Remedial Investigation Work Plan
BCP No. C442068

Location:

Taylor Apartments II

Site No. C442068

125 River Street, Buildings 3 and 4

Troy, New York 12180

Prepared for:

Taylor II LLC

230 Wyoming Avenue

Kingston, PA 18704

LaBella Project No. 2241307

August 2025

Revised November 21, 2025

LaBella
Powered by partnership.

5 McCrea Hill Road | Ballston Spa, NY 12020 | p 518-885-5383

www.labellapc.com

TABLE OF CONTENTS PAGE

FIGURES

APPENDICES

ACRONYMS

AOC	Area of Concern
ASP	Analytical Services Protocol
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
bgs	Below Ground Surface
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
CHFM	Contaminated Historic Fill Material
COC	Chain-of-Custody
COPC	Contaminants of Potential Concern
CSM	Conceptual Site Model
CUSCO	Commercial Use Soil Cleanup Objective
DER	Division of Environmental Remediation
DER-10	Technical Guidance for Site Investigation and Remediation
DNAPL	Dense Non-Aqueous Phase Liquid
DUSR	Data Usability Summary Report
EDD	Electronic Data Deliverable
ELAP	Environmental Laboratory Approval Program
EIMS	Environmental Information Management System
ESA	Environmental Site Assessment
FSP	Field Sampling Plan
GPR	Ground Penetrating Radar
GQS	Groundwater Quality Standard
GV	Guidance Value
HASP	Health & Safety Plan
HHEA	Human Health Exposure Assessment
HDPE	High Density Polyethylene
IDW	Investigation Derived Waste
IRM	Interim Remedial Measure
LaBella	LaBella Associates, DPC
LNAPL	Light Non-Aqueous Phase Liquid
MDL	Method Detection Limit
NYCRR	New York Codes, Rules, & Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PBS	Petroleum Bulk Storage
PCB	Polychlorinated Biphenyl
PFAS	Per- and Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PG	Professional Geologist
PID	Photo-ionization Detector
PPE	Personal Protective Equipment
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QEP	Qualified Environmental Professional

REC	Recognized Environmental Condition
RI	Remedial Investigation
RIR	Remedial Investigation Report
RIWP	Remedial Investigation Work Plan
RRUSCO	Restricted-Residential Use Soil Cleanup Objective
RUSCO	Residential Use Soil Cleanup Objective
SCG	Standards, Criteria, & Guidance
SCO	Soil Cleanup Objective
SDG	Sample Delivery Group
SI	Subsurface Investigation
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
UUSCO	Unrestricted Use Soil Cleanup Objective
VOC	Volatile Organic Compound

CERTIFICATION

I, Caroline Bardwell, PG, certify that I am currently a NYS licensed Professional Geologist/Qualified Environmental Professional (QEP) and that this Remedial Investigation Work Plan (RIWP) was prepared in accordance with applicable statutes and regulations and in substantial conformance with the New York State Department of Environmental Conservation's (NYSDEC's) Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10) and DER Green Remediation (DER-31).

11/21/25

Caroline Bardwell, PG
NYS PG #001180
LaBella Associates, D.P.C

Date

1.0 INTRODUCTION

LaBella Associates, D.P.C. ("LaBella") has prepared the following Remedial Investigation Work Plan (RIWP) to outline procedures and a scope of work intended to evaluate potential human exposure pathways and impacts to the environment, and to delineate impacted areas of concern at 125 River Street, City of Troy, County of Rensselaer, New York, hereinafter referred to as the "Site." (Refer to Figure 1A – Site Location Map).

The Site was entered into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) on March 27, 2025, and BCP No. C442068 has been assigned to the Site. LaBella is submitting this RIWP on behalf of Taylor II LLC, the BCP Volunteer. The objective of the Remedial Investigation (RI) is to define the nature and extent of contamination at the Site and evaluate if on-site impacts are migrating off-site. The activities in this RIWP will be conducted consistent with NYSDEC Division of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation, issued May 3, 2010.

1.1 Site Description

The Site is a 2.95-acre portion of a 3.23-acre parcel identified as City of Troy Tax Parcel No. Section 100.68, Block 1, Lot 1.1. As shown on Figure 1B, the Tax Parcel is split into three sections which are separated by the Congress Street Bridge and Front Street. A small triangular piece of land between Front Street and the Hudson River is not included in the BCP Site. Also, a piece of land beneath the bridge is not included in the BCP Site. Site improvements consist of two vacant (as of May 2025), 9-story apartment buildings (i.e., Taylor Apartments Buildings 3 and 4), a community/garage building, maintained yard areas, and paved parking areas. The Building 3 and 4 areas are separated by Ferry Street and the Congress Street Bridge approaches. The Site is situated in an urban area with mixed commercial, residential, and institutional uses. Current zoning for the Site is Downtown Mixed-Use (MU-1).

Adjoining properties consist of mixed-use buildings to the north, Taylor Apartments I and Russell Sage College to the east (across River Street), an undeveloped parcel and synagogue to the south, and the Hudson River to the west (across Front Street). The property is serviced by municipal water and sewer. As shown on the Site Location Map on Figure 1A, the Site slopes to the west toward the river. The Site and adjoining parcels are shown on Figure 1B (Tax Map).

The Volunteer plans to redevelop the Site. The current Taylor Apartments Buildings 3 and 4 will be demolished and replaced with Taylor Apartments II, which will consist of two, 6-story affordable housing buildings with 2,000 square feet of first-floor commercial space. A rendering and a proposed Site Plan for the development are attached as Figure 2A and 2B, respectively. The overall development project footprint and proposed site buildings are depicted on Figure 3A, in relation to the designated BCP Site boundary, the property boundary, and the municipal tax parcel boundary. The development project footprint includes NYS Department of Transportation (NYSDOT) easement areas, which are not currently included in the BCP Site. A Site Survey depicting existing conditions and easement areas is provided as Figure 3B. Figure 3B also identifies two subparcels (noted as M17 and M19) that were purchased back from NYSDOT by Troy Housing Authority, the site owner, in an agreement dated August 26, 2025, pending final deed issuance.

1.2 Site History

The Site was developed with various commercial and industrial facilities from at least 1893 until it was redeveloped with the current John P. Taylor Apartments buildings in 1954, which included combination of numerous separate tax parcels, building demolition, and reconfiguration of roadways. Evidence of fill material site-wide was reported in geotechnical borings from the original 1951 construction drawings. Historical utilization of the Site included several coal storage facilities and warehouses, a railroad spur, power

station, blacksmith, upholstery, pork packing, cigar factory, upholstery, blacksmith, automotive paint and supply, scrap and junkyards, engine repair and printing facilities.

1.3 Previous Investigations

LaBella completed the following previous environmental assessments and investigations:

- Phase I Environmental Site Assessment (March 2024)
- Focused Phase II Environmental Site Assessment (April 2024)
- Limited Phase II Environmental Site Assessment (August 2024)

Soil analytical results primarily identified several semi-volatile organic compounds (SVOCs) and metals at concentrations above NYSDEC Part 375 Soil Cleanup Objectives (SCOs) in the vicinity of Buildings 3 and 4. Groundwater quality was not evaluated. A summary of the findings, along with abbreviated versions of prior reports can be found in Appendix A.

1.4 Site Geology

According to the NYSDOT Geotechnical Design Manual Chapter 3 NYS Geology, the region is located within the Hudson-Mohawk Lowland Physiographic Province. The USGS NYS Region Geologic Map indicates the area is underlain by the Canajoharie Shale formation (Middle Ordovician). Historical geotechnical data included in the 1951 construction drawing set as well as more recent geotechnical data generated during pre-development efforts identified the presence of shale bedrock in and around the subject site at depths ranging from approximately 15 to 30 feet below grade, and groundwater was intermittently observed in geotechnical borings at depths ranging from approximately 10 to 25 feet below grade. The topography of the Site slopes to the west-southwest; shallower bedrock and groundwater were generally encountered on the western portion of the Site with deeper bedrock and groundwater on the eastern portion of the Site.

A review of the Surficial Geologic Map of New York indicates that surficial soils in the area are mapped as Lacustrine silt and clay. Based on a review of available information, including area topography, groundwater flow in the vicinity of the Site is expected to be westerly towards the Hudson River. Municipal water supply is provided by the City of Troy. Based on previous environmental and geotechnical soil boring findings, on-Site unconsolidated geology may consist of variable texture sand with widespread presence of historic fill materials including gravel and wood, asphalt, metallic debris, concrete, ash, and/or brick fragments.

1.5 Site Topography and Features

The topography of the Site slopes to the west-southwest, towards the Hudson River. The central nominal site elevation is approximately 15-feet above mean sea level (ft amsl) with the grade along the eastern and western Site boundaries ranging from 10-25 ft amsl and 10-15 ft amsl, respectively. The elevation of the Hudson River to the west across Front Street is at approximately 6 ft amsl. The eastern side of the property appears to have been substantially filled for structural support of the Congress Street Bridge approaches. The Site is developed with two vacant apartment buildings, paved parking areas and access drives, and concrete walkways covering a large portion of the parcel. The apartment buildings were reportedly vacated as of May 2025. A Site Survey map of the Site is depicted in Figure 3.

1.6 Current and Future Site Use

The Volunteer plans to remediate the Site as necessary and redevelop it by constructing a 325,000 square-foot, mixed-use development with two, six-story buildings containing a total of 308 affordable housing units located above sub-grade parking areas. Building 2 (current Building 3 area) will include approximately 2,000 square feet of ground-floor retail. The project requires the demolition of the current Taylor Apartments

Buildings 3 and 4, which together contain 125 public housing units that will be fully replaced in the new development. Tenants have vacated the buildings and relocated to the northern adjoining Taylor I property, retaining the right to return to Taylor II upon completion. A rendering and Site Plan of the proposed development are included as Figure 2A and 2B, respectively.

2.0 STANDARDS, CRITERIA, AND GUIDANCE

Soil SCGs: Soil sample results will be compared to:

- NYCRR Subpart 375-6 Unrestricted Use SCOs (UUSCOs);
- NYCRR Subpart 375-6 Restricted-Residential Use SCOs (RRUSCOs);
- NYCRR Subpart 375-6 Protection of Groundwater Soil Cleanup Objectives (PGSCOs), as applicable;
- CP-51 Supplemental Soil Cleanup Objectives (SSCOs), as applicable.

Groundwater SCGs: Groundwater sample results will be compared to:

- NYSDEC Part 703 Groundwater Standards; and,
- Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (AWQS) and Guidance Values.

Soil Vapor SCGs: The State of New York does not have standards, criteria, or guidance values for VOCs in soil vapor; however, the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York provides decision matrices based on concurrent evaluation of indoor air with sub-slab vapor. The guidance will be used as a reference point for VOC concentrations in both soil vapor and sub-slab vapor.

3.0 GOAL AND SCOPE OF REMEDIAL INVESTIGATION

The goal of the proposed RI is to investigate and characterize "the nature and extent of the contamination at and/or emanating from the brownfield site," per Environmental Conservation Law (ECL) Article 27, Title 14 (Brownfield Cleanup Program). The findings of the investigation will be evaluated and used to guide remedial options and/or additional investigation, if warranted. The appropriate remediation approach will be determined after the RI and a Remedial Alternatives Analysis (RAA) are approved. The remediation goals may include NYSDEC BCP Track 1, 2 or Track 4, as appropriate.

The objectives of the RI will be accomplished using a variety of investigative methods, including:

- Borehole clearance
- Surface soil investigation
- Subsurface soil investigation
- Groundwater investigation
- Soil vapor/sub-slab vapor investigation
- Qualitative Human Health Exposure Assessment (HHEA)
- Fish and Wildlife Impact Assessment (FWIA)

Proposed investigation locations are depicted on Figures 4A and 4B. No indoor air sampling will be completed on the Site as the current buildings are vacant and will be demolished prior to reconstruction.

Modifications to this scope of work may be required in the following instances: 1) due to Site conditions and/or equipment restrictions; 2) if unexpected contamination is detected and additional analytical data is needed to characterize the Site; and 3) to confirm that impacts are adequately characterized and delineated

in compliance with NYCRR Part 375 regulations and applicable investigation guidance documents (e.g., DER-10). NYSDEC and NYSDOH will be contacted to obtain approval for these modifications.

3.1 Site Preparation Activities

The Current on-Site structures are planned for demolition, but the RI will be conducted prior to this demolition. Prior removal of sections of wrought iron fencing may be necessary to allow access for drilling equipment. It is understood that building cleanout efforts and fence removal are not considered BCP activities under the Brownfield Cleanup Agreement (BCA) if not related to investigation or remedial site preparation. No investigative or remediation activities can be performed until the RIWP is approved, unless otherwise accepted by NYSDEC.

3.2 Borehole Clearance

A Dig Safely New York/UDIG stakeout will be conducted at the Site to locate any subsurface utilities in the areas where the subsurface assessment and delineation will take place and where utilities come onto the private property. Additionally, all borehole locations will be pre-cleared using a combination of ground penetrating radar (GPR) survey and electromagnetic (EM) survey prior to ground intrusive fieldwork. The GPR method is based upon the transmission of repetitive, radio-frequency EM pulses into the subsurface. Anomalies detected during the GPR/EM surveys will be marked on the ground and mapped. The results of the GPR/EM survey may necessitate relocation of borings during the RI. Although there are limitations to GPR/EM technology, they remain a widely accepted method of pre-clearing locations on private property.

3.3 Soil Investigation

3.3.1 *Surface Soil Sampling and Analysis*

Discrete surface soil samples will be collected from vegetated areas to evaluate the potential for human exposure as well as the suitability of the soil cover for compliance with SCGs. Based on the anticipated future use of the Site for "Restricted Residential" purposes, a total of 12 representative samples will be collected from the top 0 to 2 inches (0-6 inches for VOCs) focused on current/future greenspace locations. Select samples may require collection from soil borings if the area is not vegetated. Field sampling methods are outlined in the site-specific QAPP, which can be found in Appendix B. No composite samples are proposed. Proposed surface soil sample locations are depicted on Figures 4A and 4B.

All surface soil samples will be analyzed for full suite parameters and emerging contaminants, as follows:

- Target Compound List (TCL) and NYSDEC Commissioner Policy (CP-51) list VOCs including up to 20 tentatively identified compounds (TICs) using United States Environmental Protection Agency (USEPA) Method 8260;
- TCL and CP-51 list SVOCs plus TICs USEPA Method 8270;
- Target Analyte List (TAL) Metals by USEPA Methods 6010;
- Mercury by USEPA Method 7471;
- Hexavalent Chromium by USEPA Method 7196;
- Cyanide by USEPA Method 9012;
- Polychlorinated biphenyls (PCBs) by USEPA Method 8082;
- Pesticides by USEPA Method 8081;
- Herbicides by USEPA Method 8151;
- 1,4-dioxane using USEPA Method 8270 SIM; and
- Per- and Polyfluoroalkyl Substances (PFAS) using USEPA Method 1633A.

3.3.2 *Soil Boring Installation*

To investigate potential subsurface soil contamination, soil borings will be installed in the locations depicted on Figure 4A (Building 3) and Figure 4B (Building 4). Borings are grouped into the following categories:

- Combination Soil Boring/Overburden Monitoring Well Locations (16 locations);
- Targeted Direct Push Soil Borings (12 locations); and
- Basement/Interior Borings (8 locations).

The following sections provide further details regarding the methodology for installation and sampling of the proposed borings. The field geologist will document soil types, changes in lithology, and the presence of impacts/wastes, if any are encountered, at each sample location. Soils will be screened continuously to the boring termination depth for total organic vapor (TOV) concentration using a photoionization detector (PID) equipped with a 11.7 electron volt (eV) bulb, and for visual and olfactory indications of environmental impacts (e.g., staining and odor). Specific sampling methodologies are outlined in the QAPP in Appendix B.

3.3.2.1 Combination Soil Boring/Monitoring Well Locations

A total of sixteen (16) soil borings will be installed using 4.25-inch hollow stem augers advanced via a Geoprobe® 7822DT (combination direct push and rotary drilling rig). These borings will be installed to collect data representative of sitewide and perimeter (upgradient and downgradient) conditions. Borings will be converted to conventional 2-inch overburden monitoring wells to meet NYSDEC's data quality objectives with respect to assessment of SVOCs and metals in groundwater. Soil borings will be advanced at least 5 feet into the groundwater table, unless refusal is reached, and the top of the well screen will extend at least 2 feet above the observed water table. Where impacts are observed, the boring will be advanced to approximately 1 to 2 feet below a clean endpoint, if feasible, to identify vertical limits. Based on review of historical geological data, the total depth of borings/wells is not expected to exceed 30 ft bgs; however, drilling of these borings will extend into groundwater or the top of bedrock, if beyond 30 ft bgs.

3.3.2.2 Targeted Direct Push Soil Borings

A total of twelve targeted (12) soil borings will be installed utilizing a Geoprobe® direct-push drill rig outfitted with 5-foot coring barrel and dedicated acetate liners. These borings will be installed primarily to collect data regarding the nature of historic fill materials on-Site and evaluate concentrations of SVOCs and metals in soils that may be associated with that material. Continuous soil sampling is planned. Depths of these targeted soil borings are not anticipated to exceed 15 ft bgs.

3.3.2.3 Basement Soil Borings

A total of eight (8) interior soil borings will be installed in the basements of the existing Building 3 and 4 building to gather representative data of conditions beneath the buildings. These locations were selected based on observations made during the July 3, 2025, site visit with NYSDEC and NYSDOH and focused on interior floor drains and/or areas of prior use of petroleum/chemical products. A concrete core drill will be used to penetrate the slab and then soil will be sampled using either portable Geoprobe® tooling or a hand auger with a narrower diameter than the core. One sample will be selected for laboratory analysis from each of the 8 basement borings at a depth of approximately 5 feet below the slab base (or shallower based on field observations) and submitted for analysis as outlined in Section 3.3.3.

3.3.3 *Subsurface Soil Sampling and Analysis*

To evaluate on-Site soil quality, subsurface soil samples will be collected in accordance with sampling methods outlined in the QAPP in Appendix B. The number of samples collected during the RI may vary based on field conditions.

The following table illustrates the subsurface soil sampling strategy:

Boring Category	Sampling Intervals	Analytical Methods
Soil Boring/Well Combination (16)	a) Greatest degree of impacts b) One foot beneath extent of impacts and/or at the water table	-Two (2) central boring/well locations as well as one (1) upgradient and one (1) downgradient location at both Building 3 and Building 4 areas will be tested for emerging contaminants in addition to the "full suite" parameters* -Remaining borings/wells will be tested for full suite parameters* only
Targeted Direct Push Soil Boring (12)	a) Within fill unit b) One foot beneath fill and/or at water table at 50% of targeted borings	SVOCs and Metals
Basement Borings (8)	One sample at each of the 8 borings will be collected from approximately 5 ft below the slab base, unless field observations indicate shallower collection is warranted	All samples for "full suite" parameters*; plus emerging contaminants at 50% of locations (at least two at Building 3 and two at Building 4)

*Samples targeted for "full suite" parameters include the following laboratory analyses:

- TCL and CP-51 VOCs plus TICs using USEPA Method 8260;
- TCL and CP-51 list SVOCs including up to 20 TICs using USEPA Method 8270;
- Target Analyte List Metals by USEPA Methods 6010 and 7471/7470 (Mercury)
- Hexavalent Chromium by USEPA Method 7196;
- Cyanide by USEPA Method 9014;
- PCBs by USEPA Method 8082;
- Pesticides by USEPA Method 8081; and
- Herbicides by USEPA Method 8151.

In addition to the full suite parameters, "emerging contaminants" 1,4-dioxane and PFAS will selectively be included for laboratory analysis at approximately 50% of the Soil Boring/Well combination locations to screen for their presence, as noted in the preceding table: at two (2) central boring/well locations as well as one (1) upgradient and one (1) downgradient location at both Building 3 and Building 4 areas. Similarly, 50% of the Basement Boring soil samples will be analyzed for 1,4-dioxane and PFAS, including two (2) samples from Building 3 and two (2) samples from Building 4.

The specific list of PFAS compounds included in these analyses are based on the April 2023 Sampling for 1,4-Dioxane and PFAS Under NYSDEC's Part 375 Remedial Programs guidance document issued by the NYSDEC. The reporting limits for 1,4-dioxane will be no higher than 0.35 ug/L in groundwater and 0.1 mg/kg in soil. The reporting limits for PFAS will be no higher than 2 ng/L in groundwater and 1 ug/kg in soil.

Soils from borings will be continuously screened in the field for visible impairment, olfactory indications of impairment, and/or indication of detectable VOCs with a PID collectively referred to as "evidence of impairment." Field screening findings will be recorded in soil boring logs and included in the RI Report.

Samples collected for VOC analysis will be collected directly from the split-spoon sample or acetate liner utilizing terra-core sampling devices or equivalent. Soil samples collected for VOC analysis will be collected via USEPA Method 5035.

3.4 Groundwater Investigation

At locations where groundwater or an appropriate water-bearing zone is observed in the overburden, up to sixteen (16) soil borings will be converted to permanent groundwater monitoring wells to evaluate overburden groundwater quality across the Site. Groundwater samples will be collected from each of the new monitoring wells. The monitoring well installation and groundwater sampling procedures will be conducted in accordance with NYSDEC DER-10 guidance. Proposed monitoring well locations are shown on Figure 4A (Building 3) and Figure 4B (Building 4). If access to the proposed monitoring well location at subparcel M19, recently purchased by the site owner from NYSDOT, is somehow revoked, the well will be relocated.

3.4.1 *Overburden Monitoring Well Installation and Development*

The proposed monitoring wells will be constructed using 10-ft of 2-in-diameter polyvinyl chloride (PVC) riser pipe attached to schedule-40, 0.010-slot, 2-in diameter PVC screen. Each monitoring well will be installed so that the well screen straddles the observed water table. The well annulus around the screen will be backfilled with clean quartz well sand to approximately 2-ft above the top of the screen. A minimum 2-ft bentonite seal will be installed above the sand, followed by installation of a cement-bentonite mixture to seal the annular space above the bentonite seal. The wells will be finished with locking, standpipe casings. Prior to redevelopment of the property, most or all wells are likely to be properly decommissioned to avoid damage to the wells during demolition and construction activities. Pending results of the RI and review and approval from the NYSDEC, a number of the wells are anticipated to be reinstalled for long-term monitoring activities following construction, if necessary.

After waiting at least 24 hours following well installation, monitoring wells will be developed by purging a minimum of three (3) well volumes or until dry using a dedicated bailer or pump (depending on well volumes). As per the QAPP, development water will be containerized for off-site disposal, pending analysis.

3.4.2 *Groundwater Sampling and Analysis*

Two rounds of groundwater sampling will be completed on the Site, approximately three months apart.

3.4.2.1 First Round Groundwater Sampling Event

Following development, new wells will be allowed to recharge for a minimum of 1 week prior to sampling. During the first-round groundwater sampling event, samples will be collected from each newly-installed monitoring well and analyzed for the following parameters:

- TCL and CP-51 VOCs plus TICs using USEPA Method 8260;
- TCL and CP-51 list SVOCs plus TICs USEPA Method 8270;
- TAL List Metals by USEPA Methods 6010 (total and dissolved),
- Hexavalent Chromium via Method USEPA Method 7196;
- Mercury by USEPA Method 7471/7470 (both total and dissolved);
- Cyanide by USEPA Method SM4500;
- PCBs by USEPA Method 8082A;
- Pesticides by USEPA Method 8081A; and
- Herbicides by USEPA Method 8151A.

In addition to the planned analyses described above, eight (8) groundwater samples will be analyzed for the emerging contaminants listed below. These locations will coincide with the eight (8) soil boring/monitoring well locations where soil samples were analyzed for emerging contaminants (50% of the combination

boring/well locations), including one (1) upgradient, one (1) downgradient and two (2) centrally-located wells at both Building 3 and Building 4 areas:

- 1,4-dioxane using USEPA Method 8270 SIM.
- PFAS using Modified USEPA Method 1633A.

Samples for dissolved metals analysis will be lab filtered prior to preservation. In the event that low recharge rates do not provide enough volume to collect all full suite parameters, samples will be collected in the order in which the parameters are listed and up to 24 hours will be allotted for further recharge so that remaining parameter samples can be collected.

3.4.2.2 Second Round Groundwater Sampling Event

Groundwater samples collected during the second round of groundwater sampling may be tested for a reduced suite of analytes depending on the results of the 1st round of sampling based on NYSDEC review of data and approval of reductions.

3.4.3 *Monitoring Well Survey and Synoptic Gauging*

LaBella will survey vertical location of the top of casing of new monitoring wells. This data will be used with the groundwater well gauging data to prepare a sample location plan and a groundwater contour map depicting the elevation of the water table across the Site for each groundwater monitoring event. Vertical control will be established by surveying performed relative to North American Vertical Datum of 1988 (NAVD88). Elevations of the top of monitoring well casings and protective well casings will be surveyed to the nearest 0.01 foot. A synoptic gauging event will be performed to document static water levels. All wells will be gauged during each sample event.

3.5 Soil Vapor/Sub-Slab Vapor Investigation

A soil vapor/sub-slab vapor investigation will be completed as part of the RI field activities. At Building 3, two (2) soil vapor and two (2) sub-slab vapor samples will be collected and at Building 4, one (1) soil vapor and one (1) sub-slab vapor sample will be collected. Proposed sampling locations are shown on Figure 4A (Building 3) and Figure 4B (Building 4). Soil vapor samples will be collected from temporary soil vapor points installed within the footprint of the proposed buildings and sub-slab vapor samples will be collected through the concrete basement slabs of the existing buildings. No indoor air samples will be collected; however, an outdoor ambient air sample will be collected at both Building 3 and Building 4 to establish background levels.

3.5.1 *Sampling Point Installation*

Sub-slab soil vapor samples will be collected at interior locations within the current Building 3 and Building 4 basement areas. The concrete floor slabs will be breached using a concrete drill to create a narrow diameter void approximately 18 inches deep within the sub-base materials and a Vapor Pin® will be installed to collect samples. Exterior soil vapor sampling points will be created using direct push (Geoprobe®) technology to extend borings to approximate depths of 5 to 6 ft bgs. HDPE tubing will be attached to a stainless-steel mesh soil vapor implant and placed immediately above the bottom of the boring. The implant and tubing will be surrounded with clean silica sand, and the top of each borehole will be sealed with hydrated bentonite clay to prevent the infiltration of surface air. The space around the sampling point will be enclosed and sealed (with a metal hemisphere and clay) in order to introduce helium tracer gas into the area surrounding the probe point for leak detection purposes. Helium will be introduced into the enclosure and a helium detector will be utilized to determine whether helium from the surface has penetrated the seal and reached the sample tubing.

3.5.2 *Vapor Sampling and Analysis*

Soil vapor samples will be collected from each of the temporary soil vapor points and sub-slab vapor samples will be collected from the sub-slab vapor points. Prior to sample collection, a pump will be utilized to purge standing air from the tubing and the soil interval. At least three borehole and tubing volumes will be purged prior to sample collection at a rate not exceeding 0.2 liters per minute. Following purging, sub-slab vapor samples will be collected over an 8-hour period using 6-liter stainless steel, laboratory-supplied and batch-certified clean Summa® canisters equipped with 8-hour calibrated flow controllers so that equipment is not left unsecured overnight and vulnerable to tampering. For each sampling canister, the pre- and post-sample canister pressure, start and stop times, and location of each sampling point will be recorded. Samples will be transported via laboratory courier or shipped under proper chain-of-custody procedures to a NYSDOH ELAP certified laboratory for VOC analysis via USEPA Method TO-15.

3.6 Quality Assurance/Quality Control

Activities completed at the Site will be managed under LaBella's site-specific QAPP, provided in Appendix B. The QAPP outlines field methodologies and protocols for sample collection and analysis in greater detail. Quality Assurance/Quality Control (QA/QC) sampling will include collection and analysis of one set of QA/QC samples for every twenty samples collected for each matrix type (i.e., soil and groundwater) and parameter group, including one blind duplicate sample, one matrix spike/matrix spike duplicate (MS/MSD) for each, and one equipment blank. The MS/MSD will be analyzed for the same parameters as that of the field samples. One (1) trip blank will be analyzed per shipment of groundwater samples for VOC analysis.

The samples will be delivered under Chain of Custody procedures to an ELAP-certified laboratory. The laboratory will provide a NYSDEC ASP Category B Deliverable data package. A Data Usability Summary Report (DUSR) will be completed by a third-party data validator for all ASP-B laboratory data packages per DER-10. The laboratory will provide EQUIS EDDs for all samples.

3.7 Qualitative Human Health Exposure Evaluation

A qualitative human health exposure assessment (HHEA) will be completed for the Site, characterizing the current and future exposure setting, identifying exposure pathways, and evaluating contaminant fate and transport. The qualitative HHEA will be performed consistently with DER-10, Appendix 3B and Section 3.3 (b) 8 and will consider all available Site data.

3.8 Fish and Wildlife Resources Impact Analysis (FWRIA)

Consistent with DER-10 Appendix 3C, a Fish and Wildlife Resources Impact Analysis Decision Key will be completed. Site characterization will be conducted to identify fish and wildlife resources within 0.25 miles of the Site in accordance with DER-10 Section 3.10.1. Identified resources will be depicted on a map to be included in the RI Report. Contaminant migration pathways and contaminants of ecological concern will be identified, and conclusions will be made as to the potential adverse effects to fish and wildlife. If the results of the characterization indicate the need for further assessment, a FWRIA Part 2: Ecological Impact Assessment will be conducted in accordance with DER-10 Section 3.10.2.

3.9 Equipment Decontamination

Dedicated sampling equipment will be used whenever possible to minimize the need for decontamination. Specific equipment decontamination methods are outlined in the QAPP in Appendix B. Drilling and sampling equipment will be decontaminated to prevent cross-contamination, with drilling tools cleaned in a specific zone and sampling tools cleaned near the sampling location on plastic sheeting. Field personnel involved in

these procedures must wear appropriate personal protective equipment (PPE). The following equipment will be decontaminated prior to use at each location:

- Drilling equipment (e.g. augers, drill rods, casing, hand tools);
- Sampling tools such as trowels, knives, split-spoons, bowls, shovels and hand augers;
- Meters and probes (excluding air monitoring devices like PIDs and particulate meters).

Equipment will be decontaminated using laboratory-grade detergent (e.g. Alconox®), tap water scrub, and distilled water rinse.

3.10 Housekeeping and Investigation-Derived Waste

Investigation-derived waste (IDW) generated during RI activities will be containerized, stored, and disposed of in accordance with DER-10, Chapter 3, Section 3.3, Subdivision (e) and the attached QAPP (Appendix B). Good housekeeping practices will be followed to prevent leaving contaminated material on the ground. Waste materials that will be generated during the implementation of this RI Work Plan include soil cuttings as well as development and purge water from groundwater investigation efforts. These waste materials will be containerized in 55-gallon drums and stored securely at the Site for later characterization and disposal upon completion of RI field activities, but not more than 120 days after generation. Drums containing soil cuttings and/or groundwater will be labeled as "Waste Material" and will also indicate the specific source(s) of soil and/or groundwater that they contain.

4.0 REMEDIAL INVESTIGATION REPORT PREPARATION

4.1 Monthly Progress Reports

Monthly progress reports will be prepared and submitted by the 10th of the following month to the NYSDEC and NYSDOH project managers. The monthly progress reports will generally include the following:

- A summary of activities completed during the month and progress made;
- Photographic documentation;
- Identification of samples collected;
- Locations and references to a site map for completed activities;
- A summary of complaints with relevant details, including contact information;
- A summary of Community Air Monitoring Plan (CAMP) findings, including elevated concentrations and response actions, if any;
- An explanation of notable site conditions; and,
- A list of anticipated work for the following period.

Monthly reports are not intended to notify the NYSDEC of emergencies (e.g., accident, spill), request changes to the RIWP, or communicate other sensitive or time-critical information. However, such conditions will also be included in the reports. Emergency conditions and changes to the RIWP will be communicated directly to the NYSDEC Project Manager.

4.2 Remedial Investigation Report

Following completion of the RI and receipt of analytical data, a Remedial Investigation Report (RIR) will be prepared in accordance with the applicable requirements of DER-10 Section 3.14. The report will include:

- A summary of the site history (and previous investigations in Appendices);
- A description of site conditions;

- Sampling methodology and field observations;
- An evaluation of the results and findings;
- Changes made to the approved work plan during the implementation of the approved work plan;
- CAMP data;
- Validated analytical data and DUSRs; and
- Conclusions and recommendations for any further assessment (if warranted).

The RI report will seek to:

- Define the nature and extent of contamination at the Site;
- Determine surface and subsurface characteristics of the Site:
- Identify if source areas are present on the Site;
- Identify potential receptors and unacceptable exposure pathways for human health and the environment);
- Characterize the Site sufficiently to evaluate potential threats to human health and the environment and determine whether remedial action is necessary;
- Produce site data in sufficient quantity and quality to develop an offsite environmental/human health exposure assessment; and
- Produce site data in sufficient quantity and quality to develop remedial alternatives, if warranted.

The report will include soil boring and well construction logs, groundwater sampling logs, tabulated analytical results, figures, and laboratory data packages. The tabulated analytical results will be organized in table format and include sample location, media sampled, sample depth, field/laboratory identification numbers, analytical results and the applicable Standards, Criteria, and Guidance (SCGs) pertaining to the Site and contaminants of concern for comparison. The report will include scaled figures showing the locations of soil borings, monitoring wells, and surface soil samples; sample concentrations above SCGs for each media; groundwater elevation contours and flow direction; and groundwater contaminant iso-concentration contours.

Pursuant to DER-10 Section 3.2.2, the RI will include preparation of a Conceptual Site Model (CSM) to develop a general understanding of the Site and evaluate potential human exposure pathways and impacts to the environment. This CSM will consider all available Site data, Site history and context, including the factors that influence distribution, and fate and transport of remedy-relevant constituents, as well as potential receptors and pathways for exposure. These factors include potential sources and release mechanisms, the physical-chemical mechanisms and processes that control fate and transport, and the likely exposure pathways that govern the potential for adverse effects to human and ecological receptors. The degree to which, as well as the route by which, contaminants migrate is dependent on the physical characteristics of the site and the type and distribution of contaminants.

An electronic copy of the RIR will be submitted to the NYSDEC and the NYSDOH via each department's file transfer service (NYSDEC uses IBM Aspera as its large file transfer mechanism). Analytical results of the investigation will be submitted in the electronic data delivery (EDD) format through the NYSDEC Environmental Information Management System (EIMS) and uploaded into EQuIS.

5.0 HEALTH AND SAFETY

Field operations will be performed in accordance with the health and safety requirements to be provided in the site-specific Health and Safety Plan (HASP). The HASP is included as Appendix C. The HASP outlines the requirements for training, medical surveillance, daily tailgate meetings, emergency response, and accident and injury reporting. Activity Hazard Analyses (AHAs) have been completed for identified work activities

planned for the investigation. The LaBella Field Team Leader will be responsible for implementing the HASP, completing the daily tailgate safety meetings and performing necessary Industrial Hygiene (IH) monitoring as specified in the HASP.

6.0 COMMUNITY AIR MONITORING PLAN

The NYSDOH Generic Community Air Monitoring Plan (CAMP) will be used to provide a measure of protection for the downwind community from potential airborne contaminants as a direct result of the RI investigation. The CAMP is included as Appendix D. Upwind and downwind CAMP air monitoring will be conducted for fugitive dust and organic vapors during ground intrusive activities (e.g. exterior drilling efforts). Surface soil sample collection is considered non-intrusive if performed separately from intrusive activities such as test pitting or soil borings. The CAMP will be implemented and executed in accordance with 29 Code of Federal Regulations (CFR) 1910.120(h), the NYSDOH Generic CAMP, and DER-10 Appendix 1A and 1B. As requested, CAMP data will be submitted electronically to NYSDEC and NYSDOH on a daily basis, will include sketches/drawings of CAMP locations for the day, and will be provided as an Appendix to the RIR.

7.0 GREEN AND SUSTAINABLE REMEDIATION

NYSDEC Green Remediation Program Policy DER-31 (2010) defines Green Remediation as "the practice of considering all environmental effects of remedy implementation and incorporating options to minimize the environmental footprint of cleanup actions." This RIWP endeavors to employ Green and Sustainable Remediation (GSR) best management practices during the RI where practicable, including the following:

7.1 Planning & Strategy

- Consider the current and future use of the Site in investigation and remedial plans to include alternatives to excessive soil excavation and costly offsite disposal.
- Limit/reduce laboratory analysis to focus on potential contaminants of concern (COCs) where feasible and allow for reduction in analytical sampling.
- Evaluate opportunities to reuse IDW on-site rather than transport/dispose off-site once characterization and profiling is understood.
- Limit the amount of waste generated and identify destination facilities that are in proximity to the project Site.

7.2 Field Mobilization & Operational Efficiency

- Consolidate field mobilizations to combine work tasks on the same or consecutive days where possible.
- Use of local LaBella and subcontractor personnel to conduct investigation activities.
- Limit the need for use of fuel to address cold weather-related conditions.
- Avoid use of oversized equipment and vehicles.
- Limit vehicle and equipment idling during downtime. Vehicles will be shut off when not in use for more than 5 minutes consistent with 6 NYCRR Part 217 Motor Vehicle Emissions, Subpart 217-3 Idling Prohibition for Heavy Duty Vehicles.

7.3 Sampling & Equipment Optimization

- Use of Geoprobe® 7822DT combination direct push and rotary drilling rig in lieu of a larger, conventional rotary drill rig to efficiently accomplish construction of Department-requested 2-inch diameter auger monitoring wells with HSA methodology.

- Use of direct push technology to install select soil borings in locations where a monitoring well is not required, in lieu of HSA techniques. This effort will reduce the duration of the drilling event, minimize water consumption for decontamination, and reduce the amount of potential IDW generated from soil cuttings/decontamination water during the RI and the amount of time, energy, and fuel required to collect samples.

7.4 Sustainability & Green Practices

- Use greener or safer products where possible and recycle appropriate clean materials.
- Limit the use of disposable materials, where feasible.
- Employ efforts to minimize stormwater runoff and sediment erosion.
- Store and transmit data and documents electronically where possible.

Additional efforts will be made to incorporate GSR strategies as the Site progresses through remedial phases, particularly during the evaluation of remedial alternatives, remedy selection, and remedial planning processes.

8.0 PROJECT SCHEDULE

The fieldwork will begin as soon as possible following approval of this RIWP by NYSDEC, including completion of the public comment period. Appendix E presents an estimated schedule for the proposed RI and reporting. If the schedule changes, it will be updated and submitted to NYSDEC.

Implementation of the RI Work Plan is anticipated to begin within 60 days after NYSDEC approval of this work plan. The initial soil and groundwater investigation fieldwork is anticipated to require approximately 30-45 days to complete. This timeframe does not include receipt of all laboratory analytical results, data validation, or the second round of groundwater monitoring. The RI Report will be submitted within two (2) months of receipt of DUSRs. All data will also be submitted in the NYSDEC-approved EDD format.

All work performed pursuant to the RIWP will be performed in accordance with applicable federal, state, and local statues, regulations and guidance documents.

9.0 REFERENCES

NYSDEC, 2006, 6NYCRR Part 375, Environmental Remediation Programs.

NYSDEC, December 2006, 6 NYCRR Part 375 Subpart 6, Remedial Program Soil Cleanup Objectives.

NYSDEC, DER Program Policy, May 2010, DER-10, Technical Guidance for Site Investigation and Remediation.

NYSDEC, DER, April 2023, Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs.

NYSDEC, DER Program Policy, August 2010, DER-31, Green Remediation (revised January 2011).

USEPA, Office of Land and Emergency Management, August 2009, Principles for Greener Cleanups.

USEPA, Office of Land and Emergency Management, September 2016, Green Remediation Best Management Practices – Site Investigation and Environmental Monitoring.

FIGURES

LEGEND:

- BCP SITE BOUNDARY LINE
- MUNICIPAL TAX PARCEL BOUNDARY
- RUSSELL SAGE COLLEGE
- TROY HOUSING AUTHORITY TAYLOR I
- BETH TEPHILAH SYNAGOGUE
- APPROXIMATE AREA EXCLUDED FROM BCP SITE

MAP REFERENCE

TAX MAP ENTITLED "CITY OF TROY (SECTION 100.68)" PREPARED BY RENSSELAER COUNTY, LAST REVISED 08/23/2022

0 50 100 150

ORIGINAL SCALE 1"= 50'

LaBella
Powered by partnership
4 British American Boulevard
Latham, NY 12110
518-439-8235
labellapc.com
C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

ISSUED FOR: REVISED RIWP - NYSDEC SUBMITTAL

DRAWING NAME: **TAX MAP**

DRAWN BY:	DATE:	PROJECT NO.:
ZH	11/20/2025	2241307

PROJECT NAME: TAYLOR APARTMENTS II - BCP SITE C442068
125 RIVER STREET, CITY OF TROY, RENSSELAER COUNTY, NY 12180

DRAWING NUMBER: **FIGURE 1B**

Drawing Name: B:\GLOBAL\Projects\Pennrose Mgmt Co\2241307 - Taylor Apartments Bldgs 3 and 4\06_Drawings\Environmental\RIWP Figures - ZH\RIWP FIGURES.dwg
Xref's Attached: TITLEBLOCK_LBA - 11x17 - ANSI B; TITLEBLOCK_LBA-30x42-ARCH E1
Date Printed: Nov 20, 2025, 10:36am

REFERENCE

SHEET NO. T-001.00 ENTITLED "BUILDING 2 - COVER SHEET" PREPARED BY DATTNER ARCHITECTS D.P.C., LAST REVISED 07/26/2024

LaBella
Powered by partnership

4 British American Boulevard
Latham, NY 12110
518-439-8235
labellapc.com

C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

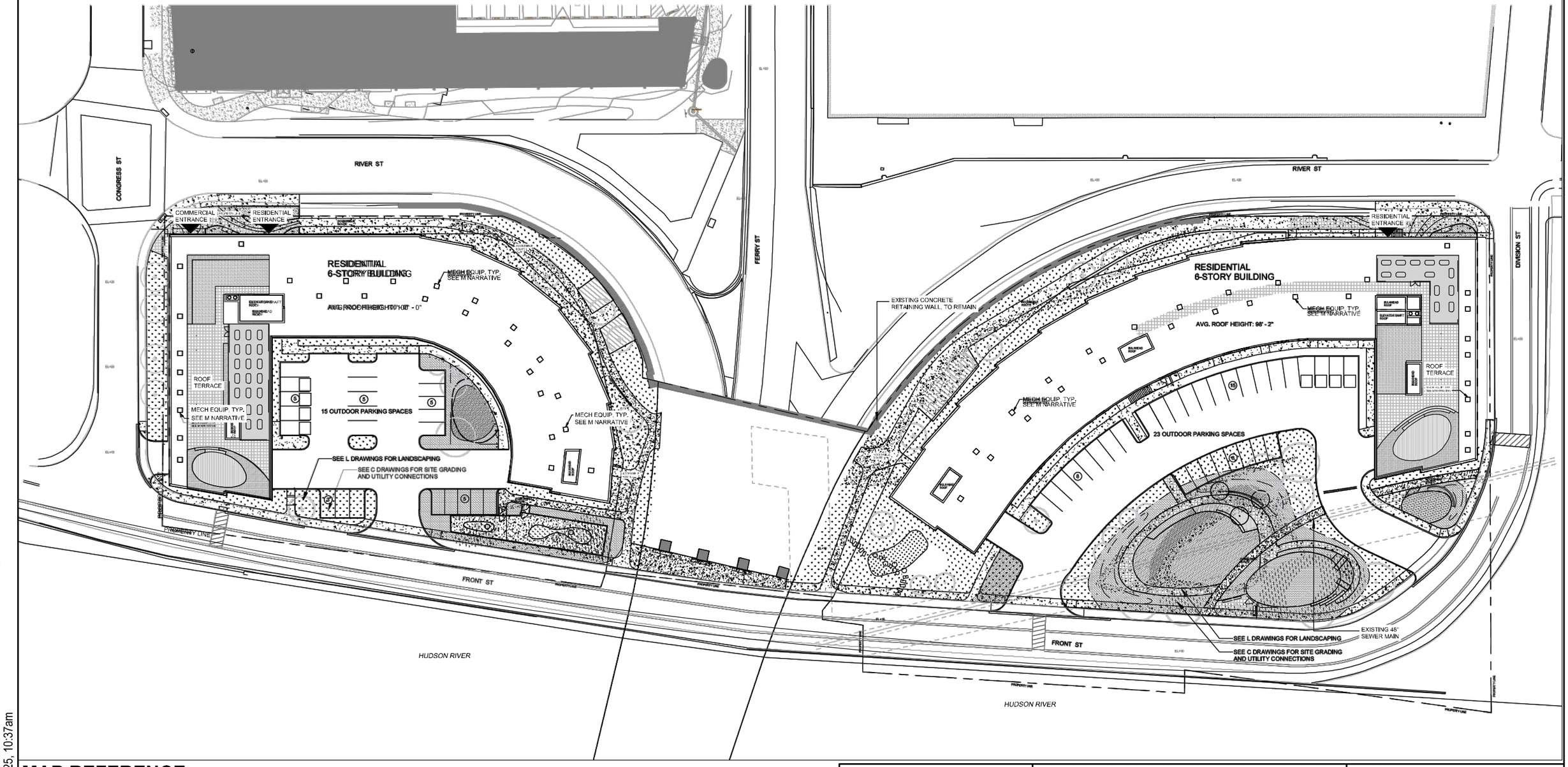
ISSUED FOR: REVISED RIWP - NYSDEC SUBMITTAL

DRAWING NAME: **PROPOSED DEVELOPMENT RENDERING**

DRAWN BY:	DATE:	PROJECT NO.:
ZH	11/20/2025	2241307

PROJECT NAME: TAYLOR APARTMENTS II - BCP SITE C442068
125 RIVER STREET, CITY OF TROY, RENSSELAER COUNTY, NY 12180

DRAWING NUMBER: **FIGURE 2A**



MAP REFERENCE

SHEET NO. A-001.00 ENTITLED "BUILDING 2 - SITE PLAN" PREPARED BY DATTNER ARCHITECTS D.P.C., LAST REVISED 07/26/2024

0 60 120 180

ORIGINAL SCALE 1"= 60'

LaBella
Powered by partnership
4 British American Boulevard
Latham, NY 12110
518-439-8235
labellapc.com
C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

ISSUED FOR: REVISED RIWP - NYSDEC SUBMITTAL

DRAWING NAME: **PROPOSED SITE PLAN**

DRAWN BY:	DATE:	PROJECT NO.:
ZH	11/20/2025	2241307

PROJECT NAME: TAYLOR APARTMENTS II - BCP SITE C442068
125 RIVER STREET, CITY OF TROY, RENSSELAER COUNTY, NY 12180

DRAWING NUMBER: **FIGURE 2B**

Drawing Name: B:\GLOBAL\Projects\Pennrose Mgmt Co\2241307 - Taylor Apartments Bldgs 3 and 4\06_Drawings\Environmental\RIWP Figrues - ZH\RIWP FIGURES.dwg
Xref's Attached: TITLEBLOCK_LBA - 11x17 - ANSI B; TITLEBLOCK_LBA-30x42-ARCH E1
Date Printed: Nov 20, 2025, 10:37am

LEGEND:

PROPERTY LINE

MUNICIPAL TAX PARCEL BOUNDARY

BCP SITE BOUNDARY

PORTION OF PROPERTY WHICH WILL BE ACCESSIBLE BY VOLUNTEER FOR REDEVELOPMENT, INVESTIGATION, AND OR REMEDIATION

NOTE:

SITE CONTROL REFERS TO THE PORTIONS OF THE PROPERTY WHERE THE VOLUNTEER HAS/WILL HAVE ACCESS.

0 60 120 180

ORIGINAL SCALE 1"= 60'

LaBella
Powered by partnership.
4 British American Boulevard
Latham, NY 12110
518-439-8235
labellapc.com
C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

ISSUED FOR: REVISED RIWP - NYSDEC SUBMITTAL

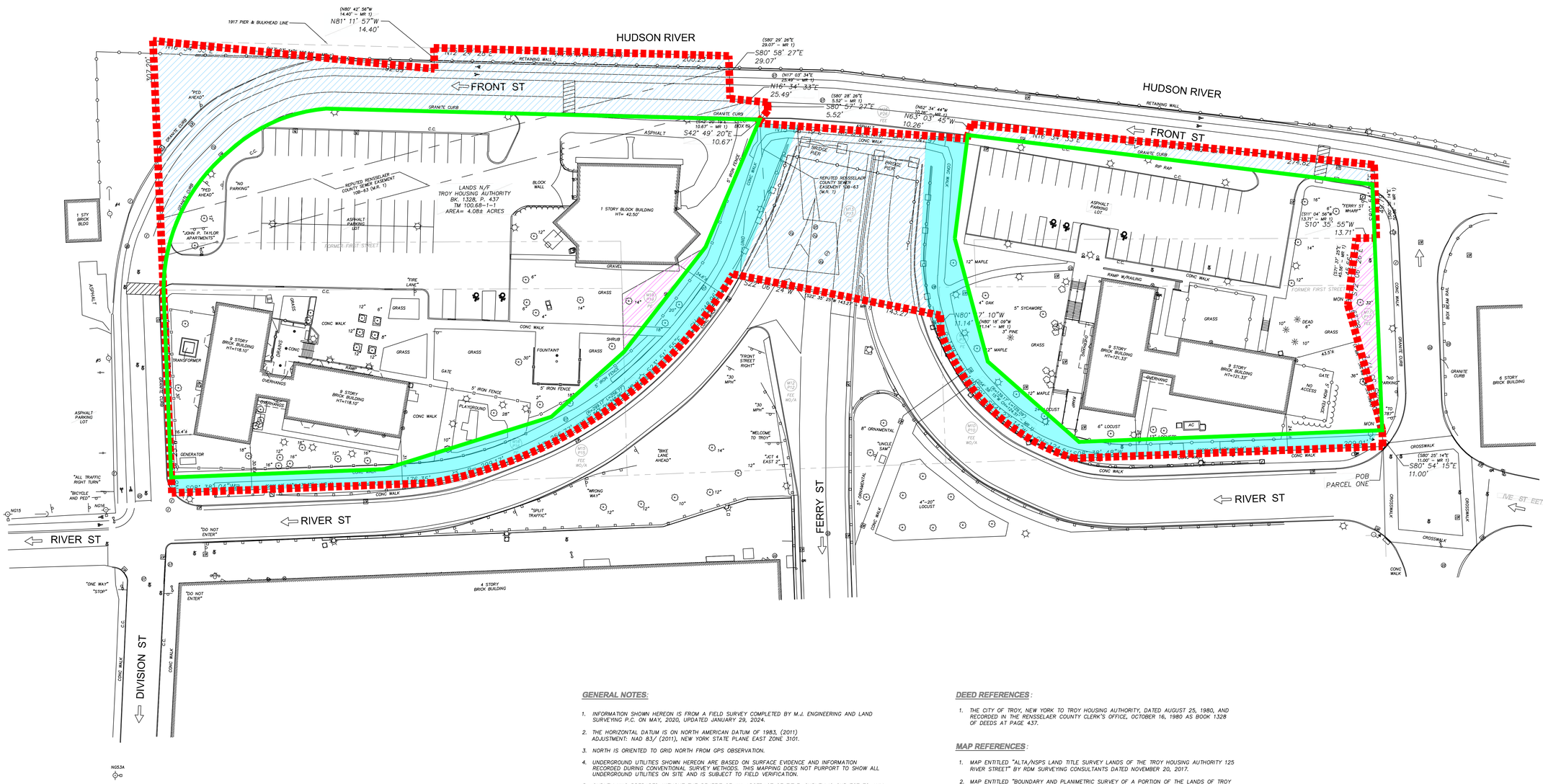
DRAWING NAME: **DEVELOPMENT PROJECT FOOTPRINT**

DRAWN BY:	DATE:	PROJECT NO.:
ZH	11/20/2025	2241307

PROJECT NAME: TAYLOR APARTMENTS II - BCP SITE C442068
125 RIVER STREET, CITY OF TROY, RENSSELAER COUNTY, NY 12180

DRAWING NUMBER: **FIGURE 3A**

Drawing Name: B:\GLOBAL\Projects\Pennrose Mgmt Co\2241307 - Taylor Apartments Bldgs 3 and 4\06_Drawings\Environmental\RIWP Figrues - ZH\RIWP FIGURES.dwg
Xref's Attached: TITLEBLOCK_LBA - 11x17 - ANSI B; TITLEBLOCK_LBA-30x42-ARCH E1
Date Printed: Nov 20, 2025, 10:39am



30 0 15 30 60

(IN FEET)
1 inch = 30 ft.

LEGEND:

- MUNICIPAL TAX PARCEL BOUNDARY
- BCP SITE BOUNDARY
- AREA EXCLUDED FROM BCP SITE BOUNDARY THAT IS OUTSIDE OF THE VOLUNTEER'S ACCESS DUE TO NYSDOT OPERATIONS
- PREVIOUS SURPLUS RIGHT OF WAY PURCHASED BY TROY HOUSING AUTHORITY (SITE OWNER) FROM NYSDOT PER PURCHASE AND SALE AGREEMENT DATED 9/26/2025, PENDING DEED ISSUANCE BEFORE END OF 2025
- PORTION OF PROPERTY WITH PERMANENT NYSDOT MAINTENANCE EASEMENTS THAT WILL BE ACCESSIBLE FOR INVESTIGATION/REMEDIATION PURPOSES THROUGH FORMAL AGREEMENT

GENERAL NOTES:

1. INFORMATION SHOWN HEREON IS FROM A FIELD SURVEY COMPLETED BY M.J. ENGINEERING AND LAND SURVEYING P.C. ON MAY, 2020, UPDATED JANUARY 29, 2024.
2. THE HORIZONTAL DATUM IS ON NORTH AMERICAN DATUM OF 1983, (2011) ADJUSTMENT: NAD 83/ (2011), NEW YORK STATE PLANE EAST ZONE 3101.
3. NORTH IS ORIENTED TO GRID NORTH FROM GPS OBSERVATION.
4. UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON SURFACE EVIDENCE AND INFORMATION RECORDED DURING CONVENTIONAL SURVEY METHODS. THIS MAPPING DOES NOT PURPORT TO SHOW ALL UNDERGROUND UTILITIES ON SITE AND IS SUBJECT TO FIELD VERIFICATION.
5. SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE. SURVEY IS SUBJECT TO ANY INFORMATION THAT AN UP TO DATE TITLE REPORT MAY DISCLOSE.
6. SUBJECT TO ANY RIGHTS, EASEMENTS, COVENANTS, OR RESTRICTIONS OF RECORD.
7. UNAUTHORIZED ALTERATIONS OR ADDITION TO THIS SURVEY MAP IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW. COPIES OF THIS SURVEY MAP NOT BEARING THE LAND SURVEYORS SEAL AND SIGNED WITH INK SHALL NOT BE CONSIDERED TO BE VALID COPIES.

DEED REFERENCES:

1. THE CITY OF TROY, NEW YORK TO TROY HOUSING AUTHORITY, DATED AUGUST 25, 1980, AND RECORDED IN THE RENSSELAER COUNTY CLERK'S OFFICE, OCTOBER 16, 1980 AS BOOK 1328 OF DEEDS AT PAGE 437.

MAP REFERENCES:

1. MAP ENTITLED "ALTA/NSPS LAND TITLE SURVEY LANDS OF THE TROY HOUSING AUTHORITY 125 RIVER STREET" BY RDM SURVEYING CONSULTANTS DATED NOVEMBER 20, 2017.
2. MAP ENTITLED "BOUNDARY AND PLANIMETRIC SURVEY OF A PORTION OF THE LANDS OF TROY HOUSING AUTHORITY BUILDING #1 AND #2." BY RDM SURVEYING CONSULTANTS DATED AUGUST 7, 2012.
3. MAP ENTITLED "NEW YORK STATE DEPARTMENT OF TRANSPORTATION DESCRIPTION AND MAP FOR THE ACQUISITION OF PROPERTY, CITY OF TROY: FERRY STREET ARTERIAL HIGHWAY (TROY-WATERVLIET BRIDGE AND APPROACHES), RENSSELAER COUNTY.
   - MAP NO. 10, PARCEL NO. 10 TROY HOUSING AUTHORITY (REPUTED OWNER), APRIL 9, 1969
   - MAP NO. 11, PARCEL NO. 11 TROY HOUSING AUTHORITY (REPUTED OWNER), APRIL 9, 1969
   - MAP NO. 12, PARCEL NO. 12 CITY OF TROY (REPUTED OWNER), APRIL 9, 1969
   - MAP NO. 13, PARCEL NO. 13 CITY OF TROY (REPUTED OWNER), APRIL 9, 1969
   - MAP NO. 15, PARCEL NO. 15 TROY HOUSING AUTHORITY (REPUTED OWNER), APRIL 9, 1969
   - MAP NO. 16, PARCEL NO. 16 TROY HOUSING AUTHORITY (REPUTED OWNER), APRIL 9, 1969
   - MAP NO. 17, PARCEL NO. 17 TROY HOUSING AUTHORITY (REPUTED OWNER), APRIL 9, 1969
   - MAP NO. 19, PARCEL NO. 19 CITY OF TROY (REPUTED OWNER), APRIL 9, 1969

MAP REFERENCE

MAP ENTITLED "ALTA/NSPS LAND TITLE SURVEY LANDS OF THE TROY HOUSING AUTHORITY 125 RIVER STREET" RDM SURVEYING CONSULTANTS, LAST REVISED 11/22/2017

LaBella
Powered by partnership.

