 days to extraction for aqueous and solid samples. The time from extraction to analysis for aqueous samples is 28 days and 40 days for solids.

Temperature greatly exceeds 6ºC upon arrival at the lab*	Use professional judgement to qualify detects and non-detects as estimated or rejected
Holding time exceeding 28 days to extraction	Use professional judgement to qualify detects and non-detects as estimated or rejected if holding time is grossly exceeded

*Samples that are delivered to the lab immediately after sampling may not meet the thermal preservation guidelines. Samples are considered acceptable if they arrive on ice or an attempt to chill the samples is observed.

Initial Calibration

The initial calibration should contain a minimum of six standards for linear fit and six standards for a quadratic fit. The relative standard deviation (RSD) for a quadratic fit calibration should be less than 20%.

The low-level calibration standard should be within 50% - 150% of the true value, and the mid-level calibration standard within 70% - 130% of the true value.

%RSD >20%	J flag detects and UJ non detects

Continuing Calibration Verification

Continuing calibration verification (CCV) checks should be analyzed at a frequency of one per ten field samples. If CCV recovery is very low, where detection of the analyte could be in question, ensure a low level CCV was analyzed and use to determine data quality.

CCV recovery <70 or >130%	J flag results

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Blanks

There should be no detections in the method blanks above the reporting limits. Equipment blanks, field blanks, rinse blanks etc. should be evaluated in the same manner as method blanks. Use the most contaminated blank to evaluate the sample results.

Blank Result	Sample Result	Qualification
Any detection	<Reporting limit	Qualify as ND at reporting limit
Any detection	>Reporting Limit and >10x the blank result	No qualification
>Reporting limit	>Reporting limit and <10x blank result	J+ biased high

Field Duplicates

A blind field duplicate should be collected at rate of one per twenty samples. The relative percent difference (RPD) should be less than 30% for analyte concentrations greater than two times the reporting limit. Use the higher result for final reporting.

RPD >30%	Apply J qualifier to parent sample

Lab Control Spike

Lab control spikes should be analyzed with each extraction batch or one for every twenty samples. In the absence of lab derived criteria, use 70% - 130% recovery criteria to evaluate the data.

Recovery <70% or >130% (lab derived criteria can also be used)	Apply J qualifier to detects and UJ qualifier to non detects

Matrix Spike/Matrix Spike Duplicate

One matrix spike and matrix spike duplicate should be collected at a rate of one per twenty samples. Use professional judgement to reject results based on out of control MS/MSD recoveries.

Recovery <70% or >130% (lab derived criteria can also be used)	Apply J qualifier to detects and UJ qualifier to non detects of parent sample only
RPD >30%	Apply J qualifier to detects and UJ qualifier to non detects of parent sample only

Extracted Internal Standards (Isotope Dilution Analytes)

Problematic analytes (e.g. PFBA, PFPeA, fluorotelomer sulfonates) can have wider recoveries without qualification. Qualify corresponding native compounds with a J flag if outside of the range.

Recovery <50% or >150%	Apply J qualifier
Recovery <25% or >150% for poor responding analytes	Apply J qualifier
Isotope Dilution Analyte (IDA) Recovery <10%	Reject results

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Signal to Noise Ratio

The signal to noise ratio for the quantifier ion should be at least 3:1. If the ratio is less than 3:1, the peak is discernable from the baseline noise and symmetrical, the result can be reported. If the peak appears to be baseline noise and/or the shape is irregular, qualify the result as tentatively identified.

Reporting Limits

If project-specific reporting limits were not met, please indicate that in the report along with the reason (e.g. over dilution, dilution for non-target analytes, high sediment in aqueous samples).

Peak Integrations

Target analyte peaks should be integrated properly and consistently when compared to standards. Ensure branched isomer peaks are included for PFAS where standards are available. Inconsistencies should be brought to the attention of the laboratory or identified in the data review summary report.

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Appendix B

NYSDOH Indoor Air Quality Questionnaire and Building Inventory Form

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NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name _____ Date/Time Prepared _____

Preparer's Affiliation _____ Phone No._____

Purpose of Investigation_____

1. OCCUPANT:

Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

Number of Occupants/persons at this location _____ Age of Occupants _____

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	Other: _____

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If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:_____

If multiple units, how many? _____

If the property is commercial, type?