4 British American Boulevard
Latham, NY 12110
518-439-8235

labellapc.com

NOT FOR CONSTRUCTION
EXP: ##/##/20##
EXP: ##/##/20##

CERTIFICATE OF AUTHORIZATION NUMBER:
PROFESSIONAL ENGINEERING: 0021272
LAND SURVEYING: 0021271
GEOLOGICAL: 0021659

PENNROSE
1301 N 31ST STREET
PHILADELPHIA, PA 19121

TAYLOR APARTMENTS II - BCP SITE C442068
125 RIVER STREET
CITY OF TROY, RENSSELAER COUNTY, NY
12180

NO:	DATE:	DESCRIPTION:
Revisions		

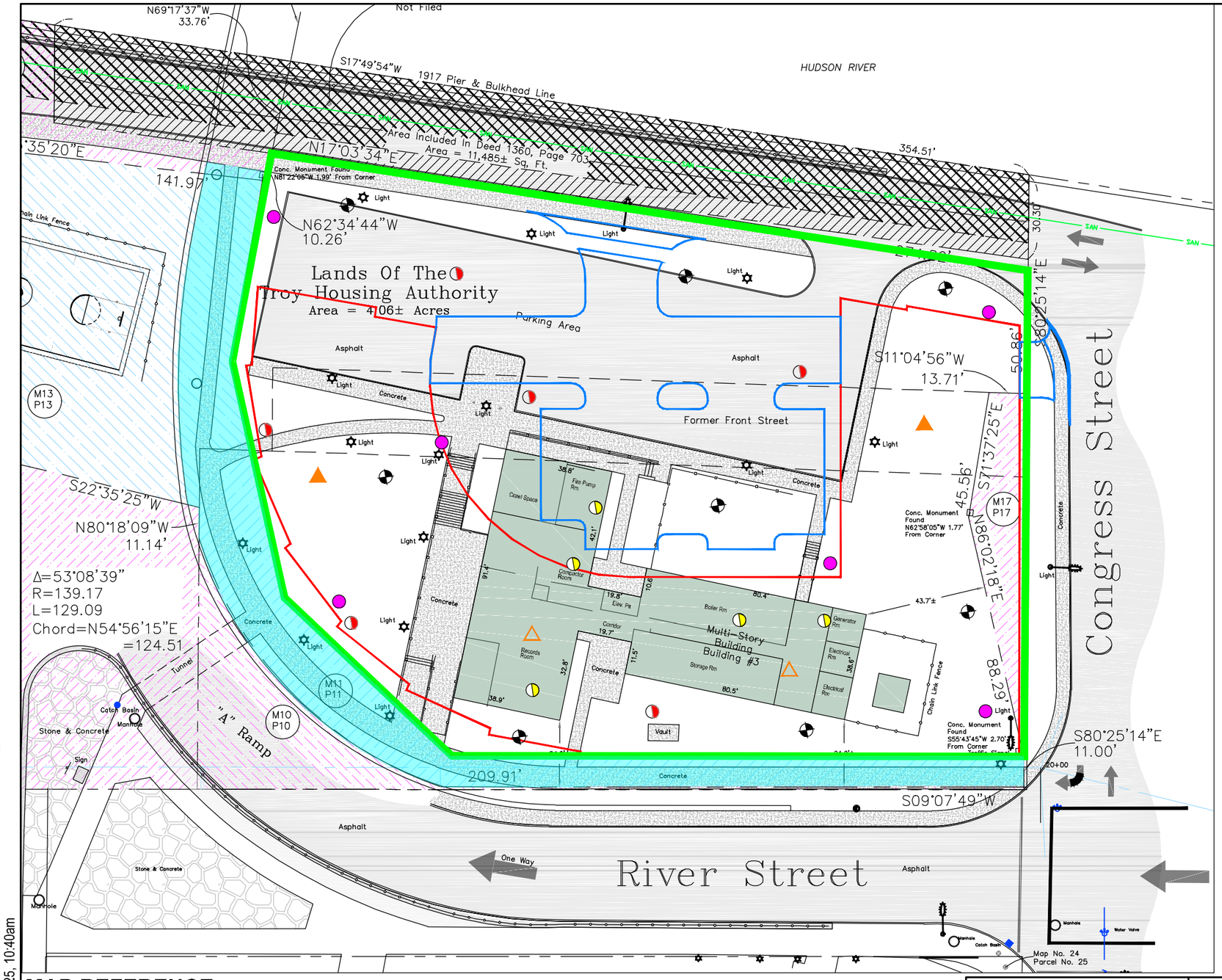
PROJECT NUMBER: 2241307
DRAWN BY:
REVIEWED BY:
ISSUED FOR: RIWP - NYSDEC SUBMITTAL
DATE: 8/25/2025
DRAWING NAME:

SITE SURVEY MAP

DRAWING NUMBER:

FIGURE 3B

Drawing Name: B:\GLOBAL\Projects\Pennrose Mgmt Co\2241307 - Taylor Apartments, Bldgs 3 and 4\06_Drawings\Environmental\RIWP Figures - 2\HRIWP FIGURES.dwg
Xref's Attached: TITLEBLOCK_LBA - 11x17 - ANSI B, TITLEBLOCK_LBA-30x42-ARCH E1
Date Plotted: Nov 20, 2025 - 1:59pm



Legend:

- Sanitary Manhole
- Storm Manhole
- Telephone Manhole
- Electric Manhole
- Water Valve
- Fire Hydrant
- Gas Valve
- Catch Basin
- Deciduous Tree
- Coniferous Tree
- Tree Line
- Sewer Line
- Water Line
- Gas Line
- Storm Sewer Line
- Combined Sewer Line
- Sanitary Forced Main
- Overhead CATV
- Overhead Electric
- Overhead Telephone
- Overhead Wires
- Underground CATV
- Underground Communication
- Underground Electric
- Underground Telephone
- Asphalt Surface
- Concrete Surface
- Fee Acquisition By The State of New York (Parcel M17 Has Been Purchased Back From NYSDOT By Site Owner, Troy Housing Authority, Pending New Deed Issuance Before End of 2025)
- Permanent Easement By The State of New York For Retaining Walls And Wall Footings, Drainage Pipelines And Sidewalks, And Steam Line
- Lands Under Water Owned By The State Of New York
- Land Accessible By Volunteer With Adherence to NYSDOT Maintenance Easement
- *Proposed Monitoring Well*
- *Proposed Soil Boring*
- *Proposed Surface Soil Sample*
- *Proposed Basement Boring*
- *Proposed Soil Vapor Sample*
- *Proposed Sub-Slab Vapor Sample*
- *Proposed Future Building Footprint*
- *Proposed Future Parking Lot*
- *BCP Site Boundary*

MAP REFERENCE

SHEET NO. A-001.00 ENTITLED "BUILDING 2 - SITE PLAN" PREPARED BY DATTNER ARCHITECTS D.P.C., LAST REVISED 07/26/2024

NOTE:

BASEMENT LAYOUT IS APPROXIMATED BASED ON A COMBINATION OF CONSTRUCTION DRAWINGS AND VISUAL OBSERVATIONS.

0 40 80 120

ORIGINAL SCALE 1"= 40'

LaBella
Powered by partnership
4 British American Boulevard
Latham, NY 12110
518-439-8235
labellapc.com
C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

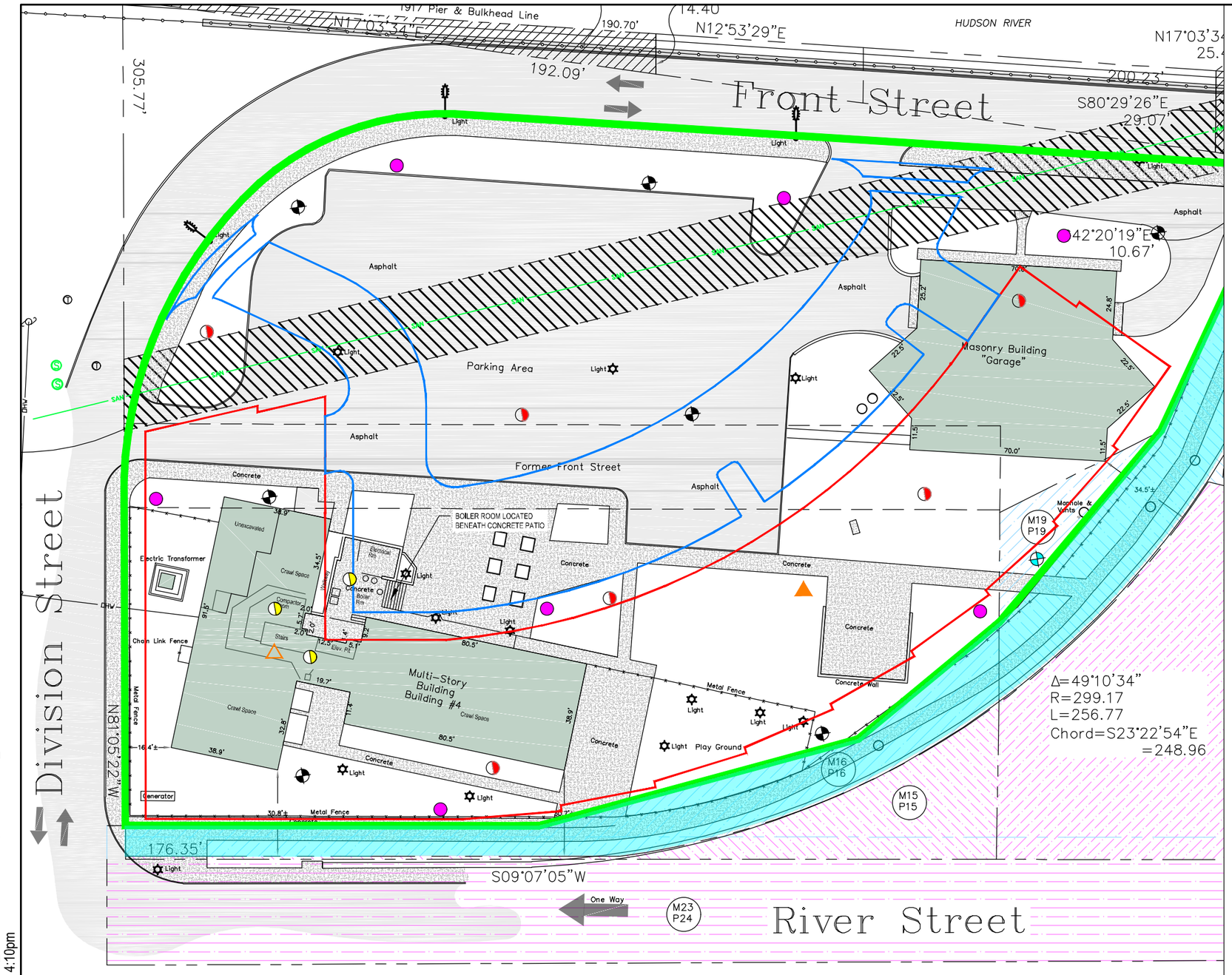
ISSUED FOR: REVISED RIWP - NYSDEC SUBMITTAL

DRAWING NAME: **PROPOSED INVESTIGATION LOCATIONS - BUILDING 3**

DRAWN BY:	DATE:	PROJECT NO.:
ZH	11/20/2025	2241307

PROJECT NAME: TAYLOR APARTMENTS II - BCP SITE C442068
125 RIVER STREET, CITY OF TROY, RENSSELAER COUNTY, NY 12180

DRAWING NUMBER: **FIGURE 4A**



MAP REFERENCE

SHEET NO. A-001.00 ENTITLED "BUILDING 2 - SITE PLAN" PREPARED BY DATTNER ARCHITECTS D.P.C., LAST REVISED 07/26/2024

NOTE:

BASEMENT LAYOUT IS APPROXIMATED BASED ON A COMBINATION OF CONSTRUCTION DRAWINGS AND VISUAL OBSERVATIONS.

0 40 80 120

ORIGINAL SCALE 1"= 40'

LaBella
Powered by partnership.
4 British American Boulevard
Latham, NY 12110
518-439-8235
labellapc.com
C.A. NUMBER:
GEOLOGICAL: 0021659
LAND SURVEYING: 0021271
PROFESSIONAL ENGINEERING: 0021272

ISSUED FOR: REVISED RIWP - NYSDEC SUBMITTAL

DRAWING NAME: **PROPOSED INVESTIGATION LOCATIONS - BUILDING 4**

DRAWN BY:	DATE:	PROJECT NO.:
ZH	11/20/2025	2241307

PROJECT NAME: TAYLOR APARTMENTS II - BCP SITE C442068
125 RIVER STREET, CITY OF TROY, RENSSELAER COUNTY, NY 12180

DRAWING NUMBER: **FIGURE 4B**

APPENDIX A OF RIWP
PRIOR ENVIRONMENTAL REPORTS

Taylor Apartments II RIWP Appendix A
Prior Environmental Reports Summary

Synopsis: A March 2024 Phase I ESA identified Recognized Environmental Conditions (RECs) associated with the historical use of the Site. Related environmental investigations on behalf of the applicant consist of a Focused Phase II Environmental Site Assessment (ESA) Draft Report and a Limited Phase II ESA Report that were completed at the Site on April 23, 2024 and August 9, 2024, respectively. Metals and semi-volatile organic compounds (SVOCs) were detected in on-site soils at concentrations above NYSDEC Restricted Residential and Unrestricted Use Soil Cleanup Objectives (USCOs).

During the investigations, non-native historic fill material consisting of sands with comingled asphalt, wood, concrete, ash, and/or bricks was observed across the Site ranging from surface elevations to depths of 5 to 15 ft below ground surface (bgs). Analysis of soil samples indicated elevated metals, PAHs and select pesticides are present in various soil/fill materials above UUSCOS and RRUSCOs. VOCs were not detected above SCOs and PCBs were not detected in soil samples.

Based on a review of previous environmental reports and observations during fieldwork activities, no specific Areas of Concern (AOCs) were identified. With the exception of the southern-central portion of the current Building 4 area, contaminated historical fill material (CHFM) was observed throughout the Site during the Phase II ESAs. Subsurface construction & demolition (C&D) debris including bricks, wood, concrete, metal, and/or coal ash were observed during the Phase II ESAs.

Phase I Environmental Site Assessment – March 2024

LaBella issued a Phase I Environmental Site Assessment (ESA) report for the Site on March 28, 2024. Based on the findings of the Phase I ESA, the following Recognized Environmental Conditions (RECs) were identified.

- The Site was historically used for a variety of commercial and industrial purposes including various coal yards/storage, power station, warehouses, cigar factories, upholstery, blacksmith, printing, scrap/junk yards, engine repair facilities and a railroad spur. Historical Sanborn maps also identified gasoline underground storage tanks (USTs) near the northeastern and southwestern boundaries of the Building 4 area.
- The northeastern adjoining John Taylor Apartments, Buildings 1 and 2 property is a registered petroleum bulk storage (PBS) facility with one closed-removed 25,000-gallon fuel oil UST. New York State Department of Environmental Conservation (NSYDEC) Spill No. 1701213 was reported in May 2017 upon discovery of a fuel oil release during tank removal activities. Appurtenant piping was identified as the cause of the release; however, no information regarding piping removal was available. Contaminant concentrations were detected "slightly above" applicable NYSDEC cleanup standards in one confirmatory endpoint sample and the spill was closed without meeting standards in July 2017. No information regarding piping removal or associated impacts to Buildings 3 and 4 is available.

Prior to completion of the Phase I ESA, LaBella performed subsurface investigation (SSI) fieldwork activities to investigate the above-referenced RECs and to assess the environmental integrity of soils likely to be encountered/disturbed during planned redevelopment activities. SSI findings were reported in LaBella's Focused Phase II ESA, dated April 23, 2024 (see below).

Focused Phase II Environmental Site Assessment – April 2024

LaBella's Focused Phase II ESA was performed: 1) as an additional/supplemental investigation of the soils impacted by historical fill materials and commercial/industrial utilization, and 2) to further assess and delineate the environmental integrity of soils likely to be encountered/disturbed during planned redevelopment activities. The Focused Phase II ESA consisted of the installation of fourteen (14) soil borings at the Site. Sixteen (16) soil samples were collected and analyzed for volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons ([PAHs] a subset of semi-volatile organic

compounds [SVOCs]), target analyte list (TAL) metals, and/or polychlorinated biphenyls (PCBs). Focused Phase II ESA findings are summarized as follows:

- Non-native, historical fill materials consisting of variable texture sands with comingled asphalt, wood, concrete, and/or bricks were identified at each boring from near surface elevations to depths ranging from 5 to 15 feet below surface grade (bgs).
- Metals were detected above Soil Cleanup Objectives (SCOs) in eight (8) samples. Barium and mercury levels exceeded the NYSDEC Part 375 Soil Cleanup Objects (SCOs) for Restricted Residential Use (RRUSCO) in one (1) sample (each) collected at Building 3 and 4, respectively. Metals were also detected above the Unrestricted Use SCOs (UUSCOs) in samples collected throughout the Site which included copper in two (2) samples, lead in five (5) samples, mercury in five (5) samples, and zinc in five (5) samples.
- PAHs were detected above applicable SCOs in three (3) soil samples. PAH levels exceeding RRUSCOs included benzo(a)anthracene in two (2) samples, benzo(a)pyrene in two (2) samples, benzo(b) fluoranthene in three (3) samples, and indeno(1,2,3-cd)pyrene in three (3) samples. Chrysene was also detected above the UUSCO in two (2) samples.
- Two (2) VOCs (i.e., benzene and toluene) were detected in one sample collected near the eastern Site boundary at Building 3; however, no VOCs were detected above applicable UUSCOs.
- No PCBs were detected in three (3) analyzed samples.

Limited Phase II Environmental Site Assessment – August 2024

A Limited Phase II Environmental Site Assessment was completed on August 9, 2024, by LaBella in response to NYSDEC BCP Pre-Application meeting input that additional analytical data would be necessary in support of the Site's BCP Application. The Limited Phase II Environmental Site Assessment included: 1) an additional/supplemental investigation of impacted historical fill materials and commercial/industrial utilization, and 2) additional assessment and delineation of the environmental integrity of soils likely to be encountered/disturbed during planned redevelopment activities. The Limited Phase II investigation consisted of soil sampling during the installation of seven (7) borings, fifteen (15) test pits, and three (3) sub-slab soil samples. Soil samples were analyzed for VOCs, PAHs, Part 375 list metals, and/or pesticides and are summarized as follows:

- Non-native historical fill materials consisting of variable texture sands with asphalt, wood, concrete, metallic debris, and/or brick fragments were identified at nineteen (19) of twenty-one (21) boring/test pit locations. Historical fill was observed at depths ranging near surface elevations to depths ranging from 2.5 to 15 feet bgs. The locations, depths, and types of historical fill material observed during the Limited Phase II ESA were generally consistent with fieldwork observations from the Focused Phase II ESA; however, elevated PAH, metal, and pesticide levels indicate that poor quality fill/debris materials have impacted on-site soils.
- Two (2) VOCs (i.e., acetone and/or carbon disulfide) were detected in four (4) samples collected during the Limited Phase II ESA; however, each of these compounds are common laboratory contaminants and are unlikely to have originated from the Site. No VOCs were detected above applicable SCOs which was consistent with the Focused Phase II ESA.
- Five (5) PAHs were detected at concentrations exceeding RRUSCOs in eight (8) samples collected during this investigation. In conjunction with the Focused Phase II ESA soil sampling data, PAH levels above RRUSCOs were detected at three (3) Building 3 sample locations and seven (7) Building 4 locations. In addition, two (2) other PAHs were detected above UUSCOs at three (3) Building 3 locations and four (4) Building 4 locations during the combined subsurface

investigations. Elevated PAHs were detected in fill/soil samples collected at depth intervals ranging from 0-2 to 6-8 feet bgs which was consistent with the Focused Phase II ESA findings.

- Six (6) NYSDEC Part 375 list metals were detected at concentrations exceeding applicable RRUSCOs in seven (7) samples collected during the Limited Phase II ESA. In conjunction with Focused Phase II ESA data, metal levels above RRUSCOs were detected at four (4) Building 3 sample locations and five (5) Building 4 locations. In addition, eight (8) metals were detected above UUSCOs at eight (8) Building 3 locations and five (5) metals were detected at nineteen (19) Building 4 locations during the combined Phase II ESAs. Metal levels exceeding UUSCOs include selenium and hexavalent chromium detected in sub-slab soil samples collected at Building 3. Elevated metals were detected in samples collected at depth intervals ranging from 0-2 to 10-12 feet bgs which was consistent with the Focused Phase II ESA findings.
- Two pesticides were detected at concentrations exceeding UUSCOs in two (2) soil samples collected at the near the northern Site boundary at Building 4. Elevated pesticides levels were detected in samples collected at depth intervals ranging from 1-3 to 4-6 feet bgs.

Geophysical surveys performed during the Focused Phase II and Limited Phase II subsurface investigations did not identify USTs, backfilled, excavation areas, or subsurface anomalies at the Site. No petroleum contamination was identified at borings or test pits installed in the vicinity of the former off-site tanks. Taylor Apartments Buildings 1 and 2 were demolished in July 2022 and Taylor I redevelopment commenced in October 2022. No subsurface petroleum contamination was identified during excavation for construction of the new building. No evidence of petroleum contamination was identified in borings installed at the eastern portions of the Building 3, located downgradient from former Buildings 1 and 2.

Key portions of prior environmental reports follow this summary. The following table summarizes the detections of compounds above Restricted Residential Soil Cleanup Objectives (RRSCOs).

Soil Sample Results with Comparisons to NYSDEC Part 375 RRSCOs

Soil Table	Detections > RRSCOs	Max Detection (mg/kg)	RRSCOs (mg/kg)	Depth (ft bsg)
Benz(a)anthracene	6	2.67	1.0	2-4
Benzo(a)pyrene	6	2.15	1.0	2-4
Benzo(b)fluoranthene	6	2.48	1.0	2-4
Benzo(k)fluoranthene	4	1.65	3.9	6-8
Dibenzo(a,h)anthracene	2	0.521	0.33	2-4
Indeno(1,2,3-cd)pyrene	11	1.73	0.5	2-4
Arsenic	2	29.7	16	2-4
Barium	2	1,100	400	6-8
Cadmium	1	5.64	4.3	6-8
Copper	1	318	270	6-8
Lead	5	1,960	400	6-8
Mercury	6	6.01	0.81	1-3

Phase I
Environmental Site Assessment

Location:

John P. Taylor Apartments – Buildings 3 and 4
125 River Street
City of Troy, New York 12180

Prepared for:

Pennrose, LLC
45 Main Street, Suite 539
Brooklyn, New York 11201

LaBella Project No. 2241307

Report Date: March 28, 2024

Date of First Research: February 21, 2024

LaBella
Powered by partnership.

Table of Contents

Table of Appendices

EXECUTIVE SUMMARY

LaBella Associates, D.P.C. (LaBella) has been contracted by Pennrose, LLC to perform a Phase I Environmental Site Assessment (ESA) report for the John P. Taylor Apartments – Buildings 3 and 4 property, located at 125 River Street, City of Troy, Rensselaer County, New York (hereinafter referred to as the "Subject Property").

This assessment was prepared according to the ASTM E1527-21 as a portion of the User's requirements in the All Appropriate Inquiries process and to satisfy the due diligence requirements set for Pennrose, LLC.

The Subject Property is further described as follows:

Subject Property Name	John P. Taylor Apartments – Buildings 3 and 4
Subject Property Address	125 River Street, City of Troy, Rensselaer County, New York
Subject Property Acreage (approximate)	3.23
Parcel ID(s)	100.68, Block 1, and Lot 1./1 made up of three non-contiguous areas
Current Owner	Troy Housing Authority
Current Subject Property Use/ Development	Two, nine-story apartment buildings and a garage structure that is currently used for community space and maintenance storage.
Public Thoroughfares and Access/Egress	Congress Street to the north, River Street to the east, Division Street to the south, and Front Street to the west. The Building 3 and 4 areas are also separated by Ferry Street and the Congress Street Bridge arterial roadways.
Exterior Areas	Asphalt paved parking lot, concrete walkways, and maintained yard areas.
Surrounding Area	Urban
Subject Property Utilities	
Electric Source	National Grid
Natural Gas Source (if provided)	National Grid
Potable Water Source	Public water
Sanitary Wastewater Disposal	Public sewer
Non-Sanitary Wastewater Disposal	N/A; no non-sanitary wastewater is generated

Based on LaBella's review of historical records, the history of the Subject Property is summarized as follows:

Time Period	Apparent Use/Development
1893 through 1954	The Subject Property is an urban area with a road shown north and south across the center of the Subject Property. The Subject Property is made up of various coal yards as well as, stores, pork packing, cigar factories, upholster, blacksmith, printing, and engine repair.
1954 through the present	Developed with the present day structures and roads in their current position.

Based on the results of this assessment, the following RECs have been identified in connection with the Subject Property:

- Historic commercial and industrial utilization of the Subject Property including various coal yards/storage, power station, warehouses, cigar factories, upholstery, blacksmith, printing, and engine repair facilities. Additionally, in the 1951 Sanborn Map, a transit mixed concrete facility is shown near the southwestern portion of the Subject Property with one gas tank.
- The northeastern adjoining John Taylor Apartments, Buildings 1 and 2 property is a registered petroleum bulk storage (PBS) facility with one closed-removed 25,000-gallon fuel oil UST. NSYDEC spill no. 1701213 was reported in May 2017 upon discovery of fuel oil contaminated soil during tank removal activities. Appurtenant piping was identified as the cause of the release; however, no information regarding piping removal was available. Contaminant concentrations were detected slightly above applicable NYSDEC cleanup standards in one confirmatory endpoint sample and the spill was closed without meeting standards in July 2017. No information regarding piping removal or associated impacts at the Subject Property are available.

Based on the results of this assessment, no CRECs have been identified in connection with the Subject Property.

Based on the results of this assessment, the following HRECs have been identified in connection with the Subject Property:

- NYSDEC spill no. 1001345 was reported at Taylor Apartments Building 3 when a tank overfill caused an approximately 2-gallon release of fuel oil in May 2010. Contaminated soil was reportedly removed, and the spill was closed without meeting standards the following day.

Based on the results of this assessment, no de minimis conditions have been identified in connection with the Subject Property.

Based on the results of this assessment, the following significant data gaps have been identified in connection with the Subject Property:

- Former heating systems prior to the connection of natural gas is undetermined at the time of this Phase I ESA. According to previous environmental reports and interviews, heating systems were fueled by #6 fuel oil stored in a closed-removed 25,000-gallon UST formerly located at the northeast adjoining, Taylor Apartments Buildings 1 and 2 property. Limited basement area space and lack of chimneys at Buildings 3 and 4 indicate that these on-site structures may have been connected to a steam system located at Building 2.

While not considered a REC, CREC, HREC, de minimis condition, or significant data gap at this time, LaBella also notes the following:

- During the site visit, the following was noted.
  - Hazardous substances and petroleum products were limited to general cleaning, building maintenance, and property maintenance supplies which were observed to be properly stored in small containers with no evidence of release noted. Additionally, a full 55-gallon plastic drum labeled as boiler water treatment was observed in the maintenance storage area of the garage.
  - LaBella performed a subsurface investigation at the Subject Property on March 18-19, 2024. No evidence of a petroleum or chemical release was identified during fieldwork activities; however, urban fill was encountered in fourteen (14) soil borings. Fill material was from near surface elevation to depths of approximately 10 to 14 feet below surface grade. Analytical information from soil samples collected during the investigation is pending at the time of this Phase I ESA; however, poor quality urban fill is a potential environmental liability to the Subject Property.
  - The eastern-central adjoining property at the intersection of River and Ferry Street (addressed as 121 River Street) was identified as a filling station from at least 1939 through 1951. This adjoining property is now developed with the Congress Street Bridge arterial roadway and any associated impacts are likely to have been excavated/removed during redevelopment activities.
  - Five ASTs were observed on the Subject Property. Four of which were connected to back up generators, and one to a sprinkler system pump. No evidence of release was noted.
  - A pad mounted transformer was observed south of building 4, and a trash compactor was observed in the basement of buildings 3 and 4, no evidence of release noted.
  - Floor drains and sumps reportedly connected to the municipal sewer system were observed within the basement areas of Buildings 3 and 4. Storm drains reportedly

connected to the municipal stormwater system were noted throughout the parking areas. No stains, spills, or unusual odors in the vicinity of the floor drains, sumps, or stormwater drains were noted during Subject Property reconnaissance.
    - An approximately three-inch vent pipe was observed exiting the central west side of Building three. The purpose of this pipe is unknown.
    - A vent pipe and cleanouts associated with the septic system were observed protruding from the ground surface near the southern exterior portion of the garage building.
    - An approximately 2-inch diameter, cut vent pipe was observed exiting the central western exterior basement wall at Building 4. No associated fill port was noted.
- The Subject Property was identified as Niagara Mohawk Power Corp., MH 13 and 16 facility; however, this facility appears to be located off-site to the north.

Based on the findings of this assessment, additional investigation is warranted at this time.

1.0 INTRODUCTION

LaBella has been contracted by Pennrose, LLC to perform a Phase I Environmental Site Assessment report for the John P. Taylor Apartments – Buildings 3 and 4 property, located at 125 River Street, City of Troy, Rensselaer County, New York.

The findings of this report are based upon an assessment of the condition of the Subject Property within the Scope of Work and objective described below as of the date of the site observations and documentation review. This assessment was prepared according to the ASTM Standard Practices E1527-21 as a portion of the User's requirements in the All Appropriate Inquiries process and to satisfy the due diligence requirements set for Pennrose, LLC. The information contained in this report is considered privileged and confidential and is intended solely for the use of the parties identified in Section 1.5.

1.1 Purpose

This investigation was requested to identify, to the extent feasible, RECs in connection with the Subject Property, including the identification of conditions indicative of releases and threatened releases of hazardous substances and petroleum products on, or in the vicinity of the Subject Property. This Phase I ESA report was conducted in conformance with the Scope and Limitations of ASTM Standard Practice E1527-21.

The performance of ASTM Standard Practices E1527-21 is intended to reduce, but not eliminate, uncertainty regarding the potential for RECs and the potential liability for contamination to be present in connection with the Subject Property recognizing reasonable limits of time and cost. It is also intended to satisfy one of the requirements to satisfy "all appropriate inquiry" as defined by 42 U.S.C §9601(35)(B), for the purposes of qualifying for innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA Liability. The User should understand that this practice does not address whether requirements in addition to all appropriate inquiry have been met in order to qualify for landowner liability protections; including (1) the continuing obligation not to impede the integrity and effectiveness of activity and use limitations, (2) the duty to take reasonable steps to prevent releases, or (3) the duty to comply with legally required release reporting obligations.

The objective of this Phase I ESA was to determine the following, using our professional judgment, by means of the Scope of Work hereafter described:

1. A general description of the Subject Property.
2. The current and historical usage of the Subject Property and adjoining properties.
3. Whether RECs exist or have the potential to exist in, on, or at the Subject Property.
4. Whether Subject Property conditions suggest further evaluation based on the presence or probable presence of RECs.

5. Provide information which may assist the Client in evaluating the fair market value of the Subject Property.

A REC is defined by ASTM as (1) the presence of hazardous substances or petroleum products in, on, or at the Subject Property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at the Subject Property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on, or at the Subject Property under conditions that pose a material threat of a future release to the environment. A de minimis condition is not a recognized environmental condition.

A Controlled REC is defined by ASTM as a recognized environmental condition affecting the Subject Property that has been addressed to the satisfaction of the applicable regulatory authority or authorities with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, activity and use limitations or other property use limitations).

A Historical REC is defined by ASTM as a previous release of hazardous substances or petroleum products affecting the Subject Property that has been addressed to the satisfaction of the applicable regulatory authority or authorities and meeting unrestricted use criteria established by the applicable regulatory authority or authorities without subjecting the Subject Property to any controls (for example, activity and use limitations or other property use limitations). A historical recognized environmental condition is not a recognized environmental condition.

A de minimis condition is defined by ASTM as a condition related to a release that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. A condition determined to be a de minimis condition is not a recognized environmental condition nor a controlled recognized environmental condition.

The term “data gap” means a lack of or inability to obtain information required by this practice despite good faith efforts by the Environmental Professional to gather such information. Data gaps may result from incompleteness in any of the activities required by this practice, including, but not limited to, site reconnaissance (for example, an inability to conduct the site visit), and interviews (for example, an inability to interview the key site manager, regulatory officials, etc.). A significant data gap is one that affects the ability of the environmental professional to identify a REC.

The term "data failure" means the failure to achieve the historical research objective as specified in ASTM E-1527-21 even after reviewing the standard historical resources that are reasonably ascertainable and likely to be useful. Data failure is one type of data gap.

Migration refers to the movement of hazardous substances or petroleum products in any form, including, for example, solid and liquid at the surface or subsurface, and vapor in the subsurface.

An Environmental Professional is a person who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding conditions indicative of releases or threatened releases on, at, in, or to a property, sufficient to meet the objectives and performance factors defined in the ASTM Standard Practice E1527-21 and §312.20 of 40 CFR §312. Specifically, an Environmental Professional is defined as a person having one of the following qualifications: (1) A state- or tribal-issued certification or license and three years of relevant, full-time work experience; (2) A bachelor's degree or higher in science or engineering and five years of relevant, full-time work experience; or, (3) 10 years of relevant, full-time work experience.

The date of first research illustrates the earliest date that information was collected for the purposes of this assessment. Under ASTM E1527-21, the report is presumed to be viable when conducted within 180 days prior to the date of acquisition of the Subject Property (or, for transactions not involving an acquisition such as a lease or refinance, the date of the intended transaction). The following components must be conducted or updated within 180 days prior to the date of acquisition or transaction:

1. Interviews with owners, operators, and occupants;
2. Searches for recorded environmental cleanup liens (a *user* responsibility);
3. Reviews of federal, tribal, state, and local government records;
4. Visual inspections of the Subject Property and of adjoining properties; and
5. The declaration by the Environmental Professional responsible for the assessment or update.

The date of first research for the above components was February 21, 2024.

1.2 Scope of Work

This Phase I Environmental Site Assessment has been prepared in accordance with ASTM E1527-21, which has been devised to address the site assessment portion for 40 CFR 312 - Innocent Landowners, Standards for Conducting All Appropriate Inquiries. The Scope of Work performed in this assessment is intended to identify RECs, CRECs, HRECs, de minimis conditions, and Significant Data Gaps through the following tasks:

1. Review of information provided by the User related to environmental cleanup liens; specialized knowledge or experience regarding the Subject Property; the relationship of the purchase price to the fair market value of the property, if the property were not contaminated; and, commonly known or reasonably available information about the Subject Property.
2. Review of local, state, and federal environmental records.
3. Review of historical sources of information to identify the use of the Subject Property dating back to 1940 or first Subject Property development, whichever is earlier.
4. Review of physical and geological settings.
5. Interviews with current and past owners, operators, and occupants to evaluate the potential for environmental contamination to be present at the Subject Property.

6. Inspection of the Subject Property and adjacent properties, to visually identify areas of concern. Adjacent properties were inspected from public roadways and the Subject Property boundaries to the extent possible.
7. The preparation of this report documenting all appropriate inquiries.

The work for this report has been performed in accordance with generally accepted environmental engineering practices for this region. The findings of this report are based upon the opinion and judgment of an Environmental Professional and are dependent upon LaBella's knowledge, the information supplied during the interviews, and data and information solicited from governmental agencies. LaBella makes no other warranty or representation, either expressed or implied, nor is one intended to be included as part of its services, proposals, contracts, or reports.

In addition, LaBella cannot provide guarantees, certifications, or warranties that the Subject Property is or is not free of contamination without a subsurface investigation involving drilling, vapor analysis, laboratory soil analysis, groundwater monitoring well installation, and laboratory groundwater analysis. Even with such a program, the data and samples from any given soil boring or monitoring well will indicate conditions that apply only at that particular location, and such conditions may not necessarily apply to the general Subject Property as a whole.

1.2.1 Significant Assumptions

Significant assumptions made in the performance of this Phase I ESA are as follows:

- Regional groundwater flow follows major topographic gradients.
- Representations made during interviews are accurate.

1.3 Data Gaps

LaBella encountered the following data gaps through the completion of this Phase I Environmental Site Assessment:

Nature of Data Gap	Details/Description	Data Sources Consulted
Limitations to site reconnaissance[1]	At the time of the site reconnaissance, a representative portion of the apartments, offices, and common areas were visually inspected. In addition, visual observations were limited at the time of the site reconnaissance due to material storage, parked vehicles, and the size of the Subject Structures.	N/A; refer to Section 4.0 for site reconnaissance methodology.
Historical Use	Historical uses were not obtained for each five-year period.	Historical sources consulted by LaBella included aerial photographs, Sanborn maps, city directories, topographic maps, municipal records, and previous studies
Regulatory Records Review	LaBella has yet to receive complete responses from all regulatory information requests.	LaBella has yet to receive responses from Rensselaer County.
Interviews	LaBella has not been able to identify and/or contact some historical owners, operators, or occupants.	LaBella consulted current owners, municipal, and/or User-provided records to identify historical ownership information and completed a focused online search in an attempt to obtain contact information.
Any significant data gaps (a data gap that affects the ability of the environmental professional to identify a REC) are discussed within the Findings and Opinions section of this report. [1] See Limitations and Exceptions of Assessment below for additional limitations of the site visit.		

1.4 Limitations and Exceptions of Assessment

ASTM E1527-21 expressly recognized the fact that no ESA can wholly eliminate uncertainty regarding the potential for RECs in connection with a property. LaBella's work is intended to reduce, but not eliminate, uncertainty regarding the potential for RECs in connection with the Subject Property, and its Scope of Work reflects recognition of the reasonable limits of time and cost.

The work for this report has been performed in accordance with the agreement signed with Pennrose, LLC. The conclusions of this report are based upon LaBella's opinion and judgment and are necessarily dependent on information supplied by the individuals, entities, and agencies contacted through the course of this assessment. LaBella makes no other warranty or representation, either expressed or implied, nor is one intended to be included as part of its services, proposals, contracts, or reports.

The actual presence of asbestos, radon, lead-based paint, lead in drinking water, wetlands, regulatory compliance, endangered species, indoor air quality, mold, substances not defined as hazardous substances, cultural and historical resources, archeological resources, ecological resources, industrial hygiene, health and safety, biological agents, and/or high voltage power lines, are not included in the Scope of Work of this assessment unless agreed to by Pennrose, LLC and LaBella; in such a case, these additional services/ASTM Non-Scope Considerations are discussed in Section 8.0 below. Should Pennrose, LLC desire any of these additional services, such can be completed by LaBella under separate cover; however, they are not included in the Scope of Work of the Phase I ESA.

The site reconnaissance was limited to visual observations of accessible areas only. No attempt was made to observe conditions in spaces not generally accessible, including but not limited to:

1. Entering crawlspaces and attics
2. Walking on roofs
3. Viewing the interior of pipe chases or plenum
4. Viewing spaces concealed by walls, floors, ceilings, interior finishes, etc.
5. Viewing areas inaccessible due to topographic features or locked doors, obscured by snow cover, vegetative growth, vehicles, etc.

The site reconnaissance was also limited to visual observations within the perimeter of the Subject Property and other accessible areas only. At the time of the site reconnaissance, a representative portion of the Subject Property and common areas were visually inspected.

1.5 Reliance

Pennrose, LLC may rely upon the findings of this report and should be aware of the agreed upon Scope of Work and the limitations associated with this Scope of Work.

2.0 SUBJECT PROPERTY AND VICINITY DESCRIPTION

The Subject Property is summarized in the tables below. Property boundaries for the purpose of this assessment were determined based on provided survey mapping and/or tax maps obtained through municipal sources. Subject Property Location and Tax Parcel maps for the Subject Property are located in the Site Maps Appendix.

Subject Property Name	John P. Taylor Apartments – Buildings 3 and 4
Subject Property Address	125 River Street, City of Troy, Rensselaer County, New York
Subject Property Acreage (approximate)	3.23
Parcel ID(s)	100.68, Block 1, and Lot 1./1 made up of three non-contiguous areas
Current Owner	Troy Housing Authority
Current Subject Property Use/ Development	Two, nine-story apartment buildings and a garage structure that is currently used for community space and maintenance storage.
Public Thoroughfares and Access/Egress	Congress Street to the north, River Street to the east, Division Street to the south, and Front Street to the west. The Building 3 and 4 areas are also separated by Ferry Street and the Congress Street Bridge arterial roadways.
Exterior Areas	Asphalt paved parking lot, concrete walkways, and maintained yard areas.
Surrounding Area	Urban
Subject Property Utilities	
Electric Source	National Grid
Natural Gas Source (if provided)	National Grid
Potable Water Source	Public water
Sanitary Wastewater Disposal	Public sewer
Non-Sanitary Wastewater Disposal	N/A; no non-sanitary wastewater is generated

2.1 Building Summary

Structures located on the Subject Property are summarized in the following table:

Building Name	Building 3	Garage	Building 4
Square Footage	64,660	5,424	66,388
Foundation Type	Full basement	Slab on grade	Full basement
Number of Stories	9	1	9
Construction Date	1954	1954 according to the County website. Between 1971 and 1986 according to historical documents.	1954
Heating/ Cooling Source	Natural gas reportedly connected in 2017	Natural gas	Natural gas reportedly connected in 2017
Current Use	Apartments	Community space and maintenance storage	Apartments and offices

2.2 Physical and Hydrogeological Setting

Based on a review of provided records, the following information was obtained regarding the physical and hydrogeological setting of the Subject Property:

Topography	Gentle to moderate downward slopes toward the west
Elevation (feet above mean sea level)	Ranges from approximately 10 to 25 feet.
Subject Property Water Bodies	None
Nearest Water Body	The Hudson River adjoins the Subject Property to the west (across Front Street).
Apparent Groundwater Flow in Surrounding Area	West
Soil Map Unit(s)	Urban Land
Geological Information	Canajoharie Shale
Anticipated Depth to Bedrock (feet)	Not determinable based on reviewed records.
Anticipated Depth to Groundwater (feet)	Greater than 10 feet below surface grade

Refer to Figure 1 for a copy of the Subject Property Location/Topographic Map. Copies of the soil and geological maps and associated descriptions are summarized in the ERIS Physical Setting Report

included in the Hydrogeologic Information Appendix. Groundwater flow was determined based on interpretation of the USGS topographic map and/or provided previous studies.

3.0 USER-PROVIDED INFORMATION

In accordance with the ASTM E1527-21, a "User" is defined as the party seeking to complete an environmental site assessment of the property. If the user is aware of any specialized knowledge or experience that is material to RECs in connection with the Subject Property, it is the user's responsibility to communicate any information based on such specialized knowledge or experience to the Environmental Professional. The User Questionnaire was completed by David Marin, Associate Developer with Pennrose, LLC. A copy of the User Questionnaire is included in the User Provided Information Appendix.

ASTM Standard Practice E1527-21 User Questionnaire Questions	Reported by User
Land Title Records	
Are land title records available for review?	Land title records were provided to LaBella for review (refer to Section 5.6).
Environmental Liens or Activity Use Limitations	
Did a search of *recorded land title records* identify any environmental liens filed or recorded against the *property* under federal, tribal, state or local law?	The User answered this question with an "unknown" response.
Did a search of *recorded land title records* identify any AULs, such as *engineering controls*, land use restrictions or *institutional controls* that are in place at the *property* and/or have been filed or recorded against the *property* under federal, tribal, state or local law?	The User answered this question with an "unknown" response.
Specialized Knowledge	
Does the *User* of this *ESA* have any specialized knowledge or experience related to the *property* or nearby properties? For example, is the *User* involved in the same line of business as the current or former *occupants* of the *property* or an *adjacent property* so that the *User* would have specialized knowledge of the chemicals and processes used by this type of business?	The User does not have any specialized knowledge or experiences related to the property or nearby properties.
Commonly Known or Reasonably Ascertainable Information	
Is the *User* aware of commonly known or *reasonably ascertainable* information about the	The User is aware of a prior Phase I ESA for the property and a gas station is formally adjacent.

ASTM Standard Practice E1527-21 User Questionnaire Questions	Reported by User
property that would help identify conditions indicative of releases or threatened releases?	
Based on the *User's* knowledge and experience related to the *property* are there any *obvious* indicators that point to the presence or likely presence of releases at the *property*?	Based on the User's knowledge and experiences related to the Subject Property, the User of this ESA is not aware of obvious indicators that point to the presence or likely presence of contamination at the Subject Property.
Valuation Reduction for Environmental Issues	
Does the purchase price being paid for the *property* reasonably reflect the fair market value of the *property*?	The User did not report a below fair market value.
If the *User* concluded that there is a difference, has the *User* considered whether the lower purchase price is because contamination is known or believed to be present at the *property*?	N/A

3.1 Reason For Performing Phase I ESA

According to ASTM 1527-21, either the User shall make known to the Environmental Professional the reason why the User wants to have the Phase I ESA performed or, if the User does not identify the purpose of the Phase I ESA, the Environmental Professional shall assume the purpose is to qualify for the Landowner Liability Protections under the Brownfields Amendments. The User indicated that the Phase I ESA is being conducted as part of due diligence activities associated with a construction loan.

4.0 SITE RECONNAISSANCE

LaBella conducted a site reconnaissance of the Subject Property as well as observations of adjacent properties as viewed from the Subject Property boundaries and public roadways, to the extent possible, to visually identify areas of concern. The site reconnaissance was conducted on March 13, 2024 by Jacob Cleinman, Environmental Analyst with LaBella.

LaBella was accompanied by Juaywan Scott, an employee associated with the Subject Property for one year.

Observations discussed in this Section are noted on Figure 3. Copies of the field notes taken during the site reconnaissance are included in the Site Reconnaissance Worksheet Appendix. Representative photographs of the Subject Property at the time of the site reconnaissance are included in the Site Photographs Appendix.

At the time of the site reconnaissance, a representative portion of the apartments, offices, and common areas were visually inspected. In addition, visual observations were limited at the time of the site reconnaissance due to material storage, parked vehicles, and the size of the Subject Structures. Additional site visit limitations are discussed in Section 1.4.

Past Uses of Subject Property

No apparent indicators that would indicate historical uses of the Subject Property (e.g., signs, equipment, etc.) were observed at the time of the site reconnaissance.

Hazardous Substances and Petroleum Products

Hazardous substances and petroleum products were limited to general cleaning, building maintenance, and property maintenance supplies which were observed to be properly stored in small containers with no evidence of release noted. A full 55-gallon plastic drum labeled as boiler water treatment was observed in the maintenance storage area within the garage building.

Unidentified Substance Containers

There were no unidentified substance containers (e.g., unlabeled drums or totes) observed at the time of the site reconnaissance.

Storage Tanks

The following aboveground storage tanks (ASTs) were identified at the Subject Property:

Type	Location	Capacity (gallons)	Construction	Contents	Age	Staining/ Evidence of Release?
AST	Northern exterior portion of Building 3 (AT&T generator, see below).	~120	Steel	Diesel	Unknown	None
AST	Northern basement area of Building 3 (emergency generator, see below)	~120	Steel	Diesel	Unknown	None
AST	Fire sprinkler room in the western-central portion of Building 3.	105	Steel	Diesel	Unknown	None
AST	Eastern-central basement area of Building 4. Appurtenant fill and vent piping was observed at the eastern-central exterior wall (inactive generator, see below).	~100	Steel	Unknown	Unknown	None
AST	Near the southeastern exterior portion of Building 4 (emergency generator, see below).	~100	Steel	Diesel	Unknown	None

Solid, Hazardous, and/or Regulated Wastes

The following wastes were noted, stored, or generated on the Subject Property:

Material	Source/Process	Storage Location/Quantity	Transporter/Hauler
General refuse/ recyclables	Residential and/or commercial operations	Dumpsters	Twin Bridges

LaBella performed a subsurface investigation at the Subject Property on March 18-19, 2024. Urban fill was encountered in fourteen (14) soil borings from near surface elevations to depths ranging from 10 to 14 feet below ground surface (bgs). Laboratory results from soil samples collected during the subsurface investigation are pending at the time of this Phase I ESA. Fill material generated during redevelopment activities may be subject to additional laboratory analysis and/or proper handling requirements.

Odors

No apparent strong, pungent, or noxious odors were observed at the Subject Property at the time of the site reconnaissance.

Standing Water/Pools of Liquid

No apparent pools, sumps, or standing water containing liquids likely to be hazardous substances or petroleum products were observed at the Subject Property at the time of the site visit.

PCB-Containing Equipment

The following potential PCB-containing equipment was observed at the time of the site reconnaissance:

Potential PCB-Containing Equipment	Location	Evidence of Leaks
Pad-mounted transformers	South of Building 4	No evidence of a release from this equipment was observed.
Compactors	Basement areas in Buildings 3 and 4	None

Stains and Corrosion

No apparent stains or corrosion were observed at the time of the site reconnaissance.

Stressed Vegetation

No apparent stressed vegetation was observed at the time of the site reconnaissance.

Drains and Sumps

Floor drains and sumps were observed in Buildings 3 and 4 basement areas. The drains and sumps are reportedly connected to the municipal sewer system. No leaks, stains, spills, or unusual odors were noted in the vicinity of the drains at the time of the site visit. Storm drains were noted throughout the parking area. These drains are connected to the municipal stormwater system. There were no stains, spills, or unusual odors noted in the vicinity of the storm drains at the time of the site reconnaissance.

Wastewater

Non-sanitary wastewater does not appear to be generated or discharged at the Subject Property.

Septic Systems and/or Cesspools

No apparent indications of septic systems or cesspools were observed at the time of the site reconnaissance or are reported to be located on the Subject Property.

Wells

No apparent potable, monitoring, irrigation, dry, or injection wells were observed at the time of the site reconnaissance or are reported to be located on the Subject Property.

Additional Information

In addition to the information summarized above, the following was identified at the time of the site reconnaissance:

- Four backup generators were observed on the Subject Property. ASTs used to store fuel oil for the generators are described as follows:
    - One with a diesel pedestal tank outside north of Building 3 owned by AT&T.
    - One with a diesel pedestal tank in the northwest basement of Building 3.
    - One inactive generator with an approximately 2x2x4 foot AST is located in the central Building 4 basement area. Appurtenant fill and vent pipes that appear to be associated with generator's AST were observed at the eastern-central exterior wall.
    - One with a diesel pedestal tank outside southeast of Building 4.
- An electric elevator was observed in Buildings 3 and 4.
- An approximately three-inch vent pipe was observed exiting the central west side of building three. The purpose of this pipe is unknown.
- Vent and cleanout pipping associated with the septic system was observed south of the garage.
- An approximately 2-inch cut vent pipe was observed exiting the western central interior basement wall of Building 4. No fill was associated with this vent pipe was noted.

No environmental impacts were observed in the vicinity of the generators.

Adjacent Property Use

The Subject Property is bordered by the following properties:

Direction	Current Use/Occupant and Address (if Determinable)	Apparent Past Use	Potential Concerns Visible During Site Visit
North	Commercial	Not apparent	None
East	New apartment building under construction and a college	Not apparent	None
South	Field and parking lot	Not apparent	None
West	Hudson River	Not apparent	None

Refer to Regulatory Information below for additional information regarding the north, south, east, and west adjacent properties.

4.1 Site Reconnaissance Summary of Findings

Observations made by LaBella during the site reconnaissance identified the following features indicative of the presence or likely presence of hazardous substances or petroleum products in, on, or at the Subject Property:

- Five ASTs were observed on the Subject Property. Four of which were connected to back up generators (one inactive), and one to a sprinkler system pump. No evidence of release was noted.
- LaBella performed a subsurface investigation at the Subject Property on March 18-19, 2024 (subsequent to this Phase I ESA site reconnaissance). Urban fill was encountered in fourteen (14) soil borings from near surface elevations to depths ranging from 10 to 14 bgs. Laboratory results from soil samples collected during the subsurface investigation are pending at the time of this Phase I ESA. Fill material generated during redevelopment activities may be subject to additional laboratory analysis and/or proper handling requirements.
- A pad mounted transformer was observed south of Building 4, and a trash compactor was observed in the basement of Buildings 3 and 4. No evidence of release noted at either location.
- Floor drains and sumps were observed within the basement of buildings 3 and 4. They reportedly discharge to the public sewer system. No leaks, stains, spills, or unusual odors were noted in the vicinity of the drains at the time of the site visit. Storm drains were noted throughout the parking area. These drains reportedly discharge to the municipal stormwater system. There were no stains, spills, or unusual odors noted in the vicinity of the storm drains at the time of the site reconnaissance.
- An electric elevator was observed in Building 3 and Building 4.
- An approximately three-inch vent pipe was observed exiting the central west side of Building 3. The purpose of this pipe is unknown.

- Vent and cleanout piping associated with the septic system were observed protruding from the ground surface south of the garage.
- An approximately 2-inch cut vent pipe was observed exiting the central west side of building 4 in the basement. No fill was associated with this vent pipe.

5.0 SUBJECT PROPERTY HISTORY AND USE

LaBella attempted to review reasonably ascertainable and readily available standard sources of historical information as defined by the ASTM E1527-21 in order to identify all obvious uses of the Subject Property back to the first developed use or 1940, whichever is earlier (i.e., the historical research objective according to ASTM). Uses of the properties adjacent to the Subject Property are identified in this report only to the extent that this information was revealed in the course of researching the Subject Property itself and were determined at the discretion of the Environmental Professional. As such, LaBella reviewed only as many of these sources as necessary to achieve the historical research objective. Data failures and data gaps are identified, defined, and evaluated for their significance in Section 1.3 of this report.

Additional/historical addresses of the Subject Property were identified through the review of historical sources (i.e., Sanborn Fire Insurance Maps and/or municipal records) include River Street odd numbers from 89 to 119 and 129 to159. These addresses were searched as part of the City Directory review discussed below.

5.1 Sanborn Fire Insurance Maps

The apparent historical use of the Subject Property and surrounding area, as depicted by the Sanborn maps, is summarized in the table below. A copy of the Sanborn maps is included in the Historical Information Appendix.

Year	Location	Occupant/Development
1885	Subject Property	The Subject Property is shown as various coal yards as well as, stores, pork packing, cigar factories, upholster, and engine repair at 147 River Street.
	Adjoining Properties and Surrounding Area	The southern adjoining property is shown as the Troy Gas Company's store house and coal sheds.
1904	Subject Property	The Subject Property is shown as various coal yards as well as, stores, saloon, carpenter, blacksmith, and printing facilities at 137 River Street. The Untied Traction Company Power Station is shown near the southwestern property corner.
	Adjoining Properties and Surrounding Area	The southern adjoining property is occupied by coal sheds associated with Troy Gas Company.
1951	Subject Property	The northern and eastern properties are shown as vacant with fire ruins as well as auto sales, auto supplies, oil, and paint sales facilities. The Clemente Bros. transit mixed concrete facility is shown along the southwestern portion of the

Year	Location	Occupant/Development
		Subject Property. An associated gasoline tank is also shown in the vicinity of the southwestern site boundary.
	Adjoining Properties and Surrounding Area	An automotive filling station with two (2) gasoline tanks are shown near the intersection of River and Ferry Street at 121 River Street.
1955, 1962, 1965, and 1971	Subject Property	The Subject Property is identified as Troy Housing Authority, John Taylor Apartments. Apartment Buildings 3 and 4 appear consistent with their current configuration.
	Adjoining Properties and Surrounding Area	Adjacent and nearby properties are shown as vacant, restaurant, institutional (i.e., college), and residential properties. The southern adjoining is shown as the Trojan Scrap Iron Corp. facility.

The following adjacent property uses of potential concern were identified:

- Sanborn maps show the eastern-central adjoining property, located at the southeastern intersection of River and Ferry Streets (addressed as 121 River Street), as an automotive filling station from sometime between 1904 and 1951 until the early 1950s. At least two gasoline tanks were associated with this historic facility.

5.2 City Directories

City Directory research was completed by ERIS. Identified occupants associated with the Subject Property are detailed in the table below. Copies of street directories are included in the Historical Information Appendix.

Year	Occupant Listings
1925 and 1930	Residential listings, furniture sales, poultry sales, shoe repair, coal sales, barber, grocer, restaurants, welding company, auto repair and sales.
1935	Residential listings, poultry sales, coal sales, restaurants, auto repair and sales.
1939 and 1944	Residential listings, poultry sales, coal sales, restaurants, printer, auto repair and sales.

Year	Occupant Listings
1948-1949	Residential listings, poultry sales, coal sales, restaurants, printer, neon sign sales, auto repair and sales.
1953	Troy Street Housing Authority
1958, 1963, 1968, 1972, 1976, 1980, 1984, 1988, 1990, 1995, 2000, 2003, 2008, 2012, 2016, 2020, and 2022	Troy Street Housing Authority John Taylor Apartments. Residential and office listings.

A review of the City Directories indicates that adjoining and nearby properties were historically utilized for commercial, institutional, and residential purposes. The following adjacent property uses of potential concern were identified:

- The eastern-central adjoining property, located at 121 River Street, was identified as an automotive filling station in 1939, 1944, and 1948-49.

5.3 Aerial Photographs

The table below outlines observations of the Subject Property and surrounding area obtained from the review of aerial photographs. Copies of aerial photographs are included in the Historical Information Appendix.

Year	Location	Development
1952	Subject Property	The Subject Property is an urban area with multiple structures near the eastern property boundary and vacant land near the west property boundary. A road is shown north and south across the center of the Subject Property.
	Adjoining Properties and Surrounding Area	The Subject Property is an urban area. A bridge is shown to the north, residential and commercial sized structures to the east and south, and a river west adjacent.
1960	Subject Property	Building 3 and 4 are shown on the Subject Property.
	Adjoining Properties and Surrounding Area	The Subject Property is an urban area. A bridge is shown to the north, residential and commercial sized structures to the east and south, and a river west adjacent.
1986, 1995, 2000, 2006, 2011, and 2021	Subject Property	All present day structures are on the Subject Property.
	Adjoining Properties and Surrounding Area	The Subject Property is an urban area. Residential and commercial sized structures are shown to the north, east, and south. A river is west adjacent, and a bridge is shown east and west between the northern parcels.

5.4 Topographic Maps

The table below outlines observations of the Subject Property and adjacent properties obtained from the review of topographic maps. Copies of topographic maps are included in the Historical Information Appendix.

Year	Location	Development
1893, 1898, 1904, 1909, 1916, 1924, 1930, 1937, and 1945	Subject Property	A road is shown north and south across the center of the Subject Property.
	Adjoining Properties and Surrounding Area	The present-day streets are shown around the Subject Property. A bridge is shown east to west north adjacent. A river is shown west adjacent.
1950, 1955, and 1961	Subject Property	The Subject Property is shown to be in an urban area.
	Adjoining Properties and Surrounding Area	The Subject Property is shown to be in an urban area. The present-day streets are shown around the Subject Property. A bridge is shown east to west north adjacent. A river is shown west adjacent.
1984	Subject Property	The Subject Property is shown to be in an urban area.
	Adjoining Properties and Surrounding Area	The Subject Property is shown to be in an urban area. The present-day streets are shown around the Subject Property. A bridge is shown east to west between the northern two parcels. A river is shown west adjacent.
2013 and 2019	Subject Property	Individual features are not shown on this map series.
	Adjoining Properties and Surrounding Area	Individual features are not shown on this map series. The present-day streets are shown around the Subject Property. A river is shown west adjacent.

5.5 Municipal Records

LaBella was provided copies of municipal records from the City of Troy on February 28, 2023. Limited assessment information was obtained from the Rensselaer County Image Mate/GIS website on February 21, 2024. The following information was obtained from these records. Copies of municipal records are included in the Municipal Information Appendix.

	Findings/Details
Parcel ID(s)	100.68, Block 1, and Lot 1./1 made up of three non-contiguous areas
Subject Property Size (acres)	3.23
Current Owner	Troy Housing Authority

	Findings/Details
Former Owners	City of Troy
Square Footage of Building(s)/Date(s) of Construction	Building 3 - 64,660/1954 Garage - 5,424/1954 according to the County website. Between 1971 and 1986 according to historical documents. Building 4 - 66,388/1954
Provided Utilities	Public sewer, water, natural gas, and electric
Additional Information	The following structure fires were reported on the Subject Property. Each was reportedly contained to a single room and are described as follows. 04/08/2004 Incident Number 24965 - Building 4 Apartment 6D 08/02/2004 Incident Number 58832 - Building 4 Apartment 6E 01/27/2011 Incident Number 8580- Building 4 Apartment 6G

5.6 Recorded Land Title Records

According to the User's Responsibility section of the ASTM Standard Practice E1527-21, “to meet the requirements of 40 C.F.R. 321.20 and 312.25, a search for the existence of environmental liens and AULs that are filed or recorded against the subject property must be conducted.” ASTM also states that the User's requirements "do not impose on the environmental professional the responsibility to undertake a review of land title records or judicial records for environmental liens or AULs." In accordance with the ASTM Standard Practice E1527-21, LaBella has requested the User provide copies of the title records for the Subject Property.

Review of the abstract of title for the Subject Property provided by the User indicated the Subject Property has been historically owned by Adolph Strichman, Fannie L. Gold, Michael J. Sullivan, H. A. Mc Rae & Co, Joseph I. Brown, Mary E. O’Neil, Abraham C. Futterman, Chuckrow Realty Inc, and The City of Troy, and is currently owned by Troy Housing Authority.

A copy of these deed records are included in the Historical Information Appendix.

5.7 Additional Sources

No additional historical sources were reviewed.

5.8 Review of Previous Reports

LaBella was provided with and reviewed the following report:

- *Phase I Environmental Site Assessment, John P. Taylor Apartments Buildings 3 & 4, 125 River Street Troy, New York 12180,* completed by HRP Associates, Inc. and dated August 29,

2023.

Based on this report, Buildings 3 and 4 were originally heated with fuel oil stored in a 25,000-gallon underground storage tank (UST). The UST was reportedly located between Taylor Apartments Buildings 1 and 2 (located on the northeastern adjoining property) and subsequently heated by natural gas since at least 2017.

HRP's site reconnaissance identified the following:

- Backup generators with approximately 100-gallon diesel ASTs were observed at exterior portions of Buildings 3 and 4. No evidence of any associated release was observed.
- A pad mounted transformer was observed near Building 4. No evidence of an associated release was observed.
- Hazardous substances and petroleum products were limited to general cleaning and building maintenance supplies which were observed to be properly stored in small containers in the basement of Building 3. No evidence of release noted.
- Backup generators with approximately 100-gallon diesel ASTs were observed in the basement of Building 3. No evidence of a release was observed.
- A vent pipe was observed on the western exterior wall of Building 4. Staining in the immediate vicinity of the pipe was observed within the mechanical room; however, no evidence of soil or groundwater impacts were noted.
- A fill and vent pipe were observed on the eastern-central exterior wall of Building 4. The pipes appeared to be cut at the interior basement wall. No evidence of a release was observed; however, the pipes were reportedly not sealed and were identified as a potential business environmental risk.
- Floor drains were observed in all three structures. They are reportedly connected to the sanitary sewer, and no staining or odors were observed around the drains.

The Subject Property was identified in regulatory records as the following:

- Fuel oil spilled from a tank overfill on May 5, 2010, spill #1001345.

Adjacent/surrounding regulatory records did not suggest a concern to the Subject Property.

HRP Associates, Inc. identified the following RECs:

- Removal documentation has not been identified for the piping from the off-site 25,000-gallon fuel oil AST to the Subject Structures.
- The Subject Property was historically used for industrial purposes from at least 1885 until 1951.

In addition, the following CRECs, HRECs, de minimis conditions, and/or significant data gaps were identified:

- According to historical records, a former gasoline tank was located just southwest of the Subject Property in 1951. A Significant Data Gap and potential REC due to the lack of removal documentation is reported.
- Fuel oil spilled from a tank overfill on May 5, 2010, spill #1001345. This is an HREC due to the quantity released and cleanup performed.

Based on the findings of the report, HRP Associates, Inc. concluded that further investigation was warranted. A copy of the reviewed reports are included in the Previous Reports Appendix.

5.9 Historical Summary of Findings

Based on LaBella's review of historical sources, the history of the Subject Property is as follows:

Time Period	Apparent Use/Development
1893 through 1954	The Subject Property is an urban area with a road shown north and south across the center of the Subject Property. The Subject Property is made up of various coal yards as well as, stores, pork packing, cigar factories, upholster, blacksmith, printing, and engine repair.
1954 through the present	Developed with the present day structures and roads in their current position.

Based on LaBella's review of historical information, the adjacent properties were historically undeveloped or utilized for commercial, religious, and residential purposes. The following adjacent property uses of potential concern were identified:

- The eastern-central adjoining property at the intersection of River and Ferry Street, (addressed as 121 River Street) was identified as a filling station in at least 1939 through 1951.

LaBella's historical research identified the following conditions indicative of the presence or likely presence of hazardous substances or petroleum products in, on, or at the Subject Property:

- The past uses of the Subject Property have the possibility of impacting soil and groundwater such as various coal yards as well as, stores, pork packing, cigar factories, upholster, blacksmith, printing, and engine repair.
- In the 1951 Sanborn Map, a transit mixed concrete facility is shown near the southwestern portion of the Subject Property. An associated gasoline tank is also shown near the southwestern Subject Property boundary, within the current Division Street roadway.

6.0 REGULATORY INFORMATION

Federal, state, and tribal environmental regulatory information was provided by ERIS, an independent research firm, which completed an ASTM-compliant regulatory records search. This search was completed to ASTM-defined search distances; however, it should be noted that the distances searched may have been modified based on LaBella's experience due to the geology or nature of the area, as permitted under ASTM E1527-21. Additionally, ERIS conducted a search of supplemental Federal, state, tribal, and local databases to augment the ASTM-specified search; any relevant listings from these supplemental searches are summarized in the following sections. The ERIS report, dated February 22, 2024 is included in the Regulatory Information Appendix.

The review of regulatory information was completed to evaluate the potential for environmental impact to the Subject Property, including contaminant migration from off-Subject Property locations. This evaluation included a review of regulatory records along with geologic/ hydrogeologic information, topographical information, and/or distance relative to the Subject Property.

6.1 Regulatory Report Summary

A complete list of the databases reviewed is included within the ERIS report. Below is a summary of the identified listings within their respective search distance:

Regulatory Report Summary

Database	Search Radius	Target Property	Within 0.12mi	0.12mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
ALT FUELS	0.25	0	1	8	-	-	9
AST	0.25	0	0	4	-	-	4
BROWNFIELDS	0.5	0	0	0	3	-	3
DELISTED TANKS	0.25	0	0	1	-	-	1
ENG	0.5	0	1	0	1	-	2
FINDS/FRS	0.02	1	-	-	-	-	1
FUDS	1.0	0	0	1	0	0	1
GEN MANIFEST	0.125	0	3	-	-	-	3
HSWDS	1.0	0	0	0	1	4	5
INST	0.5	0	1	0	1	-	2

Database	Search Radius	Target Property	Within 0.12mi	0.12mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
LANDFILL INACTIVE	0.5	0	0	1	0	-	1
LST	0.5	0	0	3	11	-	14
MGP	1.0	0	1	0	3	0	4
MOSF	0.5	0	0	0	3	-	3
MRDS	1.0	0	0	0	3	0	3
NPL	1.0	0	1	0	0	0	1
NY MANIFEST	0.125	1	1	-	-	-	2
NY SPILLS	0.5	1	23	23	171	-	218
PFAS	0.5	0	0	0	1	-	1
PFAS IND	0.5	0	1	1	0	-	2
RCRA CORRACTS	1.0	0	0	0	0	2	2
RCRA LQG	0.25	1	1	1	-	-	3
RCRA NON GEN	0.25	0	3	5	-	-	8
RCRA SQG	0.25	0	2	2	-	-	4
RCRA VSQG	0.25	0	1	0	-	-	1
SHWS	1.0	0	0	0	1	4	5
SWF/LF	0.5	0	0	0	2	-	2
TIER 2	0.125	0	1	-	-	-	1
UST	0.25	0	3	7	-	-	10
VAPOR	1.0	0	0	0	0	1	1
VCP	0.5	0	1	0	3	-	4

6.1.1 Subject Property Listings

The Subject Property, was identified as follows:

Niagara Mohawk Power Corp MH 13 and 16

- RCRA LQG (ID #NYP000256941) with no violations. This facility was identified as a LQG of lead in 2022 and 2023.
- Manifest facility in association with the RCRA listing RCRA #NYP000256941.
- FRS listing is associated with inclusion in the RCRA Program EPA ID #110071334207

The ERIS report indicates this facility is located at the Subject Property; however, the address is listed as 145 River Street and latitude/longitude coordinates locate this facility off-site to the north.

Taylor Apartment Building Three

- Spill #1001345 was reported when a tank overfill resulted in a release of approximately 2-galllons of fuel oil in May 2010. Impacted soil was reportedly removed, and the spill was closed the following day without meeting standards.

Due to the nature and/or status of the listings, there does not appear to be a REC in association with the regulatory records attached to the Subject Property.

6.1.2 Adjacent Property Listings

The following regulatory listings associated with adjacent properties were identified:

Hudson River (west)

- The Hudson River PCB NPL Superfund Remedial Site EPA ID #NYD980763841.

Route 2 bridge/19th Street (west)

- RCRA Non-Generator (ID #NYD986886224) with no violations. This facility was identified as a LQG in 1990 and a Non-Generator in 1992, 2006, and 2007.
- RCRA Non-Generator (ID #NYP000933531) with no violations. This facility was identified as a LQG and Non-Generator in 1998.
- Spill #8701423 involved white foal liquid discharging from a drain into the river in May 1987. The NYSDEC closed the spill meeting standards the same day.
- Spill #8701879 involved different color discharge from a drain into the river in June 1987. The NYSDEC closed the spill meeting standards the same day.
- Spill #8805277 involved a bright green liquid identified in the river in September 1988. The NYSDEC closed the spill meeting standards nine days later.
- Spill #8912260 involved a caller reporting white foamy and black discharge from a storm drain in the river in March 1990. The NYSDEC closed the spill meeting standards in September 1990.
- Spill #9302995 involved a caller identifying a slick on the river in June 1993. The NYSDEC closed the spill meeting standards five days later.

- Spill #9801464 involved a sheen identified on the river in May 1998. The NYSDEC closed the spill not meeting standards the next day.
- Spill #0006679 involved a bluish green material discharging from a drain into the river in September 2000. The NYSDEC closed the spill meeting standards in October 2000.
- Spill #1205233 involved a report of algae in the river in August 2012. The NYSDEC closed the spill not meeting standards the same day.

Niagara Mohawk at 160 River Street (north)

- RCRA Non-Generator (ID #NYP000976977) with no violations. This facility was identified as a Non-Generator and LQG in 2021.

Taylor Apartments (east)

- UST Facility (PBS #4-600327): A 25,000-gallon fuel oil UST was installed near Building 1 and 2 in December 1952 and removed in May 2017.
- Spill #1701213 involved contamination being identified during a tank removal in May 2017, (PBS #4-600327). After the tank was removed, contamination was identified to have originated from the piping. Contaminated soil was removed; however, endpoint sampling identified contaminant concentrations above soil cleanup objectives at one location. The NYSDEC closed the spill not meeting standards in July 2017.

Troy Liberty St. Manufactured Gas Plant at 10 Division St (south)

- The ERIS report identifies the Troy Gas Light Company manufactured gas plant (MGP) on the southern adjoining property; however, information provided on the NYSDEC site remediation database confirms that the MGP site is located approximately 0.33-mile southeast. The southern adjoining property identified on the ERIS report is shown on corresponding Sanborn maps as a coal storage facility associated with the nearby MGP site.

This nearby facility is unlikely to have impacted the environmental integrity of the Subject Property.

6.1.3 Additional Listings

Based on the location of the event/property, remedial activities, and/or the presumed direction of groundwater flow, none of the other sites listed are likely to have current or former releases of hazardous substances and/or petroleum products with the potential to migrate to the Subject Property except:

6.1.4 Unmappable Listings

Unmapped facilities were identified within the ERIS report. The specific location of these listings could not be determined due to incomplete or inaccurate address information. Based on the limited

address information available for the listings, they do not appear to be associated with the Subject Property or adjacent properties.

6.2 Enforcement Action/Permitted Activities/Institutional Controls

No recorded enforcement actions or institutional controls were identified for the Subject Property during this Phase I ESA.

Provided Information indicates that the Subject Property is subject to environmental permit activities including (storage tank and RCRA).

6.3 Regulatory Agency File and Records Review

The purpose of the regulatory file review is to obtain sufficient information to assist the Environmental Professional in determining if a recognized environmental condition, controlled recognized environmental condition, historical recognized environmental condition, de minimis condition, or significant data gap exists at the Subject Property in connection with the identified listings. Regulatory listings identified in the database report for the Subject Property and adjacent properties were evaluated in order to determine the need for a regulatory file review. Based on this evaluation, the following was concluded:

- A file review was completed relative to Subject Property and/or adjacent property regulatory listings and is included in the summary above.

6.4 Regulatory Information Summary

LaBella's review of regulatory information identified the following conditions indicative of the presence or likely presence of hazardous substances or petroleum products in, on, or at the Subject Property.

- The ERIS report identifies the Subject Property as the Niagara Mohawk Power Corp MH 13 and 16 facility with associated RCRA, manifest, and FRS listings. Additionally,
- NYSDEC spill no. 1001345 spill was reported at Taylor Apartment Building 3 for an approximately 2-gallon release of #2 fuel oil caused by a tank overfill in 2010.
- The western adjoining property is the Hudson River PCB NPL Superfund Remedial Site.
- The eastern adjoining Taylor Apartment Buildings had a 25,000-gallon fuel oil UST and a reported spill when contamination was identified during its removal.
- The southern adjoining property is identified as the Troy Gas Light Company manufactured gas plant; however, the NYSDEC remediation site database identify this facility approximately 0.33-mile southeast. Historic Sanborn maps identify this southern adjoining property as a coal storage property associated with the nearby manufactured gas plant facility.

7.0 INTERVIEWS

Interviews were completed with representatives of the owner/operator of the Subject Property, Subject Property occupants, neighbors, and/or former owners/operators, to the extent possible, to further assess Subject Property operations and/or potential environmental concerns. Notes from completed interviews are included in the Owner/Operator-Provided Information Appendix.

Additional information was obtained through federal, state, tribal, and/or local agencies or via the submission of Records Requests, as documented below.

7.1 Owner/Subject Property Representative

Brandon Rasmussen, Maintenance Supervisor, was interviewed as part of this assessment on March 13, 2024. Mr. Rasmussen has reportedly been associated with the Subject Property for six years and stated that the floor drains/sumps and storm drains are connected to the municipal sanitary sewer and stormwater systems, respectively. Mr. Rasmussen had no knowledge of any USTs located at the Subject Property.

In addition, Brandon Rasmussen did not have knowledge of: 1) environmental liens or governmental notifications relating to past or recurrent violations of environmental laws with respect to the property or any facility located on the property or 2) information regarding past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any hazardous substance or petroleum product. Provided copies of the prior Phase I ESA report, have been summarized in the Review of Previous Reports section.

7.2 Current Occupants

In accordance with ASTM Standard Practice E1527-21, for multi-family residential properties, residential occupants were not interviewed.

7.3 Former Owners/Operators/Occupants

No past owners/occupants/operators were contacted because no contact information was provided through available municipal records or through a focused online search.

7.4 Neighbors

The Subject Property is not an abandoned property; therefore, interviews with the neighboring property owners were not conducted.

7.5 Local Government Official

A FOIL request was submitted to the City of Troy on February 22, 2024, requesting copies of building department, assessment, and fire marshal records on file for the Subject Property. Relevant records are discussed in Section 5.5 above. A copy of the FOIL request and any obtained records are included in the Municipal Information Appendix.

7.6 Local Fire Department

In LaBella's experience, records from the fire department that serves the Subject Property would be included in FOIL records obtained from the local government official, as noted in Section 7.5 above.

7.7 State Regulator

A FOIL request was submitted to the NYSDEC on February 23, 2024, for information regarding the Subject Property and adjacent properties suspected to pose a potential concern to the Subject Property based on a review of the database report and/or other regulatory records. Records were obtained from the NYSDEC and are discussed in further detail in Sections 6.1.1, 6.1.2, and/or 6.1.3 above. Copies of the FOIL request and the documents obtained are included in the Regulatory Information Appendix.

7.8 State and/or County Health Department

A FOIL request was submitted to Rensselaer County on February 22, 2024, for information regarding the Subject Property. As of the date of this report submission, a response has not been received. A copy of the FOIL request is included in the Regulatory Information Appendix.

7.9 Summary of Interviews

LaBella's interviews and/or review of provided records did not identify conditions indicative of the presence or likely presence of hazardous substances or petroleum products in, on, or at the Subject Property unless discussed elsewhere in this report.

8.0 ADDITIONAL SERVICES/ASTM NON-SCOPE CONSIDERATIONS

8.1 Emerging Contaminants

Hazardous substances are those defined as such pursuant to CERCLS 42 U.S.C. § 9601(14), as interpreted by USEPA regulations and the courts. There are some substances that others may assume to be classified as hazardous substances that are in fact not defined (or not yet defined) as hazardous substances under CERCLA through interpretation by USEPA regulations.

These and any other "emerging contaminants," where they are not identified as a hazardous substance by CERCLA, as interpreted by USEPA regulations and the courts, are not included in the scope of E1527-21. Some of these substances may be considered a "hazardous substance" (or equivalent) under applicable state laws. In those instances, where a Phase I ESA is performed to satisfy both federal and state requirements, or as directed by the user of the report, it is permissible to include analysis and/or discussion of these substances in the same manner as any other Non-Scope Consideration. If and when such emerging contaminants are defined as hazardous substances under CERCLA, as interpreted by USEPA regulations and the courts, such substances shall be evaluated within the scope of ASTM E1527-21.

No information was provided indicating emerging contaminant impacts to groundwater in the area of the Subject Property; however, historic industrial utilization and three (3) separate fire events may have resulted in impacts from the emerging contaminants, 1,4-dioxane and/or per-and polyfluoroalkyl substances (PFAS), respectively. LaBella notes that no laboratory results for emerging contaminant analysis were provided for review.

9.0 FINDINGS AND OPINIONS

LaBella has been contracted by Pennrose, LLC to perform a Phase I ESA report for the John P. Taylor Apartments – Buildings 3 and 4 property, 125 River Street, City of Troy, Rensselaer County, New York.

This assessment was prepared according to the ASTM E1527-21 as a portion of the User's requirements in the All Appropriate Inquiries process and to satisfy the due diligence requirements set for Pennrose, LLC.

The Subject Property is further described in Section 2.0 while the history of the Subject Property is summarized in Section 5.9.

Based on the results of this assessment, the following RECs have been identified in connection with the Subject Property:

- Historic commercial and industrial utilization of the Subject Property including various coal yards/storage, power station, warehouses, cigar factories, upholstery, blacksmith, printing, and engine repair facilities. Additionally, in the 1951 Sanborn Map, a transit mixed concrete facility is shown near the southwestern portion of the Subject Property with one gas tank.
- The northeastern adjoining John Taylor Apartments, Buildings 1 and 2 property is a registered petroleum bulk storage (PBS) facility with one closed-removed 25,000-gallon fuel oil UST. NSYDEC spill no. 1701213 was reported in May 2017 upon discovery of fuel oil contaminated soil during tank removal activities. Appurtenant piping was identified as the cause of the release; however, no information regarding piping removal was available. Contaminant concentrations were detected slightly above applicable NYSDEC cleanup standards in one confirmatory endpoint sample and the spill was closed without meeting standards in July 2017. No information regarding piping removal or associated impacts at the Subject Property are available.

Based on the results of this assessment, no CRECs have been identified in connection with the Subject Property.

Based on the results of this assessment, the following HRECs have been identified in connection with the Subject Property:

- NYSDEC spill no. 1001345 was reported at Taylor Apartments Building 3 when a tank overfill caused an approximately 2-gallon release of fuel oil in May 2010. Contaminated soil was reportedly removed, and the spill was closed without meeting standards the following day.

Based on the results of this assessment, no de minimis conditions have been identified in connection with the Subject Property.

Based on the results of this assessment, the following significant data gaps have been identified in connection with the Subject Property:

- Former heating systems prior to the connection of natural gas is undetermined at the time of this Phase I ESA. According to previous environmental reports and interviews, heating systems were fueled by #6 fuel oil stored in a closed-removed 25,000-gallon UST formerly located at the northeast adjoining, Taylor Apartments Buildings 1 and 2 property. Limited basement area space and lack of chimneys at Buildings 3 and 4 indicate that these on-site structures may have been connected to a steam system located at Building 2.

While not considered a REC, CREC, HREC, de minimis condition, or significant data gap at this time, LaBella also notes the following:

- During the site visit, the following was noted.
    - Hazardous substances and petroleum products were limited to general cleaning, building maintenance, and property maintenance supplies which were observed to be properly stored in small containers with no evidence of release noted. Additionally, a full 55-gallon plastic drum labeled as boiler water treatment was observed in the maintenance storage area of the garage.
    - LaBella performed a subsurface investigation at the Subject Property on March 18-19, 2024. No evidence of a petroleum or chemical release was identified during fieldwork activities; however, urban fill was encountered in fourteen (14) soil borings. Fill material was from near surface elevation to depths of approximately 10 to 14 feet below surface grade. Analytical information from soil samples collected during the investigation is pending at the time of this Phase I ESA; however, poor quality urban fill is a potential environmental liability to the Subject Property.
    - The eastern-central adjoining property at the intersection of River and Ferry Street (addressed as 121 River Street) was identified as a filling station from at least 1939 through 1951. This adjoining property is now developed with the Congress Street Bridge arterial roadway and any associated impacts are likely to have been excavated/removed during redevelopment activities.
    - Five ASTs were observed on the Subject Property. Four of which were connected to back up generators, and one to a sprinkler system pump. No evidence of release was noted.
    - A pad mounted transformer was observed south of building 4, and a trash compactor was observed in the basement of buildings 3 and 4, no evidence of release noted.
    - Floor drains and sumps reportedly connected to the municipal sewer system were observed within the basement areas of Buildings 3 and 4. Storm drains reportedly

connected to the municipal stormwater system were noted throughout the parking areas. No stains, spills, or unusual odors in the vicinity of the floor drains, sumps, or stormwater drains were noted during Subject Property reconnaissance.
    - An approximately three-inch vent pipe was observed exiting the central west side of Building three. The purpose of this pipe is unknown.
    - A vent pipe and cleanouts associated with the septic system were observed protruding from the ground surface near the southern exterior portion of the garage building.
    - An approximately 2-inch diameter, cut vent pipe was observed exiting the central western exterior basement wall at Building 4. No associated fill port was noted.
- The Subject Property was identified as Niagara Mohawk Power Corp., MH 13 and 16 facility; however, this facility appears to be located off-site to the north.

9.1 Additional Investigation

Based on the findings of this assessment, additional investigation is warranted at this time.

10.0 CONCLUSIONS

LaBella has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-21 for 125 River Street, City of Troy, New York, the Subject Property. Any exceptions to, or deletions from, this practice are described in Section 1.4 of this report.

This assessment has revealed the following recognized environmental conditions, controlled recognized environmental conditions, or significant data gaps in connection with the Subject Property:

- Historic industrial and commercial utilization of the Subject Property is a REC.
- NSYDEC spill no. 1701213 was reported at the eastern adjoining, Taylor Apartments Buildings 1 and 2 property. The release was reportedly caused by an appurtenant piping failure. No information regarding pipe removal is available and endpoint sampling identified residual petroleum contamination in on-site soils which is considered a REC.
- Former heating system prior to the connection of natural gas is undetermined at the time of this reports submission for Buildings 3 and 4.

This report constitutes the findings of LaBella's investigation conducted for the Subject Property as written and reviewed by the following personnel:

Jacob Cleinman
Environmental Analyst

Adam Atkinson
Senior Project Manager

11.0 ENVIRONMENTAL PROFESSIONAL STATEMENT

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in § 312.10 of 40 C.F.R. § 312.

I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the Subject Property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 C.F.R. Part 312.

Adam Atkinson
Senior Project Manager
Environmental Professional
March 28, 2024

12.0 REFERENCES

	Source
USGS 7.5 Minute Topographic Quadrangle Map of City of Troy, New York	USGS Website
Rensselaer County Soil Survey	ERIS
Federal Environmental Regulatory Listings	ERIS
State Environmental Regulatory Listings	ERIS
Local Landfill or Solid Waste Information	ERIS
Sanborn Fire Insurance Maps	ERIS
City Directories	ERIS
Aerial Photographs	www.historicaerials.com or ERIS
Historical Topographic Maps	www.historicaerials.com or ERIS
Previous Reports	2023 Phase I ESA conducted by HRP Associates, Inc.

13.0 LIST OF ABBREVIATIONS/ACRONYMS

ACM	Asbestos Containing Material
AIRS	Aerometric Information Retrieval System
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
AUL	Activity Use Limitation
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
CBS	Chemical Bulk Storage
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CORRACTS	Corrective Action
CP-51	Commissioner's Policy 51
CREC	Controlled Recognized Environmental Condition
DRO	Diesel Range Organics
ECHO	Enforcement Compliance History Online
ERIS	Environmental Risk Information Services
ERNS	Emergency Response and Notification System
FINDS	Facility Index System
FIS	Facility Information System
FOIA	Freedom of Information Act
FOIL	Freedom of Information Law
FRS	Facility Registry Service
Ft. bgs	Feet Below Ground Surface
FWM	Freshwater Wetlands Map
GRO	Gasoline Range Organics
HREC	Historical Recognized Environmental Condition
HS/PP	Hazardous Substances/Petroleum Products
IC/EC	Institutional Control/Engineering Control
ICIS	Integrated Compliance Information System
LAST	Leaking Aboveground Storage Tank
LQG	Large Quantity Generator
LST	Leaking Storage Tank
LTANK	Leaking Tank
LUST	Leaking Underground Storage Tank
mg/kg	Milligrams Per Kilogram
mg/L	Milligrams Per Liter

MOSF	Major Oil Storage Facility
MTBE	Methyl Tert-Butyl Ether
mVOC	Microbial Volatile Organic Compound
N/A	Not Available/Not Applicable
NFRAP	No Further Remedial Action Planned
NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PAHs	Polycyclic Aromatic Hydrocarbons
PBS	Petroleum Bulk Storage
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethylene
pCi/L	Pico Curies per Liter
PEC	Potential Environmental Concern
PFAS	Per- and Polyfluoroalkyl Substances
PID	Photoionization Detector
ppb	Parts Per Billion
ppm	Parts Per Million
RCRA	Resource Conservation and Recovery Act
RCRIS	Resource Conservation and Recovery Information System
REC	Recognized Environmental Condition
SDS	Safety Data Sheet
SEMS	Superfund Enterprise Management System
SPDES	State Pollution Discharge Elimination System
SQG	Small Quantity Generator
STARS	Spill Technology and Remediation Series
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCE	Trichloroethylene
TCL	Target Compound List
TPH	Total Petroleum Hydrocarbons
TSDF	Treatment, Storage, and Disposal Facility
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service

USGS	United States Geological Survey
UST	Underground Storage Tank
VCP	Voluntary Cleanup Program
VOC	Volatile Organic Compound
VSQG	Very Small Quantity Generator
µg/L	Micrograms Per Liter
µg/kg	Micrograms Per Kilogram
$\mu g/m^3$	Micrograms Per Cubic Meter

LaBella
Powered by partnership.

Site Maps

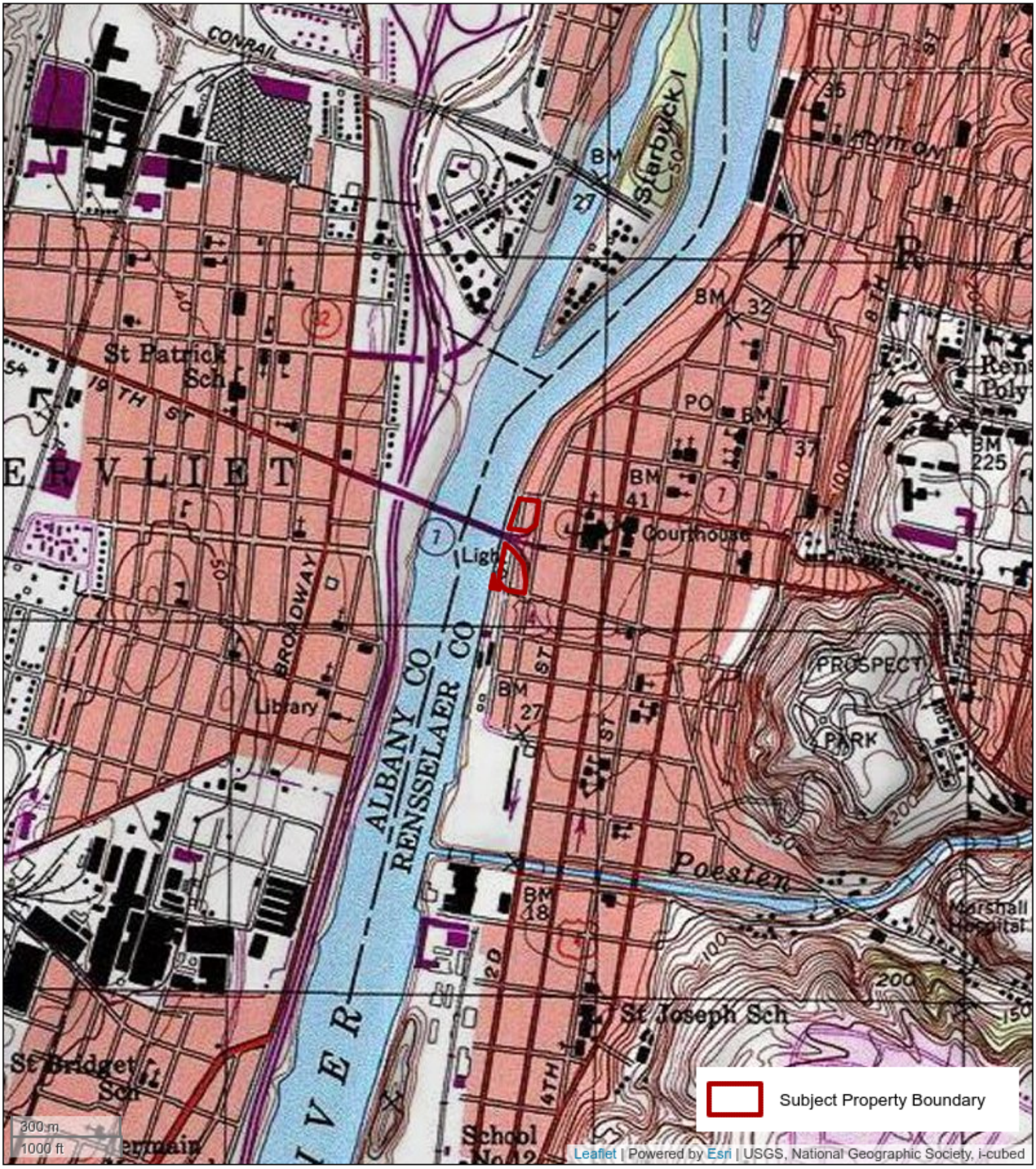


Figure 1 Site Location Map

125 River Street
City of Troy New York 12180
Project No. 2241307

LaBella
Powered by partnership

Figure 2 Site Property Tax Map

125 River Street
City of Troy, New York 12180
Project No. 2241307

Figure 3 Site Plan

125 River Street
City of Troy, New York 12180
Project No. 2241307

LaBella
Powered by partnership

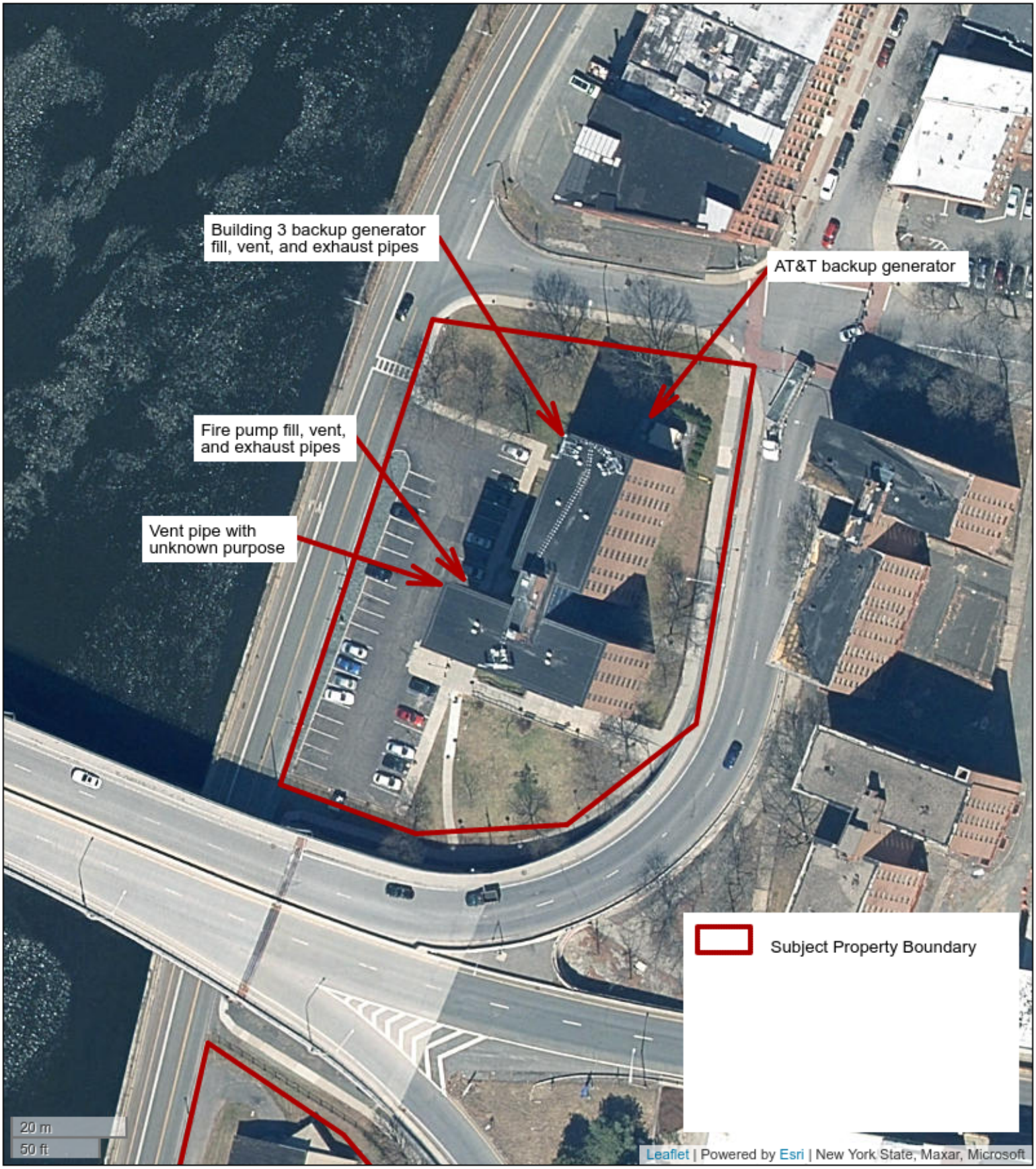


Figure 3A Site Plan

125 River Street
City of Troy, New York 12180
Project No. 2241307

LaBella
Powered by partnership

LaBella
Powered by partnership.

Historical Information

FIRE INSURANCE MAPS

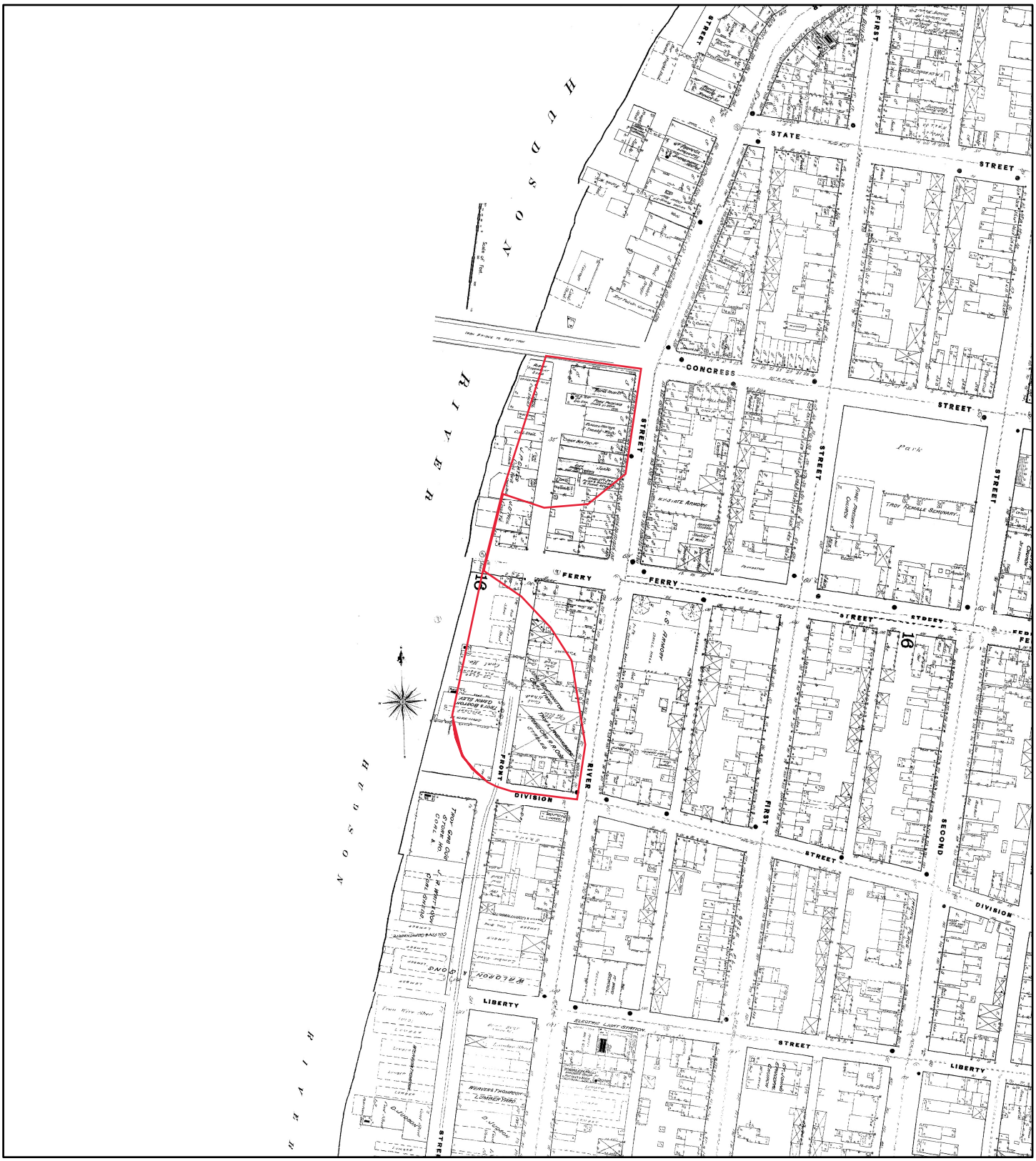
Project Property:	Taylor Apartments - Buildings 3 and 4 125 River Street Troy NY 12180
Project No:	2241307
Requested By:	LaBella Associates
Order No:	24022100973
Date Completed:	February 22, 2024

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

Listed below, please find the results of our search for historic fire insurance maps from our in-house collection, performed in conjuction with your ERIS report.

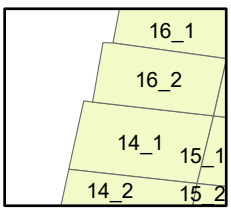
Date	City	State	Volume	Sheet Number(s)
1885	Troy	New York	1	14, 16
1904	Troy	New York	2	100, 91, 95, 96, 99
1951	Troy	New York	2	100, 91, 95, 96, 99
1955	Troy	New York	2	100, 91, 95, 96, 99
1962	Troy	New York	2	100, 91, 95, 96, 99
1965	Troy	New York	2	100, 91, 95, 96, 99
1971	Troy	New York	2	100, 91, 95, 96, 99

Fire Insurance Map



1885

Address: 125 River Street Troy NY 12180



Map sheet(s):
Volume 1: 14,16;

N

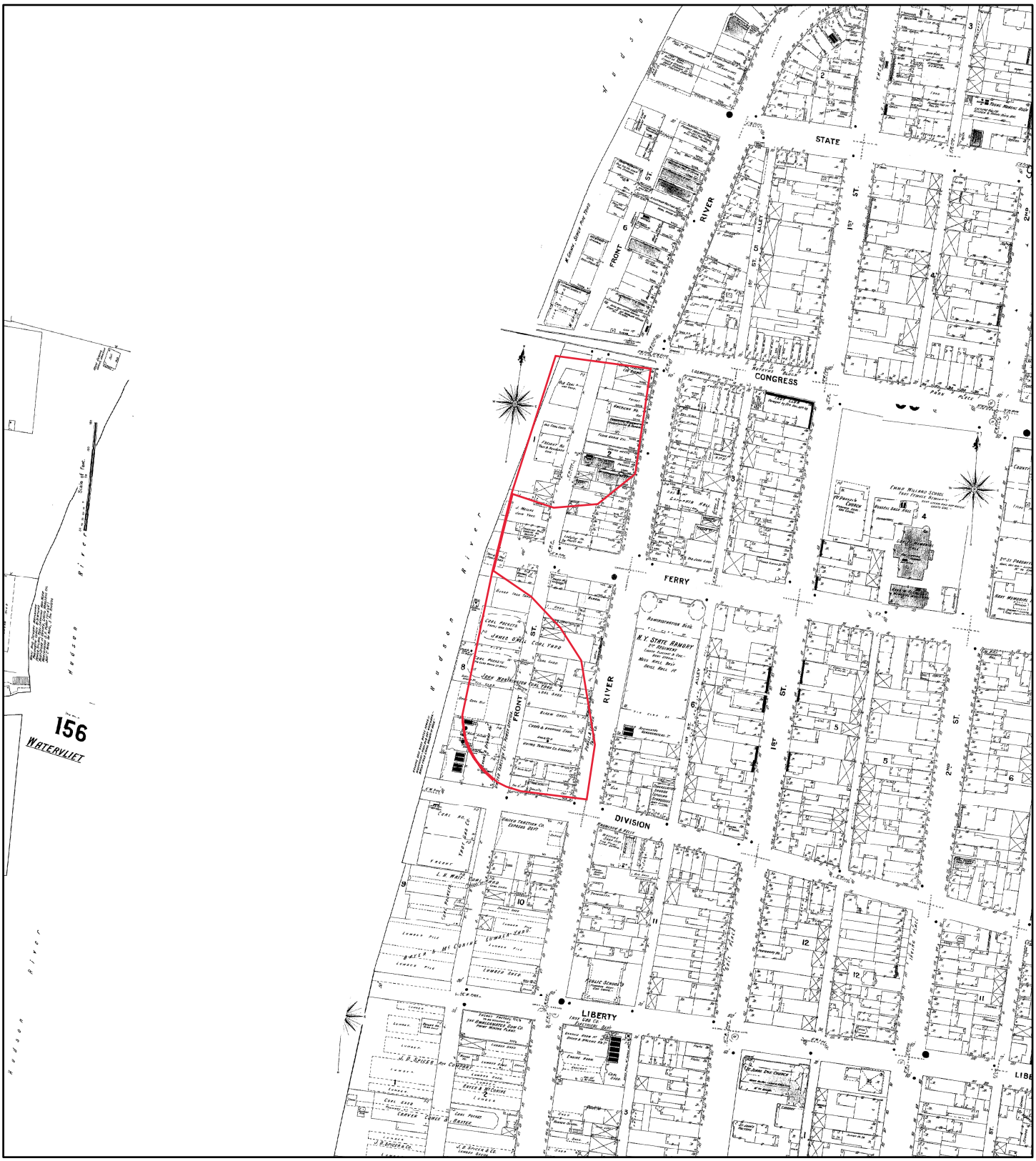
0 120 240 480 720 960

Feet

Order Number 24022100973

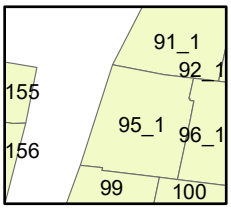
ERIS

Fire Insurance Map



1904

Address: 125 River Street Troy NY 12180



Map sheet(s):
Volume 2: 100,91,95,96,99;

N

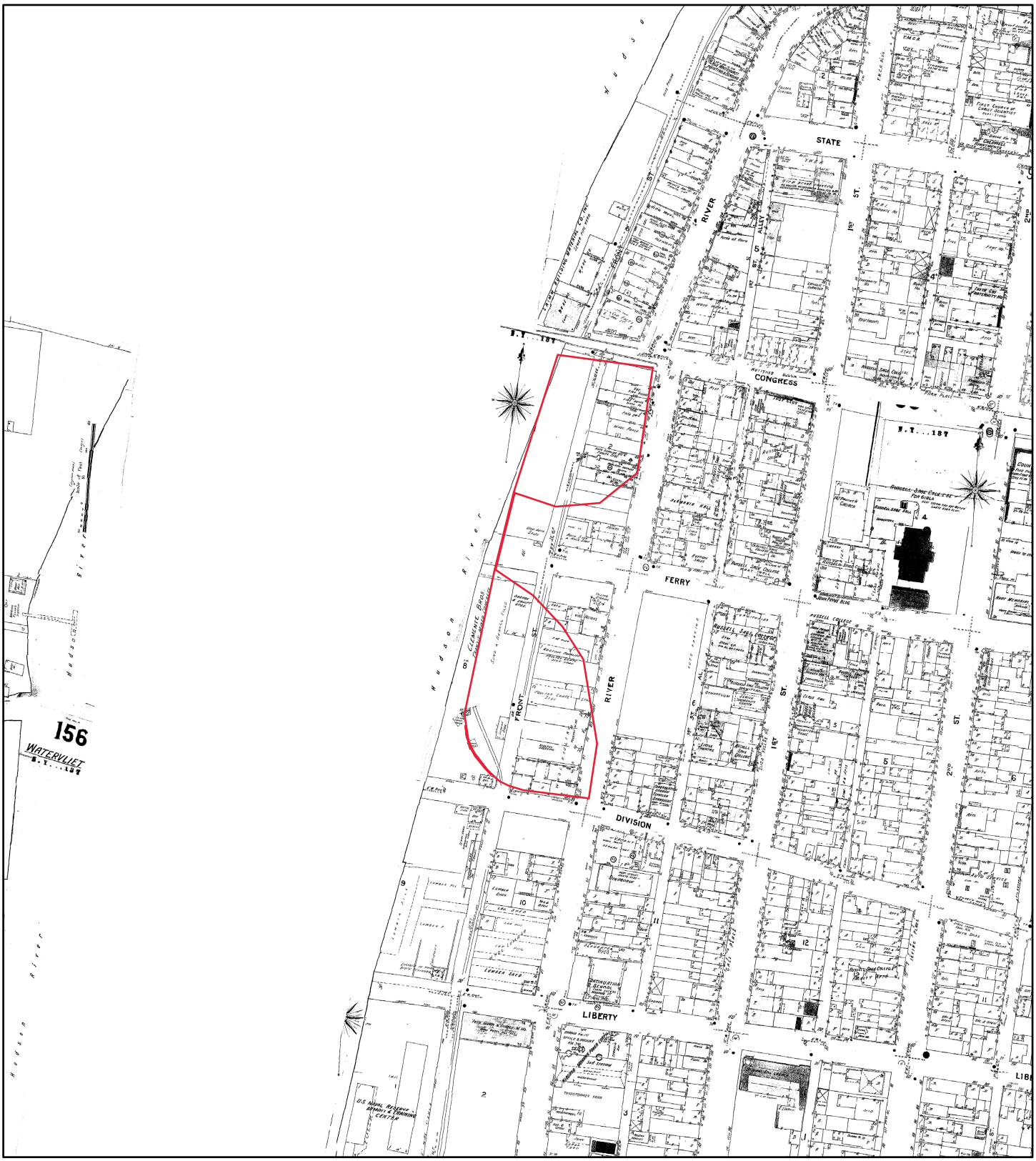
0 120 240 480 720 960

Feet

Order Number 24022100973

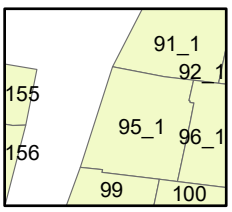
ERIS

Fire Insurance Map



1951

Address: 125 River Street Troy NY 12180



Map sheet(s):
Volume 2: 100,91,95,96,99;

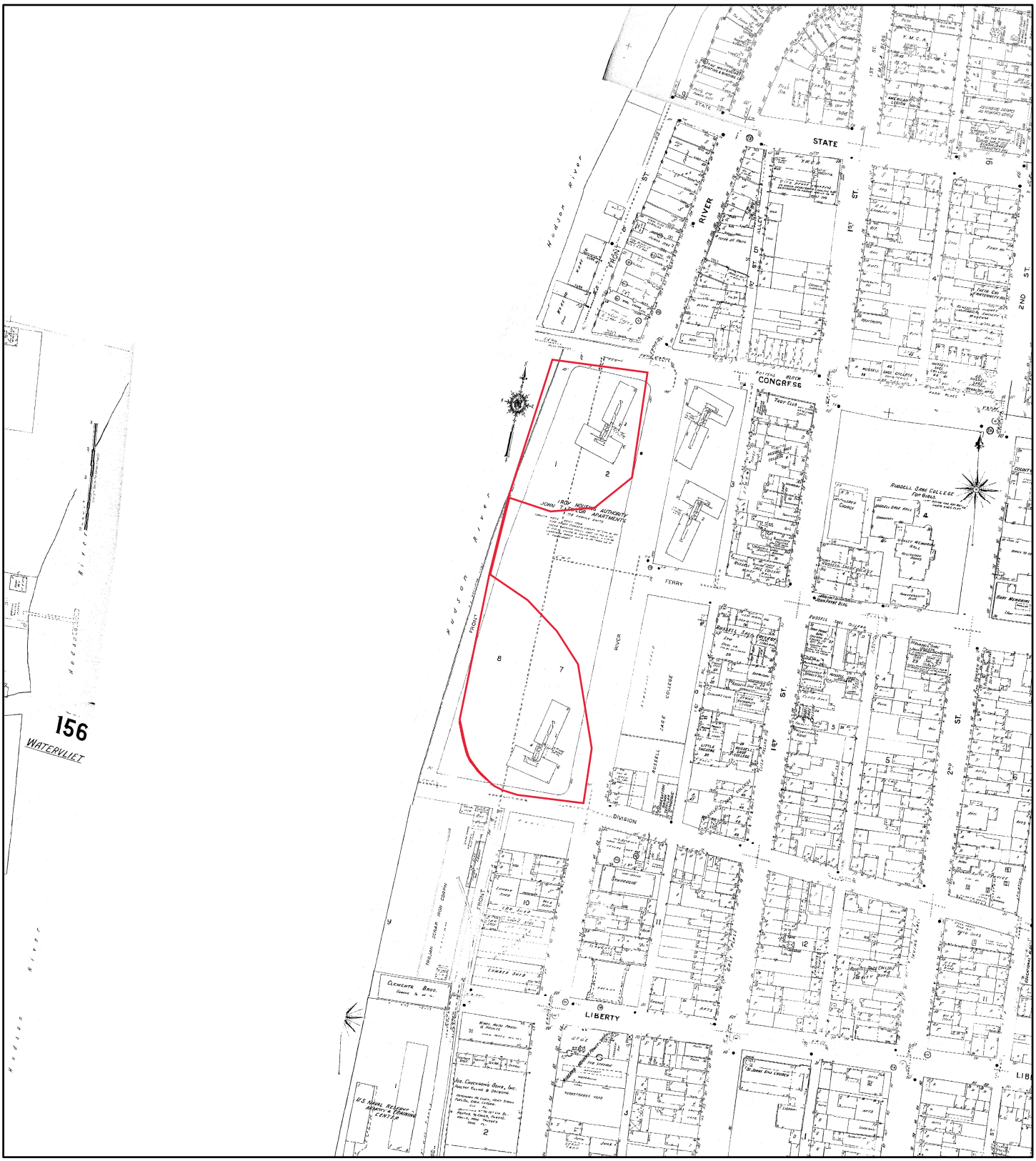
N

0 120 240 480 720 960
Feet

Order Number 24022100973

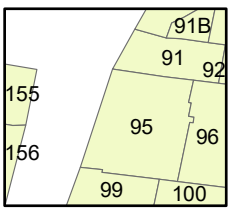
ERIS

Fire Insurance Map



1955

Address: 125 River Street Troy NY 12180



Map sheet(s):
Volume 2: 100,91,95,96,99;

N

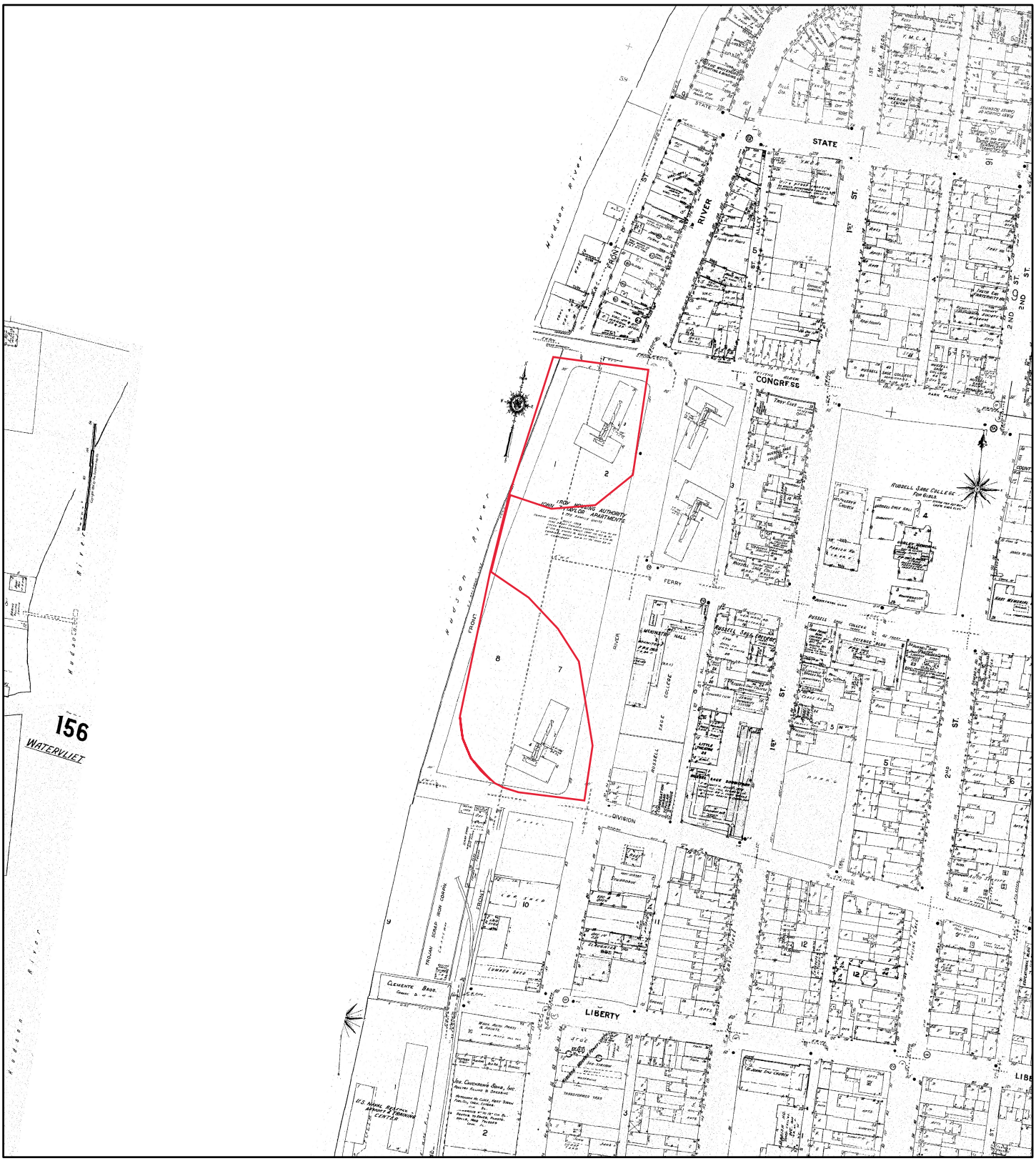
0 120 240 480 720 960

Feet

Order Number 24022100973

ERIS

Fire Insurance Map



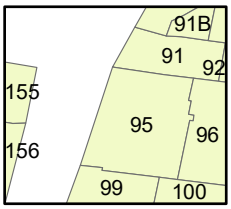
1962

N

0 120 240 480 720 960

Feet

Address: 125 River Street Troy NY 12180

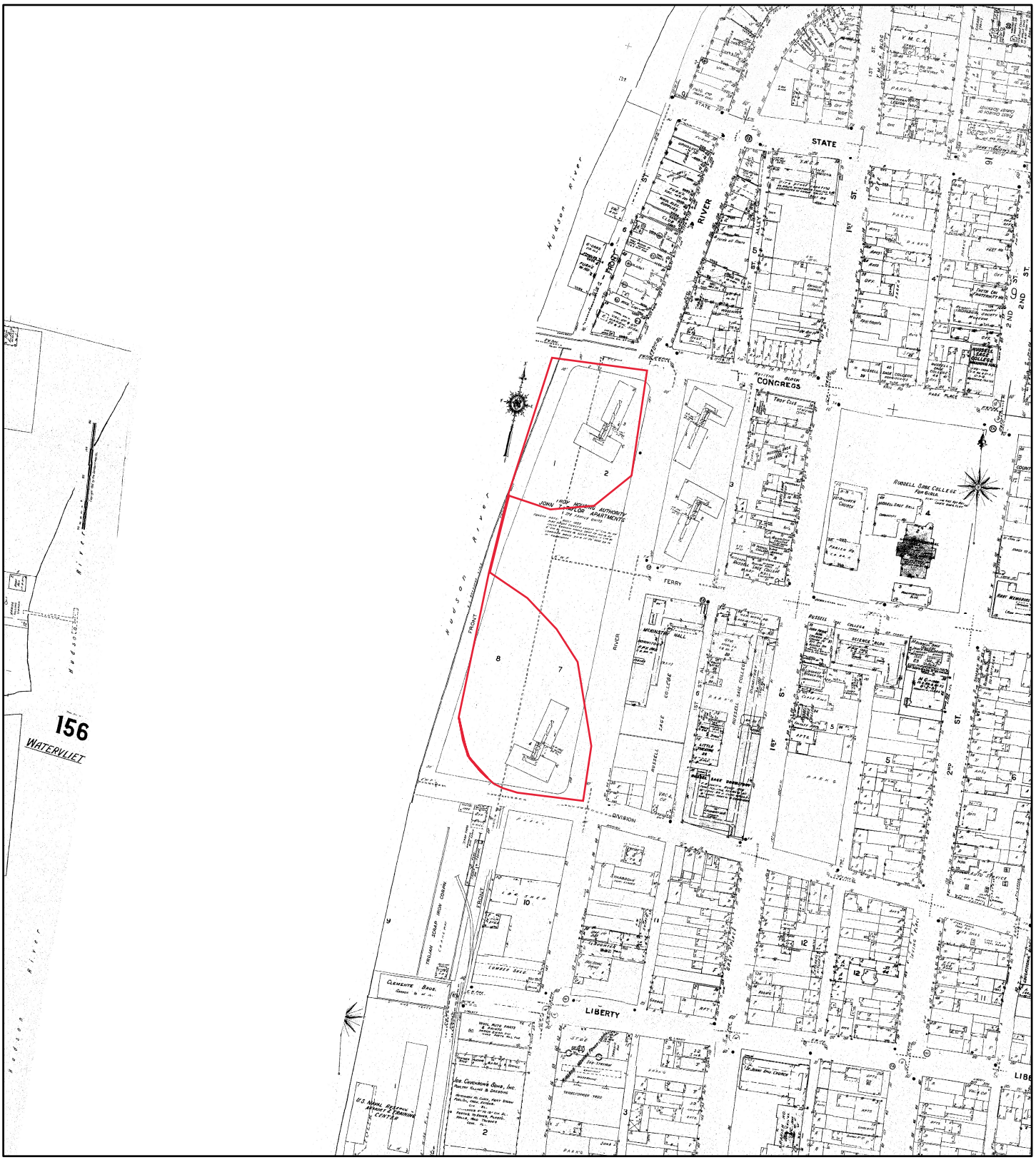


Map sheet(s):
Volume 2: 100,91,95,96,99;

Order Number 24022100973

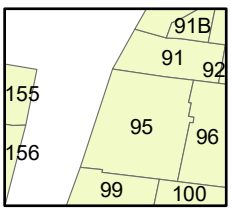
ERIS

Fire Insurance Map



1965

Address: 125 River Street Troy NY 12180



Map sheet(s):
Volume 2: 100,91,95,96,99;

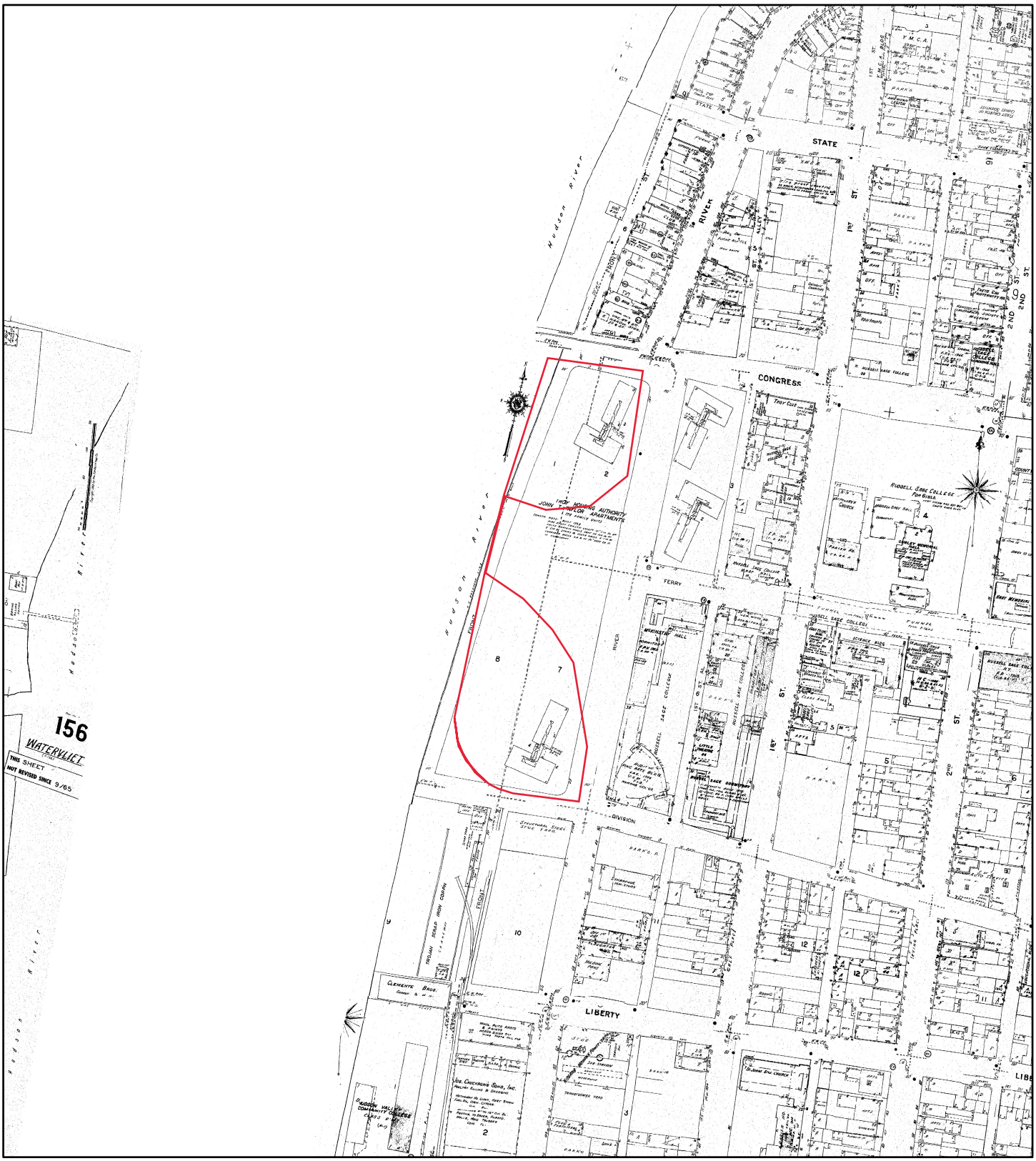
N

0 120 240 480 720 960
Feet

Order Number 24022100973

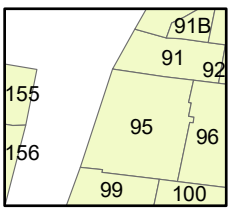
ERIS

Fire Insurance Map



1971

Address: 125 River Street Troy NY 12180



Map sheet(s):
Volume 2: 100,91,95,96,99;

N

0 120 240 480 720 960
Feet

Order Number 24022100973

ERIS

50m
300f

N
W
E
S

2021 aerial photograph
USDA (2021-09-20 - 2021-11-07)
USDA (2021-09-20 - 2021-11-07)

50m
300f

N
W
E
S

2011 aerial photograph
USDA (2011-05-01 - 2011-10-06)
USGS Hi Res Ortho Imagery (2011-04-01 - 2011-04-30)
USGS Hi Res Ortho Imagery (2011-04-01 - 2011-04-30)

50m
300f

N
W
E
S

2006 aerial photograph
USDA NAIP (2006-06-05 - 2006-11-06)

50m
300f

N
W
E
S

2000 aerial photograph
NYS GIS (2000-03-20 - 2000-06-20)

50m
300f

N
W
E
S

1995 aerial photograph
USGS DOQQ (1995-03-13 - 1995-05-14)

50m
300f

N
W
E
S

1986 aerial photograph
USDA NHAP83 (1986-03-31 - 1986-10-31)

50m
300f

N
W
E
S

1960 aerial photograph
USDA (1960-06-06 - 1960-10-12)
USDA (1960-06-05 - 1960-10-18)
USDA (1960-06-06 - 1990-09-06)

50m
300f

N
W
E
S

1952 aerial photograph
USGS (1952-04-16 - 1952-04-18)

Phase II Environmental Site Assessment Report

Location:

John P. Taylor Apartments – Buildings 3 and 4
125 River Street, City of Troy, New York

Prepared for:

Pennrose, LLC
45 Main Street, Suite 539
Brooklyn, New York 11201

LaBella Project No. 2241307

August 9, 2024

LaBella
Powered by partnership.