Business Type(s) _____

Does it include residences (i.e., multi-use)? Y / N If yes, how many? _____

Other characteristics:

Number of floors_____ Building age_____

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

_____
_____
_____

Airflow near source

_____
_____
_____

Outdoor air infiltration

_____
_____
_____

Infiltration into air ducts

_____
_____
_____

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5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other _____
c. Basement floor:	concrete	dirt	stone	other _____
d. Basement floor:	uncovered	covered	covered with _____	
e. Concrete floor:	unsealed	sealed	sealed with _____	
f. Foundation walls:	poured	block	stone	other _____
g. Foundation walls:	unsealed	sealed	sealed with _____	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: _____(feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

_____

_____

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6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other _____

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: _____

Boiler/furnace located in:	Basement	Outdoors	Main Floor	Other_____
Air conditioning:	Central Air	Window units	Open Windows	None

Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

_____

_____

_____

_____

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	_____
1st Floor	_____
2nd Floor	_____
3rd Floor	_____
4th Floor	_____

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / N

b. Does the garage have a separate heating unit? Y / N / NA

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / NA Please specify_____

d. Has the building ever had a fire? Y / N When?_____

e. Is a kerosene or unvented gas space heater present? Y / N Where? _____

f. Is there a workshop or hobby/craft area? Y / N Where & Type? _____

g. Is there smoking in the building? Y / N How frequently? _____

h. Have cleaning products been used recently? Y / N When & Type? _____

i. Have cosmetic products been used recently? Y / N When & Type? _____

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j. Has painting/staining been done in the last 6 months? Y / N Where & When? _____

k. Is there new carpet, drapes or other textiles? Y / N Where & When? _____

l. Have air fresheners been used recently? Y / N When & Type? _____

m. Is there a kitchen exhaust fan? Y / N If yes, where vented?_____

n. Is there a bathroom exhaust fan? Y / N If yes, where vented?_____

o. Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / N When & Type?_____

Are there odors in the building? Y / N
If yes, please describe: _____

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? _____

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: _____
Is the system active or passive? Active/Passive

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9. WATER AND SEWAGE

Water Supply:	Public Water	Drilled Well	Driven Well	Dug Well	Other: _____
Sewage Disposal:	Public Sewer	Septic Tank	Leach Field	Dry Well	Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: _____

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

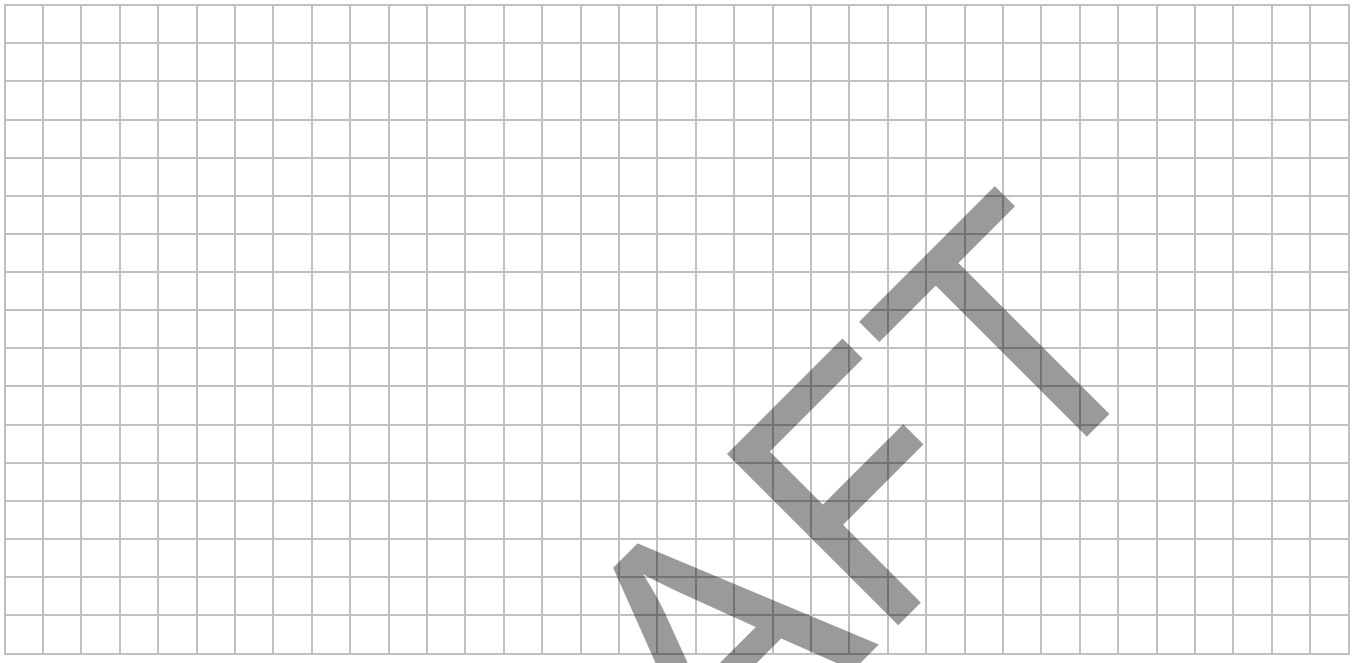
c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