5 McCrea Hill Road | Ballston Spa, NY 12020 | p 518-885-5383

Table of Contents

1.0 INTRODUCTION

LaBella Associates, D.P.C. ("LaBella") was retained by Pennrose, LLC to conduct a Phase II Environmental Site Assessment (ESA) at the John P. Taylor Apartments, Buildings 3 and 4 Property, located at 125 River Street in the City of Troy, Rensselaer County, New York, hereinafter referred to as the "Site" (see **Figure 1**).

The Site is a (±)3.23-acre, multi-family residential property located on the eastern and western sides of Front Street and River Street, respectively. The Site is developed with two, nine-story apartment buildings and a garage structure which were built in 1954.

1.1 Special Terms & Conditions

The findings of this Phase II ESA are based on the scope of work and project objectives as stated in LaBella Proposal dated January 4, 2024 (Revised February 1, 2024). This investigation is intended to provide a focused assessment of previously identified areas of concern and a general screening of soils that may have been impacted by historic commercial/industrial utilization. An assessment of groundwater quality is not included in this investigation.

1.2 Limitations & Exceptions

Work associated with this investigation was performed in accordance with generally accepted environmental engineering and environmental contracting practices for this region. LaBella Associates, D.P.C., makes no other warranty or representation, either expressed or implied, nor is one intended to be included as part of its services, proposals, contracts, or reports.

Phase II ESAs are screening level assessments to investigate specific potential environmental concerns identified at a site from the Phase I ESA and are not an exhaustive assessment of environmental conditions on a property. The Phase II ESA is not intended to delineate the nature and extent of contamination at the Site; nor address complex geological settings, the fate and transport characteristics of certain hazardous substances, physical limitations imposed by the location of utilities and other man-made objects, and the limitations of assessment technologies.

In addition, LaBella cannot provide guarantees, certifications, or warranties that the property is or is not free of environmental impairment or other regulated solid wastes. The Client shall be aware that the data and representative samples from any given soil sampling point may represent conditions that apply only at that particular location, and such conditions may not necessarily apply to the general Site as a whole.

1.3 Background/ Objective

LaBella issued a Phase I ESA report for the Site on March 28, 2024. Based on the findings of the Phase I ESA, the following Recognized Environmental Conditions (RECs) were identified.

1. Historic commercial and industrial utilization of the Site including various coal yards/storage, power station, warehouses, cigar factories, upholstery, blacksmith, printing, and engine repair facilities. Historic Sanborn maps also identified gasoline underground storage tanks (USTs) near the northeastern and southwestern boundaries of the Building 4 area.
2. The northeastern adjoining John Taylor Apartments, Buildings 1 and 2 property is a registered petroleum bulk storage (PBS) facility with one closed-removed 25,000-gallon fuel oil UST. New York State Department of Environmental Conservation (NSYDEC) Spill No. 1701213 was reported in May 2017 upon discovery of a fuel oil release during tank removal activities.

Appurtenant piping was identified as the cause of the release; however, no information regarding piping removal was available. Contaminant concentrations were detected "slightly above" applicable NYSDEC cleanup standards in one confirmatory endpoint sample and the spill was closed without meeting standards in July 2017. No information regarding piping removal or associated impacts to Buildings 3 and 4 is available.

Prior to completion of the Phase I ESA, LaBella performed subsurface investigation (SSI) fieldwork activities to investigate the above-referenced RECs and to assess the environmental integrity of soils likely to be encountered/disturbed during planned redevelopment activities. SSI findings were reported in LaBella's Focused Phase II ESA, dated April 23, 2024 (see Section 1.4 below). This Phase II ESA was performed: 1) as an additional/supplemental investigation of the soils impacted by historic fill materials and commercial/industrial utilization, and; 2) to further assess and delineate the environmental integrity of soils likely to be encountered/disturbed during planned redevelopment activities.

1.4 Previous Phase II ESA

LaBella's Focused Phase II ESA (March 2024) consisted of the installation of fourteen (14) soil borings at the Site. Sixteen (16) soil samples for were collected and analyzed for volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons ([PAHs] a subset of semi-volatile organic compounds [SVOCs]), target analyte list (TAL) metals, and/or polychlorinated biphenyls (PCBs). Focused Phase II ESA findings are summarized as follows:

1. No field evidence (e.g., visual, olfactory) of contamination was observed during installation of soil borings; however, non-native, historic fill materials consisting of variable texture sands with asphalt, wood, concrete, and/or brick fragments were identified at each boring from near surface elevations to depths ranging from 5 to 15 feet below surface grade (bsg).

2 Metals were detected above SCOs in eight (8) samples. Barium and mercury levels exceeded the NYSDEC Part 375 Soil Cleanup Objects (SCOs) for Restricted Residential Use (RRSCO) in one (1) sample (each) collected at Building 3 and 4, respectively. Metals were also detected above the Unrestricted Use SCOs (UUSCOs) in samples collected throughout the Site which included: copper in two (2) samples; lead in five (5) samples; mercury in five (5) samples, and; zinc five (5) samples.

3. PAHs were detected above applicable SCOs in three (3) soil samples. PAH levels exceeding RRSCOs included: benzo(a)anthracene in two (2) samples; benzo(a)pyrene in two (2) samples; benzo(b)fluoranthene in three (3) samples, and; indeno(1,2,3-cd)pyrene in three (3) samples. Chrysene was also detected above the UUSCO in two (2) samples.

4. Two (2) VOCs (i.e., benzene and toluene) were detected in one sample collected near the eastern Site boundary at Building 3; however, no VOCs were detected above applicable UUSCOs.

5. No PCBs were detected in three (3) analyzed samples.

A copy of the April 23, 2024 Focused Phase II ESA report is provided as **Appendix 2**. Analytical information is included in the Data Summary Tables and **Appendix 3**. Boring locations are included in the Fieldwork Map provided as **Figure 2**. Sample locations where analytes were detected above SCOs are included in the Soil Contamination Maps provided as **Figure 3** and **Figure 4**.

2.0 FIELD INVESTIGATION

2.1 Geophysical Survey and Results

LaBella performed geophysical surveys using ground penetrating radar (GPR) and magnetometry technologies on June 6, and July 15, 2024. These nondestructive methods use electromagnetic radiation in the microwave band (UHF/VHF frequencies) of the radio spectrum, and detect the reflected signals from subsurface structures. The geophysical survey did not investigate features outside of the survey boundary.

The survey was utilized to clear potential boring locations by identifying subsurface utilities including water, electric, communications, and natural gas lines. The survey did not identify any subsurface anomalies that were indicative of USTs or previously excavated and backfilled areas. A sketch showing the detected utilities and structures is attached.

The geophysical survey does not relieve interested parties from their responsibility to make required notifications prior to subsurface disturbance. Prior to the initiation of subsurface work by Core Down Drilling (CDD) or LaBella, UDig New York was notified to mark-out subsurface utilities near adjoining roadways.

2.2 Subsurface Soil Investigation

2.2.1 Soil Borings

Seven (7) soil borings, designated SB-15 through SB-21, were advanced at the Site on June 6, 2024. Borings were installed by CDD under direct supervision of a LaBella environmental professional to assess subsurface Site conditions. Soil boring locations are depicted on **Figure 2** and are summarized as follows:

Sample ID (Depth)	Building 4 Location
SB-15 (18-20)	Southern-central parking area
SB-15 (23-25)	Southern-central parking area
SB-16 (6-8)	Northeastern yard area
SB-17 (3-5)	Northern-central parking area
SB-18 (7-9)	Northwest Site boundary
SB-18 (15-17)	Northwest Site boundary

Sample ID (Depth)	Building 3 Location
SB-19 (13-15)	Northeastern Site boundary
SB-20 (10-12)	Southern-central yard area
SB-21 (3-5)	Southeastern yard area
SB-21 (6-8)	Southeastern yard area

The borings were advanced using a track-mounted, Geoprobe® Systems Model 7822DT direct-push sampling system. The use of direct-push technology allows for rapid sampling, observation, and characterization of overburden soils. Borings were extended to maximum depths ranging from 15 to 30 feet bsg. The Geoprobe uses a 5-foot coring barrel equipped with disposable acetate sleeves and soil cores are cut directly from sleeves for observation and sampling. Coring equipment was decontaminated between boring locations using an Alconox detergent and potable water solution, followed by a potable water rinse.

2.2.2 Test Pits

Seven (7) test pits, designated TP-1 through TP-7, were extended at the Site by CDD on June 6, 2024. LaBella extended an additional eight (8) test pits at the Building 4 portion of the Site on July 15, 2024. All test pits were advanced under the direct supervision of a LaBella environmental professional to facilitate additional sampling and increased visual inspection of subsurface historic fill materials. Test pit locations are depicted on **Figure 2** and are summarized as follows:

Sample ID (Depth)	Building 4 Location	Sample ID (Depth)	Building 4 Location
TP-1 (1.5-2.5)	Southwest parking area	TP-10 (1-3)	Southeastern Site boundary
TP-2 (8-10)	Southern-central parking area	TP-11 (2-4)	Eastern-central Site boundary
TP-3 (6-8)	Northeastern Site boundary	TP-12 (2-4)	Northeastern Site boundary
TP-4 (4-6)	Southeastern Site boundary	TP-13 (2-4)	Northern Site boundary
TP-5a (1-3)	Northwestern Site boundary	TP-14 (3-5)	Northwestern Site boundary
TP-5 (4-6)	Northwestern Site boundary	Sample ID (Depth)	Building 3 Location
TP-8 (2-4)	Eastern-central yard area	TP-6 (6-8)	Northern yard area
TP-9 (3-5)	Southeastern site boundary	TP-7 (3-5)	Northwestern parking area

All test pits were installed using track-mounted mini-excavators equipped with a ten-foot reach. Test pits were extended to maximum depths ranging from 4 to 9 feet bsg. Subsurface material was excavated for direct observation and sampling by LaBella's environmental professional. Disposable sampling equipment was used at each test pit location.

2.2.3 Sub-Slab Soil Sampling

Three (3) sub-slab soil samples, designated SS-01 through SS-03, were collected by LaBella personnel on June 11, 2024. The locations of these sampling points are shown in **Figure 2**. Sub-slab samples were collected by breaching basement floor slabs using a concrete drill and using a manual Geoprobe equipped with disposable acetate sleeves. Soil cores were cut directly from sleeves for observation and sampling. Coring equipment was decontaminated between sampling locations using an Alconox detergent and potable water solution, followed by a potable water rinse. Boreholes were backfilled using a coarse aggregate material and floor slabs were restored using a pre-made concrete patching mixture.

2.2.1 *Soil Sampling*

Soils encountered during extension of borings and test pits were continuously assessed for visual/olfactory evidence of contamination and screened for detectable VOCs using a properly calibrated photoionization detector (PID). Boring and test pit logs were completed at each location and are provided as **Appendix 1**.

Soil samples were placed directly into laboratory-supplied containers (preserved as appropriate) and maintained at cool temperatures for transport to York Analytical Laboratories, a New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) certified laboratory (ELAP No. 10854). Appropriate chain-of-custody protocols were followed. Laboratory analyses were selected based on fieldwork observations, sample depths, and the area of concern from which the samples were collected. The following analyses were performed:

- VOCs via United States Environmental Protection Agency (USEPA) Method 8260;
- SVOCs via USEPA Method 8270;
- PAHs via USEPA Method 8270;
- Part 375 list metals using USEPA Methods 6010, 7196, 7473, and 9014/9010; and/or,
- Pesticides via USEPA Method 8081.

In general, soil samples were analyzed for metals and PAHs where non-native fill material was identified. Sub-slab samples were also analyzed for VOCs to provide a general screening of soils within the footprint of the on-site Buildings.

3.0 FINDINGS

3.1 Site Geology and Hydrology

Soils encountered during advancement of borings and test pits generally consisted of historic fill material at depths ranging near surface elevations to 2.5 to 15 feet bsg. With the exception of SB-15 and TP-2, non-native fill material was encountered at each location and consisted of variable texture sand with gravel and wood, asphalt, metallic debris, concrete, and/or brick fragments. Underlying soils generally consisted of fine to medium texture sand and gravel. Refusal from a subsurface concrete feature was encountered at one test pit location (TP-1) at 2.5 feet bsg. Bedrock was not encountered in any soil borings or test pits during fieldwork activities. Groundwater was encountered at one boring location (SB-15) at approximately 12 feet bsg.

3.2 Field Screening Results

No field evidence of contamination (e.g., odors, stained soil, elevated PID readings) were observed at any boring location. Fieldwork observations are included in Appendix 1.

3.3 Laboratory Analytical Results

Laboratory analytical results for soil samples were compared to NYSDEC Part 375 UUSCOs and RRSCOs provided in 6 NYCRR Part 375-6.8. Analytical information is summarized in the attached Data Summary Tables and a copy of the laboratory report is included as **Appendix 3**. Soil Contamination Maps depicting sample locations where analytes were detected above SCOs are provided as **Figure 3** and **Figure 4**. Analytical results from soil samples collected during this Phase II ESA are provided below. Findings from all SSI activities at the Site are included in Section 4.0 below.

VOCs:

Low-level concentrations of acetone were detected in soil samples SB-15 (18-20), SB-18 (15-17), SS-02, and SS-03. A trace level of carbon disulfide was also detected in SB-15 (18-20); however, each of these compounds are common laboratory contaminants and are unlikely to have derived from the Site. No other VOCs were detected above laboratory Reporting Limits (RLs).

PAHs

PAHs were detected above applicable SCOs in eight (8) soil samples. PAHs exceeding RRSCOs include: benzo(a)anthracene in four (4) samples; benzo(a)pyrene in four (4) samples; benzo(b)fluoranthene in three (3) samples; dibenzo(a,h)anthracene in two (2) samples, and; indeno(1,2,3-cd)pyrene in eight (8) samples. Benzo(k)fluoranthene and chrysene were detected above the UUSCO in four (4) samples and five (5) samples, respectively.

Metals

Metals were detected above SCOs in twenty-two (22) soil samples. Metals exceeding RRSCOs include: arsenic in two (2) samples; barium, cadmium, and copper in one (1) sample (each); lead in four (4) samples, and; mercury in five (5) samples. Metals detected above UUSCOs include: hexavalent chromium in two (2) sub-slab samples; trivalent chromium in two (2) samples; copper in nine (9) samples; lead in fifteen (15) samples; mercury in thirteen (13) samples; nickel in three (3) samples; selenium in one (1) sample, and; zinc in fourteen (14) samples.

Pesticides:

Pesticides were detected above SCOs in two (2) samples. 4,4-DDE and 4,4-DDT were detected above UUSCOs in two (2) samples and one (1) sample, respectively.

4.0 CONCLUSIONS AND RECOMMENDATIONS

LaBella was retained by Pennrose, LLC to conduct a Phase II ESA at the Taylor Apartments Buildings 3 and 4 property, located at 125 River Street in the City of Troy, Rensselaer County, New York. The Focused Phase II ESA was performed: 1) as an additional/supplemental investigation of the soils impacted by historic fill materials and commercial/industrial utilization, and; 2) to further assess and delineate the environmental integrity of soils likely to be encountered/disturbed during planned redevelopment activities. This investigation consisted of soil sampling during the installation of seven (7) borings, fifteen (15) test pits, and three (3) sub-slab soil samples. Soil samples were analyzed for VOCs, PAHs, Part 375 list metals, and/or pesticides and are summarized as follows:

1. No field evidence (e.g., visual, olfactory) of contamination was observed at any sample location; however, non-native historic fill materials consisting of variable texture sands with asphalt, wood, concrete, metallic debris, and/or brick fragments were identified at nineteen (19) of twenty-one (21) boring/test pit locations. Historic fill was observed at depths ranging near surface elevations to depths ranging from 2.5 to 15 feet bsg. The locations, depths, and types of historic fill material observed during this Phase II ESA were generally consistent with fieldwork observations from the Focused Phase II ESA; however, elevated PAH, metal, and pesticide levels indicate that poor quality fill/debris materials have impacted on-site soils.

2. Two (2) VOCs (i.e., acetone and/or carbon disulfide) were detected in four (4) samples collected during this investigation; however, each of these compounds are common laboratory contaminants and are unlikely to have derived from the Site. No VOCs were detected above applicable SCOs which is consistent with the previous subsurface investigation.

3. Five (5) PAHs were detected at concentrations exceeding RRSCOs eight (8) samples collected during this investigation. In conjunction with previous soil sampling data, PAH levels above RRSCOs have been detected at three (3) Building 3 sample locations and seven (7) Building 4 locations. In addition, two (2) other PAHs were detected above UUSCOs at three (3) Building 3 locations and four (4) Building 4 locations during the combined subsurface investigations. Elevated PAHs were detected in fill/soil samples collected at depth intervals ranging from 0-2 to 6-8 feet bsg which is consistent with the previous subsurface investigation.

4. Six (6) NYSDEC Part 375 list metals were detected at concentrations exceeding applicable RRSCOs in seven (7) samples collected during this investigation. In conjunction with previous soil sampling data, metal levels above RRSCOs have been detected at four (4) Building 3 sample locations and five (5) Building 4 locations. In addition, eight (8) metals were detected above UUSCOs at eight (8) Building 3 locations and five (5) metals were detected at nineteen (19) Building 4 locations during the combined subsurface investigations. Metal levels exceeding UUSCOs include selenium and hexavalent chromium detected in sub-slab soil samples collected at Building 3. Elevated metals were detected in samples collected at depth intervals ranging from 0-2 to 10-12 feet bsg which is consistent with the previous subsurface investigation.

5. Two pesticides were detected at concentrations exceeding UUSCOs in two (2) soil samples collected at the near the northern Site boundary at Building 4. Elevated pesticides levels were detected in samples collected at depth intervals ranging from 1-3 to 4-6 feet bsg.

LaBella offers the following recommendations:

1) With the exception of acetone and carbon disulfide which are common laboratory artifacts, no VOCs were detected above UUSCOs during this Phase II ESA; however, low-level VOCs (i.e., benzene and toluene) were detected in one (1) soil sample collected at the eastern Site boundary at Building 3 during the previous subsurface investigation. The identified VOCs are indicative of gasoline contamination and are unlikely to be from an on-site source. No additional investigation is recommended at this time; however, soil disturbance during future redevelopment activities should ensure that excavated material with evidence of petroleum impacts (e.g., staining, odors) is handled and/or disposed of properly. If soils are later determined to contain VOCs at concentrations above UUSCOs, they cannot be considered clean fill and reuse options will be limited.

2) Non-native, historic fill materials were identified throughout the Site; however, due to the size of the Site, further investigation would be necessary to delineate these impacts. Current/future property owners should be aware that regulated fill material is present on-site. Fill/debris material encountered during future excavation activities should be managed in accordance with applicable regulations.

3) Laboratory analytical information obtained during this investigation has documented metals and PAHs commonly associated with poor quality urban fill materials at concentrations above NYSDEC UUSCOs and RRSCOs. Soil with concentrations exceeding UUSCOs is not considered clean fill and redevelopment activities that disturb this material should ensure proper management and/or disposal. Fill material with contaminant concentrations above RRSCOs are not considered suitable for its current or intended residential use. Excavated soil/fill should be properly characterized for off-site disposal at a permitted facility. Subsequent to Site redevelopment, non-native fill material left in place should be: 1) analyzed to confirm compliance with applicable SCOs or, 2) overlain ("capped") by a cover layer (e.g., pavement, buildings, or certified clean soil) to mitigate human exposure to contaminated material.

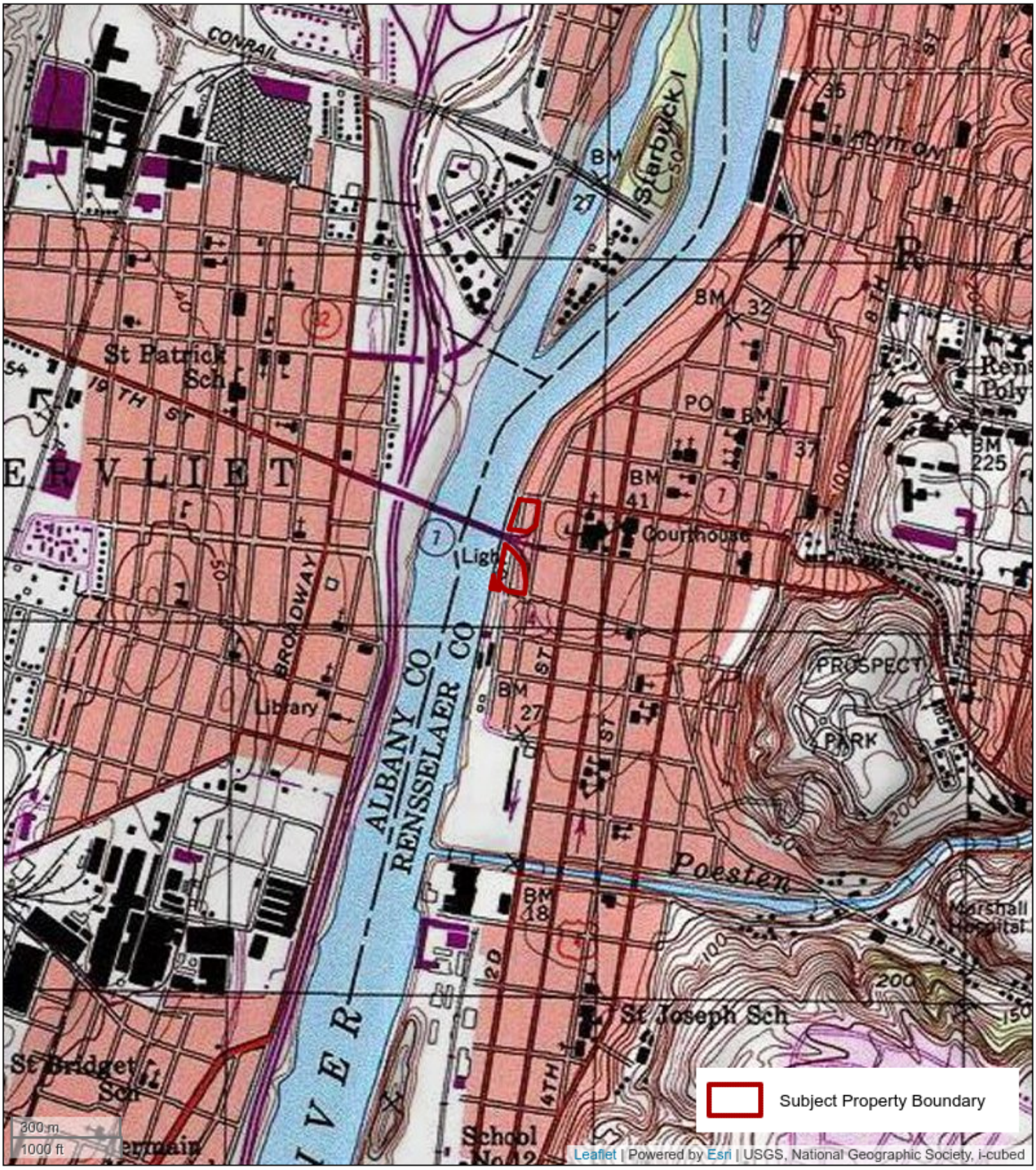
4) No assessment of ambient groundwater at the Site is currently available and groundwater encountered during redevelopment activities could contain elevated contaminant concentrations. Groundwater emanating from the Site or generated by dewatering activities during redevelopment should analyzed, managed, and/or disposed of in accordance with applicable regulations.

5.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

Report Prepared By:

Adam Atkinson
Sr. Project Manager

FIGURES



Rensselaer County

Date: 8/9/2024

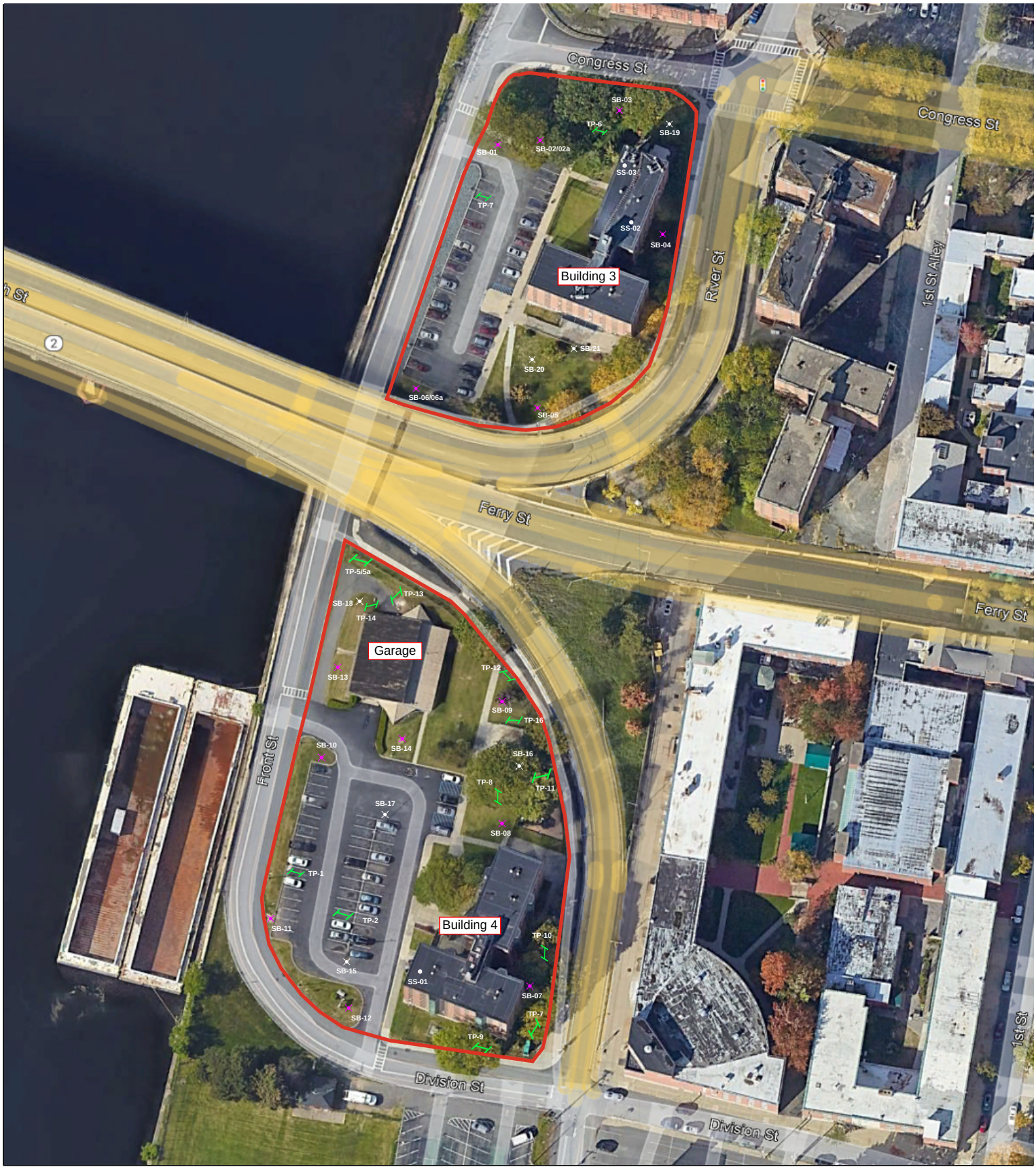
N

LaBella
Powered by partnership.

John P. Taylor Apartments - Buildings 3 and 4
125 River Street
City of Troy,
Rensselaer County, NY 12180
LaBella Project No: 2241307

Site Location Map

FIGURE #1



Legend

- Soil Boring
- Previous Soil Boring
- Test Pit
- Site Boundry

0 35 70 140 Feet

N

LaBella
Powered by partnership.

Rensselaer County

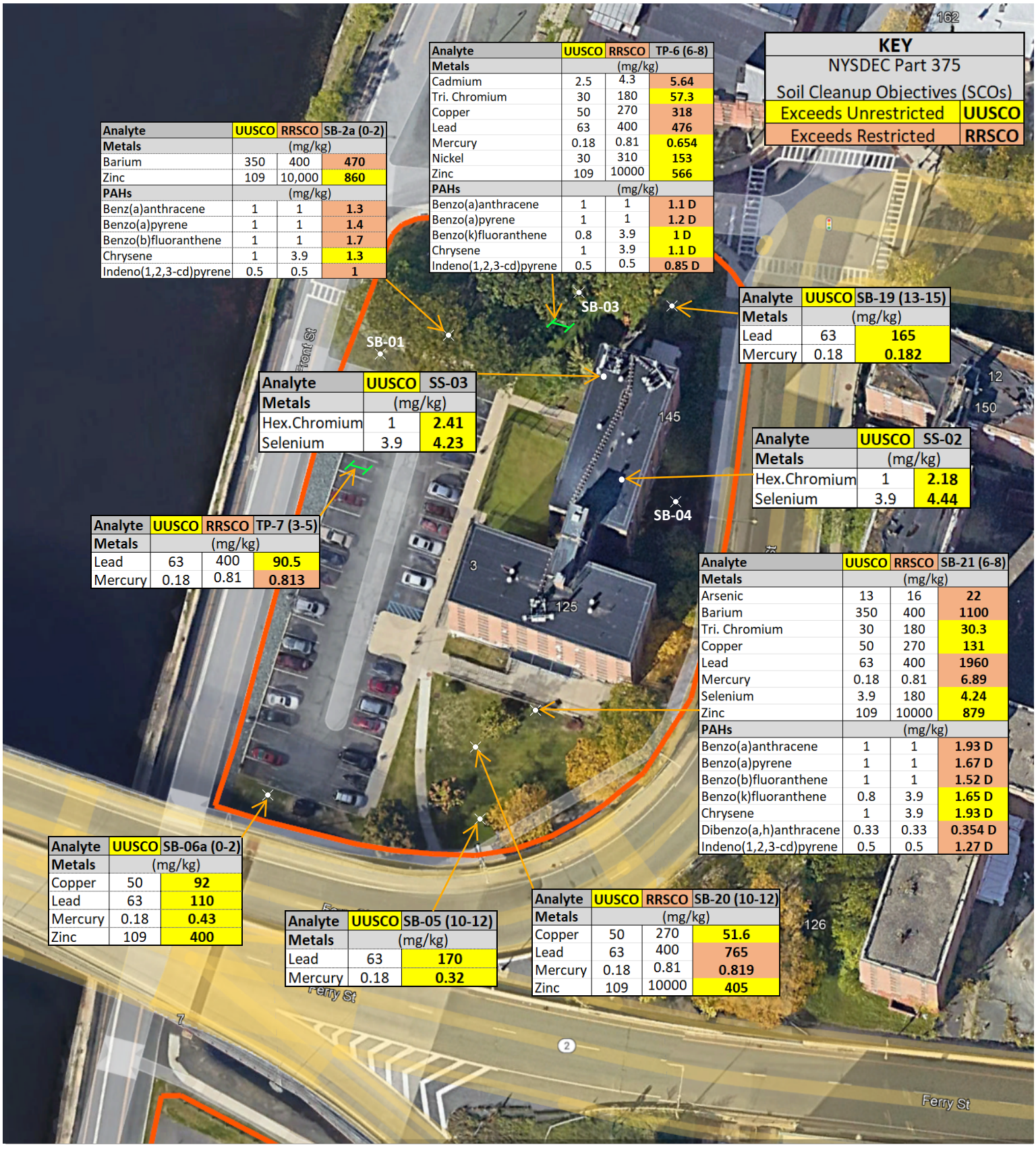
Date: 8/8/2024

John P. Taylor Apartments
Buildings 3 and 4
125 River Street
City of Troy,
Rensselaer County, NY 12180

LaBella Project No: 2241307

Fieldwork Map

FIGURE #2



Analyte	UUSCO	RRSCO	SB-2a (0-2)
Metals	(mg/kg)		
Barium	350	400	**470**
Zinc	109	10,000	**860**
PAHs	(mg/kg)		
Benz(a)anthracene	1	1	**1.3**
Benzo(a)pyrene	1	1	**1.4**
Benzo(b)fluoranthene	1	1	**1.7**
Chrysene	1	3.9	**1.3**
Indeno(1,2,3-cd)pyrene	0.5	0.5	**1**

Analyte	UUSCO	RRSCO	TP-6 (6-8)
Metals	(mg/kg)		
Cadmium	2.5	4.3	**5.64**
Tri. Chromium	30	180	**57.3**
Copper	50	270	**318**
Lead	63	400	**476**
Mercury	0.18	0.81	**0.654**
Nickel	30	310	**153**
Zinc	109	10000	**566**
PAHs	(mg/kg)		
Benzo(a)anthracene	1	1	**1.1 D**
Benzo(a)pyrene	1	1	**1.2 D**
Benzo(k)fluoranthene	0.8	3.9	**1 D**
Chrysene	1	3.9	**1.1 D**
Indeno(1,2,3-cd)pyrene	0.5	0.5	**0.85 D**

Analyte	UUSCO	SB-19 (13-15)
Metals	(mg/kg)	
Lead	63	**165**
Mercury	0.18	**0.182**

Analyte	UUSCO	SS-03
Metals	(mg/kg)	
Hex.Chromium	1	**2.41**
Selenium	3.9	**4.23**

Analyte	UUSCO	SS-02
Metals	(mg/kg)	
Hex.Chromium	1	**2.18**
Selenium	3.9	**4.44**

Analyte	UUSCO	RRSCO	TP-7 (3-5)
Metals	(mg/kg)		
Lead	63	400	**90.5**
Mercury	0.18	0.81	**0.813**

Analyte	UUSCO	RRSCO	SB-21 (6-8)
Metals	(mg/kg)		
Arsenic	13	16	**22**
Barium	350	400	**1100**
Tri. Chromium	30	180	**30.3**
Copper	50	270	**131**
Lead	63	400	**1960**
Mercury	0.18	0.81	**6.89**
Selenium	3.9	180	**4.24**
Zinc	109	10000	**879**
PAHs	(mg/kg)		
Benzo(a)anthracene	1	1	**1.93 D**
Benzo(a)pyrene	1	1	**1.67 D**
Benzo(b)fluoranthene	1	1	**1.52 D**
Benzo(k)fluoranthene	0.8	3.9	**1.65 D**
Chrysene	1	3.9	**1.93 D**
Dibenzo(a,h)anthracene	0.33	0.33	**0.354 D**
Indeno(1,2,3-cd)pyrene	0.5	0.5	**1.27 D**

Analyte	UUSCO	SB-06a (0-2)
Metals	(mg/kg)	
Copper	50	**92**
Lead	63	**110**
Mercury	0.18	**0.43**
Zinc	109	**400**

Analyte	UUSCO	SB-05 (10-12)
Metals	(mg/kg)	
Lead	63	**170**
Mercury	0.18	**0.32**

Analyte	UUSCO	RRSCO	SB-20 (10-12)
Metals	(mg/kg)		
Copper	50	270	**51.6**
Lead	63	400	**765**
Mercury	0.18	0.81	**0.819**
Zinc	109	10000	**405**

Legend

- Test Pits
- Soil Borings
- Subject Property Boundary

N

0 — 75 Feet

LaBella
Powered by partnership.

Rensselaer County

Date: 7/29/2024

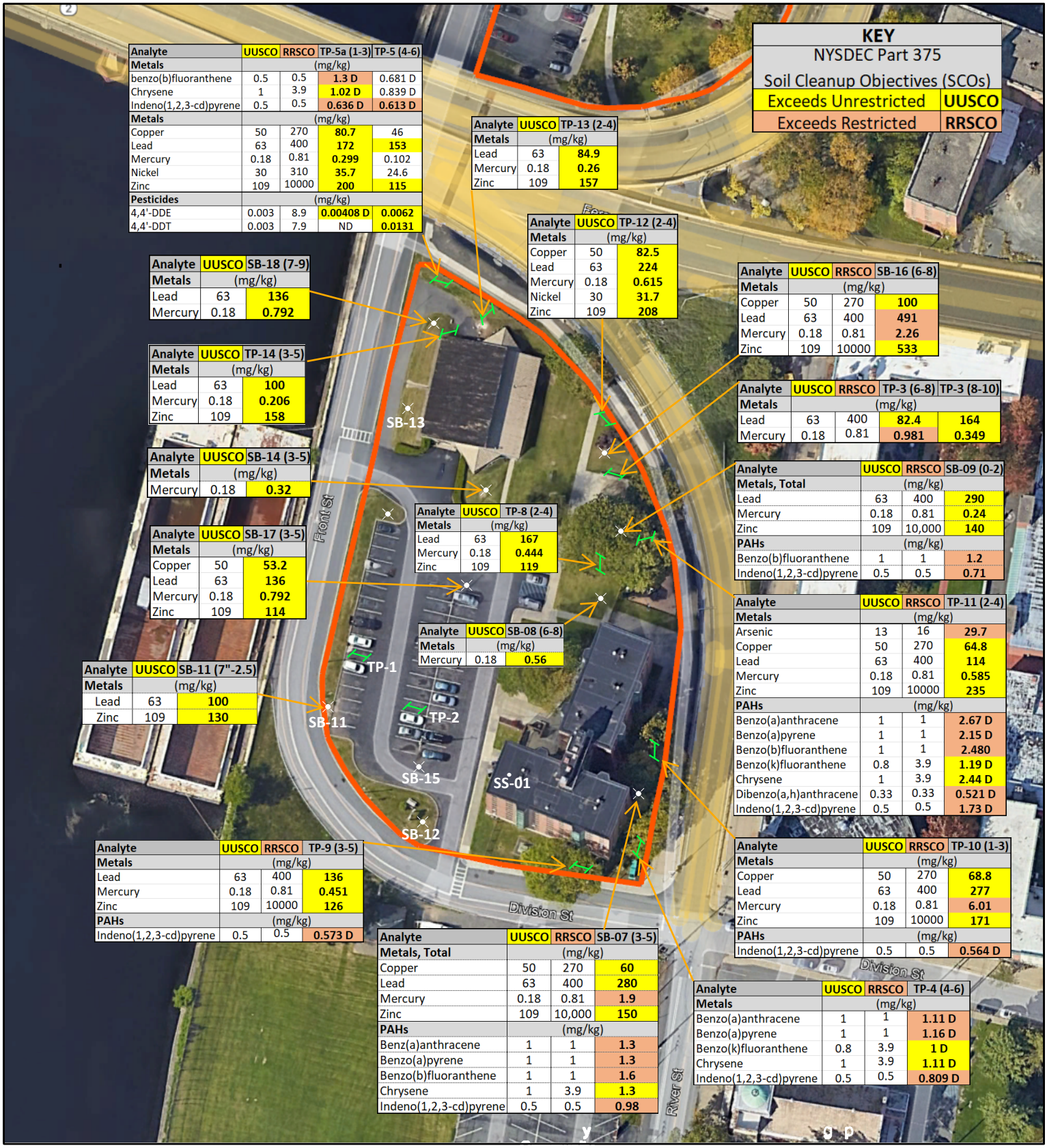
John P. Taylor Apartments
Building 3

125 River Street, City of Troy
Rensselaer County, NY 12181

LaBella Project No: 2241307

Soil Contamination Map

FIGURE #3



Legend

- Test Pits
- Soil Borings
- Subject Property Boundary

0 60 120 Feet

N

LaBella Powered by partnership.

Rensselaer County

Date: 8/9/2024

John P. Taylor Apartments
Building 4

125 River Street, City of Troy
Rensselaer County, NY 12180

LaBella Project No: 2241307

Soil Contamination Map

FIGURE #4

TABLES

VOCs in Soil
Building 3

Sample ID	Unrestricted Use	Restricted-Residential Use	TP-6 (6-8)	TP-7 (3-5)	SS-02	SS-03
Lab Sample ID			24F0496-17	24F0496-18	24F0922-02	24F0922-03
Collection Date			6/6/2024	6/6/2024	6/11/2024	6/11/2024
Matrix			Soil	Soil	Sub-Slab Soil	Sub-Slab Soil
Volatiles Organic Compounds - TCL	mg/kg		mg/kg			
1,1,1,2-Tetrachloroethane	~	~	NT	NT	ND	ND
1,1,1-Trichloroethane	0.68	100	NT	NT	ND	ND
1,1,2,2-Tetrachloroethane	~	~	NT	NT	ND	ND
1,1,2-Trichloro-1,2,2-trifluoroethane	~	~	NT	NT	ND	ND
1,1,2-Trichloroethane	~	~	NT	NT	ND	ND
1,1-Dichloroethane	0.27	26	NT	NT	ND	ND
1,1-Dichloroethylene	0.33	100	NT	NT	ND	ND
1,2,3-Trichlorobenzene	~	~	NT	NT	ND	ND
1,2,3-Trichloropropane	~	~	NT	NT	ND	ND
1,2,4-Trichlorobenzene	~	~	NT	NT	ND	ND
1,2,4-Trimethylbenzene	3.6	52	NT	NT	ND	ND
1,2-Dibromo-3-chloropropane	~	~	NT	NT	ND	ND
1,2-Dibromoethane	~	~	NT	NT	ND	ND
1,2-Dichlorobenzene	1.1	100	NT	NT	ND	ND
1,2-Dichloroethane	0.02	3.1	NT	NT	ND	ND
1,2-Dichloropropane	~	~	NT	NT	ND	ND
1,3,5-Trimethylbenzene	8.4	52	NT	NT	ND	ND
1,3-Dichlorobenzene	2.4	49	NT	NT	ND	ND
1,4-Dichlorobenzene	1.8	13	NT	NT	ND	ND
1,4-Dioxane	0.1	13	NT	NT	ND	ND
2-Butanone	0.12	100	NT	NT	ND	ND
2-Hexanone	~	~	NT	NT	ND	ND
4-Methyl-2-pentanone	~	~	NT	NT	ND	ND
Acetone	0.05	100	NT	NT	0.013 J	0.011 J
Acrolein	~	~	NT	NT	ND	ND
Acrylonitrile	~	~	NT	NT	ND	ND
Benzene	0.06	4.8	NT	NT	ND	ND
Bromochloromethane	~	~	NT	NT	ND	ND
Bromodichloromethane	~	~	NT	NT	ND	ND
Bromoform	~	~	NT	NT	ND	ND
Bromomethane	~	~	NT	NT	ND	ND
Carbon disulfide	~	~	NT	NT	ND	ND
Carbon tetrachloride	0.76	2.4	NT	NT	ND	ND
Chlorobenzene	1.1	100	NT	NT	ND	ND
Chloroethane	~	~	NT	NT	ND	ND
Chloroform	0.37	49	NT	NT	ND	ND
Chloromethane	~	~	NT	NT	ND	ND
cis-1,2-Dichloroethylene	0.25	100	NT	NT	ND	ND
cis-1,3-Dichloropropylene	~	~	NT	NT	ND	ND
Cyclohexane	~	~	NT	NT	ND	ND
Dibromochloromethane	~	~	NT	NT	ND	ND
Dibromomethane	~	~	NT	NT	ND	ND
Dichlorodifluoromethane	~	~	NT	NT	ND	ND
Ethyl Benzene	1	41	NT	NT	ND	ND
Hexachlorobutadiene	~	~	NT	NT	ND	ND
Isopropylbenzene	~	~	NT	NT	ND	ND
Methyl acetate	~	~	NT	NT	ND	ND
Methyl tert-butyl ether (MTBE)	0.93	100	NT	NT	ND	ND
Methylcyclohexane	~	~	NT	NT	ND	ND
Methylene chloride	0.05	100	NT	NT	ND	ND
n-Butylbenzene	12	100	NT	NT	ND	ND
n-Propylbenzene	3.9	100	NT	NT	ND	ND
o-Xylene	~	~	NT	NT	ND	ND
p- & m- Xylenes	~	~	NT	NT	ND	ND
p-Isopropyltoluene	~	~	NT	NT	ND	ND
sec-Butylbenzene	11	100	NT	NT	ND	ND
Styrene	~	~	NT	NT	ND	ND
tert-Butyl alcohol (TBA)	~	~	NT	NT	ND	ND
tert-Butylbenzene	5.9	100	NT	NT	ND	ND
Tetrachloroethylene	1.3	19	NT	NT	ND	ND
Toluene	0.7	100	NT	NT	ND	ND
trans-1,2-Dichloroethylene	0.19	100	NT	NT	ND	ND
trans-1,3-Dichloropropylene	~	~	NT	NT	ND	ND
Trichloroethylene	0.47	21	NT	NT	ND	ND
Trichlorofluoromethane	~	~	NT	NT	ND	ND
Vinyl Chloride	0.02	0.9	NT	NT	ND	ND
Xylenes, Total	0.26	100	NT	NT	ND	ND
% Solids	~	~	80	85.3	73.4	74.7

Notes:
Exceedances of NYSDEC Part 375-6 soil cleanup objectives (SCOs) are formatted con
mg/kg= milligrams per kilogram or parts per million (ppm)
ND - analyte not detected at or above the Reporting Level.
NA - not analyzed
Blue shade - Analyte detected above the Reporting Limit and below SCOs
~ - Indicates that no regulatory limit has been established for this analyte.

VOCs in Soil
Building 4

Sample ID	Unrestricted Use	Restricted-Residential Use	SB-15 (18-20)	SB-15 (23-25)	SB-16 (6-8)	SB-17 (3-5)	SB-18 (7-9)	SB-18 (15-17)	TP-1 (1.5-2.5)	TP-2 (8-10)	TP-3 (6-8)	TP-3 (8-10)	TP-4 (4-6)	TP-5a (1-3)	TP-5 (4-6)	SS-01
Lab Sample ID			24F0496-01	24F0496-02	24F0496-03	24F0496-04	24F0496-05	24F0496-06	24F0496-11	24F0496-12	24F0496-13	24F0496-14	24F0496-15	24G0937-01	24F0496-16	24F0922-01
Collection Date			6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	7/15/2024	6/6/2024	6/11/2024
Matrix			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Sub-Slab Soil
Volatiles Organic Compunds - TCL	mg/kg		(mg/kg)													
1,1,1,2-Tetrachloroethane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,1,1-Trichloroethane	0.68	100	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,1,2,2-Tetrachloroethane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,1,2-Trichloro-1,2,2-trifluoroethane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,1,2-Trichloroethane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,1-Dichloroethane	0.27	26	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,1-Dichloroethylene	0.33	100	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,2,3-Trichlorobenzene	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,2,3-Trichloropropane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,2,4-Trichlorobenzene	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,2,4-Trimethylbenzene	3.6	52	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,2-Dibromo-3-chloropropane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,2-Dibromoethane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,2-Dichlorobenzene	1.1	100	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,2-Dichloroethane	0.02	3.1	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,2-Dichloropropane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,3,5-Trimethylbenzene	8.4	52	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,3-Dichlorobenzene	2.4	49	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,4-Dichlorobenzene	1.8	13	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
1,4-Dioxane	0.1	13	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
2-Butanone	0.12	100	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
2-Hexanone	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
4-Methyl-2-pentanone	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Acetone	0.05	100	0.015 J	NT	NT	NT	NT	0.017	NT	NT	NT	NT	NT	NT	NT	ND
Acrolein	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Acrylonitrile	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Benzene	0.06	4.8	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Bromochloromethane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Bromodichloromethane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Bromoform	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Bromomethane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Carbon disulfide	~	~	0.0026	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Carbon tetrachloride	0.76	2.4	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Chlorobenzene	1.1	100	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Chloroethane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Chloroform	0.37	49	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Chloromethane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
cis-1,2-Dichloroethylene	0.25	100	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
cis-1,3-Dichloropropylene	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Cyclohexane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Dibromochloromethane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Dibromomethane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Dichlorodifluoromethane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Ethyl Benzene	1	41	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Hexachlorobutadiene	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Isopropylbenzene	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Methyl acetate	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Methyl tert-butyl ether (MTBE)	0.93	100	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Methylcyclohexane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Methylene chloride	0.05	100	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
n-Butylbenzene	12	100	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
n-Propylbenzene	3.9	100	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
o-Xylene	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
p- & m- Xylenes	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
p-Isopropyltoluene	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
sec-Butylbenzene	11	100	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Styrene	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
tert-Butyl alcohol (TBA)	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
tert-Butylbenzene	5.9	100	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Tetrachloroethylene	1.3	19	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Toluene	0.7	100	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
trans-1,2-Dichloroethylene	0.19	100	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
trans-1,3-Dichloropropylene	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Trichloroethylene	0.47	21	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Trichlorofluoromethane	~	~	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Vinyl Chloride	0.02	0.9	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
Xylenes, Total	0.26	100	ND	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT	ND
% Solids	~	~	83.7	87.4	85.8	84.3	82.6	80.7	89	93.9	87.5	88.7	84.4	84.4	84.4	86.4

Notes:
Exceedances of NYSDEC Part 375-6 soil cleanup objectives (SCOs) are formatted consistent with the SCO column headers.
mg/kg= miligrams per kilogram or parts per million (ppm)
ND - analyte not detected at or above the Reporting Level.
NA - not analyzed
Blue shade - Analyte detected above the Reporting Limit and below SCOs
~ - Indicates that no regulatory limit has been established for this analyte.

SVOCs in Soil
Building 3

Sample ID	Unrestricted Use	Restricted-Residential Use	SB-19 (13-15)	SB-20 (10-12)	SB-21 (3-5)	SB-21 (6-8)	TP-6 (6-8)	TP-7 (3-5)	SS-02	SS-03
York ID			24F0496-07	24F0496-08	24F0496-09	24F0496-10	24F0496-17	24F0496-18	24G0937-08	24G0937-08
Sampling Date			6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/11/2024	6/11/2024
Client Matrix			Soil	Soil	Soil	Soil	Soil	Soil	Sub-Slab Soil	Sub-Slab Soil
Semi-Volatiles (SVOCs) CP-51 list	mg/kg		mg/kg							
Acenaphthene	20	100	ND	ND	ND	ND	0.066 JD	ND	ND	ND
Acenaphthylene	100	100	ND	ND	ND	0.456 D	0.17 D	ND	ND	ND
Anthracene	100	100	ND	ND	ND	0.304 D	0.33 D	ND	ND	ND
Benzo(a)anthracene	1	1	0.076 JD	ND	ND	**1.93 D**	**1.1 D**	0.0776 JD	ND	ND
Benzo(a)pyrene	1	1	0.067 JD	ND	ND	**1.67 D**	**1.2 D**	0.0691 JD	ND	ND
Benzo(b)fluoranthene	1	1	0.058 JD	ND	ND	**1.52 D**	0.99 D	0.0575 JD	ND	ND
Benzo(g,h,i)perylene	100	100	ND	ND	ND	1.11 D	0.74 D	0.0551 JD	ND	ND
Benzo(k)fluoranthene	0.8	3.9	0.055 JD	ND	ND	**1.65 D**	**1 D**	0.0598 JD	ND	ND
Chrysene	1	3.9	0.072 JD	ND	ND	**1.93 D**	**1.1 D**	0.0831 JD	ND	ND
Dibenzo(a,h)anthracene	0.33	0.33	ND	ND	ND	**0.354 D**	0.23 D	ND	ND	ND
Fluoranthene	100	100	0.15 D	ND	ND	2.99 D	1.9 D	0.141 D	ND	ND
Fluorene	30	100	ND	ND	ND	0.0846 JD	0.09 JD	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	ND	ND	ND	**1.27 D**	**0.85 D**	0.0536 JD	ND	ND
Naphthalene	12	100	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	100	100	0.12 D	ND	ND	1.92 D	1 JD	0.0784 JD	ND	ND
Pyrene	100	100	0.14 D	ND	ND	3.03 D	1.8 D	0.15 D	ND	ND
Semi-Volatiles (SVOCs)	mg/kg		mg/kg							
1,1-Biphenyl	~	~	NT	ND	ND	ND	NT	ND	NT	NT
1,2,4,5-Tetrachlorobenzene	~	~	NT	ND	ND	ND	NT	ND	NT	NT
1,2,4-Trichlorobenzene	~	~	NT	ND	ND	ND	NT	ND	NT	NT
1,2-Dichlorobenzene	1.1	100	NT	ND	ND	ND	NT	ND	NT	NT
1,2-Diphenylhydrazine (as Azobenzene)	~	~	NT	ND	ND	ND	NT	ND	NT	NT
1,3-Dichlorobenzene	2.4	49	NT	ND	ND	ND	NT	ND	NT	NT
1,4-Dichlorobenzene	1.8	13	NT	ND	ND	ND	NT	ND	NT	NT
2,3,4,6-Tetrachlorophenol	~	~	NT	ND	ND	ND	NT	ND	NT	NT
2,4,5-Trichlorophenol	~	~	NT	ND	ND	ND	NT	ND	NT	NT
2,4,6-Trichlorophenol	~	~	NT	ND	ND	ND	NT	ND	NT	NT
2,4-Dichlorophenol	~	~	NT	ND	ND	ND	NT	ND	NT	NT
2,4-Dimethylphenol	~	~	NT	ND	ND	ND	NT	ND	NT	NT
2,4-Dinitrophenol	~	~	NT	ND	ND	ND	NT	ND	NT	NT
2,4-Dinitrotoluene	~	~	NT	ND	ND	ND	NT	ND	NT	NT
2,6-Dinitrotoluene	~	~	NT	ND	ND	ND	NT	ND	NT	NT
2-Chloronaphthalene	~	~	NT	ND	ND	ND	NT	ND	NT	NT
2-Chlorophenol	~	~	NT	ND	ND	ND	NT	ND	NT	NT
2-Methylnaphthalene	~	~	NT	ND	ND	ND	NT	ND	NT	NT
2-Methylphenol	0.33	100	NT	ND	ND	ND	NT	ND	NT	NT
2-Nitroaniline	~	~	NT	ND	ND	ND	NT	ND	NT	NT
2-Nitrophenol	~	~	NT	ND	ND	ND	NT	ND	NT	NT
3- & 4-Methylphenols	0.33	100	NT	ND	ND	ND	NT	ND	NT	NT
3,3-Dichlorobenzidine	~	~	NT	ND	ND	ND	NT	ND	NT	NT
3-Nitroaniline	~	~	NT	ND	ND	ND	NT	ND	NT	NT
4,6-Dinitro-2-methylphenol	~	~	NT	ND	ND	ND	NT	ND	NT	NT
4-Bromophenyl phenyl ether	~	~	NT	ND	ND	ND	NT	ND	NT	NT
4-Chloro-3-methylphenol	~	~	NT	ND	ND	ND	NT	ND	NT	NT
4-Chloroaniline	~	~	NT	ND	ND	ND	NT	ND	NT	NT
4-Chlorophenyl phenyl ether	~	~	NT	ND	ND	ND	NT	ND	NT	NT
4-Nitroaniline	~	~	NT	ND	ND	ND	NT	ND	NT	NT
4-Nitrophenol	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Acenaphthene	20	100	ND	ND	ND	ND	0.066 JD	ND	ND	ND
Acenaphthylene	100	100	ND	ND	ND	0.456 D	0.17 D	ND	ND	ND
Acetophenone	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Aniline	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Anthracene	100	100	ND	ND	ND	0.304 D	0.33 D	ND	ND	ND
Atrazine	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Benzaldehyde	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Benzidine	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Benzo(a)anthracene	1	1	0.076 JD	ND	ND	**1.93 D**	**1.1 D**	0.0776 JD	ND	ND
Benzo(a)pyrene	1	1	0.067 JD	ND	ND	**1.67 D**	**1.2 D**	0.0691 JD	ND	ND
Benzo(b)fluoranthene	1	1	0.058 JD	ND	ND	**1.52 D**	0.99 D	0.0575 JD	ND	ND
Benzo(g,h,i)perylene	100	100	ND	ND	ND	1.11 D	0.74 D	0.0551 JD	ND	ND
Benzo(k)fluoranthene	0.8	3.9	0.055 JD	ND	ND	**1.65 D**	**1 D**	0.0598 JD	ND	ND
Benzoic acid	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Benzyl alcohol	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Benzyl butyl phthalate	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Bis(2-chloroethoxy)methane	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Bis(2-chloroethyl)ether	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Bis(2-chloroisopropyl)ether	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Bis(2-ethylhexyl)phthalate	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Caprolactam	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Carbazole	~	~	NT	ND	ND	0.191 D	NT	ND	NT	NT
Chrysene	1	3.9	0.072 JD	ND	ND	**1.93 D**	**1.1 D**	0.0831 JD	ND	ND
Dibenzo(a,h)anthracene	0.33	0.33	ND	ND	ND	**0.354 D**	0.23 D	ND	ND	ND
Dibenzofuran	7	59	NT	ND	ND	0.0629 JD	NT	ND	NT	NT
Diethyl phthalate	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Dimethyl phthalate	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Di-n-butyl phthalate	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Di-n-octyl phthalate	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Fluoranthene	100	100	0.15 D	ND	ND	2.99 D	1.9 D	0.141 D	ND	ND
Fluorene	30	100	ND	ND	ND	0.0846 JD	0.09 JD	ND	ND	ND
Hexachlorobenzene	0.33	1.2	NT	ND	ND	ND	NT	ND	NT	NT
Hexachlorobutadiene	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Hexachlorocyclopentadiene	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Hexachloroethane	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Indeno(1,2,3-cd)pyrene	0.5	0.5	ND	ND	ND	**1.27 D**	**0.85 D**	0.0536 JD	ND	ND
Isophorone	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Naphthalene	12	100	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	~	~	NT	ND	ND	ND	NT	ND	NT	NT
N-Nitrosodimethylamine	~	~	NT	ND	ND	ND	NT	ND	NT	NT
N-nitroso-di-n-propylamine	~	~	NT	ND	ND	ND	NT	ND	NT	NT
N-Nitrosodiphenylamine	~	~	NT	ND	ND	ND	NT	ND	NT	NT
Pentachlorophenol	0.8	6.7	NT	ND	ND	ND	NT	ND	NT	NT
Phenanthrene	100	100	0.12 D	ND	ND	1.92 D	1 JD	0.0784 JD	ND	ND
Phenol	0.33	100	NT	ND	ND	ND	NT	ND	NT	NT
Pyrene	100	100	0.14 D	ND	ND	3.03 D	1.8 D	0.15 D	ND	ND
Pyridine	~	~	NT	ND	ND	ND	NT	ND	NT	NT
% Solids	~	~	81.4	82.6	96.1	85.6	80	85.3	73.4	74.7

NOTES:
mg/Kg = milligrams per kilogram
Concentratinos exceeding one or more NYSDEC SCOs are color-coded based on the SCO exceeded and as shown in the SCO column headers.
Detected concentrations are presented in blue shade
ND = analyte not detected
NT = analyte not tested
J = analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
D = result is from an analysis that required dilution
B = analyte found in batch bland
~ = no regulatory limit has been established for this analyte

SVOCs in Soil
Building 4

Sample ID	Unrestricted Use	Restricted-Residential Use	SB-15 (18-20)	SB-15 (23-25)	SB-16 (6-8)	SB-17 (3-5)	SB-18 (7-9)	SB-18 (15-17)	TP-1 (1.5-2.5)	TP-2 (8-10)	TP-3 (6-8)	TP-3 (8-10)	TP-4 (4-6)
York ID			24F0496-01	24F0496-02	24F0496-03	24F0496-04	24F0496-05	24F0496-06	24F0496-11	24F0496-12	24F0496-13	24F0496-14	24F0496-15
Sampling Date			6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024
Client Matrix			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Semi-Volatiles (SVOCs) CP-51 list	**mg/Kg**							**mg/Kg**					
Acenaphthene	20	100	NT	ND	0.0942 JD	ND	ND	NT	ND	ND	ND	ND	0.0951 JD
Acenaphthylene	100	100	NT	ND	0.101 D	ND	ND	NT	0.047 JD	ND	ND	ND	0.136 D
Anthracene	100	100	NT	ND	0.206 D	0.049 JD	ND	NT	0.13 D	ND	ND	ND	0.366 D
Benzo(a)anthracene	1	1	NT	ND	0.538 D	0.17 D	ND	NT	0.48 D	ND	0.314 D	0.126 D	**1.11 D**
Benzo(a)pyrene	1	1	NT	ND	0.646 D	0.16 D	ND	NT	0.44 D	ND	0.333 D	0.159 D	**1.16 D**
Benzo(b)fluoranthene	1	1	NT	ND	0.509 D	0.13 D	ND	NT	0.42 D	ND	0.262 D	0.119 D	0.963 D
Benzo(g,h,i)perylene	100	100	NT	ND	0.507 D	0.093 JD	ND	NT	0.27 D	ND	0.2 D	0.0967 D	0.731 D
Benzo(k)fluoranthene	0.8	3.9	NT	ND	0.486 D	0.14 D	ND	NT	0.41 D	ND	0.286 D	0.137 D	**1 D**
Chrysene	1	3.9	NT	ND	0.658 D	0.17 D	ND	NT	0.49 D	ND	0.316 D	0.127	**1.11 D**
Dibenzo(a,h)anthracene	0.33	0.33	NT	ND	0.108 D	ND	ND	NT	0.1 D	ND	0.0501 JD	ND	0.272 D
Fluoranthene	100	100	NT	ND	1.8 D	0.4 D	ND	NT	1.3 D	ND	0.49 D	0.223 D	1.96 D
Fluorene	30	100	NT	ND	0.149 D	ND	ND	NT	ND	ND	ND	ND	0.106 D
Indeno(1,2,3-cd)pyrene	0.5	0.5	NT	ND	0.379 D	0.094 JD	ND	NT	0.32 D	ND	0.226 D	0.109 D	**0.809 D**
Naphthalene	12	100	NT	ND	0.0617 JD	ND	ND	NT	ND	ND	ND	ND	NT
Phenanthrene	100	100	NT	ND	2.22 D	0.19 D	ND	NT	0.73 D	ND	ND	0.0749 JD	1.24 D
Pyrene	100	100	NT	ND	2.16 D	0.34 D	ND	NT	0.96 D	ND	0.437 D	0.216 D	1.74 D
Semi-Volatiles (SVOCs)	**mg/Kg**							**mg/Kg**					
1,1-Biphenyl	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
1,2,4,5-Tetrachlorobenzene	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
1,2,4-Trichlorobenzene	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
1,2-Dichlorobenzene	1.1	100	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
1,2-Diphenylhydrazine (as Azobenzene)	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
1,3-Dichlorobenzene	2.4	49	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
1,4-Dichlorobenzene	1.8	13	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
2,3,4,6-Tetrachlorophenol	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
2,4,5-Trichlorophenol	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
2,4,6-Trichlorophenol	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
2,4-Dichlorophenol	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
2,4-Dimethylphenol	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
2,4-Dinitrophenol	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
2,4-Dinitrotoluene	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
2,6-Dinitrotoluene	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
2-Chloronaphthalene	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
2-Chlorophenol	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
2-Methylnaphthalene	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
2-Methylphenol	0.33	100	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
2-Nitroaniline	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
2-Nitrophenol	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
3- & 4-Methylphenols	0.33	100	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
3,3-Dichlorobenzidine	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	0.053 JD
3-Nitroaniline	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
4,6-Dinitro-2-methylphenol	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
4-Bromophenyl phenyl ether	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
4-Chloro-3-methylphenol	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
4-Chloroaniline	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
4-Chlorophenyl phenyl ether	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
4-Nitroaniline	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
4-Nitrophenol	~	~	NT	ND	ND	NT	ND	NT	ND	NT	ND	ND	ND
Acenaphthene	20	100	NT	ND	0.0942 JD	ND	ND	NT	ND	ND	ND	ND	0.0951 JD
Acenaphthylene	100	100	NT	ND	0.101 D	ND	ND	NT	0.047 JD	ND	ND	ND	0.136 D
Acetophenone	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Aniline	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Anthracene	100	100	NT	ND	0.206 D	0.049 JD	ND	NT	0.13 D	ND	ND	ND	0.366 D
Atrazine	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Benzaldehyde	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Benzidine	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Benzo(a)anthracene	1	1	NT	ND	0.538 D	0.17 D	ND	NT	0.48 D	ND	0.314 D	0.126 D	**1.11 D**
Benzo(a)pyrene	1	1	NT	ND	0.646 D	0.16 D	ND	NT	0.44 D	ND	0.333 D	0.159 D	**1.16 D**
Benzo(b)fluoranthene	1	1	NT	ND	0.509 D	0.13 D	ND	NT	0.42 D	ND	0.262 D	0.119 D	0.963 D
Benzo(g,h,i)perylene	100	100	NT	ND	0.507 D	0.093 JD	ND	NT	0.27 D	ND	0.2 D	0.0967 D	0.731 D
Benzo(k)fluoranthene	0.8	3.9	NT	ND	0.486 D	0.14 D	ND	NT	0.41 D	ND	0.286 D	0.137 D	**1 D**
Benzoic acid	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Benzyl alcohol	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Benzyl butyl phthalate	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Bis(2-chloroethoxy)methane	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Bis(2-chloroethyl)ether	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Bis(2-chloroisopropyl)ether	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Bis(2-ethylhexyl)phthalate	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Caprolactam	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Carbazole	~	~	NT	ND	0.054 JD	NT	ND	NT	NT	NT	ND	ND	0.183 D
Chrysene	1	3.9	NT	ND	0.658 D	0.17 D	ND	NT	0.49 D	ND	0.316 D	0.127	**1.11 D**
Dibenzo(a,h)anthracene	0.33	0.33	NT	ND	0.108 D	ND	ND	NT	0.1 D	ND	0.0501 JD	ND	0.272 D
Dibenzofuran	7	59	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	0.0561 JD
Diethyl phthalate	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Dimethyl phthalate	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Di-n-butyl phthalate	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Di-n-octyl phthalate	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Fluoranthene	100	100	NT	ND	1.8 D	0.4 D	ND	NT	1.3 D	ND	0.49 D	0.223 D	1.96 D
Fluorene	30	100	NT	ND	0.149 D	ND	ND	NT	ND	ND	ND	ND	0.106 D
Hexachlorobenzene	0.33	1.2	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Hexachlorobutadiene	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Hexachlorocyclopentadiene	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Hexachloroethane	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	NT	ND	0.379 D	0.094 JD	ND	NT	0.32 D	ND	0.226 D	0.109 D	**0.809 D**
Isophorone	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Naphthalene	12	100	NT	ND	0.0617 JD	ND	ND	NT	ND	ND	ND	ND	ND
Nitrobenzene	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
N-Nitrosodimethylamine	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
N-nitroso-di-n-propylamine	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
N-Nitrosodiphenylamine	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Pentachlorophenol	0.8	6.7	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
Phenanthrene	100	100	NT	ND	2.22 D	0.19 D	ND	NT	0.73 D	ND	ND	0.0749 JD	1.24 D
Phenol	0.33	100	NT	ND	ND	ND	ND	NT	NT	NT	ND	ND	ND
Pyrene	100	100	NT	ND	2.16 D	0.34 D	ND	NT	0.96 D	ND	0.437 D	0.216 D	1.74 D
Pyridine	~	~	NT	ND	ND	NT	ND	NT	NT	NT	ND	ND	ND
% Solids	~	~	83.7	87.4	85.8	84.3	82.6	80.7	89	93.9	87.5	88.7	84.4

NOTES:
mg/Kg = milligrams per kilogram
Concentratinos exceeding one or more NYSDEC SCOs are color-coded based on the SCO exceeded and as shown in the SCO column headers.
Detected concentrations are presented in blue shade
ND = analyte not detected
NT = analyte not tested
J = analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
D = result is from an analysis that required dilution
B = analyte found in batch bland
~ = no regulatory limit has been established for this analyte

SVOCs in Soil
Building 4

Sample ID	Unrestricted Use	Restricted-Residential Use	TP-5a (1-3)	TP-5 (4-6)	TP-8 (2-4)	TP-9 (3-5)	TP-10 (1-3)	TP-11 (2-4)	TP-12 (2-4)	TP-13 (2-4)	TP-14 (3-5)	SS-01
York ID			24G0937-01	24F0496-16	24G0937-02	24G0937-03	24G0937-04	24G0937-05	24G0937-06	24G0937-07	24G0937-08	24G0937-08
Sampling Date			7/15/2024	6/6/2024	7/15/2024	7/15/2024	7/15/2024	7/15/2024	7/15/2024	7/15/2024	7/15/2024	6/11/2024
Client Matrix			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Sub-Slab Soil
Semi-Volatiles (SVOCs) CP-51 list	mg/Kg		mg/kg									
Acenaphthene	20	100	ND	0.104 D	0.043 JD	0.0834 JD	ND	0.0689 JD	ND	ND	ND	ND
Acenaphthylene	100	100	0.0581 JD	0.174 D	0.0663 JD	0.0431 JD	0.0768 JD	0.53 D	0.0884 JD	ND	ND	ND
Anthracene	100	100	0.126 D	0.375 D	0.137 D	0.241 D	0.154 D	0.767 D	0.0991 D	0.0878 JD	0.0884 JD	ND
Benzo(a)anthracene	1	1	0.831 D	0.865 D	0.526 D	0.795 D	0.567 D	**2.67 D**	0.469 D	0.528 D	0.291 D	ND
Benzo(a)pyrene	1	1	0.772 D	0.826 D	0.571 D	0.746 D	0.669 D	**2.15 D**	0.516 D	0.478 D	0.254 D	ND
Benzo(b)fluoranthene	1	1	**1.3 D**	0.681 D	0.79 D	0.937 D	0.845 D	**2.480**	0.804 D	0.649 D	0.316 D	ND
Benzo(g,h,i)perylene	100	100	0.526 D	0.493 D	0.351 D	0.489 D	0.507 D	1.29 D	0.381 D	0.282 D	0.147 D	ND
Benzo(k)fluoranthene	0.8	3.9	0.456 D	0.743 D	0.269 D	0.356 D	0.287 D	**1.19 D**	0.271 D	0.235 D	0.115 D	ND
Chrysene	1	3.9	**1.02 D**	0.839 D	0.499 D	0.784 D	0.558 D	**2.44 D**	0.551 D	0.482 D	0.281 D	ND
Dibenzo(a,h)anthracene	0.33	0.33	0.165 D	0.168 D	0.103 D	0.148 D	0.133 D	**0.521 D**	0.0898 D	0.0956 D	ND	ND
Fluoranthene	100	100	1.98 D	1.78 D	0.962 D	1.44 D	1.08 D	5.97 D	0.879 D	0.772 D	0.605 D	ND
Fluorene	30	100	ND	0.118 D	ND	0.0739 JD	ND	0.299 D	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	**0.636 D**	**0.613 D**	0.43 D	**0.573 D**	**0.564 D**	**1.73 D**	0.456 D	0.344 D	0.175 D	ND
Naphthalene	12	100	ND	0.0835 JD	ND	ND	ND	0.0731 JD	ND	ND	ND	ND
Phenanthrene	100	100	0.972 D	1.33 D	0.488 D	0.958 D	0.584 D	3.79 D	0.465 D	0.338 D	0.324 D	ND
Pyrene	100	100	1.81 D	1.53 D	0.908 D	1.42 D	0.979 D	4.92 D	0.819 D	0.761 D	0.582 D	ND
Semi-Volatiles (SVOCs)	mg/kg		mg/kg									
1,1-Biphenyl	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
1,2,4,5-Tetrachlorobenzene	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
1,2,4-Trichlorobenzene	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
1,2-Dichlorobenzene	1.1	100	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
1,2-Diphenylhydrazine (as Azobenzene)	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
1,3-Dichlorobenzene	2.4	49	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
1,4-Dichlorobenzene	1.8	13	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
2,3,4,6-Tetrachlorophenol	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
2,4,5-Trichlorophenol	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
2,4,6-Trichlorophenol	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
2,4-Dichlorophenol	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
2,4-Dimethylphenol	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
2,4-Dinitrophenol	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
2,4-Dinitrotoluene	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
2,6-Dinitrotoluene	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
2-Chloronaphthalene	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
2-Chlorophenol	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
2-Methylnaphthalene	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
2-Methylphenol	0.33	100	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
2-Nitroaniline	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
2-Nitrophenol	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
3- & 4-Methylphenols	0.33	100	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
3,3-Dichlorobenzidine	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
3-Nitroaniline	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
4,6-Dinitro-2-methylphenol	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
4-Bromophenyl phenyl ether	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
4-Chloro-3-methylphenol	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
4-Chloroaniline	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
4-Chlorophenyl phenyl ether	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
4-Nitroaniline	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
4-Nitrophenol	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Acenaphthene	20	100	ND	0.104 D	0.043 JD	0.0834 JD	ND	0.0689 JD	ND	ND	ND	ND
Acenaphthylene	100	100	0.0581 JD	0.174 D	0.0663 JD	0.0431 JD	0.0768 JD	0.53 D	0.0884 JD	ND	ND	ND
Acetophenone	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Aniline	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Anthracene	100	100	0.126 D	0.375 D	0.137 D	0.241 D	0.154 D	0.767 D	0.0991 D	0.0878 JD	0.0884 JD	ND
Atrazine	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Benzaldehyde	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Benzidine	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene	1	1	0.831 D	0.865 D	0.526 D	0.795 D	0.567 D	**2.67 D**	0.469 D	0.528 D	0.291 D	ND
Benzo(a)pyrene	1	1	0.772 D	0.826 D	0.571 D	0.746 D	0.669 D	**2.15 D**	0.516 D	0.478 D	0.254 D	ND
Benzo(b)fluoranthene	1	1	**1.3 D**	0.681 D	0.79 D	0.937 D	0.845 D	**2.480**	0.804 D	0.649 D	0.316 D	ND
Benzo(g,h,i)perylene	100	100	0.526 D	0.493 D	0.351 D	0.489 D	0.507 D	1.29 D	0.381 D	0.282 D	0.147 D	ND
Benzo(k)fluoranthene	0.8	3.9	0.456 D	0.743 D	0.269 D	0.356 D	0.287 D	**1.19 D**	0.271 D	0.235 D	0.115 D	ND
Benzoic acid	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Benzyl alcohol	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Benzyl butyl phthalate	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Bis(2-chloroethoxy)methane	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Bis(2-chloroethyl)ether	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Bis(2-chloroisopropyl)ether	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Bis(2-ethylhexyl)phthalate	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Caprolactam	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Carbazole	~	~	NT	0.142 D	NT	NT	NT	NT	NT	NT	NT	NT
Chrysene	1	3.9	**1.02 D**	0.839 D	0.499 D	0.784 D	0.558 D	**2.44 D**	0.551 D	0.482 D	0.281 D	ND
Dibenzo(a,h)anthracene	0.33	0.33	0.165 D	0.168 D	0.103 D	0.148 D	0.133 D	**0.521 D**	0.0898 D	0.0956 D	ND	ND
Dibenzofuran	7	59	NT	0.0835 JD	NT	NT	NT	NT	NT	NT	NT	NT
Diethyl phthalate	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Dimethyl phthalate	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Di-n-butyl phthalate	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Di-n-octyl phthalate	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Fluoranthene	100	100	1.98 D	1.78 D	0.962 D	1.44 D	1.08 D	5.97 D	0.879 D	0.772 D	0.605 D	ND
Fluorene	30	100	ND	0.118 D	ND	0.0739 JD	ND	0.299 D	ND	ND	ND	ND
Hexachlorobenzene	0.33	1.2	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Hexachlorobutadiene	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Hexachlorocyclopentadiene	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Hexachloroethane	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	0.5	0.5	**0.636 D**	**0.613 D**	0.43 D	**0.573 D**	**0.564 D**	**1.73 D**	0.456 D	0.344 D	0.175 D	ND
Isophorone	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Naphthalene	12	100	ND	0.0835 JD	ND	ND	ND	0.0731 JD	ND	ND	ND	ND
Nitrobenzene	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
N-Nitrosodimethylamine	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
N-nitroso-di-n-propylamine	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
N-Nitrosodiphenylamine	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Pentachlorophenol	0.8	6.7	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Phenanthrene	100	100	0.972 D	1.33 D	0.488 D	0.958 D	0.584 D	3.79 D	0.465 D	0.338 D	0.324 D	ND
Phenol	0.33	100	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Pyrene	100	100	1.81 D	1.53 D	0.908 D	1.42 D	0.979 D	4.92 D	0.819 D	0.761 D	0.582 D	ND
Pyridine	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
% Solids	~	~	92.2	84.4	94.7	94.6	95.5	93.9	92.9	93.3	92.3	86.4

NOTES:
mg/Kg = milligrams per kilogram
Concentratinos exceeding one or more NYSDEC SCOs are color-coded based on the SCO exceeded and as shown in the SCO column headers.
Detected concentrations are presented in blue shade
ND = analyte not detected
NT = analyte not tested
J = analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
D = result is from an analysis that required dilution
B = analyte found in batch bland
~ = no regulatory limit has been established for this analyte

Metals, Pesticides, PCBs, and Herbicides in Soil
Building 3

Sample ID	Unrestricted Use	Restricted-Residential Use	SB-19 (13-15)	SB-20 (10-12)	SB-21 (3-5)	SB-21 (6-8)	TP-6 (6-8)	TP-7 (3-5)	SS-02	SS-03
York ID			24F0496-07	24F0496-08	24F0496-09	24F0496-10	24F0496-17	24F0496-18	24F0922-02	24F0922-03
Sampling Date			6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/11/2024	6/11/2024
Client Matrix			Soil	Soil	Soil	Soil	Soil	Soil	Sub-Slab Soil	Sub-Slab Soil
Metals, Part 375	**mg/Kg**		**mg/Kg**							
Arsenic	13	16	9.79	12.1	10.2	**22**	9.6	9.99	11	10.1
Barium	350	400	106	184	100	**1100**	207	80.2	135	130
Beryllium	7.2	72	0.605	0.675	0.645	0.614	ND	0.67	0.502	0.543
Cadmium	2.5	4.3	0.318	1.94	ND	1.36	**5.64**	ND	ND	ND
Hexavalent Chromium	1	110	0.614	ND	ND	ND	ND	ND	**2.18**	**2.41**
Trivalent Chromium	30	180	17.9	20.2	17	**30.3**	**57.3**	11.3	24.3	18.9
Copper	50	270	49.9	**51.6**	**86**	**131**	**318**	30.1	38.4	39
Cyanide	27	27	0.614	ND	ND	0.876	ND	ND	ND	ND
Lead	63	400	**165**	**765**	16.7	**1960**	**476**	**90.5**	18.5	47.1
Manganese	1600	2000	806	849	983	810	570	371	467	719
Mercury	0.18	0.81	**0.182**	**0.819**	ND	**6.89**	**0.654**	**0.813**	0.0537	0.0707
Nickel	30	310	25.4	23.4	28.2	26.3	**153**	17.1	28.5	25.5
Selenium	3.9	180	2.6	2.99	2.29	**4.24**	ND	ND	**4.44**	**4.23**
Silver	2	180	0.516	ND	ND	ND	ND	ND	ND	ND
Zinc	109	10000	103	**405**	76.2	**879**	**566**	61.1	79.6	92.8
Pesticides, 8081 target list	**mg/Kg**		**mg/Kg**							
4,4'-DDD	0.0033	13	ND	ND	ND	ND	NT	ND	NT	NT
4,4'-DDE	0.0033	8.9	ND	ND	ND	ND	NT	ND	NT	NT
4,4'-DDT	0.0033	7.9	ND	ND	ND	ND	NT	ND	NT	NT
Aldrin	0.005	0.097	ND	ND	ND	ND	NT	ND	NT	NT
alpha-BHC	0.02	0.48	ND	ND	ND	ND	NT	ND	NT	NT
alpha-Chlordane	0.094	4.2	ND	ND	ND	ND	NT	ND	NT	NT
beta-BHC	0.036	0.36	ND	ND	ND	ND	NT	ND	NT	NT
Chlordane, total	~	~	ND	ND	ND	ND	NT	ND	NT	NT
delta-BHC	0.04	100	ND	ND	ND	ND	NT	ND	NT	NT
Dieldrin	0.005	0.2	ND	ND	ND	ND	NT	ND	NT	NT
Endosulfan I	2.4	24	ND	ND	ND	ND	NT	ND	NT	NT
Endosulfan II	2.4	24	ND	ND	ND	ND	NT	ND	NT	NT
Endosulfan sulfate	2.4	24	ND	ND	ND	ND	NT	ND	NT	NT
Endrin	0.014	11	ND	ND	ND	ND	NT	ND	NT	NT
Endrin aldehyde	~	~	ND	ND	ND	ND	NT	ND	NT	NT
Endrin ketone	~	~	ND	ND	ND	ND	NT	ND	NT	NT
gamma-BHC (Lindane)	0.1	1.3	ND	ND	ND	ND	NT	ND	NT	NT
gamma-Chlordane	~	~	ND	ND	ND	ND	NT	ND	NT	NT
Heptachlor	0.042	2.1	ND	ND	ND	ND	NT	ND	NT	NT
Heptachlor epoxide	~	~	ND	ND	ND	ND	NT	ND	NT	NT
Methoxychlor	~	~	ND	ND	ND	ND	NT	ND	NT	NT
Toxaphene	~	~	ND	ND	ND	ND	NT	ND	NT	NT
Polychlorinated Biphenyls (PCBs)	**mg/Kg**									
Aroclor 1016	~	~	ND	ND	ND	ND	NT	ND	NT	NT
Aroclor 1221	~	~	ND	ND	ND	ND	NT	ND	NT	NT
Aroclor 1232	~	~	ND	ND	ND	ND	NT	ND	NT	NT
Aroclor 1242	~	~	ND	ND	ND	ND	NT	ND	NT	NT
Aroclor 1248	~	~	ND	ND	ND	ND	NT	ND	NT	NT
Aroclor 1254	~	~	ND	ND	ND	ND	NT	ND	NT	NT
Aroclor 1260	~	~	ND	ND	ND	ND	NT	ND	NT	NT
Total PCBs	0.1	1.0	ND	ND	ND	ND	NT	ND	NT	NT
Herbicides, Target List	**mg/Kg**									
2,4,5-T	~	~	NT	NT	ND	NT	NT	ND	NT	NT
2,4,5-TP (Silvex)	3.8	100	NT	NT	ND	NT	NT	ND	NT	NT
2,4-D	~	~	NT	NT	ND	NT	NT	ND	NT	NT
% Solids	~	~	81.4	82.6	96.1	85.6	80	85.3	93.3	92.3

NOTES:
mg/Kg = milligrams per kilogram
Concentratinos exceeding one or more NYSDEC SCOs are color-coded based on the SCO exceeded and as shown in the SCO column headers.
Detected concentrations are presented in blue shade
ND = analyte not detected
NT = analyte not tested
J = analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
D = result is from an analysis that required dilution
B = analyte found in batch bland
~ = no regulatory limit has been established for this analyte

Metals, Pesticides, PCBs, and Herbicides in Soil
Building 4

Sample ID	Unrestricted Use	Restricted-Residential Use	SB-15 (18-20)	SB-15 (23-25)	SB-16 (6-8)	SB-17 (3-5)	SB-18 (7-9)	SB-18 (15-17)	TP-1 (1.5-2.5)	TP-2 (8-10)	TP-3 (6-8)	TP-3 (8-10)	TP-4 (4-6)
York ID			24F0496-01	24F0496-02	24F0496-03	24F0496-04	24F0496-05	24F0496-06	24F0496-11	24F0496-12	24F0496-13	24F0496-14	24F0496-15
Sampling Date			6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024	6/6/2024
Client Matrix			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Metals - NYSDEC Part 375 list	**mg/Kg**		**mg/Kg**										
Arsenic	13	16	NT	4.15	9.89	9.94	4.41	NT	9.47	7.59	7.23	8.5	NT
Barium	350	400	NT	35	332	107	72.4	NT	102	93.2	66	84.1	NT
Beryllium	7.2	72	NT	0.242	0.632	0.594	0.107	NT	ND	0.624	0.391	0.461	NT
Cadmium	2.5	4.3	NT	ND	1.61	ND	ND	NT	0.329	ND	ND	ND	NT
Hexavalent Chromium	1	110	NT	ND	ND	ND	ND	NT	0.899	ND	ND	ND	NT
Trivalent Chromium	30	180	NT	12.4	15.9	14.4	10.8	NT	15.4	14.4	9.48	13	NT
Copper	50	270	NT	15	**100**	**53.2**	29.5	NT	27.7	33.1	33.1	39.9	NT
Cyanide	27	27	NT	ND	ND	ND	ND	NT	0.562	ND	ND	ND	NT
Lead	63	400	NT	8.15	**491**	**136**	**80.6**	NT	39.3	13	**82.4**	**164**	NT
Manganese	1600	2000	NT	238	503	826	235	NT	877	609	403	480	NT
Mercury	0.18	0.81	NT	ND	**2.26**	**0.792**	**0.371**	NT	0.0426	ND	**0.981**	**0.349**	NT
Nickel	30	310	NT	14.4	19.6	27.2	13.9	NT	19.3	21.7	14.7	19.4	NT
Selenium	3.9	180	NT	ND	ND	ND	ND	NT	ND	ND	3.01	ND	NT
Silver	2	180	NT	ND	ND	ND	ND	NT	ND	ND	ND	ND	NT
Zinc	109	10000	NT	46	**533**	**114**	51.6	NT	98.2	67	75.1	75	NT
Pesticides - 8081 target list	**mg/Kg**		**mg/Kg**										
4,4'-DDD	0.0033	13	NT	NT	NT	NT	ND	NT	NT	NT	ND	ND	ND
4,4'-DDE	0.0033	8.9	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
4,4'-DDT	0.0033	7.9	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
Aldrin	0.005	0.097	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
alpha-BHC	0.02	0.48	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
alpha-Chlordane	0.094	4.2	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
beta-BHC	0.036	0.36	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
Chlordane, total	~	~	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
delta-BHC	0.04	100	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
Dieldrin	0.005	0.2	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
Endosulfan I	2.4	24	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
Endosulfan II	2.4	24	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
Endosulfan sulfate	2.4	24	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
Endrin	0.014	11	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
Endrin aldehyde	~	~	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
Endrin ketone	~	~	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
gamma-BHC (Lindane)	0.1	1.3	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
gamma-Chlordane	~	~	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
Heptachlor	0.042	2.1	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
Heptachlor epoxide	~	~	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
Methoxychlor	~	~	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
Toxaphene	~	~	NT	NT	NT	NT	ND	NT	NT	ND	ND	ND	ND
Polychlorinated Biphenyls (PCBs)	**mg/Kg**		**mg/Kg**										
Aroclor 1016	~	~	NT	ND	NT	NT	ND	NT	ND	NT	ND	ND	ND
Aroclor 1221	~	~	NT	ND	NT	NT	ND	NT	ND	NT	ND	ND	ND
Aroclor 1232	~	~	NT	ND	NT	NT	ND	NT	ND	NT	ND	ND	ND
Aroclor 1242	~	~	NT	ND	NT	NT	ND	NT	ND	NT	ND	ND	ND
Aroclor 1248	~	~	NT	ND	NT	NT	ND	NT	ND	NT	ND	ND	ND
Aroclor 1254	~	~	NT	ND	NT	NT	ND	NT	ND	NT	ND	ND	ND
Aroclor 1260	~	~	NT	ND	NT	NT	ND	NT	ND	NT	ND	ND	ND
Total PCBs	0.1	1.0	NT	ND	NT	NT	ND	NT	ND	NT	ND	ND	ND
Herbicides, Target List	**mg/Kg**		**mg/Kg**										
2,4,5-T	~	~	NT	NT	ND	NT	ND	NT	NT	NT	ND	NT	NT
2,4,5-TP (Silvex)	3.8	100	NT	NT	ND	NT	ND	NT	NT	NT	ND	NT	NT
2,4-D	~	~	NT	NT	ND	NT	ND	NT	NT	NT	ND	NT	NT
% Solids	~	~	83.7	87.4	85.8	84.3	82.6	80.7	89	93.9	87.5	88.7	84.4

NOTES:
mg/Kg = milligrams per kilogram
Concentratinos exceeding one or more NYSDEC SCOs are color-coded based on the SCO exceeded and as shown in the SCO column headers.
Detected concentrations are presented in blue shade
ND = analyte not detected
NT = analyte not tested
J = analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
D = result is from an analysis that required dilution
B = analyte found in batch bland
~ = no regulatory limit has been established for this analyte

Metals, Pesticides, PCBs, and Herbicides in Soil
Building 4

Sample ID	Unrestricted Use	Restricted-Residential Use	TP-5a (1-3)	TP-5 (4-6)	TP-8 (2-4)	TP-9 (3-5)	TP-10 (1-3)	TP-11 (2-4)	TP-12 (2-4)	TP-13 (2-4)	TP-14 (3-5)	SS-01
York ID			24G0937-01	24F0496-16	24G0937-02	24G0937-03	24G0937-04	24G0937-05	24G0937-06	24G0937-07	24G0937-08	24F0922-01
Sampling Date			7/15/2024	6/6/2024	7/15/2024	7/15/2024	7/15/2024	7/15/2024	7/15/2024	7/15/2024	7/15/2024	7/15/2024
Client Matrix			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Sub-Slab Soil
Metals - NYSDEC Part 375 list	**mg/Kg**											
Arsenic	13	16	8.7	8.83	8.33	6.99	9.8	**29.7**	10.5	7.41	7.5	11.7
Barium	350	400	103	118	125	156	146	107	179	113	144	72.2
Berylium	7.2	72	0.949	0.602	0.545	0.37	0.41	0.523	0.601 B	0.616	0.614	0.545
Cadmium	2.5	4.3	0.28	ND	ND	ND	0.41	ND	0.466	0.295	0.451	ND
Hexavalent Chromium	1	110	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trivalent Chromium	30	180	24.7	23	17.7	12.7	14.9	20.4	23.9	20.7	20.9	18.5
Copper	50	270	**80.7**	46	46	42.1	**68.8**	**64.8**	**82.5**	43.5	46.9	42.5
Cyanide	27	27	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	63	400	**172**	**153**	**167**	**136**	**277**	**114**	**224**	**84.9**	**100**	19.4
Manganese	1600	2000	602	567	654	547	554	634	775	657	786	616
Mercury	0.18	0.81	**0.299**	0.102	**0.444**	**0.451**	**6.01**	**0.585**	**0.615**	**0.26**	**0.206**	0.0752
Nickel	30	310	**35.7**	24.6	23.6	16.2	19.1	26.5	**31.7**	27	29.8	28.4
Selenium	3.9	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.42
Silver	2	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	109	10000	**200**	**115**	**119**	**126**	**171**	**235**	**208**	**157**	**158**	85.5
Pesticides - 8081 target list	**mg/Kg**											
4,4'-DDD	0.0033	13	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
4,4'-DDE	0.0033	8.9	**0.00408 D**	**0.0062**	NT	NT	ND	NT	NT	NT	NT	NT
4,4'-DDT	0.0033	7.9	ND	**0.0131**	NT	NT	ND	NT	NT	NT	NT	NT
Aldrin	0.005	0.097	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
alpha-BHC	0.02	0.48	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
alpha-Chlordane	0.094	4.2	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
beta-BHC	0.036	0.36	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
Chlordane, total	~	~	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
delta-BHC	0.04	100	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
Dieldrin	0.005	0.2	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
Endosulfan I	2.4	24	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
Endosulfan II	2.4	24	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
Endosulfan sulfate	2.4	24	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
Endrin	0.014	11	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
Endrin aldehyde	~	~	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
Endrin ketone	~	~	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
gamma-BHC (Lindane)	0.1	1.3	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
gamma-Chlordane	~	~	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
Heptachlor	0.042	2.1	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
Heptachlor epoxide	~	~	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
Methoxychlor	~	~	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
Toxaphene	~	~	ND	ND	NT	NT	ND	NT	NT	NT	NT	NT
Polychlorinated Biphenyls (PCBs)	**mg/Kg**											
Aroclor 1016	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Aroclor 1221	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Aroclor 1232	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Aroclor 1242	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Aroclor 1248	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Aroclor 1254	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Aroclor 1260	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Total PCBs	0.1	1.0	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
Herbicides, Target List	**mg/Kg**											
2,4,5-T	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
2,4,5-TP (Silvex)	3.8	100	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
2,4-D	~	~	NT	ND	NT	NT	NT	NT	NT	NT	NT	NT
% Solids	~	~	92.2	84.4	94.7	94.6	95.5	93.9	92.9	93.3	92.3	92.9

NOTES:
mg/Kg = milligrams per kilogram
Concentratinos exceeding one or more NYSDEC SCOs are color-coded based on the SCO exceeded and as shown in the SCO column headers.
Detected concentrations are presented in blue shade
ND = analyte not detected
NT = analyte not tested
J = analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
D = result is from an analysis that required dilution
B = analyte found in batch bland
~ = no regulatory limit has been established for this analyte

VOCs in Soil

LaBella Sample ID (depth)	Unrestricted Use	Restricted-Residential Use	SB-01 (14.5-15FT)	SB-2a (0-2FT)	SB-02 (10.5-12.5FT)	SB-03 (14-15FT)	SB-04 (7-7.5FT)	SB-05 (10-12FT)	SB-06a (0-2FT)	SB-06 (10-12FT)	SB-07 (3-5FT)	SB-08 (6-8FT)	SB-09 (0-2FT)	SB-10 (1-3FT)	SB-11 (7in-2.5FT)	SB-12 (2-4FT)	SB-13 (7-9FT)	SB-14 (3-5FT)
Lab Sample ID			24C2194-01	24C2194-03	24C2194-02	24C2194-04	24C2194-05	24C2194-06	24C2194-08	24C2194-07	24C2194-09	24C2194-10	24C2194-11	24C2194-12	24C2194-13	24C2194-14	24C2194-15	24c2194-16
Collection Date			3/18/20214	3/18/20215	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024
Matrix			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Volatiles Organic Compounds (VOCs)			(mg/kg)								(mg/kg)							
Acetone	0.05	100	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Acrylonitrile	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
tert-Amyl Methyl Ether (TAME)	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Benzene	0.06	4.8	NA	NA	ND	NA	0.0016	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Bromobenzene			NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Bromochloromethane	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Bromodichloromethane	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Bromoform	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Bromomethane	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Methyl ethyl ketone (MEK)	0.12	100	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
tert-Butyl Alcohol (TBA)	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
n-Butylbenzene	12	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
sec-Butylbenzene	11	100	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
tert-Butylbenzene	5.9	100	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
tert-Butyl Ethyl Ether (TBEE)	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Carbon Disulfide	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Carbon tetrachloride	0.76	2.4	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Chlorobenzene	1.1	100	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Chlorodibromomethane	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Chloroethane	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Chloroform	0.37	49	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Chloromethane	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
2-Chlorotoluene	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
4-Chlorotoluene	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,2-Dibromo-3-chloropropane (DBCP)	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,2-Dibromoethane (EDB)	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Dibromomethane	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,2-Dichlorobenzene	1.1	100	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,3-Dichlorobenzene	2.4	49	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,4-Dichlorobenzene	1.8	13	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Trans-1,4-Dichloro-2-butene	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Dichlorodifluoromethane (Freon 12)	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,1-Dichloroethane	0.27	26	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,2-Dichloroethane	0.02	3.1	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,1-Dichloroethene	0.33	100	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
cis-1,2-Dichloroethene (DCE)	0.25	100	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
trans-1,2-Dichloroethene	0.19	100	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,2-Dichloropropane	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,3-Dichloropropane	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
2,2-Dichloropropane	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,1-Dichloropropene	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
cis-1,3-Dichloropropene	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
trans-1,3-Dichloropropene	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Diethyl ether	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Diisopropyl Ether (DIPE)	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,4-Dioxane	0.1	13	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Ethylbenzene	1	41	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Hexachlorobutadiene			NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
2-Hexanone (MBK)	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Isopropylbenzene (Cumene)	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
p-Isopropyltoluene (p-Cymene)			NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Methylacetate	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Methyl t-butyl ether (MTBE)	0.93	100	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Methylcyclohexane	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Methylene chloride	0.05	100	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
4-Methyl-2-pentanone (MIBK)	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Naphthalene	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
n-Propylbenzene	3.9	100	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Styrene	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,1,1,2-Tetrachloroethane	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,1,2,2-Tetrachloroethane	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Tetrachloroethene (PCE)	1.3	19	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Tetrahydrofuran	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Toluene	0.7	100	NA	NA	ND	NA	0.0019	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,2,3-Trichlorobenzene	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,2,4-Trichlorobenzene	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,3,5-Trichlorobenzene			NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,1,1-Trichloroethane	0.68	100	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,1,2-Trichloroethane	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Trichloroethene (TCE)	0.47	21	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Trichlorofluoromethane (Freon 11)	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,2,3-Trichloropropane	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,2,4-Trimethylbenzene	3.6	52	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
1,3,5-Trimethylbenzene	8.4	52	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Vinyl chloride	0.02	0.9	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
m&p-Xylene	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
o-Xylene	~	~	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
Total Xylenes	0.26	100	NA	NA	ND	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA
% Solids	~	~	77.7	92.4	72.4	73.3	83.1	90.9	86.4	83	88	81.9	89.6	83.5	87.2	92.1	84.3	90.5

Notes:
Exceedances of NYSDEC Part 375-6 soil cleanup objectives (SCOs) are formatted consistent with the SCO column headers.
mg/kg= millgrams per kilogram or parts per million (ppm)
ND - analyte not detected at or above the Reporting Level.
NA - not analyzed
Blue shade - Analyte detected above the Reporting Limit and below SCOs
~ - Indicates that no regulatory limit has been established for this analyte.

Metals, PAHs, and Pesticides in Soil

LaBella Sample ID (depth)	Unrestricted Use	Restricted-Residential Use	SB-01 (14.5-15FT)	SB-2a (0-2FT)	SB-02 (10.5-12.5FT)	SB-03 (14-15FT)	SB-04 (7-7.5FT)	SB-05 (10-12FT)	SB-06a (0-2FT)	SB-06 (10-12FT)	SB-07 (3-5FT)	SB-08 (6-8FT)	SB-09 (0-2FT)	SB-10 (1-3FT)	SB-11 (7in-2.5FT)	SB-12 (2-4FT)	SB-13 (7-9FT)	SB-14 (3-5FT)
Lab Sample ID			24C2194-01	24C2194-03	24C2194-02	24C2194-04	24C2194-05	24C2194-06	24C2194-08	24C2194-07	24C2194-09	24C2194-10	24C2194-11	24C2194-12	24C2194-13	24C2194-14	24C2194-15	24c2194-16
Collection Date			3/18/20214	3/18/20215	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024	3/18/2024
Matrix			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Metals, Target Analyte List										(mg/kg)								
Aluminum	~	~	NA	1,300	NA	NA	NA	12,000	8,900	12,000	9,400	9,200	11,000	11,000	12,000	8,300	NA	12,000
Antimony	~	~	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
Arsenic	13	16	NA	3.9	NA	NA	NA	ND	3.8	ND	7.5	ND	4.7	ND	ND	3.7	NA	4
Barium	350	400	NA	**470**	NA	NA	NA	120	110	45	130	100	100	60	120	66	NA	150
Beryllium	7.2	72	NA	0.58	NA	NA	NA	0.56	0.52	0.52	0.54	0.54	0.53	0.5	0.82	0.44	NA	0.5
Cadmium	2.5	4.3	NA	ND	NA	NA	NA	ND	0.63	ND	ND	ND	ND	ND	ND	ND	NA	ND
Calcium	~	~	NA	12,000	NA	NA	NA	11,000	28,000	5,300	15,000	8,500	25,000	4,200	47,000	11,000	NA	15,000
Chromium (total)	30	180	NA	18	NA	NA	NA	25	14	16	16	12	16	16	16	13	NA	14
Cobalt	~	~	NA	9.4	NA	NA	NA	9.1	6.9	9.9	7.6	8.2	8.6	7.9	6.4	7.4	NA	9.7
Copper	50	270	NA	35	NA	NA	NA	39	**92**	29	**60**	30	46	14	30	27	NA	37
Iron	~	~	NA	33,000	NA	NA	NA	31,000	28,000	28,000	25,000	22,000	27,000	28,000	27,000	22,000	NA	31,000
Cyanide	27	27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	63	400	NA	61	NA	NA	NA	**170**	**110**	18	**280**	60	**290**	8.7	**100**	22	NA	23
Magnesium	~	~	NA	8,500	NA	NA	NA	8,300	7,400	6,700	4,800	4,200	6,500	6,300	11,000	5,400	NA	9,500
Manganese	1,600	2,000	NA	700	NA	NA	NA	1,200	530	440	440	530	890	450	910	570	NA	710
Mercury	0.18	0.81	NA	0.14	NA	NA	NA	**0.32**	**0.43**	0.1	**1.9**	**0.56**	**0.24**	ND	0.14	0.11	NA	**0.32**
Nickel	30	310	NA	24	NA	NA	NA	24	17	22	18	18	20	18	17	18	NA	23
Potassium	~	~	NA	1,400	NA	NA	NA	1,400	1,100	1,400	1,500	1,400	1,200	1,300	1,700	1,100	NA	1,300
Selenium	3.9	180	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
Silver	2	180	NA	ND	NA	NA	NA	ND	MD	ND	ND	ND	ND	ND	ND	ND	NA	ND
Sodium	~	~	NA	ND	NA	NA	NA	190	310	260	230	ND	ND	360	1,600	ND	NA	ND
Thallium	~	~	NA	ND	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
Vanadium	~	~	NA	20	NA	NA	NA	19	15	17	19	13	17	14	26	14	NA	17
Zinc	109	10,000	NA	**860**	NA	NA	NA	88	**400**	56	**150**	66	**140**	56	**130**	78	NA	62
Semi-Volatiles (SVOCs) CP-51 list										(mg/kg)								
Acenaphthene	20	100	NA	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	100	100	NA	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	100	100	NA	0.36	NA	ND	ND	ND	ND	NA	0.33	ND	ND	ND	ND	ND	ND	ND
Benz(a)anthracene	1	1	NA	**1.3**	NA	ND	ND	ND	ND	NA	**1.3**	ND	0.84	ND	0.59	ND	0.41	ND
Benzo(a)pyrene	1	1	NA	**1.4**	NA	ND	ND	ND	ND	NA	**1.3**	ND	0.88	ND	0.55	ND	0.47	ND
Benzo(b)fluoranthene	1	1	NA	**1.7**	NA	ND	ND	ND	ND	NA	**1.6**	ND	**1.2**	ND	0.68	ND	0.57	ND
Benzo(ghi)perylene	100	100	NA	1.4	NA	ND	ND	ND	ND	NA	1	ND	0.74	ND	0.38	ND	0.28	ND
Benzo(k)fluoranthene	0.8	3.9	NA	0.74	NA	ND	ND	ND	ND	NA	0.64	ND	0.48	ND	0.27	ND	0.23	ND
Chrysene	1	3.9	NA	**1.3**	NA	ND	ND	ND	ND	NA	**1.3**	ND	0.83	ND	0.57	ND	0.37	ND
Dibenz(a,h)anthracene	0.33	0.33	NA	0.24	NA	ND	ND	ND	ND	NA	0.27	ND	0.19	ND	ND	ND	ND	ND
Fluoranthene	100	100	NA	2.4	NA	ND	ND	ND	ND	NA	2.9	ND	1.7	ND	1.3	0.23	0.61	ND
Fluorene	30	100	NA	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.5	0.5	NA	**1**	NA	ND	ND	ND	ND	NA	**0.98**	ND	**0.71**	ND	0.38	ND	0.31	ND
2-Methylnaphthalene	~	~	NA	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	12	100	NA	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	100	100	NA	1.6	NA	ND	ND	ND	ND	NA	1.7	ND	0.63	ND	0.66	ND	0.21	ND
Pyrene	100	100	NA	2.4	NA	ND	ND	ND	ND	NA	2.9	ND	1.5	ND	1.3	0.25	0.64	ND
Polychlorinated Biphenyls (PCBs)										(mg/kg)								
PCB-1016	0.1	1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA
PCB-1221	0.1	1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA
PCB-1232	0.1	1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA
PCB-1242	0.1	1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA
PCB-1248	0.1	1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA
PCB-1254	0.1	1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA
PCB-1260	0.1	1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA
PCB-1262	0.1	1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA
PCB-1268	0.1	1	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA
% Solids	~	~	77.7	92.4	72.4	73.3	83.1	90.9	86.4	83	88	81.9	89.6	83.5	87.2	92.1	84.3	90.5

Notes:
Exceedances of NYSDEC Part 375-6 soil cleanup objectives (SCOs) are formatted consistent with the SCO column headers.
mg/kg= milligrams per kilogram or parts per million (ppm)
ND - analyte not detected at or above the Reporting Level.
NA - not analyzed
Blue shade - Analyte detected above the Reporting Limit and below SCOs
~ - Indicates that no regulatory limit has been established for this analyte.

APPENDIX 1

Field Logs

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

BORING: SB - 13
SHEET __ of __
JOB: 2241307
CHKD BY:
DATE: 6/6/2024

CONTRACTOR: CDD LaBella Env. LLC
DRILLER: CDD
LABELLA REPRESENTATIVE: AA

BORING LOCATION: Bldg 4 Lot
GROUND SURFACE ELEVATION: NA
START DATE:
END DATE:

TIME: 10:55 TO 11:40
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe
AUGER SIZE AND TYPE: NA dual tube 1¼"
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER:
OTHER:

DEPTH (FEET BGS)	SAMPLE RECOVERY (INCHES)	SAMPLE NO. AND DEPTH	STRATA CHANGE (FEET BGS)	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
0				4" asphalt - drilled through brick @ 6"	none	
1	2½'			2'2" brown, med fine sand minor small gravel	↓	no ind. of fill
2					0.0	
3						
4						
5				2' dark brown coarse sand gravel @ 9'		no ind. of fill
6						
7	2'					
8						
9						
10				4" rock - large gravel		
11	2.75'			1' light brown, med sand moist @ 13'		no ind. of fill
12				1' grayish brown med sand		
13				6" gray silt clay firm		
14				3' gray silt clay firm		
15		sampled 18-20'		6" dark gray sandy silt moist w/ gravel		
16	3½'					
17			sampled 23-25			
18		25-30'		20-25' 2' gray moist silty silt		
19		3' recovery		1' light gray weathered rock mostly fill		
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

BORING: SB-16
SHEET __ of __
JOB: 2241307
CHKD BY:
DATE: 6/6/2024

CONTRACTOR: CDD LaBella Env, LLC
DRILLER: CDD
LABELLA REPRESENTATIVE:

BORING LOCATION: Between water feature & playground
GROUND SURFACE ELEVATION NA
START DATE: END DATE:

TIME: __ TO __
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe _____
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE RECOVERY (INCHES)	SAMPLE NO. AND DEPTH	STRATA CHANGE (FEET BGS)	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
0				3" topsoil		
1	2'			6" dry fine to light brown sand		
2				3" concrete cracked by corer		
3				3" brick		fill ½'-5'
4				9" dk gray to black silt w/ slag		
5				1' black fine to med sand w/ brick		1½' fill (6-6½')
6	2½'	(6-8)		1½' fine tan dry sand some brick and pebbles		
7						
8						
9						
10				1¼' variable brown fine sand - very little brick		
11	2½			1¼ brow coarse sand w/ pebbles		
12						
13						
14						
15						
16						
17						
18						
19						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

BORING: SB - V7
SHEET __ of __
JOB: 2241307
CHKD BY:
DATE: 6/6/2024

CONTRACTOR: CDD LaBella Env. LLC
DRILLER: CDD
LABELLA REPRESENTATIVE:

BORING LOCATION: N - central p-lot Bldg 4
GROUND SURFACE ELEVATION NA
START DATE:

END DATE:

TIME: __ TO __
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe _____
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE: SAMPLE RECOVERY (INCHES)	SAMPLE: SAMPLE NO. AND DEPTH	SAMPLE: STRATA CHANGE (FEET BGS)	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
0				4" asphalt		
1	2½			3" dry fine med sand w/ small gravel		very little brick
2				concrete @ 1'		
3				2' brown to black clayey silt w/		
4				pebbles gravel vc.		fill to 5'
5						
6	8"			drk gray moist clayey silt		very soft little recov.
7						
8						
9						
10				Concrete @ 10'		
11	1½'			6" moist brown sndy clay		
12				1' moist firm dark gray sndy clay		
13				2" wet gray sndy clay & rock		
14						
15				End of boring		
16						
17						
18						
19						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

BORING: SB - 18
SHEET __ of __
JOB: 2241307
CHKD BY:
DATE: 6/6/2024

CONTRACTOR: CDD LaBella Env. LLC
DRILLER: CDD
LABELLA REPRESENTATIVE:

BORING LOCATION:
GROUND SURFACE ELEVATION NA
START DATE: END DATE:

TIME: __ TO __
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe _____
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE RECOVERY (INCHES)	SAMPLE NO. AND DEPTH	STRATA CHANGE (FEET BGS)	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
0	2½'			3" topsoil 1' dry fine light brown snd 3" dry brown rock & fine snd 1' bsg brick @ 18"		
1						
2						
3						
4				1' dark grey to black fine snd dry		this layer coal ash 4¾ to 5
5	2'			1' coal coarse snd moist 1' clayey silt moist from b) dark grey to reddish grey		
6						
7						
8						
9						
10	14"			2" reddish grey clayey silt 1' grey to brownish tan moist clayey silt with gravel		wood @ 15'
11						
12						
13						
14						
15	1½'			4" wet very coarse grey snd 14" wet dense fine snd w/ rock		
16						
17						
18						
19						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

ERAL NOTES

RATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

d Surface

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

BORING: SB - 19
SHEET __ of __
JOB: 2241307
CHKD BY:
DATE: 6/6/2024

CONTRACTOR: CDD LaBella Env. LLC
DRILLER: CDD
LABELLA REPRESENTATIVE:

BORING LOCATION: NE corner Bldg 3 yard
GROUND SURFACE ELEVATION NA
START DATE: END DATE:

TIME: __ TO __
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe _____
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE: SAMPLE RECOVERY (INCHES)	SAMPLE: SAMPLE NO. AND DEPTH	SAMPLE: STRATA CHANGE (FEET BGS)	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
0	2½'			3" topsoil 6" very dry fine sand concrete @ 1'659		
1						
2				6" very dry fine sand w/ brick/concrete		
3				8" dry very firm silty clay		
4				3" brick		
5						
6	1½'			All brick		
7						
8						
9						
10						
11	1'			4" brick 3" coal ash & ~~concrete~~ rock		
12				5" brown sandy clay w/ rock moist		
13						
14						
15						
16	3'			2' moist light brown very firm clay		
17				8" coarse lt brown moist sand		
18				4" wet moist grayish brown silt		
19						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

BORING: SB-2b
SHEET __ of __
JOB:
CHKD BY:
DATE:

CONTRACTOR: LaBella Env. LLC
DRILLER: CDD
LABELLA REPRESENTATIVE: AA

BORING LOCATION: South yard near Bldg 3
GROUND SURFACE ELEVATION: NA
START DATE: 6/6/24
END DATE:

TIME: __ TO __
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe 7822
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE RECOVERY (INCHES)	SAMPLE NO. AND DEPTH	STRATA CHANGE (FEET BGS)	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
0	8"			2" topsoil	0.0	
1				4" very dry brown sand		
2				2" bricks and brown sand		
3						
4						
5				very loose fine dry sand	0.0	soil fell from core switched to micro-core
6						
7						
8						
9						
10				3" coal ash		
11	48"	10-12		3" variable texture sand with gravel		concrete @ 13'
12						
13				9" grayish brown dense fine sand		
14						
15						
16						
17						
18						
19						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

BORING: SB-21
SHEET __ of __
JOB:
CHKD BY:
DATE:

CONTRACTOR: LaBella Env. LLC
DRILLER: CDD
LABELLA REPRESENTATIVE: AA
BORING LOCATION: South yard near Bldg 3 entry
GROUND SURFACE ELEVATION: NA
START DATE:
END DATE:
TIME: __ TO __
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe 7822
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push
DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE RECOVERY (INCHES)	SAMPLE NO. AND DEPTH	STRATA CHANGE (FEET BGS)	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
0	36"	3-5		3" topsoil 1' light brown to tan/gray very fine dry snd. 2' very fine gray to tan dry snd with gravel	0.0	Concrete @ 2'
5	42"	6-8		1' tan/gray very fine dry snd 3" coal, brick, ash 3' drk brown to tan med sand with minor brick/gravel	0.0	
10						
15						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

BORING: ~~SB~~ TP-1
SHEET __ of __
JOB: 2241307
CHKD BY:
DATE: 6/6/2024

CONTRACTOR: CDD LaBella Env. LLC
DRILLER: CDD
LABELLA REPRESENTATIVE:

BORING LOCATION:
GROUND SURFACE ELEVATION NA
START DATE:
END DATE:

TIME: __ TO __
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe _____
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE: SAMPLE RECOVERY (INCHES)	SAMPLE: SAMPLE NO. AND DEPTH	SAMPLE: STRATA CHANGE (FEET BGS)	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
0				Bldg 4		
1				TP-1 6th stall from corner		
2				concrete feature @ 2½'		
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

BORING: ~~SB~~ TP-2
SHEET __ of TP-3
JOB: 2241307
CHKD BY:
DATE: 6/6/2024

CONTRACTOR: CDD LaBella Env. LLC
DRILLER: CDD
LABELLA REPRESENTATIVE:

BORING LOCATION:
GROUND SURFACE ELEVATION NA
START DATE:
END DATE:

TIME: __ TO __
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe _____
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE: SAMPLE RECOVERY (INCHES)	SAMPLE: SAMPLE NO. AND DEPTH	SAMPLE: STRATA CHANGE (FEET BGS)	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
0				TP-2	6.0	
1				clean to 10'		
2				~2' fill/aggregate over geofabric		
3						
4						
5				all native brown med SND		
6				no strata		
7		8-10				
8				TP-3 north of water feature	0.0	3 layers of fill
9						
10			1-3½'	- 3½' brown fine snd (dry) trg. brick pieces throughout		
11						
12			3½-7'	- 2½' variable txtl / color fill coal frags, coal ash, slag	0.0	
13		6-8				
14						
15						
16			7-10'	- ~~8~~ black soft fine snd 1'	0.0	
17				brown to drk brown variable texture fill		
18		8-10				
19						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

BORING: SB-

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

TP-4

BORING: ~~SB~~ TP-4 of TP-5
SHEET
JOB: 2241307
CHKD BY:
DATE: 6/6/2024

CONTRACTOR: CDD LaBella Env. LLC
DRILLER: CDD
LABELLA REPRESENTATIVE:

BORING LOCATION: Near SB-7 Back Bldg 4
GROUND SURFACE ELEVATION NA
START DATE: END DATE:

TIME: __ TO __
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe _____
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE: SAMPLE RECOVERY (INCHES)	SAMPLE: SAMPLE NO. AND DEPTH	SAMPLE: STRATA CHANGE (FEET BGS)	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
0				TP-4		
1				refusal @ 6'		
2				large rock concrete & brick (whole bricks)		
3						
4				Soil is consistent fine brown base Sand		
5						
6		(4-6)		debris is too big to pull from depth		
7				TP-5 North of garage		
8				2' light brown fine sand w/ rock		
9				plastic layer @ 1'		
10				4' variable texture/color fill (like TP-3)		
11						
12						
13				vein of coal ash @ 5'		
14		(5-7)		3½' dark brown med tx sand		
15				w/ brick/rock, glass, wire		
16						
17						
18						
19						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

BORING: SB-

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

BORING: ~~SB~~ TP-6 TP-7
SHEET __ of __
JOB: 2241307
CHKD BY:
DATE: 6/6/2024

CONTRACTOR: CDD LaBella Env. LLC
DRILLER: CDD
LABELLA REPRESENTATIVE:

BORING LOCATION: North Yard Bldg 3
GROUND SURFACE ELEVATION NA
START DATE: END DATE:

TIME: __ TO __
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe _____
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE: SAMPLE RECOVERY (INCHES)	SAMPLE: SAMPLE NO. AND DEPTH	SAMPLE: STRATA CHANGE (FEET BGS)	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
0				TP-6 soil is homogenous		
1		(4-6)		- whole/large brick pieces throughout		
2				very dry fine light brown sand lrg rock		
3				and gravel wire @ 2'		
4						
5						
6				TP-7 Parking lot		
7				coal ash @ 3½-5'		
8				1½' brown variable fill		
9				reddish brown med to coarse SnL		
10				w/ rock and gravel		
11				6-9'		
12						
13						
14						
15						
16						
17						
18						
19						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

BORING: SB -

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

BORING: ~~SB~~ TP-8
SHEET __ of __
JOB:
CHKD BY:
DATE:

CONTRACTOR: LaBella Env. LLC
DRILLER: CDD
LABELLA REPRESENTATIVE: AA

BORING LOCATION: Building 4 north-central yard
GROUND SURFACE ELEVATION: NA
START DATE: 7/15/2024
END DATE:

TIME: __ TO __
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe 7822
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE: SAMPLE RECOVERY (INCHES)	SAMPLE: SAMPLE NO. AND DEPTH	SAMPLE: STRATA CHANGE (FEET BGS)	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
0				2" topsoil		
1				light brown, fine loose sand w/ large rock		some Brick & concrete pieces 1-6' bgs
2		sampled 2-4			0.0	
3						
4						
5				Brown fine to med. texture sandy silt w/ little brick		
6						
7						
8						
9				End of test pit		
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

BORING: SB-

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

BORING: ~~SB~~ TP-9
SHEET __ of __
JOB:
CHKD BY:
DATE:

CONTRACTOR: LaBella Env. LLC
DRILLER: CDD
LABELLA REPRESENTATIVE: AA

BORING LOCATION: Southeast corner of Building 4
GROUND SURFACE ELEVATION: NA
START DATE: 7/15/24
END DATE:

TIME: __ TO __
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe 7822
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE: SAMPLE RECOVERY (INCHES)	SAMPLE: SAMPLE NO. AND DEPTH	SAMPLE: STRATA CHANGE (FEET BGS)	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
0				2" topsoil	0.0	
1				dark brown medium sand wl		
2				some brick		
3		Sampled 3-5'				
4						
5				dark brown medium to fine sand		coal ash 3-5'
6				w/ some brick		
7				whole bricks		
8						
9				End of test pit		
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

BORING: SB-

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

BORING: ~~SB~~ TP-10
SHEET __ of __
JOB:
CHKD BY:
DATE:

CONTRACTOR: LaBella Env. LLC
DRILLER: CDD
LABELLA REPRESENTATIVE: AA

BORING LOCATION: East side of Bldg 4
GROUND SURFACE ELEVATION NA
START DATE: 7/15/24
END DATE:

TIME: __ TO __
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe 7822
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
	SAMPLE RECOVERY (INCHES)	SAMPLE NO. AND DEPTH	STRATA CHANGE (FEET BGS)			
0				light brown fine sad and silt	0.0	roots and large rock refusal
1				brick throughout		
2		1-3'		large rocks very dry		
3						
4				End of test pit 3'		
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

BORING: SB -

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

BORING: ~~SB~~ TP-11
SHEET __ of __
JOB:
CHKD BY:
DATE:

CONTRACTOR: LaBella Env. LLC
DRILLER: CDD
LABELLA REPRESENTATIVE: AA

BORING LOCATION: NE yard area Bldg 4
GROUND SURFACE ELEVATION NA
START DATE: 7/15/24 END DATE:

TIME: __ TO __
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe 7822
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE: SAMPLE RECOVERY (INCHES)	SAMPLE: SAMPLE NO. AND DEPTH	SAMPLE: STRATA CHANGE (FEET BGS)	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
0				light brown to brown fine sand w/ rock throughout	0.0	rocks to 3'
1						
2		2-4				
3				whole bricks throughout		
4						wood at 4½'
5				coal ash 3-4'		
6						
7				End of test pit		
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

BORING: SB-

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

BORING: ~~SB~~-TP-12
SHEET __ of __
JOB:
CHKD BY:
DATE:

CONTRACTOR: LaBella Env. LLC
DRILLER: CDD
LABELLA REPRESENTATIVE: AA

BORING LOCATION: NE yard Area Bldg 4 near walkway
GROUND SURFACE ELEVATION: NA
START DATE: 7/15/24 END DATE:

TIME: __ TO __
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe 7822
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE: SAMPLE RECOVERY (INCHES)	SAMPLE: SAMPLE NO. AND DEPTH	SAMPLE: STRATA CHANGE (FEET BGS)	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
0				light brown dry fine sand w/ gravel little brick	0.0	Brick @ 3'
1						
2						
3		2-4				
4						
5				dark brown / black course sand w/ gravel		
6						
7					0.0	
8						
9				End of TP		
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

BORING: SB-

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

BORING: ~~SB-~~ TP-13
SHEET __ of __
JOB:
CHKD BY:
DATE:

CONTRACTOR: LaBella Env. LLC
DRILLER: CDD
LABELLA REPRESENTATIVE: AA

BORING LOCATION: NE of garage
GROUND SURFACE ELEVATION NA
START DATE: 7/15
END DATE:

TIME: __ TO __
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe 7822
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE: SAMPLE RECOVERY (INCHES)	SAMPLE: SAMPLE NO. AND DEPTH	SAMPLE: STRATA CHANGE (FEET BGS)	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
0				light brown dry fine to med texture Snd w/ concrete and some brick debris throughout	0.0	concrete with rebar @ 0.75'
1						
2						
3		2-4				
4						
5						
6				brown to dark brown med Snd w/ brick	0.2	
7						
8				End of boring		
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

BORING: SB-

LaBella
Powered by partnership

300 STATE STREET, ROCHESTER, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT
Taylor Apartments II

BORING: ~~SB~~ TP-14
SHEET __ of __
JOB:
CHKD BY:
DATE:

CONTRACTOR: LaBella Env. LLC
DRILLER: CDD
LABELLA REPRESENTATIVE: AA

BORING LOCATION: NW of garage (bldg 4)
GROUND SURFACE ELEVATION: NA
START DATE: 7/15
END DATE:

TIME: __ TO __
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe 7822
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE RECOVERY (INCHES)	SAMPLE NO. AND DEPTH	STRATA CHANGE (FEET BGS)	VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
0				dark brown variable txtr snds brick and debris throughout little wood and concrete pieces	0.0	metal and brick to 6' large metal pice @5'
1						
2						
3		3.5'				
4						
5						
6						
7						
8						
9						
10				End of test pit		
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

BORING: SB-

APPENDIX 2

Focused Phase II ESA Excerpt

Focused Phase II Environmental Site Assessment Draft Report

Location:

John P. Taylor Apartments – Buildings 3 and 4
125 River Street, City of Troy, New York

Prepared for:

Pennrose, LLC
45 Main Street, Suite 539
Brooklyn, New York 11201

LaBella Project No. 2241307

April 23, 2024

LaBella
Powered by partnership.