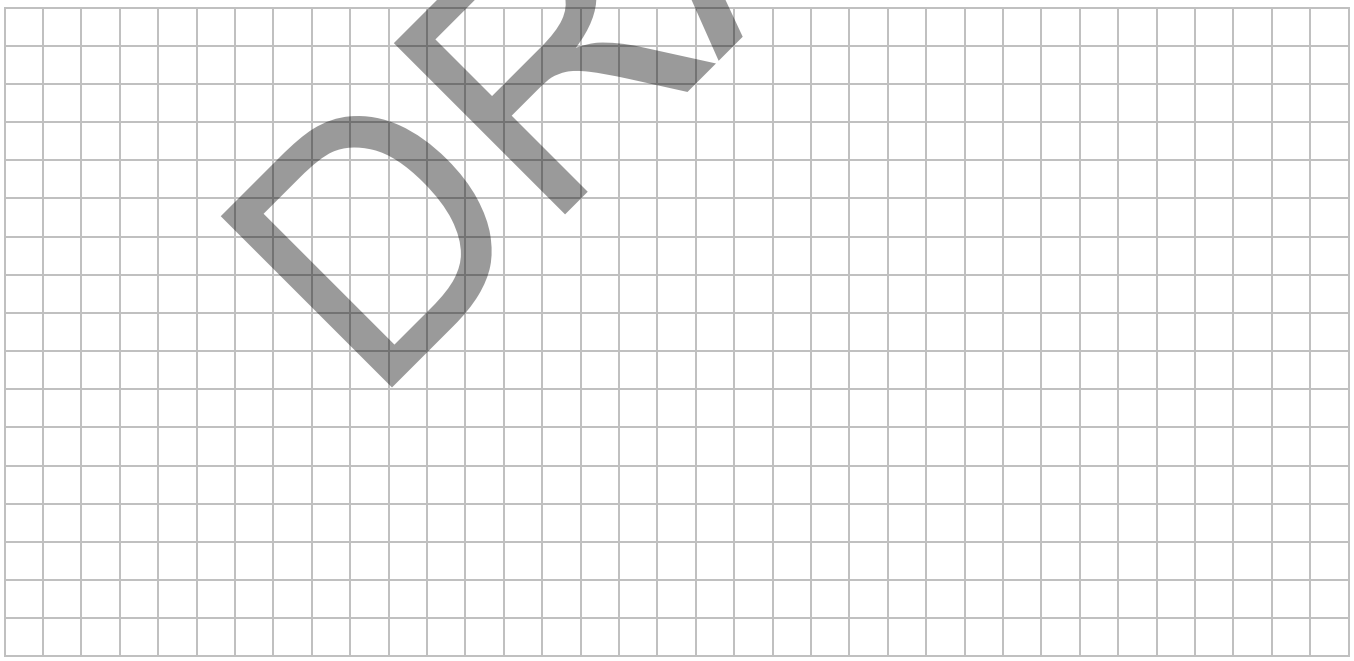
11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:



First Floor:

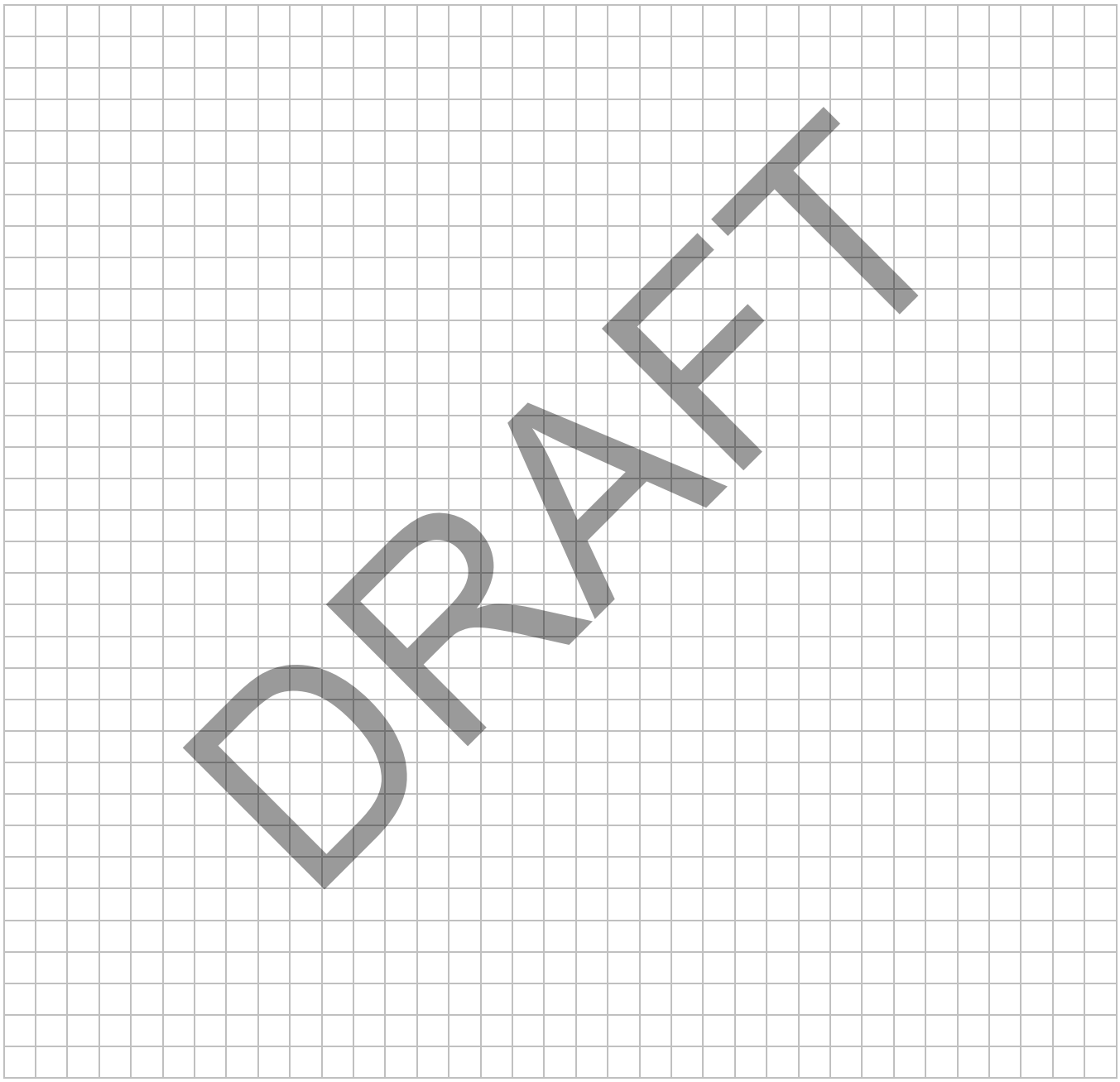


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12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: _____

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N

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* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

Appendix G

FWRIA Decision Key

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Appendix 3C Fish and Wildlife Resources Impact Analysis Decision Key		If YES Go to:	If NO Go to:
1.	Is the site or area of concern a discharge or spill event? Yes	13	2
2.	Is the site or area of concern a point source of contamination to the groundwater which will be prevented from discharging to surface water? Soil contamination is not widespread, or if widespread, is confined under buildings and paved areas.	13	3
3.	Is the site and all adjacent property a developed area with buildings, paved surfaces and little or no vegetation?	4	9
4.	Does the site contain habitat of an endangered, threatened or special concern species?	Section 3.10.1	5
5.	Has the contamination gone off-site?	6	14
6.	Is there any discharge or erosion of contamination to surface water or the potential for discharge or erosion of contamination?	7	14
7.	Are the site contaminants PCBs, pesticides or other persistent, bioaccumulable substances?	Section 3.10.1	8
8.	Does contamination exist at concentrations that could exceed ecological impact SCGs or be toxic to aquatic life if discharged to surface water?	Section 3.10.1	14
9.	Does the site or any adjacent or downgradient property contain any of the following resources? i. Any endangered, threatened or special concern species or rare plants or their habitat ii. Any DEC designated significant habitats or rare NYS Ecological Communities iii. Tidal or freshwater wetlands iv. Stream, creek or river v. Pond, lake, lagoon vi. Drainage ditch or channel vii. Other surface water feature viii. Other marine or freshwater habitat ix. Forest x. Grassland or grassy field xi. Parkland or woodland xii. Shrubby area xiii. Urban wildlife habitat xiv. Other terrestrial habitat	11	10
10.	Is the lack of resources due to the contamination?	3.10.1	14
11.	Is the contamination a localized source which has not migrated and will not migrate from the source to impact any on-site or off-site resources?	14	12
12.	Does the site have widespread surface soil contamination that is not confined under and around buildings or paved areas?	Section 3.10.1	12
13.	Does the contamination at the site or area of concern have the potential to migrate to, erode into or otherwise impact any on-site or off-site habitat of endangered, threatened or special concern species or other fish and wildlife resource? (See #9 for list of potential resources. Contact DEC for information regarding endangered species.) No	Section 3.10.1	14
14.	No Fish and Wildlife Resources Impact Analysis needed.		

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