21 Fox Street | Poughkeepsie, NY 12601 | p 888-539-9073

Table of Contents

1.0 INTRODUCTION

LaBella Associates, D.P.C. ("LaBella") was retained by Pennrose, LLC to conduct a Focused Phase II Environmental Site Assessment (ESA) at the John P. Taylor Apartments, Buildings 3 and 4 Property, located at 125 River Street in the City of Troy, Renssalaer County, New York, hereinafter referred to as the "Site" (see **Figure 1**).

The Site is a (±)3.23-acre, multi-family residential property located on the eastern and western sides of Front Street and River Street, respectively. The Site is developed with two, nine-story apartment buildings and a garage structure which were built in 1954.

1.1 Special Terms & Conditions

The findings of this Focused Phase II ESA are based on the scope of work and project objectives as stated in LaBella Proposal dated January 4, 2024 (Revised February 1, 2024). This investigation is intended to provide a focused assessment of previously identified areas of concern and a general screening of soils that may have been impacted by historic commercial/industrial utilization. An assessment of groundwater quality is not included in this investigation.

1.2 Limitations & Exceptions

Work associated with this investigation was performed in accordance with generally accepted environmental engineering and environmental contracting practices for this region. LaBella Associates, D.P.C., makes no other warranty or representation, either expressed or implied, nor is one intended to be included as part of its services, proposals, contracts, or reports.

Phase II ESAs are screening level assessments to investigate specific potential environmental concerns identified at a site from the Phase I ESA and are not an exhaustive assessment of environmental conditions on a property. The Phase II ESA is not intended to delineate the nature and extent of contamination at the Site; nor address complex geological settings, the fate and transport characteristics of certain hazardous substances, physical limitations imposed by the location of utilities and other man-made objects, and the limitations of assessment technologies.

In addition, LaBella cannot provide guarantees, certifications, or warranties that the property is or is not free of environmental impairment or other regulated solid wastes. The Client shall be aware that the data and representative samples from any given soil sampling point may represent conditions that apply only at that particular location, and such conditions may not necessarily apply to the general Site as a whole.

1.3 Background/ Objective

Concurrent to this investigation, LaBella performed a Phase I ESA for the Site which was completed on March 28, 2024. Based on the findings of the Phase I ESA, the following Recognized Environmental Conditions (RECs) were identified with the Site.

1. Historic commercial and industrial utilization of the Site including various coal yards/storage, power station, warehouses, cigar factories, upholstery, blacksmith, printing, and engine repair facilities. A Sanborn map dated 1951 also shows a gas tank associated with a transit mixed concrete facility near the southwestern portion of the Subject Property.
2. The northeastern adjoining John Taylor Apartments, Buildings 1 and 2 property is a registered petroleum bulk storage (PBS) facility with one closed-removed 25,000-gallon fuel oil underground storage tank (UST). NSYDEC spill no. 1701213 was reported in May 2017 upon

discovery of fuel oil contaminated soil during tank removal activities. Appurtenant piping was identified as the cause of the release; however, no information regarding piping removal was available. Contaminant concentrations were detected "slightly above" applicable NYSDEC cleanup standards in one confirmatory endpoint sample and the spill was closed without meeting standards in July 2017. No information regarding piping removal or associated impacts to the Subject Property are available.

This Focused Phase II ESA scope of work includes the installation of soil borings to assess potential impacts associated with RECs identified during the Phase I ESA. Near-surface soil sampling was also performed to assess the environmental integrity of soils likely to be encountered or disturbed during planned redevelopment activities.

2.0 FIELD INVESTIGATION

2.1 Geophysical Survey and Results

LaBella performed a geophysical survey using ground penetrating radar (GPR) and magnetometry technologies on March 14 and 15, 2024. These nondestructive methods use electromagnetic radiation in the microwave band (UHF/VHF frequencies) of the radio spectrum, and detect the reflected signals from subsurface structures. The geophysical survey does not relieve interested parties from their responsibility to make required notifications prior to subsurface disturbance. Prior to the initiation of subsurface work LaBella notified UDig New York to mark-out subsurface utilities near adjoining roadways. The geophysical survey did not investigate features outside of the survey boundary.

The survey was utilized to clear potential boring locations by identifying subsurface utilities including water, electric, communications, and natural gas lines. The survey did not identify any subsurface anomalies that were indicative of USTs or previously excavated and backfilled areas. A sketch showing the detected utilities and structures is attached.

2.2 Subsurface Soil Investigation

2.2.1 Soil Borings

Sixteen (16) soil borings, designated SB-01 through SB-14 were advanced at the Site on March 18 and 19, 2024 [Note: additional borings were installed at SB-02 and SB-06.] The borings were installed under direct supervision of a LaBella environmental professional to assess subsurface Site conditions. Soil boring locations are depicted on **Figure 2** and are summarized as follows:

Sample ID (Depth)	Building 3 Locations	Sample ID (Depth)	Building 4 Locations
SB-01 (14.5-15FT)	Rear yard Area	SB-07 (3-5FT)	Rear Yard Area
SB-02a (0-2FT)	Northwestern Yard Area	SB-08 (6-8FT)	East-Central Yard Area
SB-02 (10.5-15FT)	Northwestern Yard Area	SB-09 (0-2FT)	Northeastern Yard Area
SB-03 (14-15FT)	Northern Yard Area	SB-10 (1-3FT)	West-Central Site Boundary
SB-04 (7-7.5FT)	Rear Yard Area	SB-11 (7in-2.5FT)	Southwestern Site Boundary
SB-05 (10-12FT)	Southeastern Yard Area	SB-12 (2-4FT)	Southern Site Boundary
SB-06a (0-2FT)	Southern Site Boundary	SB-13 (7-9FT)	West of Garage
SB-06 (10-12FT)	Southwestern Site Boundary	SB-14 (3-5FT)	South of Garage

The borings were advanced using a track-mounted, Geoprobe® Systems Model 6610DT direct-push

sampling system. The use of direct-push technology allows for rapid sampling, observation, and characterization of overburden soils. Borings were extended to maximum depths ranging from 5 to 15 feet (ft) below ground surface (bgs). The Geoprobe uses a 5-foot coring barrel equipped with disposable acetate sleeves and soil cores are cut directly from sleeves for observation and sampling. Coring equipment was decontaminated between boring locations using an Alconox detergent and potable water solution, followed by a potable water rinse.

2.2.1 Soil Sampling

Soils encountered during extension of borings were continuously assessed for visual/olfactory evidence of contamination and screened for detectable volatile organic compounds (VOCs) using a properly calibrated photoionization detector (PID). Boring logs were completed at each location and are provided as **Appendix 1**.

Soil samples were placed directly into laboratory-supplied containers (preserved as appropriate) and maintained at cool temperatures for transport to Pace Analytical, a New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) certified laboratory (ELAP No. 10478). Appropriate chain-of-custody protocols were followed. Laboratory analyses were selected based on fieldwork observations, sample depths, and the area of concern from which the samples were collected. The following analyses were performed:

- Target Compound List (TCL) VOCs via United States Environmental Protection Agency (USEPA) Method 8260;
- Polycyclic aromatic hydrocarbons ([PAHs] a subset of semi-volatile organic compounds [SVOCs]) via USEPA Method 8270;
- Target Analyte List (TAL) metals using USEPA Methods 6010 and 7471; and,
- Polychlorinated biphenyls (PCBs) via USEPA Method 8082

The table below summarizes the laboratory analyses performed for each sample:

Sample ID (Depth)	Building 3 Location	Sample ID (Depth)	Building 4Location
SB-01 (14.5-15FT)	PCBs	SB-07 (3-5FT)	TAL metals, PAHs
SB-02a (0-2FT)	TAL metals, PAHs	SB-08 (6-8FT)	TAL metals, PAHs
SB-02 (10.5-12.5FT)	VOCs	SB-09 (0-2FT)	TAL metals, PAHs
SB-03 (14-15FT)	PAHs	SB-10 (1-3FT)	TAL metals, PAHs
SB-04 (7-7.5FT)	PAHs, VOCs	SB-11 (7in-2.5FT)	TAL metals, PAHs
SB-05 (10-12FT)	TAL metals, PAHs	SB-12 (2-4FT)	TAL metals, PAHs
SB-06a (0-2FT)	TAL metals, PAHs	SB-13 (7-9FT)	PAHs, VOCs
SB-06 (10-12FT)	TAL metals, VOCs	SB-14 (3-5FT)	TAL metals, PAHs

In general, samples collected from boring locations with potential petroleum-related sources of contamination were analyzed for VOCs and/or PAHs. Samples collected from borings installed at the former on-site power station were analyzed for PCBs. Samples collected at former coal storage locations and where non-native fill material was identified were analyzed for TAL metals and/or PAHs.

3.0 FINDINGS

3.1 Site Geology and Hydrology

Soils encountered during advancement of borings generally consisted of fill material at depths ranging from 5 to 15 feet bgs overlying fine to medium texture sand and gravel. Non-native fill material was

encountered at each boring and consisted of variable texture sand with gravel and wood, asphalt, concrete, and/or brick fragments. Refusal was encountered at one boring location (SB-06) at 10.5 feet bgs; however, bedrock was not encountered during fieldwork activities. Groundwater was encountered at one boring location (SB-01) at approximately 10 feet bgs. Soil Boring Logs are included as **Appendix 1** and the soil boring locations are shown on **Figure 2**.

3.2 Field Screening Results

No field evidence of contamination (e.g., odors, stained soil, elevated PID readings) were observed at any boring location.

3.3 Laboratory Analytical Results

Laboratory analytical results for soil samples were compared to New York State Department of Environmental Conservation (NYSDEC) Soil Cleanup Objectives (SCOs) provided in 6 NYCRR Part 375-6.8 for Unrestricted Use (UUSCOs) and Restricted Use, Restricted Residential (RRSCOs). Results were also compared to Commercial Use SCOs (CUSCOs) which are usually applicable to sites in a NYSDEC remediation program but can be helpful in property evaluation. Soil results are summarized in **Table 1** and a copy of the laboratory report is included as **Appendix 2**. A Soil Contamination Map depicting boring/sample locations where analytes were detected above SCOs is provided as **Figure 3**.

VOCs:

No VOCs were detected above UUSCOs in the four (4) soil samples submitted for analysis. Benzene (UUSCO 0.06 milligrams per kilogram [mg/kg]) and toluene (UUSCO 0.7 mg/kg) were detected in SB-04 (7-7.5FT) at 0.0016 mg/kg and 0.0019 mg/kg, respectively. No other VOCs were detected at concentrations above laboratory Reporting Limits (RLs).

PAHs:

PAHs were detected above SCOs in three (3) of thirteen (13) soil samples submitted for analysis. In summary:

- Benzo(a)anthracene (RRSCO 1.0 mg/kg) was detected in SB-2a (0-2FT) at 1.3 mg/kg and SB-07 (3-5FT) at 1.3 mg/kg.
- Benzo(a) pyrene (RRSCO and CUSCO 1.0 mg/kg) was detected in SB-2a (0-2FT) at 1.4 mg/kg and SB-07 (3-5FT) at 1.3 mg/kg.
- Benzo(b)fluoranthene (RRSCO 1.0 mg/kg) was detected in SB-2a (0-2FT) at 1.7 mg/kg, SB-07 (3-5FT) at 1.6 mg/kg, and SB-09 (0-2 FT) at 1.2 mg/kg.
- Chrysene (UUSCO 1.0 mg/kg) was detected in SB-2a (0-2FT) at 1.3 mg/kg and SB-07 (3-5FT) at 1.3 mg/kg.
- Indeno(1,2,3-cd)pyrene (RRSCO 0.5 mg/kg) was detected in SB-2a (0-2FT) at 1.0 mg/kg, SB-07 (3-5FT) at 0.98 mg/kg, and SB-09 (0-2FT) at 0.71 mg/kg.

PAHs were detected above laboratory RLs but below UUSCOs in six (6) of thirteen (13) soil samples submitted for analysis. No PAHs were detected in seven (7) soil samples.

Metals:

Metals were detected above SCOs in eight (8) of eleven (11) soil samples submitted for analysis. In summary:

- Barium (RRSCO 400 mg/kg) was detected in SB-2a (0-2FT) at 470 mg/kg (also exceeds the CUSCO of 400 mg/kg)

- Copper (UUSCO 50 mg/kg) was detected in SB-06a (0-2FT) at 92 mg/kg and SB-07 (3-5FT) at 60 mg/kg.
- Lead (UUSCO 63 mg/kg) was detected in SB-05 (10-12FT) at 170 mg/kg, SB-06a (0-2FT) at 110 mg/kg, SB-07 (3-5FT) at 280 mg/kg, SB-09 (0-2 FT) at 290 mg/kg, and SB-11 (7in-2.5 FT) at 100 mg/kg.
- Mercury (UUSCO 0.18 mg/kg) was detected in SB-05 (10-12FT) at 0.32 mg/kg, SB-06a (0-2FT) at 0.43 mg/kg, SB-07 (3-5FT) at 1.9 mg/kg (also exceeds the RRSCO of 0.81 mg/kg), SB-08 (6-8FT) at 0.56 mg/kg, SB-009 (0-2FT) at 0.24 mg/kg, and SB-14 (3-5FT) at 0.32 mg/kg.
- Zinc (UUSCO 0.5 mg/kg) was detected in SB-2a (0-2FT) at 860 mg/kg, SB-06a (0-2FT) at 400 mg/kg, SB-07 (3-5FT) at 150 mg/kg, SB-09 (0-2FT) at 140 mg/kg, and SB-11 (7in-2.5FT) at 130 mg/kg.

Metals were detected above laboratory RLs but below UUSCOs in three (3) of eleven (11) soil samples submitted for analysis.

PCBs:

No PCBs were detected above laboratory RLs in the three (3) samples submitted for analysis.

4.0 CONCLUSIONS AND RECOMMENDATIONS

LaBella was retained by Pennrose, LLC to conduct a Focused Phase II ESA at the Taylor Apartments Buildings 3 and 4 property, located at 125 River Street in the City of Troy, Renssalaer County, New York. The Focused Phase II ESA was performed to: 1) investigate potential impacts associated with previously identified RECs; 2) provide a general screening of representative areas that may have been impacted by historic commercial/industrial utilization; and, 3) to assess the environmental integrity of soils likely to be encountered/disturbed during planned redevelopment activities. This investigation consisted of continuous soil sampling during the installation of sixteen (16) borings. Soil samples were analyzed for VOCs, PAHs, TAL metals, and/or PCBs and are summarized as follows:

1. No field evidence (e.g., visual, olfactory) of contamination was observed during installation of a soil borings. Non-native fill materials consisting of variable texture sands with asphalt, wood, concrete, and/or brick fragments were identified at each boring at depths ranging from 5 to 15 feet bgs.

2. Two (2) VOCs, benzene and toluene, were detected in one sample collected near the eastern Site boundary at Building 3; however, no VOCs were detected above applicable SCOs.

3. Elevated PAH concentrations were detected in three (3) shallow soil samples collected at the Site. Benzo(a)pyrene was detected above the RRSCO and CUSCO the northern yard area and near the southeastern Site boundary of Buildings 3 and 4, respectively. Benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene were detected above RRSCOs at the northern yard area of Building 3 and near the northeastern and southeastern Site boundaries of Building 4. Benzo(a)anthracene was detected above the RRSCO at the northern yard area of Building 3 and near the southeastern Site boundary of Building 4. Chrysene was detected above UUSCOs at each of these sample locations.

4. Elevated concentrations of TAL metals were detected in eight (8) samples collected throughout the majority of the Site. Barium was detected above the RRSCO and CUSCO in

one (1) shallow sample collected at the northwestern yard area of Building 3. Copper was detected above the UUSCO in two (2) shallow samples collected near the southwestern and southeastern Site boundaries at Building 3 and Building 4, respectively. Lead was detected above the UUSCO in five (5) samples collected near the southeastern and southwestern Site boundaries at Building 3, and near the northeastern, southeastern, and southwestern Site boundaries at Building 4. Mercury was detected above the RRSCO in one (1) soil sample collected near the southeastern Site boundary of Building 4. Mercury was also detected above the UUSCO in five (5) samples collected near the southern Site boundaries of Building 3, the eastern Site boundaries of Building 4, and southeast of the garage structure. Zinc was detected above the UUSCO in five (5) samples collected at the northwestern and southwestern yard areas of Building 3 and near the northeastern, eastern, and southwestern Site boundaries at Building 4.

5. No PCBs were detected in any of the three (3) analyzed samples.

LaBella offers the following recommendations:

1) No VOCs were detected above UUSCOs; however, low-level VOCs (i.e., benzene and toluene) were detected in one (1) soil sample collected at the eastern Site boundary of Building 3. These VOCs are indicative of gasoline contamination and are likely unrelated to the fuel oil release at Buildings 1 and 2 (NSYDEC spill no. 1701213). No additional investigation is recommended at this time; however, analytical information for VOCs identified at this location is limited. Soil disturbance during future redevelopment activities should ensure that this material is handled and/or disposed of properly. If soils are later determined to contain VOCs at concentrations above UUSCOs, they cannot be considered clean fill and reuse options will be limited.

2) Non-native fill material was identified at each boring location. Further assessment would be necessary to fully delineate the nature and extent of the contamination. Due to its relatively large size and historical industrial/commercial utilization of the Site, the potential exists for localized soil impacts in areas between the borings installed during this investigation.

3) Laboratory analytical information obtained during this investigation has documented metals and PAHs commonly associated with poor quality urban fill materials at concentrations above NYSDEC UUSCOs and RRSCOs. Soil with concentrations exceeding UUSCOs is not considered clean fill and redevelopment activities that disturb this material should ensure proper management and/or disposal. Fill material with contaminant concentrations above RRSCOs are not considered suitable for its current or intended residential use. Excavated soils should be properly characterized for off-site disposal at a permitted facility. Subsequent to Site redevelopment, non-native fill material left in place should be 1) analyzed to confirm compliance with applicable SCOs or, 2) overlain ("capped") by a cover layer (e.g., pavement, buildings, or certified clean soil) to mitigate human exposure to contaminated material.

4) No assessment of ambient groundwater at the Site is currently available and groundwater encountered during redevelopment activities could contain elevated contaminant concentrations. Groundwater emanating from the Site or generated by dewatering activities during redevelopment should analyzed, managed, and/or disposed of in accordance with applicable regulations.

APPENDIX B OF RIWP
QUALITY ASSURANCE PROJECT PLAN

Quality Assurance Project Plan
BCP No. C442068

Location:

Taylor Apartments II
Site No. C442068
125 River Street, Buildings 3 & 4
Troy, New York 12180

Prepared for:

Taylor II LLC
230 Wyoming Avenue
Kingston, PA 18704

LaBella Project No. 2241307

August 25, 2025
Revised November 21, 2025

LaBella
Powered by partnership.

5 McCrea Hill Road | Ballston Spa, NY 12020 |Phone: 518-885-5383
www.labellapc.com

Table of Contents

ATTACHMENTS

1.0 Introduction

This Quality Assurance Project Plan (QAPP) reflects LaBella's overall Quality Control Program (QCP), which is an integral part of its approach to environmental investigation and remediation projects. By maintaining a rigorous QC program, our firm is able to provide accurate and reliable data. The QCP serves as a basis for quality control methods to be implemented during field programs and any project-specific or agency-specific requirements are reflected in this site-specific QAPP. This QAPP follows requirements detailed in New York State Department of Environmental Conservation's (NYSDEC's) Technical Guidance for Site Investigation and Remediation (DER-10), Section 2.

Our QCP contains procedures which allow for the proper collection and evaluation of data and documents that QC procedures have been followed during field investigations. The QCP presents the methodology and measurement procedures used in collecting quality field data. This methodology includes the proper use of equipment, documentation of sample collection, and sample handling procedures. Procedures used in the QCP are compatible with federal, state, and local regulations, as well as appropriate professional and technical standards.

The QCP consists of the following:

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

The remainder of this document presents the site-specific QAPP for the Brownfields Cleanup Program Remedial Investigation at the Taylor Apartments II BCP Site in Troy, NY.

1.1 Project Scope

The scope of the RI includes investigation of surface soil, subsurface soil, and groundwater, to evaluate the nature and extent of impacts so that an exposure assessment and significant threat determination can be made. Investigation methods include advance of soil borings, installation of monitoring wells collection and analysis of soil and groundwater samples, and associated reporting.

1.2 Project Goals

The goal of the RI is to investigate and characterize "the nature and extent of the contamination at and/or emanating from the brownfield site," per Environmental Conservation Law (ECL) Article 27, Title 14 (Brownfield Cleanup Program). The findings of the investigation will be evaluated and used to guide remedial options and/or additional investigation, if warranted. The appropriate remediation approach will be determined after the RI and a Remedial Alternatives Analysis (RAA) are approved.

2.0 Project Organization

The investigative efforts defined in this RIWP will be coordinated by LaBella on behalf of the Volunteer, Taylor II LLC. The following identifies the responsibilities of various individuals and organizations supporting the RI:

- The NYSDEC Project Manager (Shayna Batyrov) will be responsible for reviewing and approving this work plan, coordinating approval of requested modifications, and providing guidance on regulatory requirements.
- LaBella Project Manager (Caroline Bardwell, PG) will be responsible for overall project management, technical decisions, project support and for the planning and implementation of RI activities. The Project Manager is responsible for ensuring that the requirements of this RI work plan are implemented.
- LaBella Technical Director (Jennifer Gillen, PG) will provide technical expertise for peer-reviewing the project plans, reports, and ongoing field activities.
- LaBella Principal Engineer (Daniel Noll, PE) will provide professional design and engineering services during the RI and any associated Interim Remedial Measures (IRMs).
- LaBella Field Operations Manager/Quality Assurance Manager (Branson Fields) will assist with day-to-day task management and coordination of field personnel and laboratory project managers to ensure that this QAPP is being followed.
- LaBella Field Team Lead (TBD) will be responsible for collection of daily field data and samples, oversight of subcontractor personnel, and coordination of daily field activities. The Field Team Leader will act as the on-site Site Health and Safety Officer ensuring implementation of the Site Health and Safety Plan.
- A NYSDOH ELAP certified laboratory (ALS Global/York Analytical) will be contracted to perform required analyses and reporting, including ASP Category B Deliverables, which will allow for third-party data validation.
- Various LaBella and subcontracted entities will perform surveying, drilling, and/or sampling at the direction of the project team in accordance with this RIWP.

Resumes for Key personnel are included in Attachment A.

3.0 Data Quality Objectives

This QAPP presents the objectives, functional activities, methods, and Quality Assurance/Quality Control (QA/QC) requirements associated with sample collection and laboratory analysis for characterization activities. The overall QA objective is to develop and implement procedures for sample preparation and handling, sample chain-of-custody (COC), laboratory analyses, and reporting, in order to provide accurate data. Specific procedures to be followed for sampling, sample custody and document control, calibration, laboratory analyses and data reduction, validation, assessment and reporting are presented throughout the document.

The purpose of the subsequent sections is to define the goals for the level of QA effort; namely, accuracy; precision and sensitivity of analyses; and completeness, representativeness and comparability of measurement data from the analytical laboratories. QA objectives for field measurements are also discussed.

3.1 Accuracy

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

3.2 Precision

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

3.3 Completeness

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

3.4 Representativeness

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

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

3.5 Comparability

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

4.0 Measurement of Data Quality

4.1 Accuracy

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

In each case the recovery of the analyte is measured as a percentage, correcting for analytes known to be present in the original sample, if necessary, as in the case of a matrix spike analysis. For EPA supplied known solutions, this recovery is compared to the published data that accompany the solution. For the laboratory's prepared solutions, the recovery is compared to EPA-developed data or the firm's historical data as available. For surrogate compounds, recoveries are compared to EPA CLP acceptable recovery tables.

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

analyses are not corrected for recovery of matrix spike or surrogate compounds.

4.2 Precision

Precision of a particular analysis is measured by assessing its performance with duplicate or replicate samples. Duplicate samples are pairs of samples taken in the field and transported to the laboratory as distinct samples. Their identity as duplicates is typically not known to the laboratory. For most purposes, precision is determined by the analysis of replicate pairs (i.e., two samples prepared at the laboratory from one original sample). Often in replicate analysis the sample chosen for replication does not contain target analytes so that quantitation of precision is impossible. For EPA CLP analyses, replicated pairs of spiked samples, known as matrix spike/matrix spike duplicate samples, are used for precision studies. This has the advantage that two real positive values for a target analyte can be compared.

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

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

4.3 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared with the amount that was expected to be obtained under normal conditions. To be considered complete, the data set must contain all QC check analyses verifying precision and accuracy for the analytical protocol. In addition, all data are reviewed in terms of stated goals in order to determine if the database is sufficient.

The goal for any project is 100% completeness measured by the amount of valid data obtained versus data planned; however, that cannot always be achieved. Third-party data validation will be performed to evaluate data quality and completeness of the analytical laboratory. It is expected that all analyses conducted in accordance with the selected methods will provide data meeting QC acceptance criteria for at least 95 percent of samples tested. Any reasons for variances will be communicated and documented.

4.4 Representativeness

The sampling program has been designed to provide data representative of Site conditions. During development of sampling strategies, consideration was given to location of historical activities, existing data from past studies completed for the Site and the physical Site setting.

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

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

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

4.5 Comparability

The extent to which existing and planned analytical data will be comparable depends on the similarity of sampling and analytical methods. Comparability of laboratory tests is ensured by utilizing only New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP)-certified laboratories. This certification is the basis for demonstrating proficiency in testing requirements. Using ELAP certified laboratories will result in consistency amongst analytical data. Comparability of laboratory analyses will be ensured by the use of consistent units. Following completion of data collection, the data will be evaluated for representativeness.

5.0 Quality Control Targets

Laboratory reporting limits are included in Attachment B. Percent spike recovery and percent "true" value of known check standards, and RPD of duplicates/replicates vary by method, but are typically in the 20-30% range. Instances may arise where high sample concentrations, non-homogeneity of samples, or matrix interferences preclude achievement of target detection limits or other quality control criteria. In such instances, the laboratory will report reasons for deviations from these detection limits or noncompliance with quality control criteria.

5.1 Precision

Precision will be assessed by comparing the analytical results between duplicate spike analyses. Precision as relative percent difference (RPD) will be calculated as follows:

$$\text{Precision} = \frac{(D_2 - D_1)}{(D_1 + D_2)/2} \times 100$$

D1 = matrix spike recovery
D2 = matrix spike duplicate spike recovery

Acceptance criteria for duplicate soil samples will be ≤30% RPD. Acceptance criteria for duplicate water samples will be ≤20% RPD between field and laboratory data.

Percent relative standard deviation or the RPD between matrix spike analyses will be used to assess laboratory analytical precision. Acceptable criteria and compounds that will be used are identified in the appropriate USEPA methods.

5.2 Accuracy

Accuracy will be assessed by comparing a set of analytical results to the accepted or "true" values that would be expected. In general, MS/MSD and surrogate spike recoveries will be used to assess accuracy. Accuracy as percent recovery will be calculated as follows:

$$\text{Accuracy} = \frac{A-B}{C} \times 100$$

A = The analyte determined experimentally from the spike sample.
B = The background level determined by a separate analysis of the unspiked sample.
C = The amount of spike added.

Percent spike recoveries in MS/MSD and surrogate spike recoveries will be used to evaluate analytical accuracy. Acceptable criteria and compounds that will be used for matrix spikes are identified in the appropriate EPA methods.

The evaluation of accuracy of field measurements will be limited to checking the reproducibility of the measurement in the field by obtaining multiple readings and by calibrating the instruments (where appropriate).

5.3 Representativeness, Completeness and Comparability

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

To be considered complete, the data set must contain all QC check analyses verifying precision and accuracy for the analytical protocol. In addition, all data are reviewed in terms of stated goals in order to determine if the database is sufficient.

If the completeness goal is not met, Site decisions may be based on any, or all of, the remaining, validated data. Representativeness will be addressed by collecting the samples as described in this document. Comparability will be addressed by collecting, analyzing, and reporting the data as described in this document.

5.4 Outliers

Procedures discussed previously will be followed for documenting deviations. In the event that a result deviates significantly from method established control limits, this deviation will be noted and its effect on the quality of the remaining data will be assessed and documented.

6.0 Soil Boring Advancement & Monitoring Well Installation Procedures

Field procedures outlined in the remaining sections of this QAPP are intended to summarize our Quality Control Program. LaBella's Standard Operating Procedures (SOPs), which may cover activities beyond the scope of this investigation, are included in Attachment C for reference. These SOPs may expand upon the content of this QAPP in certain areas. If there is conflict between the QAPP and SOPs, the QAPP will take precedence.

All drilling and monitoring well installation efforts will be overseen by a LaBella field representative, who will be responsible for collection of samples, recording field measurements, directing drillers on well placement, etc., under the direction of the Project Manager and Field Team Lead. Soil borings will be advanced using two different methods, depending on their purpose. Borings which will be converted to monitoring wells will be installed using hollow stem augers and borings installed to collect targeted soil data will be installed using direct push technology. Continuous soil samples will be collected to characterize soil and obtain samples from each sample location. Decontamination of drilling equipment will occur in accordance with Section 14. Any investigation-derived waste (IDW) generated during the advancement of soil borings and monitoring well installations will be containerized and characterized for proper disposal as described later in this document. Soil and groundwater sampling

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

Prior to drilling, DIGSAFE/UDIG NY will be contacted to confirm locations of utilities in the vicinity of planned borings/wells and avoid potential accidents relating to underground utilities. Boreholes will also be pre-cleared using GPR/EM technology. Available plans were reviewed during development of the RI scope; however, prior to the implementation of the RI tasks, they will be consulted to identify the locations of utilities on and in close proximity to the site to prevent damage during intrusive site work and to identify potential utility conduit contaminant migration pathways.

6.1 Drilling Equipment and Techniques

6.1.1 Hollow-Stem Auger Borings/Monitoring Wells

The drilling and installation of soil borings for conversion into monitoring wells will be performed using a drill rig which can perform 4 1/4-inch inside diameter (ID) hollow-stem auger (HSA) drilling in the overburden and retrieve split-spoon samples. The HSA method utilizes coupled lengths of continuous-flight, hollow steel augers to advance through overburden materials. With this method, drill cuttings rise upward on the flights as the string of augers rotates. Typically, 4.25-inch inner diameter (ID) augers produce 8-inch boreholes. A center plug equipped with cutting teeth is attached to drilling rods and placed inside the augers to facilitate cutting and to prevent subsurface materials from entering the augers. When the augers are advanced to the appropriate depth, the center plug is removed to allow for the collection of soil or in situ samples.

Split-spoon samplers are used to collect soil samples from the borehole. The sampler consists of a thick-walled, steel tube that is split lengthwise. It has a cutting shoe attached at the lower end and a check valve at the upper end. When needed, the split-spoon sampler is attached to drill rods with a threaded adapter. The split-spoon sampler is driven into the ground in accordance with the standard penetration test (ASTM D1586). The standard penetration test (SPT) consists of driving a 1 3/8-inch ID, 2-foot split-spoon 24 inches into the soil using a 140-pound hammer falling 30 inches. The number of blows required to drive the split-spoon each 6 inches is recorded to obtain the SPT-N value, which is defined as the total blows for the penetration from 6 to 18 inches.

6.1.2 Direct Push Geoprobe Advanced Borings

A Geoprobe ® relies on a relatively small amount of static (vehicle) weight combined with a hydraulic hammer as the energy for advancement of a tool string. The use of direct push technology allows for rapid sampling, observation, and characterization of relatively shallow overburden soils without the use of rotation to remove soil and to make a path for the tool, which minimizes the amount of cuttings, restoration, and disturbance of materials and accelerates the investigation time. Probing tools do not remove cuttings from the probe hole but depend on compression of soil. Direct-push tooling can typically penetrate several inches of asphalt or crushed stone; however, if several inches of concrete are present, core drilling or another coring method will be required to penetrate the surface.

For soil borings advanced using Geoprobe direct-push methodology to collect focused site data, soil cores will be retrieved in four or five-foot sections and can be easily cut from the polyethylene sleeves for observation and sampling. The Macrocore sampler will be decontaminated between boring locations using an Alconox® and water solution.

Prior to initiating drilling activities, the Macrocores, drive rods, and pertinent equipment will be steam cleaned or washed with an Alconox® and water solution. This cleaning procedure will also be used

between each boring. Throughout and after the cleaning processes, direct contact between the equipment and the ground surface will be avoided. Plastic sheeting and/or clean support structures (e.g., pallets, sawhorses) will be used.

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

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

6.1.3 Monitoring Well Installation

A typical well-construction diagram is provided in Attachment D. Monitoring wells will be installed within the augers, once advanced to the appropriate depth. Wells will consist of flush-threaded, 2-inch diameter Schedule 40 polyvinyl chloride (PVC) well screen with 0.01-inch (10-slot) screen slot, PVC riser pipe, and bottom cap. Monitoring wells will be constructed with approximately 10 feet of screen placed within the top 10 feet of saturation, extending at least 2 feet above the observed water table. The annulus around the well screen will be filled with sand pack placed around the screen and casing to a depth extending at least 2-ft above the screen. A 2-foot thick layer of bentonite will be installed above the top of the sand. Cement/Bentonite slurry will be used to backfill the annular space above the bentonite seal.

The riser will extend above the surface within a locking protective standpipe casing that will be installed in concrete at the ground surface to prevent damage, provide security, and to provide a seal to prevent surface runoff from entering the well. Wells will be equipped with a suitable cap. Monitoring well depths and screened intervals will be calculated by the Field Team maintaining accurate measurements of screen and casing placed in the borehole and documented on a boring/well construction log. Decontamination of drilling equipment will be performed in accordance with this QAPP.

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

Artificial Sand Pack

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

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

Bentonite Seal

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

will be filled with bentonite.

Grout Mixture

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

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 standpipe with a locking well cap. 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.

6.2 Surveying

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

6.3 Monitoring Well Development

Well development will begin no sooner than 24 hours after grouting is completed, following installation of the well. Development will be performed using pumping, bailing, or surge blocking to remove fine sediments from the well, sand pack, and surrounding formation, thereby restoring the hydraulic connection between the well and the water-bearing unit. No dispersing agents, acids, disinfectants, or other additives will be used during development or introduced into the well at any time. Water will be removed throughout the entire water column by periodically lowering and raising the pump intake or bailer. Dedicated, disposable sampling materials will be used to prevent cross-contamination.

The development process will continue until either:

- At least three well volumes are removed, or
- Field parameters (temperature, pH, turbidity, and specific conductivity) stabilize to levels deemed representative of groundwater conditions, whichever occurs soonest.

No more than 10 well volumes will be removed from a well during development. If limited recharge prevents recovery of the full target volume, the well will be allowed to stabilize for at least 7 days prior to purging and sampling. In formations with high silt or clay content, development will continue until turbidity readings appear stable, even if 50 NTUs cannot be achieved.

Development water will be properly contained and managed as investigation-derived waste (IDW). Disposal will be based on analytical results. Drums will be labeled with the specific source (Well ID) of the development water.

A general well development procedure is as follows:

1. Measure static water level and total well depth using a water level indicator and weighted tape.
2. Lower a pump, bailer, or tubing for an inertial pump (for stickup wells) to the bottom of the well. Surge to loosen and mobilize fines.
3. Pump or bail groundwater from the well, periodically adjusting intake depth throughout the screened interval.
4. Collect readings of pH, temperature, specific conductance, and turbidity after each well volume removed, or at appropriate intervals.
5. Continue development until field parameters stabilize. Aim for ≤50 NTU turbidity, if practical.
6. After development, measure the water level and total depth of the well.
7. Securely cover and lock the well.
8. Containerize all purged water for proper IDW management.
9. Document all procedures and measurements on a Well Development Log.

7.0 Soil Sample Collection

Representative soil samples will be collected for physical and chemical analysis in accordance with the RIWP and QAPP. Consistent with the requirements of this QAPP, soil samples selected for laboratory analysis will be placed directly into laboratory-supplied containers, labeled with the date, time, sample ID, and location, then stored on ice and shipped to a New York State Environmental Laboratory Approval Program (NYS ELAP)-certified laboratory. The RIWP summarizes the sample collection frequency and analytical methods for each soil parameter. Sample containers are discussed in Section 11.0. Analytical testing will be performed to evaluate soil quality and contamination characteristics. All soil collection and handling procedures will follow methods outlined in this QAPP to ensure sample integrity and data usability.

7.1 Field Screening

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

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

7.2 Surface Soil Sampling

A hand or bucket auger may be used for collecting surface soil samples (0-2" or 2-6" for VOCs) and shallow soil samples (up to 24 inches deep) at locations not otherwise included in the HSA or Geoprobe soil boring program. The following procedure is used when collected soil samples with a hand auger:

1. Remove vegetation and organic material and if present, overlying pavement or subbase. Using a decontaminated stainless-steel auger, begin turning the auger clockwise until the auger is full. Remove the auger, empty the soil onto plastic sheeting, and continue augering until the

desired depth is reached. When sampling at depths deeper than 12 inches, discard ½-inch of material at the top of the auger due to cave in.
2. For VOC analysis, immediately place a portion of the soil sample in a new Terra Core sampler, then put directly into glass 40-ml vials provided by the laboratory and close vials. Samples for VOC analysis are required to be frozen by the laboratory within 48 hours.
3. Remove a small portion of soil and place inside a small sealable plastic bag for VOC headspace screening.
4. For non-VOC analysis, transfer remaining soil to a larger sealable plastic bag and homogenize by hand wearing new nitrile gloves. Proceed to fill laboratory containers with portions of the homogenized soil and place them in a sample cooler on ice.
5. Classify soil in field logbook consistent with geologic logging procedures in Section 4.4.
6. Decontaminate sampling equipment between locations as outlined in Section 14.

7.3 Subsurface Soil Sampling

Once the sampler is recovered from the subsurface and opened, visual soil classification, field screening, and/or collection of samples for laboratory analysis can commence. After the sample is exposed and field screening has occurred, soil from sample intervals selected for analysis are transferred to the appropriate sample container(s), which are then capped, labeled, and placed in a cooler with ice for delivery to the laboratory. Samples are logged in the field notebook, on the chain of custody form, and in any other required documentation. If additional soil volume is needed to meet laboratory requirements, extra cores may be collected from immediately adjacent locations. All sampling tools must be decontaminated prior to reuse.

To minimize volatilization, samples will be transferred from the sampling equipment to containers promptly after recovery, limiting exposure to ambient air. Soil sample intervals selected for analysis will be based on field screening results (e.g., PID readings), and visual or olfactory evidence of contamination such as the presence of fill materials, staining or odor. If elevated field screening readings or other signs of contamination are observed at more than one depth within a boring, an additional interval may also be submitted for laboratory analysis at the discretion of the Field Team and Project Manager, with NYSDEC approval.

7.4 PFAS Soil Sampling Procedure

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

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

- No use of sunscreen, insect repellants, cosmetic, lotions or moisturizers will be allowed by sampling personnel the day of sampling.
- If any of the above items are handled by the field personnel prior to sampling activities, field personnel will wash their hands thoroughly with soap and water prior to any sampling activities.
- Powder-free nitrile gloves will be worn during all sample collection activities.

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

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

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

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

PFAS samples will be submitted to an Environmental Laboratory Accreditation Program (ELAP) certified laboratory for analysis of the full PFAS target analyte list via USEPA Method 1633A with a method detection limit not to exceed 1 ug/kg.

8.0 Geologic Logging and Sampling

At each investigative location, borings will be advanced through overburden using either a drill rig and hollow-stem auger or direct push technology (split spoons or Macrocore). Soil samples will be characterized in the field using the Modified Burmeister or Unified Soil Classification System. Soils will be evaluated for visual and olfactory evidence of impairment (i.e., staining, odors, and elevated PID readings) by a qualified individual. Sampling devices will be decontaminated according to procedures outlined in the Decontamination section of this document. When utilized, split-spoon samplers will be driven into the soil using a minimum 140-pound safety hammer and allowed to free-fall 30-inches, in accordance with ASTM-D 1586-84 specifications. The number of blows required to drive the sampler each 6-inches of penetration will be recorded. When required, samples will be stored in the appropriate bottleware until analysis or deemed unnecessary. In the event that maximum design depth of investigation is reached and hydrogeologic conditions are not suitable for well installation, the maximum drilling depth may be revised with NYSDEC approval.

Drilling logs will be prepared by a qualified individual who will be present during drilling operations. One copy of each field boring and well construction log and groundwater data, will typically be submitted as part of the investigation summary report (e.g., Remedial Investigation Report). Information provided in the logs shall include, but not be limited to, the following:

- Date(s), test hole identification, and project identification;
- Name of individual developing the log;
- Name of driller and assistant(s);
- Drill, make and model, auger size;

- Standard penetration test (ASTM D-1586) blow counts;
- Field diagram of each monitoring well installed with the depth to bottom of well/ screen, top of screen, length of riser, depth of steel casing, depths of sand pack, bentonite seal, grout, type of well completion, etc.;
- Depth of each change of stratum;
- Identification of the material of which each stratum is composed, according to the USCS system or standard rock nomenclature, as appropriate;
- Depth interval from which each sample was taken, sample identification, and sample time;
- Depth at which groundwater and/or bedrock is encountered.

9.0 Groundwater Sampling Procedures

The groundwater in all new monitoring wells will be allowed to stabilize for at least 1 week following development prior to sampling. Water levels will be measured to within 0.01 feet prior to purging and sampling.

9.1 Groundwater Gauging

Prior to groundwater sampling, a synoptic, site-wide gauging event will be performed to evaluate water levels within a narrow time interval. Each monitoring well will be accessed and gauged using a water level indicator to determine the depth to groundwater and calculate the height of the standing water column. This information, along with the total well depth, will be used to estimate the well water volume. Gauging will be performed at all wells before initiating any sampling or field-testing activities to ensure the data reflect static conditions within a single, narrow time frame.

All water level data will be documented on Groundwater Sampling Logs. All non-disposable equipment will be decontaminated between well locations to prevent cross-contamination. Groundwater elevation data will be used to generate potentiometric surface contours, which will be presented in the RI Report.

9.2 Groundwater Purging

Following the site-wide synoptic gauging event, the wells will be purged and sampled via low-flow methodology to allow collection of representative groundwater samples. Low-flow procedures are designed to limit the drawdown inside the well. This method minimizes the stress on the groundwater system by setting the intake velocity of the sampling pump to a flow rate that limits drawdown and collecting periodic measurements of water quality parameters.

The following steps outline low-flow sampling methods:

Install Pump: Slowly lower the pump, safety cable and tubing into the well to the depth specified for that well. The pump intake should be in the middle or slightly above the middle of the screened interval. Too close to the bottom increases the possibility that solids that have collected in the well over time will be collected in the sample. Too close to the top increases the possibility that water stored in the casing will be included in the sample. Record the depth to which the pump is lowered.

Measure Water Level: Before starting the pump, measure the water level again with the pump in the well. Leave the water level measuring device in the well.

Purge Well: Start pumping the well at 100 to 500 milliliters per minute (ml/min). The water level should be monitored approximately every 5 minutes. Ideally, a steady flow rate should be maintained that results in a stabilized water level (drawdown of 0.3 ft or less). Pumping rates should be reduced, if needed, to the minimum capabilities of the pump to ensure stabilization of the water level. Care should be taken to maintain pump suction and to avoid entrainment of air in the tubing. Record each adjustment made to the pumping rate and the water level measured immediately after each adjustment.

Monitor Indicator Parameters: Each monitoring well will be purged until water quality parameters have stabilized. During purging of the well, monitor and record the field indicator parameters (temperature, specific conductance, and pH) approximately every 5 minutes. The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized for three consecutive readings as follows:

- Water level drawdown (<0.3')
- Turbidity (+/- 10%)
- pH (+/-0.1)
- Temperature (+/- 3%)
- Specific conductance or conductivity (+/- 3%)
- Dissolved Oxygen (+/- 10%)
- Oxidation reduction potential (+/- 10 millivolts)

Turbidity of less than 50 NTU is desired; however, may not be achievable at this site. If 10 well volumes have been removed and parameters have not stabilized, the sample will be collected.

During purging, the following data will be recorded in field books or groundwater sampling logs:

- date
- purge start time
- weather conditions
- presence of NAPL, if any, and approximate thickness
- pump rate
- pH
- dissolved oxygen
- temperature
- specific conductance
- redox
- turbidity
- depth of well
- depth to water
- depth to pump intake and any changes made
- purge end time
- volume of water purged

9.3 Groundwater Sample Collection

After each monitoring well has been purged and stabilized, groundwater samples can be collected via low-flow sampling methodology for the required analyses. The pump must not be removed from the well between purging and sampling. Sample collection should be directly from the dedicated or

disposable tubing, not from the flow-through cell discharge hose. New pairs of disposable nitrile gloves will be worn at each sampling location. Groundwater samples will immediately be placed into appropriate laboratory-supplied bottles for physical and chemical testing. The samples will be labeled with the date and time of sampling, sample identification and site location, then packed in a cooler with ice for transport via courier or shipment to a NYS ELAP certified laboratory for analysis of groundwater quality. Section 11.0 provides detail regarding sample containers for each analysis. After collecting the samples, remove the pump or sampling device. Tubing must be properly discarded or dedicated to the well for resampling by hanging the tubing inside the well. Close and lock the well.

Specific instructions are provided for PFAS sample collection.

9.4 PFAS Groundwater Sampling Procedure

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

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

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

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

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

- **Equipment blank** – Sample will be collected to help identify possible contamination from

sampling equipment (i.e., bailer). One equipment blank will be collected by pouring laboratory certified analyte-free deionized water over a bailer into the sample container.

PFAS samples will be submitted to an Environmental Laboratory Accreditation Program (ELAP) certified laboratory for analysis of the full PFAS target analyte list (listed in the NYSDEC Guidance) via USEPA Method 1633A with a method detection limit not to exceed 2 ng/L.

10.0 Soil Vapor/Sub-Slab Vapor Sampling Procedures

Soil vapor and sub-slab vapor sampling procedures will comply with NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation) and NYSDOH's Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006, as updated).

10.1 Sampling Point Installation

Sub-slab vapor samples will be collected from interior basement locations by drilling through the concrete slab to install vapor sampling points (e.g., Vapor Pin®). Outdoor soil vapor points will be installed using direct-push technology to reach the target sampling depth. Each temporary soil vapor implant will be connected to HDPE tubing, placed above the borehole base, and surrounded by clean silica sand or glass beads, which will extend at least 6 inches above the top of the implant. The borehole annulus will be sealed with hydrated bentonite to prevent surface air intrusion. A helium tracer gas will be introduced around each probe to verify the integrity of seals and ensure sample quality. *ambient air samples will be collected upwind of the sampling area to assess background conditions.*

10.2 Vapor Sampling and Analysis

Prior to sampling, vapor points will be purged to remove approximately three volumes of standing air from the tubing and soil interval. Following purging, vapor samples will be collected over a controlled time period using laboratory-supplied, batch-certified clean Summa® canisters equipped with calibrated flow controllers. Sampling information including canister pressures, times, and locations will be recorded in field logs. All samples will be transported under chain-of-custody to a NYSDOH ELAP-certified laboratory for analysis of the full list of volatile organic compounds (VOCs) by USEPA Method TO-15. One field duplicate will be collected from either a soil vapor or sub-slab vapor location. Method detection limits will be sufficient to meet NYSDOH soil vapor intrusion screening levels.

11.0 Field Documentation

11.1 Daily Logs/ Field Notebook

The primary purpose of the field logbook is to document the daily field activities and to provide descriptions of each activity. Daily logs are necessary to provide sufficient data and observations to enable participants to reconstruct events that occurred during the project, to allow others on the project team to understand field activities, and to refresh the memory of the field personnel if called upon to give legal testimony. Daily logs may be kept in a project-specific notebook labelled with the project name/ number and contact information.

Documentation will take place on either appropriate forms (see Attachment D) or in a dedicated site logbook per LaBella SOP#001 Field Logbook and Photographs and #006 Sampling for PFAS. Permanent black or blue ink will be used to record information in the logbook. Forms will be kept by the LaBella Field Team Leader during the field activities. All entries in the field logbook will be recorded and dated by the person making the entry. Field activities will be documented in the field logbook and supported by field sheets as needed, for example using boring log sheets and well purge log sheets to use during those activities and limiting use of the waterproof logbook during PFAS sampling activities. The logbook will contain waterproof pages that are consecutively numbered and permanently bound with a hard cover. Upon completion of daily activities, unused portions of pages will be lined-through and initialed.

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

- Name of person making entry;
- Date and start and end time of work;
- Names of all personnel on-site;
- Purpose of proposed work effort;
- Project location and description of work area;
- Summary of tasks completed and sampling methods;
- Field measurements (e. g., Photoionization Detector (PID) readings);
- Summary of sample type, number, matrix and location;
- Field observations and remarks;
- Weather conditions, wind direction, etc.;
- Any deviations from the work plan or standard operating procedures;
- Daily health and safety entries, including levels of protection and any changes;
- Air monitoring locations, start and end times, and equipment identification numbers;
- Calibration of sampling equipment;
- Information regarding sample handling, packaging, and shipping; and
- Initials/ signature of person recording the information.

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

11.2 Photographs

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

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

12.0 Sample Containers

Requirements for sample analyses are described below. Following collection in laboratory-supplied bottleware, labeled samples will be placed on ice in a cooler. Samples will be submitted to a NYSDOH

ELAP certified laboratory for analysis with a standard turnaround request (7 to 10 business days). Analytical methods, preservation, container requirements, and holding times are summarized in the table below:

ANALYTICAL METHODS

(SOIL/GROUNDWATER)

Analyses	EPA Method	Soil Sample Preservation	Soil Sample Holding Time	Soil Sample Container	Water Sample Preservation	Water Sample Holding Time	Water Sample Container
VOCs	8260C/5035	(1) 5ml MeOH (2) 5ml Water Cool to 4°C	48 hours freeze 14 Days analysis	40 ml vials	5ml HCL Cool to 4°C	14 days	(3) 40 ml vials
SVOCs	8270D	Cool to 4°C	14 days	4 oz. wide mouth glass	Cool to 4°C	7 days	(2) 1-L Amber
TAL Metals	6010 7470/7471	Cool to 4°C	6 months (28 days for Mercury)	4 oz. wide mouth glass	HNO3 (total); Unpreserved (dissolved) Cool to 4°C	6 months (28 days for Mercury)	250mL plastic
Hexavalent Chromium	7196A	Cool to 4°C	30 days	4 oz. wide mouth glass	Cool to 4°C	1 day	250 mL plastic
PCBs	8082A	Cool to 4°C	14 Days (Extraction)	4 oz. wide mouth glass	Cool to 4°C	7 Days	1-L Amber
Pesticides	8081B	Cool to 4°C	14 Days (Extraction)	4 oz. wide mouth glass	Cool to 4°C	7 Days	1-L Amber
Herbicides	8151A	Cool to 4°C	14 Days (Extraction)	4 oz. wide mouth glass	Cool to 4°C	7 Days	1-L Amber
1,4-Dioxane	8270D SIM	Cool to 4°C	14 Days (Extraction)	4 oz. wide mouth glass	Cool to 4°C	7 Days (Extraction)	500 mL amber
PFAS	1633	Cool to 4°C	14 Days (Extraction)	250 mL plastic bottle	Cool to 4°C	14 Days to Extraction; 28 days to analysis	(2) 500 mL HDPE filled halfway
Cyanide	SM4500	Cool to 4°C	14 Days (Extraction)	4 oz. wide mouth glass	NaOH Cool to 4°C	14 Days (Extraction)	250 mL plastic bottle

13.0 Sample Custody and Shipment

13.1 Sample Identification

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

Soil Samples

TA#-BBCCC-DD-EEFF

TA#:	TA = Taylor Apartments. The # corresponds to the existing Building Number: Building 3 (northern parcel) or Building 4 (southern parcel). TA3 for Building 3 samples and TA4 for Building 4 samples.
BB	This set of initials represents the type of sample (e.g., SB for soil boring; SS for surface soil; BB for Basement Boring, etc.)
CCC:	These initials identify the unique sample location number. RI samples will start at 100 to differentiate from pre-BCP investigations (e.g. TA3-SB-101)
DD:	These initials identify the sample start depth (if soil sample)
EE:	These initials identify the sample end depth (if soil sample)
FF:	These initials identify the unit of measure for the depth interval (FT for Feet and IN for Inches)

Groundwater Samples

TA#-MW-CCC-MMDDYY

TA#:	TA = Taylor Apartments. The # corresponds to the existing Building Number: Building 3 (northern parcel) or Building 4 (southern parcel). TA3 for Building 3 samples and TA4 for Building 4 samples.
MW:	This set of initials represents the type of sample (e.g., MW for monitoring well)
CCC:	These initials identify the unique sample location number. RI samples will start at 100 to differentiate from pre-BCP investigations (e.g. TA3-MW-101)
MMDDYY:	These initials correspond to the sample date to distinguish between sampling events

Examples of sample IDs are shown below:

- TA3-SB101-0204FT: subsurface soil sample from soil boring 101 in the Building #3 area-collected from 2-4 feet below grade
- TA4-SS101-0206IN: surface soil sample for VOC depth interval from the Building #4 area
- TA3-MW101-101325: groundwater sample collected from the Building #3 area - monitoring well #101 sampled on October 13, 2025;
- TA4-BB101-0305FT: basement soil boring location collected Building 4 from 3-5 feet below the top of the slab.

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

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

Sample tags attached to or affixed around the sample container must be used to properly identify all samples collected in the field. The sample tags are to be placed on the bottles so as not to obscure

any QC lot numbers on the bottles; sample information must be printed in a legible manner using waterproof ink. Field identification must be sufficient to enable cross-reference with the logbook. For chain-of-custody purposes, all QC samples are subject to exactly the same custodial procedures and documentation as "real" samples.

Sample frequency, locations, depths, and nomenclature may change subject to field decisions and professional judgment.

13.2 Chain of Custody

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

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

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

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

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

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

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

13.3 Transfer of Custody and Shipment

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

Samples will be packaged and couriered to or by a laboratory representative, or they may be shipped in a manner that maintains sample preservation requirements during transport (i.e., ice to keep samples cool until receipt at the laboratory), ensures that sample holding times can be achieved by the laboratory, and prevents samples from being tampered with.

If shipped, shipping containers must be sealed with custody seals for shipment to the laboratory. The method of shipment, name of courier, and other pertinent information are entered on the chain-of-custody. All shipments must be accompanied by the chain-of-custody record (COC) identifying their contents. The original record accompanies the shipment. The other copies are distributed appropriately to the site manager. Commercial carriers are not required to sign the COC as long as it is enclosed in the shipping container and evidence tape (custody seal) remains in place on the shipping container.

13.4 Custody Seals

Custody seals are preprinted with adhesive-backed seals. Sample shipping containers (coolers, cardboard boxes, etc., as appropriate) are sealed in as many places as necessary to ensure security. Seals must be signed and dated before shipment. On receipt at the laboratory, the custodian must check (and certify, by completing the package receipt log and LABMIS entries) that seals on boxes and bottles are intact. Strapping tape should be placed over the seals to ensure that seals are not accidentally broken during shipment.

13.5 Sample Packaging

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

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

13.6 Sample Shipment

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

samples.

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

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

13.7 Laboratory Custody Procedures

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

14.0 Investigation-Derived Waste

The purposes of these guidelines are to ensure the proper holding, storage, transportation, and disposal of materials that may contain non-hazardous or hazardous wastes. Waste materials generated from the field operations may consist of soil cuttings, well development and purge water, decontamination waters, and miscellaneous solid materials such as personal protective equipment (PPE) and supplies. Investigation-derived waste (IDW) generated during field operations will be disposed of in accordance with applicable regulations.

Soil cuttings will be stored in Department of Transportation (DOT)-approved 55-gallon drums, roll-off boxes, or other containers suitable for the wastes. Well development and purge water will also be containerized. Different media will be placed in separate drums (i.e., do not combine solids and liquids). Drums will be labeled with indelible ink as Waste Material (type of water, soil, PPE etc.) and indicate the source(s) boring/well, generation date. Containers will be stored on-Site in a designated staging area. Waste containers must be transferred to the staging area as soon as practicable after the generating activity is complete. Soil cores and soil cuttings will be field screened using a PID, while performing drilling operations. IDW will be managed in accordance with DER-10, Chapter 3, Section 3.3, Subdivision (e) - Management of IDW and other applicable regulations (e.g. NYSDEC Division of Materials Management Part 360 series and Part 370 series). Waste characterization sampling and analyses will be based on requirements of appropriately licensed transportation and disposal providers.

Soils, water, and other environmental media will be disposed as non-hazardous industrial waste or hazardous waste, as appropriate. Alternate disposition must be consistent with applicable State and Federal laws. Personal protective equipment, disposable bailers, and similar equipment may be disposed as municipal waste, unless waste characterization results mandate disposal as industrial waste. IDW that contains listed Hazardous Waste contaminants will be submitted for review and

approval by the NYSDEC Division of Materials Management Contained-In Determination Unit before media can be disposed of as non-hazardous waste.

15.0 Decontamination Procedures

Sampling methods and equipment have been chosen to minimize decontamination requirements and to prevent the possibility of cross-contamination. Decontamination of equipment will be performed between discrete sample locations (e.g. soil borings). Drilling equipment will be decontaminated in a designated area. All drilling equipment will be decontaminated after the completion of each drilling location. Special attention will be given to the drilling assembly and augers. Drilling equipment shall be decontaminated prior to performance of the first boring/excavation and between subsequent borings/excavations. This shall include hand tools, casing, augers, drill rods, and other related tools and equipment. Water used during drilling and/or steam cleaning operations shall be from a potable source.

Sampling equipment and probes will be decontaminated in an area covered with plastic sheeting near the sampling location. Split spoons and other non-disposable equipment will be decontaminated between each sampling location. The sampler will be cleaned prior to each use, by removing foreign matter, scrubbed with brushes in laboratory-grade detergent (i.e. Alconox® solution) and triple rinsed (or steam-cleaned).

Other sampling equipment including but not limited to low-flow sampling pumps, surface soil sampling trowel, water level meters, etc. will be decontaminated between sample locations using an Alconox® solution. Equipment used to collect samples between composite sample locations will not require decontamination between collection of samples. Decontamination of sampling equipment shall be kept to a minimum, and wherever possible, dedicated sampling equipment shall be used. Consumables including gloves, tubing, bailers, string, etc. will be dedicated to one sample location and will not be reused.

Waste material generated during decontamination activities will be containerized, stored and disposed of in accordance with the procedures in the section on Investigation-Derived Waste. Personnel directly involved in equipment decontamination shall wear appropriate personal protective equipment (PPE).

16.0 Laboratory Deliverables and Data Usability

This section will describe laboratory requirements and procedures to be followed for laboratory analysis. Samples collected in New York State will be analyzed by a New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP)-certified laboratory. When required, analyses will be conducted in accordance with the most current NYSDEC Analytical Services Protocol (ASP).

The main purpose of the data is for use in defining the extent of contamination at the site, to aid in evaluation of potential exposure assessments, and to support remedial action decisions. Based upon this, data usability and validation will be performed as described below. ASP Category B reports will be generated by the laboratory for Remedial Investigation samples. Electronic data deliverables (EDDs) will also be generated by the laboratory in EQUIS format for samples requiring ASP Category B format reports. Complete data packages will be archived in the project files.

Data usability and validation are performed on analytical data sets, primarily to confirm that sampling and COC documentation are complete, sample IDs can be tied to specific sampling locations, samples were analyzed within the required holding times, and analyses are reported in conformance with NYSDEC ASP, Category B data deliverable requirements as applicable to the method utilized. The Data Usability Summary Report (DUSR) provides a thorough evaluation of analytical data with the primary objective to determine whether or not the data, as presented, meets the site/project specific criteria for data quality and data use. DUSRs will be completed by a qualified third party for samples requiring ASP Category B format reports, who will conduct the independent evaluation of the Category B data reduction and reporting by the laboratory.

Data validation will be performed in accordance with the following documents: "NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, May 2010," "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review EPA 540/R-99-008, October 1999" and "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review EPA 540/R-04-004, October 2004". Data analyzed using methods not covered in these documents will be validated using the general principles used in these documents, and the analytical requirements specified in the methods pertaining to USEPA Data Validation.

The DUSR is developed by reviewing and evaluating the analytical data package. In order for the DUSR to be acceptable, during the course of this review the following questions applicable to the analysis being reviewed must be answered in the affirmative.

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

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

17.0 Equipment Calibration

Equipment will be inspected and approved by the Field Team Leader before being used. All instruments and equipment used during sampling and analysis will be operated, calibrated, and maintained according to the manufacturer's guidelines and recommendations as well as criteria set forth in the applicable analytical methodology references. Operation, calibration, and maintenance will be performed by personnel properly trained in these procedures. Monitoring equipment will be calibrated

following manufacturers' recommended schedules. Daily field response checks and calibrations will be performed as necessary (i.e., PID calibrations) following manufacturers' standard operating procedures. Equipment calibrations will be documented in a designated field logbook.

Brief descriptions of calibration procedures for major field and laboratory instruments follow.

17.1 Photoionization Detector (PID)

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

17.2 Conductance, Temperature, and pH Tester

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

17.3 Nephelometer (Turbidity Meter)

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

17.4 Particulate Meters

TSI Dustrak particulate meters, which will be utilized for perimeter air monitoring, are calibrated daily before each use. The DustTrak™ monitor is factory calibrated to the respirable fraction of standard ISO 12103-1, A1 test dust. The pre-programmed Ambient Cal is appropriate for outdoor ambient dust or fugitive dust monitoring.

The DustTrak™ Environmental Monitor has the ability to automatically "Zero" the instrument readings at programmed intervals. "Zeroing" the instrument resets the photo detector, to a signal that represents no particles flowing through the optics. Over time, photometric light-scattering instrument readings can drift due to changes in temperature and aerosol build up in the optics. Programming regular "Zero" events corrects the photometric signal to account for these changes. The monitor automatically performs a zero calibration when the instrument begins any programmed run and the auto zero function has been enabled.

18.0 Quality Control Checks

To assess the quality of data resulting from the field sampling program, field duplicate samples, field blank samples, samples for laboratory matrix spike/matrix spike duplicate (MS/MSD) analyses, and trip blank samples will be collected (where appropriate) and submitted to the contract laboratory. QC data are necessary to determine precision and accuracy and to demonstrate the absence of interferences and/or contamination of field equipment. Field-based QC will comprise at least 10% of each data set generated and will consist of standards, replicates, spikes, and blanks. Field duplicates

and field blanks will be analyzed by the laboratory as samples and will not necessarily be identified to the laboratory as duplicates or blanks. For each matrix, field duplicates will be provided at a rate of one per 20 samples collected. Field blanks which may consist of trip, routine field, and/or rinsate blanks will be provided at a rate of one per 20 samples collected for each media. In the event that a sampling round consists of less than 20 samples, one field duplicate will be collected.

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

18.1 Field Blanks

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

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

18.2 Duplicates

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

- **Blind duplicate** samples consist of a set of two samples collected independently at a sampling location during a single sampling event. Blind duplicates are designed to assess the consistency of the overall sampling and analytical system. Blind duplicate samples should not be distinguishable by the person performing the analysis.

- **Matrix Spike and Matrix Spike Duplicates (MS/MSDs)** consist of a set of three samples collected independently at a sampling location during a single sampling event. These samples are for laboratory quality control checks.

The sampling and analysis program is summarized in the RIWP and outlines the specific parameters to be measured, the number of samples to be collected, and the level of QA effort required for each matrix.

ATTACHMENT A of QAPP
STAFF RESUMES

JENNIFER GILLEN, PG

Senior Vice President, Director of Environmental

Jen has over 15 years of experience at LaBella and has held various roles including the Phase I ESA Program Manager, the Phase II ESA Program Manager and the Brownfield Remediation Program Manager. In addition to working on hundreds of Phase I and II ESAs throughout her career, she has managed numerous projects in the NYSDEC Brownfield Cleanup Program (BCP) and coordinated frequently with other leaders at LaBella to provide a comprehensive suite of services to her clients.

Jen has served in an advisory role for numerous Phase I and II ESAs completed for financial institutions, private developers and affordable housing developers within New York City. She has also provided advisory services, including review of DER-10 level work plans and reports for various projects subject to NYCRR Part 375.

PG

Professional Geologist, NY

EDUCATION

SUNY Albany: BS, Geological Sciences

SUNY Albany: MS, Geological Sciences

CERTIFICATIONS/ REGISTRATIONS/ COMMITTEES

Certified Hazardous Waste Operations & Emergency Response (40 Hour OSHA Health and Safety Training 29)

OSHA 8 Hour Hazardous Waste Operations and Emergency Response Course

LaBella Inclusion Council: 2021-2022 Team, Co-Leader

Carbon Forestry Trust, Board Member

PRESENTATION

NYSDEC Amendments to NYCRR Part 375 BCP Amendments, Presented at Greater Finger Lakes Air & Waste Management Association Annual Seminar; April 27, 2022.

Ebenezer Plaza 2 (#C224241)—Brooklyn, NY

Contaminants of concern at this NYSDEC Brownfield Cleanup Program site have primarily included VOCs in groundwater and SVOC and heavy metals in shallow soil. The site is slated to be redeveloped for affordable housing and remediation is currently underway to meet NYCRR Part 375 Restricted Residential SCOs. The selected remedy includes demolition of existing buildings associated with former automotive repair and scrapping operations, removal of soil impacts above Restricted Residential SCOs and long-term engineering and institutional controls.

Urban League of Rochester: Former Wollensak Optical, NYSDEC BCP #C828209—Rochester, NY

Jennifer was the Project Manager and has helped the client meet tight environmental deadlines with funding agencies. This historic property was converted from a former manufacturing facility to affordable housing. The site is enrolled in the NYSDEC BCP. Due to the funding deadlines, extensive coordination with contractors and the NYSDEC has been required because building renovations have been underway concurrently with investigation and remediation efforts. The project was completed in early 2021.

Warburton Dry Cleaners Site (#C360227)—Yonkers, NY

The site was entered into the NYSDEC Brownfield Cleanup Program in 2022 based on the presence of SVOCs, heavy metals and pesticides in shallow soils and dry-cleaning related chlorinated solvents in groundwater and soil vapor. Existing buildings are planned to be demolished and the site will be redeveloped for affordable housing. The Remedial Investigation was completed in 2023 and consisted of

LaBella
Powered by partnership.

excavation of previously identified geophysical survey magnetic anomalies, advancement of soil borings and the installation of additional groundwater monitoring wells and soil vapor points to delineate the nature and extent of impacts and develop a remedial strategy.

Former Sherwood Shoe Factory, NYSDEC BCP #828201—Rochester, NY

This property is enrolled in the NYSDEC BCP and subject to NYCRR Part 375 Regulations. Contamination at the site includes chlorinated volatile organic compounds, per- and polyfluoroalkyl substances (PFAS), urban fill and petroleum impacts. Previously utilized for shoe manufacturing and subsequently for staging by the NYSDOT, the site was recently redeveloped for residential purposes. LaBella personnel were on-site for almost a year during redevelopment to perform construction oversight and community air monitoring. The NYSDEC Certificate of Completion was obtained in 2020.

Ellicott Station and Ellicott Station East, NYSDEC BCP #C819021 & #C819023—Batavia, NY

Redevelopment of these dual BCP projects will consist of construction of an affordable housing structure as well as commercial structures. Jennifer has assisted the client with enrolling the sites in the BCP as well as completed Remedial Investigations, Interim Remedial Measures Work Plans and Interim Site Management Plans to meet NYSDEC and funding agency requirements.

Former Michelsen Furniture Co., NYSDEC BCP #C828189—Rochester, NY

This site was entered into the NYSDEC BCP. Redevelopment of the site involved converting the property from a former manufacturing facility to an affordable housing apartment building. Jennifer completed the Phase II ESA and assisted with a Remedial Investigation, in-situ chemical treatment and installation of a sub-slab depressurization system as part of this project.

Former Midtown Plaza,NYSDEC BCP #C738045—Oswego, NY

This affordable housing project was completed in 2022. After managing the Phase II ESA at this property, Jennifer assisted the client in enrolling the site in the NYSDEC BCP, completing a Remedial Investigation and Remedial Alternatives Analysis as well as an Interim Site Management Plan to meet NYSDEC and funding agency requirements. The NYSDEC Certificate of Completion was obtained in 2021.

Genesee Valley Real Estate: 690 Saint Paul Street, NYSDEC BCP Site #C828159—Rochester, NY

Jennifer assisted with the development of two Interim Remedial Measure Work Plans, the Remedial Investigation Report and Remedial Alternatives Analysis/Remedial Action Work Plan for the remediation of a NYSDEC Brownfield Cleanup Program site formerly utilized as an industrial manufacturing facility. Implemented the two Interim Remedial Measures and portions of the Remedial Investigation at the site which included the excavation of contaminated soil and bedrock, the advancement of soil borings, and the installation and sampling of groundwater monitoring wells. Also included in this work was the installation of bedrock monitoring wells using conventional rock coring methods and installation of infrastructure for in situ chemical treatment. This process involved coordination with the NYSDEC, the NYSDOH, and the City of Rochester School District.

Urban League of Rochester: Jefferson Avenue—Rochester, NY

This property is enrolled in the NYSDEC Brownfield Cleanup Program (BCP) and subject to NYCRR Part 375 Regulations. Contamination at the site includes chlorinated volatile organic compounds, urban fill and petroleum impacts. Jennifer has managed an extensive investigation completed at the site as well as a Remedial Alternatives Analysis. The site is being redeveloped and LaBella is performing construction oversight and community air monitoring.

Yates County: Penn Yan Marine—Penn Yan, NY

Currently completing a groundwater delineation investigation and BCP application as well as a work plan for in situ treatment of groundwater contaminated with chlorinated volatile organic compounds. The implementation of the groundwater delineation investigation has included the installation and sampling of nineteen groundwater monitoring wells.

CAROLINE BARDWELL

Sr. Project Manager

Caroline has 18 years of experience in the environmental engineering and consulting industry as a Professional Geologist, with 13 years in project and program management. Her background includes executing due diligence site assessments, remedial investigations and feasibility studies, remedial actions, and long-term monitoring and site management projects, particularly for sites located in New York State. She has been involved in a range of cleanup programs and specializes in petroleum and chlorinated solvent contamination. She has worked on behalf of commercial, manufacturing, utility, and municipal and state government clients.

PG

NYS Professional Geologist #001180

EDUCATION

St. Lawrence University: B.S., Geology

CERTIFICATION

OSHA 40-Hour HAZWOPER

ORGANIZATIONS/ REGISTRATIONS

Member of the Hudson Mohawk Professional Geologists Association (HMPGA)

American Institute of Professional Geologists (AIPG) (in January 2025)

City of Amsterdam: Phase I and Phase II ESAs—Amsterdam, NY

Caroline is the Deputy Project Manager for Phase I and Phase II Environmental Site Assessments of three former industrial properties in the City of Amsterdam as part of a NYS Department of State Brownfield Opportunity Area (BOA) grant to facilitate redevelopment of the abandoned sites. The properties were developed in the mid-to-late-1800s and housed a variety of operations with a range of concerns. Her responsibilities include client and team communications, management of subcontractors, task management, and monitoring of scope, schedule, and budget.

Community Manufacturing BCP Site—Port Ewen, NY

Technical Project Manager for a former manufacturing facility enrolled in the BCP program. LaBella conducted various environmental assessments and investigations at the property for the Volunteer and identified the presence of chlorinated VOCs in various media. This property was accepted into the BCP and LaBella will conduct a Remedial Investigation in the Fall of 2025, including installation of groundwater monitoring wells, soil borings, collection and analysis of surface soil, subsurface soil, groundwater, sub-slab vapor and indoor air samples. This data will inform appropriate remedial strategies.

City of Mechanicville: Former Railyard Brownfield Investigation—Mechanicville, NY*

Completed a Phase I ESA and Phase II ESA at a former railyard property to characterize the nature and extent of historical contamination present at the site so the next steps for further property development could be identified and evaluated. This key work, which included regulatory agency coordination, aided the community in seeking and securing grant funding for brownfields redevelopment and enrollment of the site in the NYS Brownfield Cleanup Program.

Village of Greenwich: Dunbarton Mill EPA Brownfield Assessment—Greenwich, NY

Deputy Project Manager for the Dunbarton Mill property EPA Brownfield Assessment. The property is a nine-acre former

**Completed under previous employer.*

LaBella
Powered by partnership.

EDUCATION

University of Cincinnati: B.S. in Environmental Science and Natural Resource Management

AFFILIATIONS

OSHA HAZWOPER 40-Hour

OSHA HAZWOPER 8-Hour

OSHA Confined Space Entry 8-Hour

ANSI Hydrogen Sulfide Training

SafeLand™ USA Compliant

First Aid/CPR/AED Training

Trench and Excavation Competent Person Training

NYSDEC Erosion and Sediment Control Training 4-Hour

LaBella
Powered by partnership.

BRANSON FIELDS

Environmental Scientist

Branson has 17 years of environmental project experience providing environmental inspection, remediation engineering, consulting and regulatory services as an environmental scientist, field operations supervisor, and project manager. Experience includes construction inspection, SWPPP monitoring, regulatory permitting, environmental remediation, and geotechnical equipment environmental compliance monitoring. Branson's responsibilities include designing, managing, and overseeing remedial activities, including remediation systems, sediment and access control management of a wide range of sites, implementation of complex in-situ and ex-situ environmental remedies; development of overall project remedial strategies; and field data acquisition programs.

Private Client: Fuller Road Brownfields Cleanup Program Site—Albany, NY

Project Manager for post-remedial operations and maintenance at a BCP site that was a former brush manufacturing facility with chlorinated solvent contamination. Efforts included development of work plan, managing field activities, reporting, and coordination with NYSDEC and NYSDOH. Project remedial actions include sub-slab depressurization system and a high vacuum extraction and soil vapor extraction system to address chlorinated and petroleum contamination.

Procida Development Group: Ebenezer Plaza 1—Brooklyn, NY

For an active redevelopment site in the NYSDEC Brownfield Cleanup Program (BCP), conducts environmental oversight of soil excavation remedy activities including Community Air Monitoring Program and tracking excavation progress and load tracking. Serves as on-site Health & Safety Officer.

Village of Greenwich: Dunbarton Mill EPA Brownfield Assessment—Greenwich, NY

Branson did field work and drafted the Phase II ESA report for the Dunbarton Mill property EPA Brownfield Assessment. The property is a nine-acre former industrial waterfront property that was largely destroyed by a fire in the early 2000s. The site has a deep history and a variety of areas of concern with limited documentation of prior investigations and remediation efforts. LaBella efforts include Phase I ESA, Phase II ESA Quality Assurance Project Work Plan and implementation, and EPA coordination and ACRES reporting.

Private Client: Redevelopment Project—Newburgh, NY

Project Manager for environmental management and monitoring activities to implement a Soil and Groundwater Management Plan during redevelopment activities at a former landfill listed as Class 4 on the NYSDEC Inactive Hazardous Waste Site Registry, including CAMP monitoring, construction oversight and stormwater pollution prevention plan inspection. Responsibilities include coordination of field staff during construction, data management, and regulatory communication and reporting, as well as annual groundwater sampling and inspection and maintenance of institutional and engineering controls and other environmental assessment and monitoring needs.

industrial waterfront property that was largely destroyed by a fire in the early 2000s. The site has a deep history and a variety of areas of concern with limited documentation of prior investigations and remediation efforts. Caroline provided technical review for the Phase II ESA Work Plan to comply with EPA's program requirements and will coordinate execution of the site investigation and support the project manager to ensure the scope, schedule and budget are on track.

Various Lending Institutions: Due Diligence Site Assessments—Various Locations, US*

Executed several dozen Phase I and Phase II ESAs for a variety of lenders to facilitate real estate transactions. Work was performed in New York State and to a lesser degree at sites across the country, and included scoping/budgeting, site work, research, and report preparation in accordance with ASTM Standards. Additional work included task management of underground tank closures, remedial actions, groundwater monitoring, and preparation of pre-demolition building surveys.

NYS Department of Environmental Conservation: Standby Superfund Contract—Various Locations, NY*

Project and/or Task Manager for variety of work assignments to support NYSDEC's investigation, remediation, and management of registered Inactive Hazardous Waste Sites. Work occurred during all phases of a project life cycle, including immediate investigation work assignments, remedial investigations, feasibility studies, remedial design and pre-design investigation, remedial oversight, interim remedial measures, long-term groundwater monitoring, site management plan preparation, and operation, maintenance, and monitoring of a variety of treatment systems (pump and treat, whole house point-of-entry, sub-slab depressurization, etc.). She developed and managed project scopes and budgets, prepared and reviewed technical documents, oversaw technical staff and subcontractors, facilitated citizen participation and managed stakeholders.

NYS Office of General Services: Tank Management & Spill Response Activities—Various Locations, NY*

Program and Project Manager for two consecutive term contracts to manage petroleum tanks at various state-owned properties across New York, for a wide variety of state agency clients. Caroline managed her own projects and developed other PMs to accommodate nearly 100 different work assignments with a variety of needs. Developed scopes and budgets, oversaw field- and office-based technical staff, contractors, and vendors, and prepared/reviewed technical documents. Projects often required engineering support and multi-disciplinary teams. The primary nature of the work included assembling contractor work order packages for new tank installations, overseeing underground tank removals and closures, addressing evidence of petroleum releases, if any, and scoping additional subsurface investigation, remediation, and monitoring efforts.

NYS Office of General Services: Climate Vulnerability Assessments—Various Locations, NY*

Technical Editor for a comprehensive state agency climate change resiliency evaluation. Documents were created in collaboration with a variety of technical experts using agency-specific insight to continue to identify hazards and move towards the state's climate change preparedness goals.

Various Utility Clients: Former Manufactured Gas Plant Sites—Capital Region/Hudson Valley, NY*

Project and/or Task Manager for Pre-Design Investigation and Site Management activities at various former MGP sites in the Capital Region and Hudson Valley. Managed work across disciplines to ensure design requirements were satisfied and regularly engaged with client PM and regulators to ensure work plans and field activities were consistent with project goals.

Confidential Military Clients: PFAS Site Assessments—Various Locations, NY*

Task Manager for initial assessments and investigations at multiple sites in New York to identify the presence or absence of per- and polyfluoroalkyl substances (PFAS) at areas of potential concern. Project work included historical research, compilation and interpretation of field data, comparison to developing regulatory guidance, preparation of technical documents, and providing recommendations for further assessment, if necessary.

Dormitory Authority of State of NY: Rockland PC Site Management—Orangetown, NY*

Caroline finalized the Remedial Investigation and Feasibility Study for the project site and prepared a Site Management Plan and supporting materials for issuance of the Record of Decision. Managed long-term groundwater monitoring program until a no further action letter was obtained for the site.

DANIEL NOLL

Vice President, Environmental Technical Manager

Dan has more than 28 years of experience with environmental projects at industrial/manufacturing facilities and environmental investigation and construction projects for a variety of clients including developers, financial institutions, industrial clients, and municipalities (municipally and USEPA grant funded projects). Dan has managed numerous Brownfield Assessment projects that have included site inventories and Phase I and Phase II Environmental Site Assessments. These investigations have included groundwater monitoring programs, soil vapor investigations, test pit investigations, bedrock groundwater investigations, and geo-probe investigations. Dan also has extensive experience supporting construction projects that encounter fill materials and completing beneficial use determinations. In addition, Dan has significant remedial design and implementation experience including landfill cover systems, electrical resistance heating systems, underground storage tank removals, soil removals, bio-cell remediations, and in-situ groundwater remediation. He also has experience with the design and installation oversight of mitigation systems.

PE

Professional Engineer: NY, ME, OH, NH, AZ, CO, CT, IA, KS, MA, ND, OR, SD, WA

EDUCATION

Clarkson University: B.S. in Chemical Engineering

CERTIFICATIONS/ REGISTRATIONS

OSHA 40-Hour Certified Hazardous Waste Site Worker Training

OSHA 8-Hour Certified Hazardous Waste Site Worker Refresher Training

Urban League of Rochester: Wollensak Optical—Rochester, NY

Dan served as the overall Engineer in Charge of the investigation and remediation work at the former Wollensak Optical facility. The site was entered into the NYSDEC Brownfield Program to address contamination that resulted from historical operations at the site. The remedial investigation identified orphaned underground storage tanks and associated petroleum impacted soil and groundwater, chlorinated solvent impacts to soil and groundwater and radioactive building materials. Dan guided the technical aspects of the investigation work which included delineation of a chlorinated solvent groundwater plume that extended from the overburden and into a fractured bedrock network. Subsequent to completing the investigation work, Dan served as the Engineer of Record for the remedial analysis and the remedial action work plan. The selected remedy included in-situ chemical treatment to address chlorinated solvents, removal of underground tanks and a sub-slab depressurization system to mitigate potential exposure concerns. The remedial work allowed for the redevelopment of the building into an affordable housing complex.

Getinge USA, Inc.: Electrical Resistance Heating Project, Getinge Manufacturing Facility—Henrietta, NY

Dan served as the overall Engineer in Charge and Certifying Engineer for the design, installation and operation of an electrical resistance heating system to remediate a source area of chlorinated solvents beneath a former manufacturing building. The ERH approach was selected in order to rapidly and effectively remove significant

mass from the source area materials. The ERH operated for 80 days and removed an estimated 168 pounds of Trichloroethylene. The ERH was supplemented with an injection of an amendment to provide further long-term treatment and allow for natural attenuation monitoring as part of the overall remedy. This project successfully obtained a Certificate-of-Completion through the NYSDEC Brownfield Program.

Stern Family Limited Partnership: Former Manufacturing Facility BCP Site—Rochester, NY

Dan was the Project Engineer for this BCP site, which underwent a Remedial Investigation, Interim Remedial Measures, and installation of a sub-slab depressurization system. Dan completed and stamped the Final Engineering Report required to obtain the Certificate of Completion for the property owner, allowing them to obtain their tax credits.

Springs Land Company: Carriage Cleaners BCP Site—Rochester, NY

As Project Manager, Dan completed a Brownfield Cleanup Program (BCP) Application & Work Plan to conduct a Remedial Investigation at a former dry cleaning facility. A soil, groundwater, and soil gas study was undertaken to develop remedial costs and assist with redeveloping the property. Subsequently, an Interim Remedial Measure was completed to remove the source area of impacts from the site. Dan completed a remedial alternatives analysis for selecting a treatment approach for the residual groundwater plume. Dan also attended town board meetings regarding this project.

American Siepmann Corporation: Former Manufacturing Facility BCP Site—Henrietta, NY

Dan was the Project Manager for this Brownfield Cleanup Program (BCP) site and has overseen the installation of a groundwater monitoring well network and subsequent routine sampling as part of a Monitored Natural Attenuation (MNA) program for remediation of chlorinated groundwater impacts at the site.

RJ Dorschel Corporation: Former Gasoline/Service Station BCP Site—Rochester, NY

Dan was the Project Manager for this BCP site, which included Remedial Investigations at two adjoining parcels, implementation of Interim Remedial Measures, and development of the Final Engineering Report and Site Management Plan. The project also included implementation of necessary Citizen Participation requirements. The project ultimately obtained the Certificate of Completion and thus the NYS tax credits.

One Flint Street Associates: Vacuum Oil BCP Site—Rochester, NY

Dan was the Project Manager for this Brownfield site that is the oldest oil refinery in the United States. The project included developing a remedial investigation plan for two parcels that have had a history of oil refining since the 1800s. The remedial investigation was designed to fill data gaps from previous studies in order to minimize cost to the client.

Genesee Valley Real Estate: Former Bausch & Lomb Facility BCP Site—Rochester, NY

Dan was Project Manager for this Brownfield site that served as a manufacturing facility from the 1930s to the 1970s. The project included a Remedial Investigation (RI) a four-acre parcel with ten areas of concern identified. The RI identified four areas requiring remedial actions. The remedial areas included petroleum impacted soil and groundwater, free floating petroleum product, and two areas of chlorinated solvent contamination with one including bedrock impacts at depth. A Feasibility Study was completed that evaluated pros/cons and associated cost of each remedial alternative. The remedial work was agreed to with NYSDEC and Dan led the design of the remedial systems for each area. The remedial approach included in-situ chemical oxidation for one of the chlorinated solvent areas through several subsurface injection manifolds. The remediation approach for the other area of chlorinated solvent impacts included the design and installation of bedrock injection wells and a pump and treat groundwater extraction system. The injection wells were utilized inject zero-valent iron for treatment of the solvents. The pump and treat system was utilized to pull the injection chemicals across the impacted area for greater distribution. The remedial systems were successful and the site received a Certificate of Completion from NYSDEC in 2018.

Bajrangee, Inc.: Comfort Inn, BCP Site—Rochester, NY

Dan was the Project Manager for this Brownfield site that included a design phase investigation to determine the extent of remedial work. The remediation work included excavation of chlorinated solvent impacts to soil and groundwater from the basement of the building. This included proper shoring design to facilitate the removal

action. A second phase of the remediation included injection of treatment chemicals to address downgradient groundwater impacts.

DePaul Properties: Brenneman Industrial—Oswego, NY

Dan was the Engineer of Record for the investigation and remediation work at the former Brenneman industrial facility. The site was identified as a 'catalyst' site through the NYSDEC Brownfield Opportunity Area program and based on that a developer put the site into the NYSDEC Brownfield Program. The remedial investigation identified a plume of chlorinated solvents and significant fill material at the site. Dan led the team that evaluated remedial options and selected the remedy for the site. Dan provided technical oversight during the remedy implementation phase and during site management phase as part of the redevelopment of the site. The site was successfully redeveloped into an affordable housing building filling a need for the community.

Marketview Park—Ithaca, NY

Dan served as the Technical Manager for an affordable housing/commercial redevelopment project in Ithaca NY. The site had significant urban fill material identified during a routine due diligence project. The funding source (Housing and Community Renewal) required specific actions be implemented during construction to allow for redevelopment for the intended use. Due to significant cost for removal and disposal of these materials, Dan led a project team that developed a beneficial use determination (BUD) for the reuse of the urban fill material that was encountered during construction. Ultimately several 'BUDs' were obtained to minimize disposal cost and allow the project to move forward.

Covanta Niagara, L.P.: Brownfield Redevelopment Project, Covanta Rail-to-Truck Intermodal Facility—Niagara Falls, NY

Dan was the Remedial Engineer for the investigation, remediation and redevelopment of a 15-acre former industrial site for use as a Rail-to-Truck Intermodal Facility (RTIF). The project was completed through the Brownfield Cleanup Program (BCP) and involved the completion of a Remedial Investigation (RI); development of a NYSDEC-approved Remedial Action Work Plan to address a range of contamination, including radioactive slag. The project was completed successfully and obtained a Certificate of Completion which allowed redeveloping the property for the proposed use.

Procida Development Group: Ebenezer Plaza II, BCP Site Remediation—Brooklyn, NY

Dan was the Engineer of Record for the design and construction of remedial systems at a Brownfield Cleanup Program Site in Brooklyn, NY. The remediation work consisted of a source area soil removal, in-situ chemical injections and a sub-slab depressurization system (SSDS). The soil removal was completed in-conjunction with the site development work in order to minimize excavation and dewatering costs. Subsequent to soil removal, an injection well network was designed for treating residual impacts via in-situ chemical oxidation. The future site use will be residential and an SSDS was designed and installed as a precautionary measure in order to mitigate potential exposure due to vapor intrusion. The project has completed the remedial action construction phase and is on track to achieved a Certificate of Completion.

Mark IV Enterprises: Monoco Oil Brownfield Cleanup and Redevelopment—Pittsford, NY

Dan was the Engineer of Record for the NYSDEC Brownfield Cleanup Program for this project. This complex environmental project involves the cleanup and demolition of a 20-acre blighted vacant oil refinery. The remedial work included removal and disposal of over 20,000 tons of contaminated soils and construction of a cover system over the entire 20-acre site. The redevelopment plan for the project includes redevelopment of an upscale waterfront apartment and town home complex along the canal. Dan conducted all NYSDEC, NYSDOH, and local negotiations for many aspects of the project. Public participation and communication was been paramount to the project success.

US EPA Grant Funded Work

Dan has worked on numerous EPA funded projects for different clients. This work included conducting investigation and remediation projects at gas stations, dry cleaners, former industrial properties, and railroad yards. Dan has managed all aspects of these projects including developing Remedial Investigation Work Plans, Quality Assurance Project Plans, Analysis of Brownfield Cleanup Alternatives and Final Engineers Reports. Through this experience, Dan has a firm understanding of the EPA requirements for planning and implementing investigation and cleanup projects funded by the EPA.

ATTACHMENT B of QAPP
LABORATORY REPORTING LIMITS

Analytical Method Information

Printed: 08/25/2025 12:32 pm

Chromium, Hexavalent in Soil (EPA 7196A)

Preservation: Cool 4°C

Container: 06_4 oz. Glass Cool to 4° C **Amount Required:** 25 g, **Hold Time:** 30 days

Analyte	MDL	Reporting Limit	Cas Number
Chromium, Hexavalent	0.350	0.500 mg/kg	18540-29-9

Analytical Method Information

Printed: 08/25/2025 12:33 pm

Chromium, Hexavalent in Water (EPA 7196A)

Preservation: Cool 4°C

Container: 10_250mL Plastic Cool to 4° C **Amount Required:** 100 mL **Hold Time:** 1 day

Analyte	MDL	Reporting Limit	Cas Number
Chromium, Hexavalent	0.0100	0.0100 mg/L	18540-29-9

Analytical Method Information

Printed: 08/25/2025 12:30 pm

Cyanide, Total in Soil (EPA 9014/9010C)

Preservation: Cool 4°C

Container: 06_4 oz. Glass Cool to 4° C **Amount Required:** 10 g. **Hold Time:** 14 days

Analyte	MDL	Reporting Limit	Cas Number
Cyanide, total	0.500	0.500 mg/kg	57-12-5

Analytical Method Information

Printed: 08/25/2025 12:30 pm

Cyanide, Total in Water (SM 4500 CN C-2016 / E-2016)

Preservation: Dechlorinate; NaOH to pH>10

Container: 10_250 mL Plastic NAOH pH>10 Cool 4° C **Amount Required:** 100 **Hold Time:** 14 days

Analyte	MDL	Reporting Limit	Cas Number
Cyanide, total	0.0100	0.0100 mg/L	57-12-5

Analytical Method Information

Printed: 08/25/2025 12:28 pm

Herbicides, NYSDEC Part 375 Target List in Soil (EPA 8151A)

Preservation: Cool 4°C

Container: 06_4 oz. Glass Cool to 4° C **Amount Required:** 100 g. **Hold Time:** 14 days

Analyte	MDL	Reporting Limit	Cas Number
2,4,5-T	20.0	20.0 ug/kg	93-76-5
2,4,5-T [2C]	20.0	20.0 ug/kg	93-76-5
2,4,5-TP (Silvex)	20.0	20.0 ug/kg	93-72-1
2,4,5-TP (Silvex) [2C]	20.0	20.0 ug/kg	93-72-1
2,4-D	20.0	20.0 ug/kg	94-75-7
2,4-D [2C]	20.0	20.0 ug/kg	94-75-7
Surr: 2,4-Dichlorophenylacetic acid (DCAA)			19719-28-9
Surr: 2,4-Dichlorophenylacetic acid (DCAA) [2C]			19719-28-9

Analytical Method Information

Printed: 08/25/2025 12:29 pm

Herbicides, NYSDEC Part 375 Target List in Water (EPA 8151A)

Preservation: Cool 4°C

Container: 07_1000mL Amber Glass Cool to 4° C **Amount Required:** 1000 ml **Hold Time:** 7 days

Analyte	MDL	Reporting Limit	Cas Number
2,4,5-T	5.00	5.00 ug/L	93-76-5
2,4,5-T [2C]	5.00	5.00 ug/L	93-76-5
2,4,5-TP (Silvex)	5.00	5.00 ug/L	93-72-1
2,4,5-TP (Silvex) [2C]	5.00	5.00 ug/L	93-72-1
2,4-D	5.00	5.00 ug/L	94-75-7
2,4-D [2C]	5.00	5.00 ug/L	94-75-7
Surr: 2,4-Dichlorophenylacetic acid (DCAA)			19719-28-9
Surr: 2,4-Dichlorophenylacetic acid (DCAA) [2C]			19719-28-9

Analytical Method Information

Printed: 08/25/2025 12:31 pm

Mercury by 7470/7471 in Water (EPA 7470)

Preservation: Add HNO3 to pH<2, Cool 4°C

Container: 10_250mL Plastic pH <2 w/ HNO3 **Amount Required:** 100 mL **Hold Time:** 28 days

Analyte	MDL	Reporting Limit	Cas Number
Mercury	0.00020000	0.00020000 mg/L	7439-97-6

Metals, NYSDEC Part 375 - ICP/MS in Water (EPA 6020B)

Preservation: Add HNO3 to pH<2, Cool 4°C

Container: 10_250mL Plastic pH <2 w/ HNO3 **Amount Required:** 200 **Hold Time:** 180 days

Analyte	MDL	Reporting Limit	Cas Number
Arsenic	1.00	1.00 ug/L	7440-38-2
Barium	1.00	1.00 ug/L	7440-39-3
Beryllium	0.300	0.300 ug/L	7440-41-7
Cadmium	0.500	0.500 ug/L	7440-43-9
Chromium	1.00	1.00 ug/L	7440-47-3
Cobalt	1.00	1.00 ug/L	7440-48-4
Copper	1.00	1.00 ug/L	7440-50-8
Iron	10.0	10.0 ug/L	7439-89-6
Lead	1.00	1.00 ug/L	7439-92-1
Manganese	1.00	1.00 ug/L	7439-96-5
Nickel	1.00	1.00 ug/L	7440-02-0
Selenium	1.00	1.00 ug/L	7782-49-2
Silver	1.00	1.00 ug/L	7440-22-4
Vanadium	1.00	1.00 ug/L	7440-62-2
Zinc	1.00	1.00 ug/L	7440-66-6

Analytical Method Information

Printed: 08/25/2025 12:30 pm

Mercury by 7473 in Soil (EPA 7473)

Preservation: Cool 4°C

Container: 06_8 oz. Glass Cool to 4° C **Amount Required:** 10 g. **Hold Time:** 28 days

Analyte	MDL	Reporting Limit	Cas Number
Mercury	0.0300	0.0300 mg/kg	7439-97-6

Metals, NYSDEC Part 375 in Soil (EPA 6010D)

Preservation: Cool 4°C

Container: 06_4 oz. Glass Cool to 4° C **Amount Required:** 50 **Hold Time:** 180 days

Analyte	MDL	Reporting Limit	Cas Number
Arsenic	1.25	1.25 mg/kg	7440-38-2
Barium	2.08	2.08 mg/kg	7440-39-3
Beryllium	0.0420	0.0420 mg/kg	7440-41-7
Cadmium	0.250	0.250 mg/kg	7440-43-9
Chromium	0.417	0.417 mg/kg	7440-47-3
Cobalt	0.333	0.333 mg/kg	7440-48-4
Copper	1.67	1.67 mg/kg	7440-50-8
Iron	20.8	20.8 mg/kg	7439-89-6
Lead	0.417	0.417 mg/kg	7439-92-1
Manganese	0.417	0.417 mg/kg	7439-96-5
Nickel	0.830	0.830 mg/kg	7440-02-0
Selenium	2.08	2.08 mg/kg	7782-49-2
Silver	0.420	0.420 mg/kg	7440-22-4
Vanadium	0.830	0.830 mg/kg	7440-62-2
Zinc	2.08	2.08 mg/kg	7440-66-6
Yttrium 371.029			7440-65-5

Metals, NYSDEC Part 375 Target List in Soil (varies)

Preservation: [Group Analysis]

Container: **Amount Required:** **Hold Time:** 5 days

Analyte	MDL	Reporting Limit	Cas Number

No Analytes listed

Analytical Method Information

Printed: 08/25/2025 12:27 pm

Pesticides, NYSDEC Part 375 Target List in Soil (EPA 8081B)

Preservation: Cool 4°C

Container: 06_4 oz. Glass Cool to 4° C **Amount Required:** 100 g **Hold Time:** 14 days

Analyte	MDL	Reporting Limit	Cas Number
4,4'-DDD	0.330	0.330 ug/kg	72-54-8
4,4'-DDD [2C]	0.330	0.330 ug/kg	72-54-8
4,4'-DDE	0.330	0.330 ug/kg	72-55-9
4,4'-DDE [2C]	0.330	0.330 ug/kg	72-55-9
4,4'-DDT	0.330	0.330 ug/kg	50-29-3
4,4'-DDT [2C]	0.330	0.330 ug/kg	50-29-3
Aldrin	0.330	0.330 ug/kg	309-00-2
Aldrin [2C]	0.330	0.330 ug/kg	309-00-2
alpha-BHC	0.330	0.330 ug/kg	319-84-6
alpha-BHC [2C]	0.330	0.330 ug/kg	319-84-6
alpha-Chlordane	0.330	0.330 ug/kg	5103-71-9
alpha-Chlordane [2C]	0.330	0.330 ug/kg	5103-71-9
beta-BHC	0.330	0.330 ug/kg	319-85-7
beta-BHC [2C]	0.330	0.330 ug/kg	319-85-7
delta-BHC	0.330	0.330 ug/kg	319-86-8
delta-BHC [2C]	0.330	0.330 ug/kg	319-86-8
Dieldrin	0.330	0.330 ug/kg	60-57-1
Dieldrin [2C]	0.330	0.330 ug/kg	60-57-1
Endosulfan I	0.330	0.330 ug/kg	959-98-8
Endosulfan I [2C]	0.330	0.330 ug/kg	959-98-8
Endosulfan II	0.330	0.330 ug/kg	33213-65-9
Endosulfan II [2C]	0.330	0.330 ug/kg	33213-65-9
Endosulfan sulfate	0.330	0.330 ug/kg	1031-07-8
Endosulfan sulfate [2C]	0.330	0.330 ug/kg	1031-07-8
Endrin	0.330	0.330 ug/kg	72-20-8
Endrin [2C]	0.330	0.330 ug/kg	72-20-8
Endrin aldehyde	0.330	0.330 ug/kg	7421-93-4
Endrin aldehyde [2C]	0.330	0.330 ug/kg	7421-93-4
Endrin ketone	0.330	0.330 ug/kg	53494-70-5
Endrin ketone [2C]	0.330	0.330 ug/kg	53494-70-5
gamma-BHC (Lindane)	0.330	0.330 ug/kg	58-89-9
gamma-BHC (Lindane) [2C]	0.330	0.330 ug/kg	58-89-9
gamma-Chlordane	0.330	0.330 ug/kg	5566-34-7
gamma-Chlordane [2C]	0.330	0.330 ug/kg	5566-34-7
Heptachlor	0.330	0.330 ug/kg	76-44-8
Heptachlor [2C]	0.330	0.330 ug/kg	76-44-8
Heptachlor epoxide	0.330	0.330 ug/kg	1024-57-3
Heptachlor epoxide [2C]	0.330	0.330 ug/kg	1024-57-3
Methoxychlor	0.330	0.330 ug/kg	72-43-5
Methoxychlor [2C]	0.330	0.330 ug/kg	72-43-5
Parathion	1.32	1.32 ug/kg	56-38-2
Surr: Decachlorobiphenyl			2051-24-3
Surr: Decachlorobiphenyl [2C]			2051-24-3
Surr: Tetrachloro-m-xylene			877-09-8
Surr: Tetrachloro-m-xylene [2C]			877-09-8

Analytical Method Information

Printed: 08/25/2025 12:28 pm

Pesticides, NYSDEC Part 375 Target List in Water (EPA 8081B)

Preservation: Cool 4°C

Container: 07_1000mL Amber Glass Cool to 4° C **Amount Required:** 1000 mL **Hold Time:** 7 days

Analyte	MDL	Reporting Limit	Cas Number
4,4'-DDD	0.00400	0.00400 ug/L	72-54-8
4,4'-DDD [2C]	0.00400	0.00400 ug/L	72-54-8
4,4'-DDE	0.00400	0.00400 ug/L	72-55-9
4,4'-DDE [2C]	0.00400	0.00400 ug/L	72-55-9
4,4'-DDT	0.00400	0.00400 ug/L	50-29-3
4,4'-DDT [2C]	0.00400	0.00400 ug/L	50-29-3
Aldrin	0.00400	0.00400 ug/L	309-00-2
Aldrin [2C]	0.00400	0.00400 ug/L	309-00-2
alpha-BHC	0.00400	0.00400 ug/L	319-84-6
alpha-BHC [2C]	0.00400	0.00400 ug/L	319-84-6
alpha-Chlordane	0.00400	0.00400 ug/L	5103-71-9
alpha-Chlordane [2C]	0.00400	0.00400 ug/L	5103-71-9
beta-BHC	0.00400	0.00400 ug/L	319-85-7
beta-BHC [2C]	0.00400	0.00400 ug/L	319-85-7
delta-BHC	0.00400	0.00400 ug/L	319-86-8
delta-BHC [2C]	0.00400	0.00400 ug/L	319-86-8
Dieldrin	0.00200	0.00200 ug/L	60-57-1
Dieldrin [2C]	0.00200	0.00200 ug/L	60-57-1
Endosulfan I	0.00400	0.00400 ug/L	959-98-8
Endosulfan I [2C]	0.00400	0.00400 ug/L	959-98-8
Endosulfan II	0.00400	0.00400 ug/L	33213-65-9
Endosulfan II [2C]	0.00400	0.00400 ug/L	33213-65-9
Endosulfan sulfate	0.00400	0.00400 ug/L	1031-07-8
Endosulfan sulfate [2C]	0.00400	0.00400 ug/L	1031-07-8
Endrin	0.00400	0.00400 ug/L	72-20-8
Endrin aldehyde	0.0100	0.0100 ug/L	7421-93-4
Endrin [2C]	0.00400	0.00400 ug/L	72-20-8
Endrin aldehyde [2C]	0.0100	0.0100 ug/L	7421-93-4
Endrin ketone	0.0100	0.0100 ug/L	53494-70-5
Endrin ketone [2C]	0.0100	0.0100 ug/L	53494-70-5
gamma-BHC (Lindane)	0.00400	0.00400 ug/L	58-89-9
gamma-BHC (Lindane) [2C]	0.00400	0.00400 ug/L	58-89-9
gamma-Chlordane	0.0100	0.0100 ug/L	5566-34-7
gamma-Chlordane [2C]	0.0100	0.0100 ug/L	5566-34-7
Heptachlor	0.00400	0.00400 ug/L	76-44-8
Heptachlor [2C]	0.00400	0.00400 ug/L	76-44-8
Heptachlor epoxide	0.00400	0.00400 ug/L	1024-57-3
Heptachlor epoxide [2C]	0.00400	0.00400 ug/L	1024-57-3
Methoxychlor	0.00400	0.00400 ug/L	72-43-5
Methoxychlor [2C]	0.00400	0.00400 ug/L	72-43-5
Surr: Decachlorobiphenyl			2051-24-3
Surr: Decachlorobiphenyl [2C]			2051-24-3
Surr: Tetrachloro-m-xylene			877-09-8
Surr: Tetrachloro-m-xylene [2C]			877-09-8

Analytical Method Information - PFAS in Soil Method 1633A

Analyte	MDL(µg/kg)	RL(µg/kg)
11CL-PF3OUdS	0.22	0.756
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	0.16	0.768
1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	0.22	0.75
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	0.18	0.76
2H,2H,3H,3H-Perfluorodecanoic acid (7:3FTCA)	0.94	5
2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	0.73	5
4,4,5,5,6,6,6-Heptafluorohexanoic acid (3:3FTCA)	0.32	1
9CL-PF3ONS	0.27	0.748
ADONA	0.26	0.756
HFPO-DA (Gen-X)	0.23	0.8
N-EtFOSA	0.09	0.2
N-EtFOSAA	0.09	0.2
N-EtFOSE	0.46	2
N-MeFOSA	0.13	0.2
N-MeFOSAA	0.08	0.2
N-MeFOSE	0.73	2
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.06	0.36
Perfluoro-1-decanesulfonic acid (PFDS)	0.06	0.193
Perfluoro-1-heptanesulfonic acid (PFHpS)	0.07	0.191
Perfluoro-1-nonanesulfonic acid (PFNS)	0.14	0.192
Perfluoro-1-octanesulfonamide (FOSA)	0.03	0.2
Perfluoro-1-pentanesulfonate (PFPeS)	0.07	0.188
Perfluoro-3,6-dioxaheptanoic acid (NFDHA)	0.39	0.4
Perfluoro-4-oxapentanoic acid (PFMPA)	0.04	0.4
Perfluoro-5-oxahexanoic acid (PFMBA)	0.12	0.4
Perfluorobutanesulfonic acid (PFBS)	0.07	0.177
Perfluorodecanoic acid (PFDA)	0.08	0.2
Perfluorododecanesulfonic acid (PFDoS)	0.15	0.194
Perfluorododecanoic acid (PFDoA)	0.08	0.2
Perfluoroheptanoic acid (PFHpA)	0.11	0.2
Perfluorohexanesulfonic acid (PFHxS)	0.07	0.183
Perfluorohexanoic acid (PFHxA)	0.05	0.2
Perfluoro-n-butanoic acid (PFBA)	0.16	0.8
Perfluorononanoic acid (PFNA)	0.14	0.2
Perfluorooctanesulfonic acid (PFOS)	0.07	0.186
Perfluorooctanoic acid (PFOA)	0.07	0.2
Perfluoropentanoic acid (PFPeA)	0.08	0.4
Perfluorotetradecanoic acid (PFTA)	0.13	0.2
Perfluorotridecanoic acid (PFTrDA)	0.11	0.2
Perfluoroundecanoic acid (PFUnA)	0.11	0.2

Analytical Method Information - PFAS in Water Method 1633A

Analyte	MDL (ng/L)	RL (ng/L)
11CL-PF3OUdS	2.23	7.56
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	2.25	7.68
1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	2.82	7.5
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	2.32	7.6
2H,2H,3H,3H-Perfluorodecanoic acid (7:3FTCA)	23.07	50
2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	6.73	50
4,4,5,5,6,6,6-Heptafluorohexanoic acid (3:3FTCA)	2.36	10
9CL-PF3ONS	2.75	7.48
ADONA	2.97	7.56
HFPO-DA (Gen-X)	3.14	8
N-EtFOSA	1.05	2
N-EtFOSAA	1.05	2
N-EtFOSE	7.28	20
N-MeFOSA	0.71	2
N-MeFOSAA	0.50	2
N-MeFOSE	7.10	20
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.50	3.56
Perfluoro-1-decanesulfonic acid (PFDS)	0.62	1.93
Perfluoro-1-heptanesulfonic acid (PFHpS)	0.31	1.91
Perfluoro-1-nonanesulfonic acid (PFNS)	0.75	1.92
Perfluoro-1-octanesulfonamide (FOSA)	0.37	2
Perfluoro-1-pentanesulfonate (PFPeS)	0.75	1.88
Perfluoro-3,6-dioxaheptanoic acid (NFDHA)	3.00	4
Perfluoro-4-oxapentanoic acid (PFMPA)	0.70	4
Perfluoro-5-oxahexanoic acid (PFMBA)	1.40	4
Perfluorobutanesulfonic acid (PFBS)	0.78	1.77
Perfluorodecanoic acid (PFDA)	0.57	2
Perfluorododecanesulfonic acid (PFDoS)	0.89	1.94
Perfluorododecanoic acid (PFDoA)	0.60	2
Perfluoroheptanoic acid (PFHpA)	0.70	2
Perfluorohexanesulfonic acid (PFHxS)	0.89	1.83
Perfluorohexanoic acid (PFHxA)	0.36	2
Perfluoro-n-butanoic acid (PFBA)	1.63	8
Perfluorononanoic acid (PFNA)	0.99	2
Perfluorooctanesulfonic acid (PFOS)	0.76	1.86
Perfluorooctanoic acid (PFOA)	0.79	2
Perfluoropentanoic acid (PFPeA)	0.89	4
Perfluorotetradecanoic acid (PFTA)	1.58	2
Perfluorotridecanoic acid (PFTrDA)	1.20	2
Perfluoroundecanoic acid (PFUnA)	0.71	2

Analytical Method Information

Printed: 08/25/2025 12:26 pm

Polychlorinated Biphenyls (PCB)-8082 in Soil (EPA 8082A)

Preservation: Cool 4°C

Container: 06_8 oz. Glass Cool to 4° C **Amount Required:** 100g **Hold Time:** 14 days

Analyte	MDL	Reporting Limit	Cas Number
Aroclor 1016	0.0167	0.0167 mg/kg	12674-11-2
Aroclor 1016 (1)			12674-11-2
Aroclor 1016 (2)			12674-11-2
Aroclor 1016 (3)			12674-11-2
Aroclor 1016 (4)			12674-11-2
Aroclor 1016 (5)			12674-11-2
Aroclor 1016 [2C]	0.0167	0.0167 mg/kg	12674-11-2
Aroclor 1016 (1) [2C]			12674-11-2
Aroclor 1016 (2) [2C]			12674-11-2
Aroclor 1016 (3) [2C]			12674-11-2
Aroclor 1016 (4) [2C]			12674-11-2
Aroclor 1016 (5) [2C]			12674-11-2
Aroclor 1221	0.0167	0.0167 mg/kg	11104-28-2
Aroclor 1221 (1)			11104-28-2
Aroclor 1221 (2)			11104-28-2
Aroclor 1221 (3)			11104-28-2
Aroclor 1221 [2C]	0.0167	0.0167 mg/kg	11104-28-2
Aroclor 1221 (1) [2C]			11104-28-2
Aroclor 1221 (2) [2C]			11104-28-2
Aroclor 1221 (3) [2C]			11104-28-2
Aroclor 1232	0.0167	0.0167 mg/kg	11141-16-5
Aroclor 1232 (1)			11141-16-5
Aroclor 1232 (2)			11141-16-5
Aroclor 1232 (3)			11141-16-5
Aroclor 1232 (4)			11141-16-5
Aroclor 1232 (5)			11141-16-5
Aroclor 1232 [2C]	0.0167	0.0167 mg/kg	11141-16-5
Aroclor 1232 (1) [2C]			11141-16-5
Aroclor 1232 (2) [2C]			11141-16-5
Aroclor 1232 (3) [2C]			11141-16-5
Aroclor 1232 (4) [2C]			11141-16-5
Aroclor 1232 (5) [2C]			11141-16-5
Aroclor 1242	0.0167	0.0167 mg/kg	53469-21-9
Aroclor 1242 (1)			53469-21-9
Aroclor 1242 (2)			53469-21-9
Aroclor 1242 (3)			53469-21-9
Aroclor 1242 (4)			53469-21-9
Aroclor 1242 (5)			53469-21-9
Aroclor 1242 [2C]	0.0167	0.0167 mg/kg	53469-21-9
Aroclor 1242 (1) [2C]			53469-21-9
Aroclor 1242 (2) [2C]			53469-21-9
Aroclor 1242 (3) [2C]			53469-21-9
Aroclor 1242 (4) [2C]			53469-21-9
Aroclor 1242 (5) [2C]			53469-21-9
Aroclor 1248	0.0167	0.0167 mg/kg	12672-29-6
Aroclor 1248 (1)			12672-29-6
Aroclor 1248 (2)			12672-29-6
Aroclor 1248 (3)			12672-29-6
Aroclor 1248 (4)			12672-29-6
Aroclor 1248 (5)			12672-29-6
Aroclor 1248 [2C]	0.0167	0.0167 mg/kg	12672-29-6

Analytical Method Information

Printed: 08/25/2025 12:26 pm

(Continued)

Polychlorinated Biphenyls (PCB)-8082 in Soil (EPA 8082A) (Continued)

Analyte	MDL	Reporting Limit	Cas Number
Aroclor 1248 (1) [2C]			12672-29-6
Aroclor 1248 (2) [2C]			12672-29-6
Aroclor 1248 (3) [2C]			12672-29-6
Aroclor 1248 (4) [2C]			12672-29-6
Aroclor 1248 (5) [2C]			12672-29-6
Aroclor 1254	0.0167	0.0167 mg/kg	11097-69-1
Aroclor 1254 (1)			11097-69-1
Aroclor 1254 (2)			11097-69-1
Aroclor 1254 (3)			11097-69-1
Aroclor 1254 (4)			11097-69-1
Aroclor 1254 (5)			11097-69-1
Aroclor 1254 [2C]	0.0167	0.0167 mg/kg	11097-69-1
Aroclor 1254 (1) [2C]			11097-69-1
Aroclor 1254 (2) [2C]			11097-69-1
Aroclor 1254 (3) [2C]			11097-69-1
Aroclor 1254 (4) [2C]			11097-69-1
Aroclor 1254 (5) [2C]			11097-69-1
Aroclor 1260	0.0167	0.0167 mg/kg	11096-82-5
Aroclor 1260 (1)			11096-82-5
Aroclor 1260 (2)			11096-82-5
Aroclor 1260 (3)			11096-82-5
Aroclor 1260 (4)			11096-82-5
Aroclor 1260 (5)			11096-82-5
Aroclor 1260 [2C]	0.0167	0.0167 mg/kg	11096-82-5
Aroclor 1260 (1) [2C]			11096-82-5
Aroclor 1260 (2) [2C]			11096-82-5
Aroclor 1260 (3) [2C]			11096-82-5
Aroclor 1260 (4) [2C]			11096-82-5
Aroclor 1260 (5) [2C]			11096-82-5
Aroclor 1262	0.0167	0.0167 mg/kg	37324-23-5
Aroclor 1262 (1)			37324-23-5
Aroclor 1262 (2)			37324-23-5
Aroclor 1262 (3)			37324-23-5
Aroclor 1262 (4)			37324-23-5
Aroclor 1262 (5)			37324-23-5
Aroclor 1262 [2C]	0.0167	0.0167 mg/kg	37324-23-5
Aroclor 1262 (1) [2C]			37324-23-5
Aroclor 1262 (2) [2C]			37324-23-5
Aroclor 1262 (3) [2C]			37324-23-5
Aroclor 1262 (4) [2C]			37324-23-5
Aroclor 1262 (5) [2C]			37324-23-5
Aroclor 1268	0.0167	0.0167 mg/kg	11100-14-4
Aroclor 1268 (1)			11100-14-4
Aroclor 1268 (2)			11100-14-4
Aroclor 1268 (3)			11100-14-4
Aroclor 1268 (4)			11100-14-4
Aroclor 1268 (5)			11100-14-4
Aroclor 1268 [2C]	0.0167	0.0167 mg/kg	11100-14-4
Aroclor 1268 (1) [2C]			11100-14-4
Aroclor 1268 (2) [2C]			11100-14-4
Aroclor 1268 (3) [2C]			11100-14-4
Aroclor 1268 (4) [2C]			11100-14-4
Aroclor 1268 (5) [2C]			11100-14-4

Analytical Method Information

(Continued)

Printed: 08/25/2025 12:26 pm

Polychlorinated Biphenyls (PCB)-8082 in Soil (EPA 8082A) (Continued)

Analyte	MDL	Reporting Limit	Cas Number
Total PCBs	0.0167	0.0167 mg/kg	1336-36-3
Total PCBs [2C]	0.0167	0.0167 mg/kg	1336-36-3
Surr: Tetrachloro-m-xylene			877-09-8
Surr: Tetrachloro-m-xylene [2C]			877-09-8
Surr: Decachlorobiphenyl			2051-24-3
Surr: Decachlorobiphenyl [2C]			2051-24-3

Analytical Method Information

Printed: 08/25/2025 12:27 pm

Polychlorinated Biphenyls (PCB)-8082 in Water (EPA 8082A)

Preservation: Cool 4°C

Container: 07_1000mL Amber Glass Cool to 4° C **Amount Required:** 1000 mL **Hold Time:** 7 days

Analyte	MDL	Reporting Limit	Cas Number
Aroclor 1016	0.0500	0.0500 ug/L	12674-11-2
Aroclor 1016 (1)			12674-11-2
Aroclor 1016 (2)			12674-11-2
Aroclor 1016 (3)			12674-11-2
Aroclor 1016 (4)			12674-11-2
Aroclor 1016 (5)			12674-11-2
Aroclor 1016 [2C]	0.0500	0.0500 ug/L	12674-11-2
Aroclor 1016 (1) [2C]			12674-11-2
Aroclor 1016 (2) [2C]			12674-11-2
Aroclor 1016 (3) [2C]			12674-11-2
Aroclor 1016 (4) [2C]			12674-11-2
Aroclor 1016 (5) [2C]			12674-11-2
Aroclor 1221	0.0500	0.0500 ug/L	11104-28-2
Aroclor 1221 (1)			11104-28-2
Aroclor 1221 (2)			11104-28-2
Aroclor 1221 (3)			11104-28-2
Aroclor 1221 [2C]	0.0500	0.0500 ug/L	11104-28-2
Aroclor 1221 (1) [2C]			11104-28-2
Aroclor 1221 (2) [2C]			11104-28-2
Aroclor 1221 (3) [2C]			11104-28-2
Aroclor 1232	0.0500	0.0500 ug/L	11141-16-5
Aroclor 1232 (1)			11141-16-5
Aroclor 1232 (2)			11141-16-5
Aroclor 1232 (3)			11141-16-5
Aroclor 1232 (4)			11141-16-5
Aroclor 1232 (5)			11141-16-5
Aroclor 1232 [2C]	0.0500	0.0500 ug/L	11141-16-5
Aroclor 1232 (1) [2C]			11141-16-5
Aroclor 1232 (2) [2C]			11141-16-5
Aroclor 1232 (3) [2C]			11141-16-5
Aroclor 1232 (4) [2C]			11141-16-5
Aroclor 1232 (5) [2C]			11141-16-5
Aroclor 1242	0.0500	0.0500 ug/L	53469-21-9
Aroclor 1242 (1)			53469-21-9
Aroclor 1242 (2)			53469-21-9
Aroclor 1242 (3)			53469-21-9
Aroclor 1242 (4)			53469-21-9
Aroclor 1242 (5)			53469-21-9
Aroclor 1242 [2C]	0.0500	0.0500 ug/L	53469-21-9
Aroclor 1242 (1) [2C]			53469-21-9
Aroclor 1242 (2) [2C]			53469-21-9
Aroclor 1242 (3) [2C]			53469-21-9
Aroclor 1242 (4) [2C]			53469-21-9
Aroclor 1242 (5) [2C]			53469-21-9
Aroclor 1248	0.0500	0.0500 ug/L	12672-29-6
Aroclor 1248 (1)			12672-29-6
Aroclor 1248 (2)			12672-29-6
Aroclor 1248 (3)			12672-29-6
Aroclor 1248 (4)			12672-29-6
Aroclor 1248 (5)			12672-29-6
Aroclor 1248 [2C]	0.0500	0.0500 ug/L	12672-29-6

Analytical Method Information

(Continued)

Polychlorinated Biphenyls (PCB)-8082 in Water (EPA 8082A) (Continued)

Analyte	MDL	Reporting Limit	Cas Number
Aroclor 1248 (1) [2C]			12672-29-6
Aroclor 1248 (2) [2C]			12672-29-6
Aroclor 1248 (3) [2C]			12672-29-6
Aroclor 1248 (4) [2C]			12672-29-6
Aroclor 1248 (5) [2C]			12672-29-6
Aroclor 1254	0.0500	0.0500 ug/L	11097-69-1
Aroclor 1254 (1)			11097-69-1
Aroclor 1254 (2)			11097-69-1
Aroclor 1254 (3)			11097-69-1
Aroclor 1254 (4)			11097-69-1
Aroclor 1254 (5)			11097-69-1
Aroclor 1254 [2C]	0.0500	0.0500 ug/L	11097-69-1
Aroclor 1254 (1) [2C]			11097-69-1
Aroclor 1254 (2) [2C]			11097-69-1
Aroclor 1254 (3) [2C]			11097-69-1
Aroclor 1254 (4) [2C]			11097-69-1
Aroclor 1254 (5) [2C]			11097-69-1
Aroclor 1260	0.0500	0.0500 ug/L	11096-82-5
Aroclor 1260 (1)			11096-82-5
Aroclor 1260 (2)			11096-82-5
Aroclor 1260 (3)			11096-82-5
Aroclor 1260 (4)			11096-82-5
Aroclor 1260 (5)			11096-82-5
Aroclor 1260 [2C]	0.0500	0.0500 ug/L	11096-82-5
Aroclor 1260 (1) [2C]			11096-82-5
Aroclor 1260 (2) [2C]			11096-82-5
Aroclor 1260 (3) [2C]			11096-82-5
Aroclor 1260 (4) [2C]			11096-82-5
Aroclor 1260 (5) [2C]			11096-82-5
Aroclor 1262	0.0500	0.0500 ug/L	37324-23-5
Aroclor 1262 (1)			37324-23-5
Aroclor 1262 (2)			37324-23-5
Aroclor 1262 (3)			37324-23-5
Aroclor 1262 (4)			37324-23-5
Aroclor 1262 (5)			37324-23-5
Aroclor 1262 [2C]	0.0500	0.0500 ug/L	37324-23-5
Aroclor 1262 (1) [2C]			37324-23-5
Aroclor 1262 (2) [2C]			37324-23-5
Aroclor 1262 (3) [2C]			37324-23-5
Aroclor 1262 (4) [2C]			37324-23-5
Aroclor 1262 (5) [2C]			37324-23-5
Aroclor 1268	0.0500	0.0500 ug/L	11100-14-4
Aroclor 1268 (1)			11100-14-4
Aroclor 1268 (2)			11100-14-4
Aroclor 1268 (3)			11100-14-4
Aroclor 1268 (4)			11100-14-4
Aroclor 1268 (5)			11100-14-4
Aroclor 1268 [2C]	0.0500	0.0500 ug/L	11100-14-4
Aroclor 1268 (1) [2C]			11100-14-4
Aroclor 1268 (2) [2C]			11100-14-4
Aroclor 1268 (3) [2C]			11100-14-4
Aroclor 1268 (4) [2C]			11100-14-4
Aroclor 1268 (5) [2C]			11100-14-4

Analytical Method Information

(Continued)

Printed: 08/25/2025 12:27 pm

Polychlorinated Biphenyls (PCB)-8082 in Water (EPA 8082A) (Continued)

Analyte	MDL	Reporting Limit	Cas Number
Total PCBs	0.0500	0.0500 ug/L	1336-36-3
Total PCBs [2C]	0.0500	0.0500 ug/L	1336-36-3
Surr: Tetrachloro-m-xylene			877-09-8
Surr: Tetrachloro-m-xylene [2C]			877-09-8
Surr: Decachlorobiphenyl			2051-24-3
Surr: Decachlorobiphenyl [2C]			2051-24-3

Analytical Method Information

Printed: 08/25/2025 1:04 pm

Semi-Volatiles, 1,4-Dioxane 8270 SIM-Aqueous in Water (EPA 8270E SIM)

Preservation: Cool 4°C

Container: 09_500 mL Glass Amber **Amount Required:** 500 mL **Hold Time:** 7 days

Analyte	MDL	Reporting Limit	Cas Number
1,4-Dioxane	0.200	0.300 ug/L	123-91-1
Surr: 1,4-Dioxane-d8	0.200		17647-74-4
1,2-Dichlorobenzene-d4			2199-69-1

Analytical Method Information

Printed: 08/25/2025 1:05 pm

Semi-Volatiles, 1,4-Dioxane 8270 SIM-Soil in Soil (EPA 8270D SIM)

Preservation: Cool 4°C

Container: 06_4 oz. Glass Cool to 4° C **Amount Required:** 250 mL **Hold Time:** 14 days

Analyte	MDL	Reporting Limit	Cas Number
1,4-Dioxane	3.70	20.0 ug/kg	123-91-1
Surr: 1,4-Dioxane-d8	4.60		17647-74-4
1,2-Dichlorobenzene-d4			2199-69-1

Analytical Method Information

Printed: 08/25/2025 12:26 pm

Semi-Volatiles, NYSDEC Part 375 List - LL in Water (EPA 8270D)

Preservation: Cool 4°C

Container: 07_1000mL Amber Glass Cool to 4° C **Amount Required:** 1000 mL **Hold Time:** 7 days

Analyte	MDL	Reporting Limit	Cas Number
2-Methylphenol	1.25	1.25 ug/L	95-48-7
3- & 4-Methylphenols	1.25	1.25 ug/L	65794-96-9
Acenaphthene	0.0500	0.0500 ug/L	83-32-9
Acenaphthylene	0.0500	0.0500 ug/L	208-96-8
Anthracene	0.0500	0.0500 ug/L	120-12-7
Benzo(a)anthracene	0.0500	0.0500 ug/L	56-55-3
Benzo(a)pyrene	0.0500	0.0500 ug/L	50-32-8
Benzo(b)fluoranthene	0.0500	0.0500 ug/L	205-99-2
Benzo(g,h,i)perylene	0.0500	0.0500 ug/L	191-24-2
Benzo(k)fluoranthene	0.0500	0.0500 ug/L	207-08-9
Chrysene	0.0500	0.0500 ug/L	218-01-9
Dibenzo(a,h)anthracene	0.0500	0.0500 ug/L	53-70-3
Dibenzofuran	2.50	5.00 ug/L	132-64-9
Fluoranthene	0.0500	0.0500 ug/L	206-44-0
Fluorene	0.0500	0.0500 ug/L	86-73-7
Hexachlorobenzene	0.0200	0.0200 ug/L	118-74-1
Indeno(1,2,3-cd)pyrene	0.0500	0.0500 ug/L	193-39-5
Naphthalene	0.0500	0.0500 ug/L	91-20-3
Pentachlorophenol	0.250	0.250 ug/L	87-86-5
Phenanthrene	0.0500	0.0500 ug/L	85-01-8
Phenol	1.25	1.25 ug/L	108-95-2
Pyrene	0.0500	0.0500 ug/L	129-00-0
Surr: SURR: 2-Fluorophenol			367-12-4
Surr: SURR: Phenol-d6			13127-88-3
Surr: SURR: Nitrobenzene-d5			4165-60-0
Surr: SURR: 2-Fluorobiphenyl			321-60-8
Surr: SURR: 2,4,6-Tribromophenol			118-79-6
Surr: SURR: Terphenyl-d14			1718-51-0
ISTD: 1,4-Dichlorobenzene-d4			3855-82-1
ISTD: Naphthalene-d8			1146-65-2
ISTD: Acenaphthene-d10			15067-26-2
ISTD: Phenanthrene-d10			1517-22-2
ISTD: Chrysene-d12			1719-03-5
ISTD: Perylene-d12			1520-96-3

Analytical Method Information

Printed: 08/25/2025 12:24 pm

Semi-Volatiles, NYSDEC Part 375 List in Soil (EPA 8270E)

Preservation: Cool 4°C

Container: 06_4 oz. Glass Cool to 4° C **Amount Required:** 100 g **Hold Time:** 14 days

Analyte	MDL	Reporting Limit	Cas Number
2,4,5-Trichlorophenol	20.9	41.7 ug/kg	95-95-4
2,4,6-Trichlorophenol	20.9	41.7 ug/kg	88-06-2
2,4-Dichlorophenol	20.9	41.7 ug/kg	120-83-2
2,4-Dinitrophenol	41.7	83.3 ug/kg	51-28-5
2,6-Dinitrotoluene	20.9	41.7 ug/kg	606-20-2
2-Chlorophenol	20.9	41.7 ug/kg	95-57-8
2-Methylnaphthalene	20.9	41.7 ug/kg	91-57-6
2-Methylphenol	20.9	41.7 ug/kg	95-48-7
2-Nitroaniline	41.7	83.3 ug/kg	88-74-4
2-Nitrophenol	20.9	41.7 ug/kg	88-75-5
3- & 4-Methylphenols	20.9	41.7 ug/kg	65794-96-9
3-Nitroaniline	41.7	83.3 ug/kg	99-09-2
4-Chloroaniline	20.9	41.7 ug/kg	106-47-8
4-Nitrophenol	41.7	83.3 ug/kg	100-02-7
Acenaphthene	20.9	41.7 ug/kg	83-32-9
Acenaphthylene	20.9	41.7 ug/kg	208-96-8
Aniline	83.5	167 ug/kg	62-53-3
Anthracene	20.9	41.7 ug/kg	120-12-7
Benzo(a)anthracene	20.9	41.7 ug/kg	56-55-3
Benzo(a)pyrene	20.9	41.7 ug/kg	50-32-8
Benzo(b)fluoranthene	20.9	41.7 ug/kg	205-99-2
Benzo(g,h,i)perylene	20.9	41.7 ug/kg	191-24-2
Benzo(k)fluoranthene	20.9	41.7 ug/kg	207-08-9
Benzoic acid	20.9	41.7 ug/kg	65-85-0
Benzyl butyl phthalate	20.9	41.7 ug/kg	85-68-7
Bis(2-ethylhexyl)phthalate	20.9	41.7 ug/kg	117-81-7
Chrysene	20.9	41.7 ug/kg	218-01-9
Dibenzo(a,h)anthracene	20.9	41.7 ug/kg	53-70-3
Dibenzofuran	20.9	41.7 ug/kg	132-64-9
Diethyl phthalate	20.9	41.7 ug/kg	84-66-2
Dimethyl phthalate	20.9	41.7 ug/kg	131-11-3
Di-n-butyl phthalate	20.9	41.7 ug/kg	84-74-2
Di-n-octyl phthalate	20.9	41.7 ug/kg	117-84-0
Fluoranthene	20.9	41.7 ug/kg	206-44-0
Fluorene	20.9	41.7 ug/kg	86-73-7
Hexachlorobenzene	20.9	41.7 ug/kg	118-74-1
Indeno(1,2,3-cd)pyrene	20.9	41.7 ug/kg	193-39-5
Isophorone	20.9	41.7 ug/kg	78-59-1
Naphthalene	20.9	41.7 ug/kg	91-20-3
Nitrobenzene	20.9	41.7 ug/kg	98-95-3
Pentachlorophenol	20.9	41.7 ug/kg	87-86-5
Phenanthrene	20.9	41.7 ug/kg	85-01-8
Phenol	20.9	41.7 ug/kg	108-95-2
Pyrene	20.9	41.7 ug/kg	129-00-0
Benzo(a)pyrene (BAP) Equivalent-BAPE			
Surr: SURR: 2-Fluorophenol			367-12-4
Surr: SURR: Phenol-d6			13127-88-3
Surr: SURR: Nitrobenzene-d5			4165-60-0
Surr: SURR: 2-Fluorobiphenyl			321-60-8
Surr: SURR: 2,4,6-Tribromophenol			118-79-6

Analytical Method Information

(Continued)

Printed: 08/25/2025 12:24 pm

Semi-Volatiles, NYSDEC Part 375 List in Soil (EPA 8270E) (Continued)

Analyte	MDL	Reporting Limit	Cas Number
Surr: SURR: Terphenyl-d14			1718-51-0
ISTD: 1,4-Dichlorobenzene-d4			3855-82-1
ISTD: Naphthalene-d8			1146-65-2
ISTD: Acenaphthene-d10			15067-26-2
ISTD: Phenanthrene-d10			1517-22-2
ISTD: Chrysene-d12			1719-03-5
ISTD: Perylene-d12			1520-96-3

Analytical Method Information

Printed: 08/25/2025 12:23 pm

Volatile Organics, NYSDEC Part 375 List in Soil (EPA 8260D)

Preservation: Cool 4°C

Container: 03_5035 Vial Set **Amount Required:** 20 g. **Hold Time:** 14 days

Analyte	MDL	Reporting Limit	Cas Number
1,1,1-Trichloroethane	2.5	5.0 ug/kg	71-55-6
1,1,2,2-Tetrachloroethane	2.5	5.0 ug/kg	79-34-5
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	2.5	5.0 ug/kg	76-13-1
1,1-Dichloroethane	2.5	5.0 ug/kg	75-34-3
1,1-Dichloroethylene	2.5	5.0 ug/kg	75-35-4
1,2,3-Trichloropropane	2.5	5.0 ug/kg	96-18-4
1,2,4-Trichlorobenzene	2.5	5.0 ug/kg	120-82-1
1,2,4-Trimethylbenzene	2.5	5.0 ug/kg	95-63-6
1,2-Dichlorobenzene	2.5	5.0 ug/kg	95-50-1
1,2-Dichloroethane	2.5	5.0 ug/kg	107-06-2
1,3,5-Trimethylbenzene	2.5	5.0 ug/kg	108-67-8
1,3-Dichlorobenzene	2.5	5.0 ug/kg	541-73-1
1,3-Dichloropropane	2.5	5.0 ug/kg	142-28-9
1,4-Dichlorobenzene	2.5	5.0 ug/kg	106-46-7
1,4-Dioxane	50	100 ug/kg	123-91-1
2-Butanone	2.5	5.0 ug/kg	78-93-3
4-Methyl-2-pentanone	2.5	5.0 ug/kg	108-10-1
Acetone	5.0	10 ug/kg	67-64-1
Benzene	2.5	5.0 ug/kg	71-43-2
Carbon disulfide	2.5	5.0 ug/kg	75-15-0
Carbon tetrachloride	2.5	5.0 ug/kg	56-23-5
Chlorobenzene	2.5	5.0 ug/kg	108-90-7
Chloroethane	2.5	5.0 ug/kg	75-00-3
Chloroform	2.5	5.0 ug/kg	67-66-3
cis-1,2-Dichloroethylene	2.5	5.0 ug/kg	156-59-2
Ethyl Benzene	2.5	5.0 ug/kg	100-41-4
Isopropylbenzene	2.5	5.0 ug/kg	98-82-8
Methyl tert-butyl ether (MTBE)	2.5	5.0 ug/kg	1634-04-4
Methylene chloride	5.0	10 ug/kg	75-09-2
Naphthalene	2.5	10 ug/kg	91-20-3
n-Butylbenzene	2.5	5.0 ug/kg	104-51-8
n-Propylbenzene	2.5	5.0 ug/kg	103-65-1
o-Xylene	2.5	5.0 ug/kg	95-47-6
p- & m- Xylenes	5.0	10 ug/kg	179601-23-1
p-Isopropyltoluene	2.5	5.0 ug/kg	99-87-6
sec-Butylbenzene	2.5	5.0 ug/kg	135-98-8
tert-Butylbenzene	2.5	5.0 ug/kg	98-06-6
Tetrachloroethylene	2.5	5.0 ug/kg	127-18-4
Toluene	2.5	5.0 ug/kg	108-88-3
trans-1,2-Dichloroethylene	2.5	5.0 ug/kg	156-60-5
Trichloroethylene	2.5	5.0 ug/kg	79-01-6
Vinyl Chloride	2.5	5.0 ug/kg	75-01-4
Xylenes, Total	7.5	15 ug/kg	1330-20-7
Surr: SURR: 1,2-Dichloroethane-d4			17060-07-0
Surr: SURR: Toluene-d8			2037-26-5
Surr: SURR: p-Bromofluorobenzene			460-00-4
ISTD: Fluorobenzene			462-06-6
ISTD: Chlorobenzene-d5			3114-55-4
ISTD: 1,2-Dichlorobenzene-d4			2199-69-1

Analytical Method Information

Printed: 08/25/2025 12:23 pm

Volatile Organics, NYSDEC Part 375 List in Water (EPA 8260D)

Preservation: Add HCl to pH<2; Store cool at 4°C

Container: 00_40mL Clear Vial (pre-pres.) HCl; Cool t **Amount Required:** 80 mL **Hold Time:** 14 days

Analyte	MDL	Reporting Limit	Cas Number
1,1,1-Trichloroethane	0.20	0.50 ug/L	71-55-6
1,1-Dichloroethane	0.20	0.50 ug/L	75-34-3
1,1-Dichloroethylene	0.20	0.50 ug/L	75-35-4
1,2,4-Trimethylbenzene	0.20	0.50 ug/L	95-63-6
1,2-Dichlorobenzene	0.20	0.50 ug/L	95-50-1
1,2-Dichloroethane	0.20	0.50 ug/L	107-06-2
1,3,5-Trimethylbenzene	0.20	0.50 ug/L	108-67-8
1,3-Dichlorobenzene	0.20	0.50 ug/L	541-73-1
1,4-Dichlorobenzene	0.20	0.50 ug/L	106-46-7
1,4-Dioxane	40	80 ug/L	123-91-1
2-Butanone	0.20	0.50 ug/L	78-93-3
Acetone	1.0	2.0 ug/L	67-64-1
Benzene	0.20	0.50 ug/L	71-43-2
Carbon tetrachloride	0.20	0.50 ug/L	56-23-5
Chlorobenzene	0.20	0.50 ug/L	108-90-7
Chloroform	0.20	0.50 ug/L	67-66-3
cis-1,2-Dichloroethylene	0.20	0.50 ug/L	156-59-2
Ethyl Benzene	0.20	0.50 ug/L	100-41-4
Methyl tert-butyl ether (MTBE)	0.20	0.50 ug/L	1634-04-4
Methylene chloride	1.0	2.0 ug/L	75-09-2
Naphthalene	1.0	2.0 ug/L	91-20-3
n-Butylbenzene	0.20	0.50 ug/L	104-51-8
n-Propylbenzene	0.20	0.50 ug/L	103-65-1
o-Xylene	0.20	0.50 ug/L	95-47-6
p- & m- Xylenes	0.50	1.0 ug/L	179601-23-1
sec-Butylbenzene	0.20	0.50 ug/L	135-98-8
tert-Butylbenzene	0.20	0.50 ug/L	98-06-6
Tetrachloroethylene	0.20	0.50 ug/L	127-18-4
Toluene	0.20	0.50 ug/L	108-88-3
trans-1,2-Dichloroethylene	0.20	0.50 ug/L	156-60-5
Trichloroethylene	0.20	0.50 ug/L	79-01-6
Vinyl Chloride	0.20	0.50 ug/L	75-01-4
Xylenes, Total	0.60	1.5 ug/L	1330-20-7
Surr: SURR: 1,2-Dichloroethane-d4			17060-07-0
Surr: SURR: Toluene-d8			2037-26-5
Surr: SURR: p-Bromofluorobenzene			460-00-4
ISTD: Fluorobenzene			462-06-6
ISTD: Chlorobenzene-d5			3114-55-4
ISTD: 1,2-Dichlorobenzene-d4			2199-69-1

York Analytical Laboratories, Inc.

11/10/2025

Analytical Method Information

Volatile Organic Compounds in Air by GC/MS

Analyte	MDL	Reporting Limit	Surrogate %R	Duplicate RPD	Matrix Spike %R	Matrix Spike RPD	Blank Spike / LCS %R	Blank Spike / LCS RPD
Q_A_Volatile Organics, EPA TO15 Full List in Air (EPA TO-15)					Units: **ppbv**			
Preservation: None Required							**Hold Time to Analysis** 30 days	
Container: 12_Summa Canister, 6 Liter		**Amount Required:** 6 L					**Hold Time to Extr.** 30 days	
1,1,1,2-Tetrachloroethane	0.17	0.70 ug/m³		25			70 - 130	
1,1,1-Trichloroethane	0.19	0.55 ug/m³		25			70 - 130	
1,1,2,2-Tetrachloroethane	0.20	0.70 ug/m³		25			70 - 130	
1,1,2-Trichloro-1,2,2-trifluoroethane (	0.28	0.78 ug/m³		25			70 - 130	
1,1,2-Trichloroethane	0.20	0.55 ug/m³		25			70 - 130	
1,1-Dichloroethane	0.17	0.41 ug/m³		25			70 - 130	
1,1-Dichloroethylene	0.18	0.20 ug/m³		25			70 - 130	
1,2,4-Trichlorobenzene	0.29	37.74 ug/m³		25			70 - 130	
1,2,4-Trimethylbenzene	0.17	0.50 ug/m³		25			70 - 130	
1,2-Dibromoethane	0.25	0.78 ug/m³		25			70 - 130	
1,2-Dichlorobenzene	0.19	0.61 ug/m³		25			70 - 130	
1,2-Dichloroethane	0.11	0.41 ug/m³		25			70 - 130	
1,2-Dichloropropane	0.16	0.47 ug/m³		25			70 - 130	
1,2-Dichlorotetrafluoroethane	0.21	0.71 ug/m³		25			70 - 130	
1,3,5-Trimethylbenzene	0.08	0.50 ug/m³		25			70 - 130	
1,3-Butadiene	0.06	0.68 ug/m³		25			70 - 130	
1,3-Dichlorobenzene	0.17	0.61 ug/m³		25			70 - 130	
1,3-Dichloropropane	0.08	0.47 ug/m³		25			70 - 130	
1,4-Dichlorobenzene	0.15	0.61 ug/m³		25			70 - 130	
1,4-Dioxane	0.38	1.83 ug/m³		25			70 - 130	
2,2,4-Trimethylpentane	0.10	0.24 ug/m³		25			70 - 130	
2-Butanone	0.25	15.00 ug/m³		25			70 - 130	
2-Hexanone	0.22	0.83 ug/m³		25			70 - 130	
3-Chloropropene	0.13	1.59 ug/m³		25			70 - 130	
4-Methyl-2-pentanone	0.18	0.42 ug/m³		25			70 - 130	
Acetone	1.25	12.08 ug/m³		25			70 - 130	
Acrolein	0.14	0.23 ug/m³		25			70 - 130	
Acrylonitrile	2.11	11.04 ug/m³		25			70 - 130	
Benzene	0.10	0.32 ug/m³		25			70 - 130	
Benzyl chloride	0.15	13.16 ug/m³		25			70 - 130	
Bromodichloromethane	0.20	0.68 ug/m³		25			70 - 130	
Bromoform	0.44	1.05 ug/m³		25			70 - 130	
Bromomethane	0.17	0.39 ug/m³		25			70 - 130	
Carbon disulfide	0.08	0.32 ug/m³		25			70 - 130	
Carbon tetrachloride	0.14	0.16 ug/m³		25			70 - 130	
Chlorobenzene	0.18	0.47 ug/m³		25			70 - 130	
Chloroethane	0.15	0.27 ug/m³		25			70 - 130	
Chloroform	0.13	0.50 ug/m³		25			70 - 130	
Chloromethane	0.06	0.21 ug/m³		25			70 - 130	
cis-1,2-Dichloroethylene	0.10	0.20 ug/m³		25			70 - 130	
cis-1,3-Dichloropropylene	0.18	0.46 ug/m³		25			70 - 130	
Cyclohexane	0.10	0.35 ug/m³		25			70 - 130	
Dibromochloromethane	0.35	0.87 ug/m³		25			70 - 130	
Dichlorodifluoromethane	0.15	0.50 ug/m³		25			70 - 130	
Ethyl acetate	0.10	18.32 ug/m³		25			70 - 130	
Ethyl Benzene	0.15	0.44 ug/m³		25			70 - 130	

York Analytical Laboratories, Inc.

Analytical Method Information

Volatile Organic Compounds in Air by GC/MS

Analyte	MDL	Reporting Limit	Surrogate %R	Duplicate RPD	Matrix Spike %R	Matrix Spike RPD	Blank Spike / LCS %R	Blank Spike / LCS RPD
Hexachlorobutadiene	0.41	1.08 ug/m³		25			70 - 130	
Isopropanol	0.20	1.50 ug/m³		25			70 - 130	
Isopropylbenzene	0.08	0.50 ug/m³		25			70 - 130	
Methyl Methacrylate	0.26	0.42 ug/m³		25			70 - 130	
Methyl tert-butyl ether (MTBE)	0.11	0.37 ug/m³		25			70 - 130	
Methylene chloride	0.12	2.12 ug/m³		25			70 - 130	
Naphthalene	0.37	5.33 ug/m³		25			70 - 130	
n-Butylbenzene	0.17	0.56 ug/m³		25			70 - 130	
n-Heptane	0.15	0.42 ug/m³		25			70 - 130	
n-Hexane	0.11	0.36 ug/m³		25			70 - 130	
n-Propylbenzene	0.11	0.50 ug/m³		25			70 - 130	
o-Xylene	0.15	0.44 ug/m³		25			70 - 130	
p- & m- Xylenes	0.23	0.88 ug/m³		25			70 - 130	
p-Ethyltoluene	0.18	0.50 ug/m³		25			70 - 130	
p-Isopropyltoluene	0.10	0.56 ug/m³		25			70 - 130	
Propylene	0.08	0.18 ug/m³		25			70 - 130	
sec-Butylbenzene	0.14	0.56 ug/m³		25			70 - 130	
Styrene	0.13	0.43 ug/m³		25			70 - 130	
tert-Butylbenzene	0.21	0.56 ug/m³		25			70 - 130	
Tetrachloroethylene	0.16	0.69 ug/m³		25			70 - 130	
Tetrahydrofuran	0.10	0.60 ug/m³		25			70 - 130	
Toluene	0.12	0.38 ug/m³		25			70 - 130	
trans-1,2-Dichloroethylene	0.07	0.40 ug/m³		25			70 - 130	
trans-1,3-Dichloropropylene	0.18	0.46 ug/m³		25			70 - 130	
Trichloroethylene	0.08	0.14 ug/m³		25			70 - 130	
Trichlorofluoromethane (Freon 11)	0.18	0.57 ug/m³		25			70 - 130	
Vinyl acetate	0.18	0.36 ug/m³		25			70 - 130	
Vinyl bromide	0.11	0.44 ug/m³		25			70 - 130	
Vinyl Chloride	0.10	0.13 ug/m³		25			70 - 130	
Xylenes, Total	0.36	1.32 ug/m³		25				

ATTACHMENT C of QAPP
STANDARD OPERATING PROCEDURES

Field Book and Photographs

Standard Operating Procedure #001

A. Purpose and Scope:

To produce an accurate and reliable record of all field activities, including field observations, sample collection activities, etc.

All pertinent field survey and sampling information shall be recorded in a logbook or on field logs during each day of the field effort.

In addition to keeping logs, photographs will be taken to provide a physical record to augment the field worker's written observations. They can be valuable to the field team during future inspections, informal meetings, and hearings. Photographs should be taken with a camera-lens system having a perspective similar to that afforded by the naked eye. A photograph must be documented if it is to be a valid representation of an existing situation.

B. Equipment and Materials:

- Bound Field Book (with waterproof paper) or Field Logs
- Chain-of-Custody, Other Appropriate Forms
- Indelible Ink Pens
- Digital Camera with 50 mm lens or similar

C. Procedure:

1. At a minimum, entries in a logbook shall include:
    a. Date and time of starting work
    b. Names of all personnel at site
    c. Summary of key conversations with contractors, agency representatives, etc.
    d. Purpose of proposed work effort
    e. Sampling equipment to be used
    f. Field calibration of equipment or documentation of calibration of rented equipment
    g. Description of work area
    h. Location of work area, including map reference. Document sample locations with references to fixed landmarks (e.g., 10 feet from southwest corner of building)
    i. Details of work effort, particularly any deviation from the field operations plan or standard operating procedures
    j. Field observations and field measurements (e.g., pH)
    k. Field laboratory analytical results
    l. Personnel and equipment decontamination procedures
    m. Daily health and safety entries, including levels of protection
    n. Type and number of samples
    o. Sampling method, particularly deviations from the standard operating procedures
    p. Sample location and number
    q. Sample handling, packaging, labeling, and shipping information (including destination)
    r. Time of leaving site

For each photograph taken, several items shall be recorded in the field logbooks:

A. Date and time – Camera set to record on photo
B. Name of photographer
C. General direction faced and description of the subject
D. Sequential number of the photograph
E. Always attempt to include an object in the photograph that helps show scale
F. Always try to shoot at approximately 50mm focal length (what human eye sees)

2. Each day's entries will be initialed and dated at the end by the author, and a line will be drawn through the remainder of the page.

D. QA/QC Requirements:

All entries in the logbook shall be made in indelible ink. All corrections shall consist of single line-out deletions that are initialed.

The field task leader shall be responsible for ensuring that sufficient detail is recorded in the logbooks, and shall review the site logbooks daily.

E. Special Conditions:

Photographs should be downloaded from the camera to the project folder and notes regarding the photographs should accompany the photos. Photographs should be no larger than 3 MB each unless they are being utilized for presentation purposes. LaBella has software available to decrease file sizes if necessary.

As noted above, if a bound logbook is not used, then a field observation form must be used and information above should be captured on the form.

F. References:

None.

G. Appendices or Forms:

None.

Sample Naming and Numbering

Standard Operating Procedure #002

A. Purpose and Scope:

The success of large environmental programs is greatly affected by the efficiency of data management and analysis. When performing environmental sampling, one of the most critical steps is appropriately naming or numbering samples so that they are uniquely identified and can be distinguished from all other samples by all future users.

Some of the potential benefits that can be obtained by adopting a naming convention include the following:

a) To ensure that every sample collected at a site has a unique identifier

b) To enhance clarity in cases of potential ambiguity

c) To help avoid "naming collisions" that might occur when the data is imported into our Equis or other databases

d) To provide meaningful data to be used in project handovers

Note that many of our sampling programs are performed at sites with previously established sample locations and in these cases, we would not change sample names. Additionally, this process shall be applied at larger, more complex sites, and/or sites that are required to follow a site- specific QAAP. Simpler naming conventions may be implemented for small, simple sites.

B. Equipment and Materials:

- Field Logbook
- Field Sample Login Sheet
- Site Map / Work Plan
- Sampling Forms
- Chain of Custody
- Sample Containers with Labels

C. Procedure:

1. Once Each sample shall be uniquely defined by a multi-field name. In general, three fields are required:

   [Project # or Name] – [Media Type] – [Location Name/Sequential Number].

2. If using a site name, abbreviate to 2-3 letters. (e.g., Congress St site would be “CS”).

3. Use the following example abbreviations for media types:

Subsurface Soil.....SOIL
Surface Soil.....SURF
Sediment.....SED
Groundwater.....GW
Surface Water.....SW
Waste Water.....WW
Soil Vapor.....SV
Storm Water.....STORM

4. All samples collected at a site shall be numbered sequentially for each media type, regardless of the field event or project phase. The use of hyphens to separate segments of a sample name is beneficial for sample name readability. It is also beneficial to use enough leading zeros to accommodate the Sequential Number (or sys_loc_code) portion of the sample name, which will assist in sorting sample IDs in the data management program or database (see EQUIS discussion below).

5. Do not include information such as time, sample depths, etc. in the name. This information should be recorded as defined in Section F (below).

6. In no cases shall the multi-field name be longer than 30 characters, including dashes. Ensure that each name is clearly written on both the sample label as well as the Chain of Custody.

7. Do not use special characters (e.g. #, ‘, “, @, !) when naming samples. Including such characters in the Serial Number (sys_loc_codes) or Sample Number (sys_sample_codes) can be incompatible with the database.

8. For QA/QC blank samples use the following abbreviations in place of the media type:

Trip Blank.....TB
Equipment Rinse (Field Blank)..... FB
Duplicate.....DUP
Matrix Spike..... MS
Matrix Spike Duplicate.....MSD

For Duplicate and MS/MSD samples we need to make sure we include the parent sample name. Add the DUP, MS or MSD indicator after the Sequential Number.

For Blind Duplicate samples, use the LBA (LaBella) indicator in place of the Sequential Number. The location should be recorded in the field logs for our evaluation purposes. For example, a blind duplicate sample number for soil collected at the 005 location would be “CS-SOIL-AZT-1.”

You would record in the field log that the blind soil duplicate AZT-1 has SOIL-12345-005 as its parent sample.

9. Option to Include the Sample Collection Date - As an option, the date may be included in the sample name. NYS Electronic Data Deliverable guidance suggests using dates in the YYYYDDMM format. Placing the year first provides for ease of sorting data in the database:

   However, adding the date adds 9 characters to the sample name thus increasing the complexity of sample numbering. The date is captured on the Chain-of-Custody and in field records.

D. QA/QC Requirements:

All data must be documented on field data sheets or within site logbooks.

Field personnel should verify that all sample data and supporting information in log books is correct prior to leaving the site.

E. Special Conditions:

NYSDEC EQUIS Considerations:

NYSDEC uses EQuIS for data management and generally requires data to be submitted in EQuIS format. EQuIS has three different sample name related fields, a sample_name, a sys_sample_code and a location_ name. Location_name will almost always be simplified to something like SW-1, GW-2 etc. and is usually the last field of the sample name.

In terms of the other two, sample_name is what we record in the field. That is limited to 30 characters of text.

The laboratory generates the sys_sample_code by taking the sample_name field and adding another qualifier, such as the sample delivery group or work order number. EQuIS requires that the sys_sample_code field be unique within a database. This is limited to 40 characters of text so it typically will be the sample name plus up to 10 characters.

It is recommended to keep the LaBella sample name as short as possible to work with the EQuIS format. The basic sample names identified above are 14 to 17 characters long. If the optional date format is used, sample names will be 23 to 26 characters which is near the limit for what EQuIS can accommodate (and you may have issues physically fitting the sample names legibly into the COC form).

References:

NYSDEC, DER-10, Technical Guidance for Site Investigation and Remediation, May 2010, http://www.dec.ny.gov/docs/remediation_hudson_pdf/der10.pdf

NYSDEC, Electronic Data Delivery Manual, January 2013, http://www.dec.ny.gov/docs/remediation_hudson_pdf/eddmanual.pdf

F. Appendices or Forms:

None

Sample Containers, Volumes, Preservations and Holding Times

Standard Operating Procedure #003

A. Purpose and Scope:

The following standard operating procedure (SOP) presents general guidelines for sample containers, volumes, preservations and holding times associated with air, water and soil/sediment samples. Field personnel are responsible for ensuring that state-specific standards/guidelines/regulations are followed, where applicable.

Proper preserving, storing and handling of air, water and soil/sediment samples are critical if the integrity of the samples are to be maintained. Samples collected in the field may undergo biological, chemical or physical changes following removal from their environment. In order to minimize those changes, many samples must have preservatives in the form of strong acids or bases added prior to delivery to the laboratory. If samples are to be collected as part of a government program, the governing agency typically must be notified 30 days prior to sample collection

B. Equipment and Materials:

Pre-cleaned sample containers along with associated preservations within the sample containers will be provided to LaBella from the analytical laboratory. The field geologist/engineer will provide the necessary personal protective equipment to place samples collected within the appropriate sample containers. However, if field preservation is required the following equipment and materials shall be obtained:

- Hydrochloric (HCl) Acid Reagent A.S.C. 38%
- Nitric (HNO3) Acid Reagent A.S.C. 71%
- Sodium Hydroxide (NaOH) 97%
- 10 mL glass pipettes
- Narrow range (0-3 and 12-14) pH paper
- Nitrile gloves

C. Procedure:

1. Review Table 1 which details typical parameters of interest at environmental sites and the associated methods, preservation, container type, holding time and required sample volume.
2. Obtain pre-cleaned and pre-preserved sample containers from the laboratory. If pre-preserved sample containers were provided skip to Step 7; if not proceed to Step 3.
3. Put on a clean pair of nitrile gloves.
4. In a clean, non-dusty environment, remove the cap of the sample container.
5. Using a clean, 10 mL glass pipette draw the required amount of acid or base and insert into the sample container.
6. Volatile Organic Compounds – 2 mL of HCl acid (water samples).
7. Total and Dissolved Metals (including mercury) – 5 mL Nitric acid (water samples).
8. Cyanide – 15-20 Sodium Hydroxide pellets (water samples.
9. Chemical Oxygen Demand, Oil and Grease, Organic Carbon, Phenolics, Total Dissolved Phosphorous, Hydrolyzable Phosphorus, Ammonia, Nitrate and Nitrite – 5 mL Sulfuric acid (water samples).

10. Immediately replace and tighten the sample container cap.
11. Collect sample using equipment and procedures outlined in other SOPs as appropriate. The volume of the sample collected shall be sufficient to conduct the analysis required, as well as associated quality assurance/quality control samples (QA/QC).
12. Place samples immediately in the pre-preserved sample containers.
13. Chill all samples to 4°C from sample collection until laboratory analysis.
14. Package and ship samples.

D. QA/QC Requirements:

This section includes QA/QC requirements associated with sample containers, volumes, preservations, and holding times. The following general requirements apply to this SOP:

1. All data must be documented on field data sheets or within site logbooks.
2. All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified in the work plan.
3. Equipment checkout and calibration activities must occur prior to sampling/operation, and must be documented.
4. QA/QC samples shall be collected in accordance with SOP #005.

The following procedure shall be conducted to provide a QA/QC check of water (aqueous) samples to ensure the samples were preserved to the proper pH prior to shipping for laboratory analysis.

Volatile Organic Compounds:

1. Collect one additional VOA vial at every third aqueous sampling location.
2. Fill the extra vial with the sample.
3. Using the extra VOA vial, remove the cap and using a clean, 10 mL glass pipette extract approximately 1 mL of water.
4. Place two drops of the water on a 1-inch strip of 0-3 range pH paper.
5. Compare pH strip's color while wet with that of the color key included on the pH paper container.
6. If pH is not less than 2, add additional HCL to the remaining 3 VOA vials prior to collecting the sample.
7. Discard the vial used to check the pH.

Total and Dissolved Metals, Mercury, Ammonia, Nitrate plus Nitrite, Total Dissolved Phosphorus, COD, Oil & Grease, Organic Carbon, Phenolics:

1. Collect sample and tightly reseal the cap.
2. Agitate the sample by gently shaking the sample bottle to mix the acid and water.
3. Remove the cap and using a clean, 10 mL glass pipette extract approximately 1 mL of sample.
4. Place approximately two drops of sample on a 1 inch strip of 0-3 range pH paper.
5. Compare pH strip's color while wet with that of the color key included on the pH paper container.
6. If pH is not less than 2, add appropriate additional Sulfuric Acid to the sample using a clean pipette.
7. Recheck sample using steps 2 through 6 until sample pH is less than 2.

Cyanide:

1. Collect sample and tightly reseal the cap.
2. Agitate the sample by gently shaking the sample bottle until the NaOH pellets are dissolved.
3. Remove the cap and using a clean 10 mL glass pipette extract approximately 1 mL of sample.
4. Place approximately two drops of sample on a 1-inch strip of 12-14 range pH paper.
5. Compare pH strip's color while wet with that of the color key included on the pH paper container.
6. If pH is not greater than 12, add additional NaOH to the sample using standard procedures.
7. Recheck sample using steps 2 through 6 until sample pH is greater than 12.

E. Special Conditions:

None

F. References:

Eurofins Test America

G. Appendices or Forms:

Table 1 Laboratory Analysis: Summarizing parameters, methods, preservations, container type, holding times and minimum sample volumes are included as an attachment to this SOP.

Table 1

Laboratory Analysis	EPA Method	Standard Method and/or SW846 Method	Preservation	Container	Holding Time	Minimum Volume
WATER						
Acid Soluble & Insoluble Sulfide	-----	9030B	Cool to 4 deg C No Headspace	P or G	7 Days	8 oz.
Acidity as CaCO3	305.1	2310B	Cool to 4 deg C	P or G	14 Days	100 mL
Alkalinity	-----	2320B	Cool to 4 deg C	P or G	14 Days	100 mL
Alkalinity as CaCO3	310.1	2320B	Cool to 4 deg C	P or G	14 Days	100 mL
Ammonia	350.2/.3	4500-NH3 B,E	Cool to 4 deg C, H2SO4 to pH<2	P or G	28 Days	400 mL
Aromatic Hydrocarbons	602	8021B	1:1 HCl to pH <2, Cool to 4 deg C 0.008% Na2S2O3 if residual chlorine present	G, Vial screw cap with center hole Teflon- faced silicone septum	14 Days	40 mL
Biochemical Oxygen Demand	405.1	5210B	Cool to 4 deg C	P or G	48 Hrs.	500 mL
Bromide	300	-----	None	P or G	28 Days	250 mL
Calcium	-----	3120B	HNO3 to pH<2	P or G	6 Months	100 mL
Calcium- Hardness	200.7	3111B	HNO3 to pH<2	P or G	6 Months	100 mL
Carbamates	531.1	-----	Cool to 4 deg C, 0.08% Na2S2O3 if residual chlorine present	G, screw cap Teflon faced silicone septum	14 Days	100 mL mL
Carbonaceous BOD	-----	5210B	Cool to 4 deg C	P or G	48 Hrs.	1000 mL
Chloride	300	4500-CL D 4110	Cool to 4 deg C	P or G	28 Days	100 mL
Chloride, Residual Disinfectant	-----	4500Cl-G	Cool to 4 deg C	P or G	Analyze Immediately	200 mL
COD	410.4	5220D	H2S04 to pH<2, Cool to 4 deg C	P	28 days	250 mL
Color	-----	2120B	Cool to 4 deg C	P or G	24 Hrs	100 mL
Conductivity	-----	2510B	Cool to 4 deg C	P or G	28 Days	100 mL
Cyanide	335.4	4500-CN C&E	Cool to 4 deg C NaOH pH>12	P or G	14 Days	250 mL
Cyanide	335.2	9010B, 9012A, 9014	Cool to 4 deg C, NaOH to pH>12 0.6 g ascorbic acid if residual chlorine present	P or G	Sulfide absent, 14 days; sulfide present 24 Hrs	250 mL
Cyanide, Amenable	335.1					
Dioxin	-----	8280A	Cool to 4 deg C 0.008% Na2S2O3 if residual chlorine present	G, Amber Teflon-lined screw cap	7 days until extraction 40 days after extraction	1000 mL
DRO	-----	8015B	Cool to 4 deg C 0.008% Na2S2O3 if residual chlorine present	G, Amber Teflon-lined screw cap	7 days until extraction 40 days after extraction	1000 mL
Escherichia Coli	-----	9222B	0.008% Na2S203 if residual chlorine present 0.3 mL/125 mL 15% EDTA if > 0.01 mg/L heavy metals	Sterile P or G	30 Hrs. for Drinking Water 6 Hrs. for Waste Water	125 mL
Extractable Org. Compounds			Cool to 4 deg C, Store in dark	G, Amber Teflon-lined screw cap	*7 days	4000 mL

Table 1

Laboratory Analysis	EPA Method	Standard Method and/or SW846 Method	Preservation	Container	Holding Time	Minimum Volume
Fecal Coliform	-----	9222B or D	0.008% Na2S203 if residual chlorine present 0.3 mL/125 mL 15% EDTA if > 0.01 mg/L heavy metals	Sterile P or G	30 Hrs. for Drinking Water 6 Hrs. for Waste Water	125 mL
Fecal Streptococci	-----	9230C	Cool to 4 deg C 0.008% Na2S2O3 if residual chlorine present	Sterile P or G	30 Hrs. for Drinking Water 6 Hrs. for Waste Water	125 mL
Fluoride	300	4500 F-B,C S	Cool to 4 deg C	P or G	28 Days	300 mL
Foaming Agents (MBAS)	-----	5540C	Cool to 4 deg C	P or G	48 Hrs	250 mL
Gases	-----	3810	Cool to 4 deg C 0.008% Na2S2O3 if residual chlorine present 1:1 HCl to pH <2	G, Vial screw cap with center hole Teflon- faced silicone septum	7 days without HCl 14 days with HCl	40 mL
GRO	-----	8015B	1:1 HCl to pH <2, Cool to 4 deg C 0.008% Na2S2O3 if residual chlorine present	G, Vial screw cap with center hole Teflon- faced silicone septum	7 days w/o HCl 14 days w/HCl	40 mL
Hardness			HNO3 to pH<2	P	6 months	1000 mL
Heterotrophic Plate Count	-----	9215B	Cool to 4 deg C 0.008% Na2S2O3 if residual chlorine present	Sterile P or G	30 Hrs. for Drinking Water 6 Hrs. for Waste Water	125 mL
Hexavalent Chromium	7196A	3500Cr-D	Cool to 4 deg C	P	24 hours	500 mL
HPLC (Explosive)	------	8330	Cool to 4 deg C	G, Amber Teflon-lined screw cap	7 days until extraction 40 days after extraction	1000mL
HPLC (Explosive)	------	8310	Cool to 4 deg C	G, Amber Teflon-lined screw cap		1000mL
Mercury	-----	7470A	Cool to 4 deg C	P or G	28 Days	8 oz.
Metals	200.7	-----	HNO3 to pH<2	P	6 Months	100 mL
Nitrate	300	-----	Cool to 4 deg C	P or G	48 Hrs.	100 mL
Nitrate (Chlorinated)	353.2	4500-NO3 F	Cool to 4 deg C	P or G	48 Hrs	250 mL
Nitrate (Non- chlorinated)	353.2	4500-NO3 F	H2SO4 to pH<2, Cool to 4 deg C	P or G	14 Days	250 mL
Nitrite	300, 353.2, 354.1	4500-NO3 D	Cool to 4 deg C	P or G	48 Hrs	100 mL
Odor	-----	2150B	Cool to 4 deg C	G only	24 Hrs	200 mL
Oil and Grease		1664	HCl to pH<2, Cool to 4 deg C	G, Amber Teflon-lined screw cap	28 days	1000 mL
Organic Nitrogen	351.1	-----	Cool to 4 deg C, H2SO4 to pH<2	G	28 Days	500 mL

Table 1

Laboratory Analysis	EPA Method	Standard Method and/or SW846 Method	Preservation	Container	Holding Time	Minimum Volume
Organochlorine Pesticides/PCB	608	8081A,8082	Cool to 4 deg C 0.008% $Na_2S_2O_3$ if residual chlorine present If aldrin is to be determined bind to pH 5-9.	G, Amber Teflon-lined screw cap	7 days until extraction 40 days after extraction	1000 mL
Ortho Phosphate	300	4500 P-E	Cool to 4 deg C	P or G	48 Hrs	50 mL
Orthophosphate	365.2	-----	Filter immediately, Cool to 4 deg C	P or G	48 Hrs.	50 mL
pH, Hydrogen ion	-----	4500-H-B	Cool to 4 deg C	P or G	Analyze Immediately	25 mL
Phenols	420.1	9065, 510ABC	Cool to 4 deg C, H_2SO_4 to pH<2	G	28 Days	500 mL
Pseudomanas Aeruginosa	-----	9213E	Cool to 4 deg C 0.008% $Na_2S_2O_3$ if residual chlorine present	Sterile P or G	30 Hrs. for Drinking Water 6 Hrs. for Waste Water	125 mL
Purgeable Halocarbons	601	8021B	Cool to 4 deg C 0.008% $Na_2S_2O_3$ if residual chlorine present	G, Vial screw cap with center hole Teflon- faced silicone septum	14 Days	40 mL
Radiological	-----	-----	HNO_3 to pH<2	P or G	6 Months	100 mL
Residue- Settleable (SS)	160.5	-----	Cool to 4 deg C	P or G	48 Hrs.	1000 mL
Residue-filtered (TDS)	160.1	-----	Cool to 4 deg C	P or G	7 Days	100 mL
Residue-non- filtered (TSS)	160.2	-----	Cool to 4 deg C	P or G	7 Days	100 mL
Residue-Total Volatile Solids	160.4	2540 E	Cool to 4 deg C	P or G	7 Days	100 mL
Salinity	-----	2520 C	Cool to 4 deg C	G	28 Days	100 mL
Semivolatile Organic Compounds (Unregulated)	525.2	-----	If residual chlorine is present, add 40-50 mg Sodium Thiosulfate. If not chlorinated, add 6N HCl to pH<2 Cool to 4 deg C	G, Amber Teflon-lined screw cap	7 Days for extraction, 30 after extraction	1000 mL
Semivolatile Organics	625	8270C	Cool to 4 deg C 0.008% $Na_2S_2O_3$ if residual chlorine present	G, Amber Teflon-lined screw cap	7 days for extraction 40 days after extraction	1000 mL
Silica	200.7	-----	Cool to 4 deg C	P only	7 Days	50 mL
Specific Conductance	120.1	-----	Cool to 4 deg C	P or G	28 Days	100 mL
Sulfate	300	4500-SO_4	Cool to 4 deg C	P or G	28 Days	50 mL
Sulfate	375.4	-----	Cool to 4 deg C	P or G	28 Days	50 mL
Sulfide	376.2	9030 B, 4500S2-AD	Cool to 4 deg C, add zinc plus NaOH to pH>9	P or G	7 Days	50 mL
Sulfite (SO_3)	377.1	-----	None Required	G, Bottle and Top	Analyze immediately	50 mL
Surfactants (MBAS)	425.1	-----	Cool to 4 deg C	P or G	48 Hrs.	250 mL

Table 1

Laboratory Analysis	EPA Method	Standard Method and/or SW846 Method	Preservation	Container	Holding Time	Minimum Volume
TDS			Cool to 4 deg C	P	7 days	500 mL
Temperature	-----	2550B	None	P or G	Analyze Immediately	1000 mL
Temperature	170.1	-----	None Required	G, Bottle and Top	Analyze immediately	1000 mL
Total Kjeldahl Nitrogen	353.3/.1	4500Norg-C	H2S04 to pH<2 , Cool to 4 deg C	P	28 days	250 mL
Total Coliform	-----	9221D	0.008% Na2S203 if residual chlorine present 0.3 mL/125 mL 15% EDTA if > 0.01 mg/L heavy metals	Sterile P or G	30 Hrs. for Drinking Water 6 Hrs. for Waste Water	125 mL
Total Dissolved Solids	160.1	2540C	Cool to 4 deg C	P or G	7 Days	100 mL
Total Hardness	130.2 , 200.7	-----	HNO3 to pH<2 H2SO4 to pH<2	P or G	6 Months	100 mL
Total Kjeldahl Nitrogen	351.3	-----	H2SO4 to pH<2	P or G	28 Days	500 mL
Total Metals	200.7 200.8	6010B, 6020, 7000A	HNO3 to pH<2	P	6 months (Hg 28 days)	500 mL
Total Organic Carbon (TOC)	415.1	9060, 5310C	H2SO4 to pH<2, Cool to 4 deg C	G, Amber Teflon-lined screw cap	28 days	80 mL
Total Organic Halides		5320B	1N H2SO4 to pH<2	P or G	28 Days	50 mL
Total Phosphorus	365.2	-----	Cool to 4 deg C, H2SO4 to pH<2	G	28 Days	50 mL
Total Recoverable Oil & Grease	413.1,166 4A	-----	Cool to 4 deg C, HCL or H2SO4 to pH<2	G	Petroleum Based 3 Days; Non-Petroleum Based 24 hours	1000 mL
Total-Residue (TS)	160.3	2540B	Cool to 4 deg C	P or G	7 Days	100 mL
Turbidity	180.1	2130B	Cool to 4 deg C	P or G	48 Hrs	100 mL
Volatile Organics	624	8260B	1:1 HCl to pH <2, Cool to 4 deg C 0.008% Na2S2O3 if residual chlorine present	G, Vial screw cap with center hole Teflon-faced silicone septum	7 days w/o HCl 14 days w/HCl	40 mL
Volatiles (Regulated)	524.2	-----	Cool to 4 deg C HCl to pH<2	G, Vial screw cap with center hole Teflon-faced silicone septum	14 Days	60-120 mL
SOIL						
Acid Soluble & Insoluble Sulfide	-----	9030B	Cool to 4 deg C, no headspace	P or G	7 Days	8 oz.
Amenable Cyanide	-----	9213	Cool to 4 deg C	P or G	14 Days	4 oz.
Bromide	-----	9211	Cool to 4 deg C	P or G	28 Days	8 oz.
Cation - Exchange Capacity	-----	9080, 9081	None	P	-----	8 oz.
Chloride	-----	9212, 9056, 9253	None	P or G	28 Days	8 oz.
Chlorinated Herbicides	-----	8151A	Cool to 4 deg C	G, wide mouth, teflon liner	14 Days	8 oz.
Corrosivity pH Waste>20% water	-----	9040B	Cool to 4 deg C	P	Analyze Immediately	4 oz.

Table 1

Laboratory Analysis	EPA Method	Standard Method and/or SW846 Method	Preservation	Container	Holding Time	Minimum Volume
Corrosivity Toward Steel	-----	1110	Cool to 4 deg C	P	14 Days	4 oz.
Cyanide		9010B, 4500CN	Cool to 4 deg C	G, Amber	14 Days	4 oz
Dioxin	-----	8280A	Cool to 4 deg C	G	14 Days	8 oz.
DRO	-----	8015B	Cool to 4 deg C	G, Amber	14 Days	4 oz.
Extractable Organic Compounds			Cool to 4 deg C, Store in dark	G	14 days	8 oz
Extractable Sulfide	-----	9031	Cool to 4 deg C, fill top of sample with 2N Zinc Acetate until moistened	P or G	7 Days	8 oz.
Fluoride	-----	9214	None	P	28 Days	8 oz.
Gases	-----	3810	Cool to 4 deg C	G, Amber	14 Days	8 oz.
Grain Size			N/A	G	N/A	8 oz
GRO	-----	8015B	Cool to 4 deg C, check state regulations for proper preservative. NJ (methanol), PA (encore samplers) NY (cool to 4 deg C).	G, Amber VOA vial	14 Days	15 Grams
HPLC (PAH)	------	8310	Cool to 4 deg C	G, Amber Teflon-lined screw cap	14 days until extraction 40 days after extraction	4 oz.
Ignitability	-----	1010	None	P or G	None	8 oz.
Ignitability of Solids		1030	None	P or G	None	8 oz.
Mercury	245.1	7471A	Cool to 4 deg C	G, Amber	28 Days	4 oz.
Metals	-----	6010B, 6020, 7000A	Cool to 4 deg C	G, Amber	6 Months	8 oz.
Moisture Content			Store in airtight jar 3-30 deg C	G	N/A	8 oz
Nitrate	-----	9210	Cool to 4 deg C	P or G	48 Hrs	8 oz.
Oil & Grease (Sludge, Sludge- Hem)	-----	9071B	Cool to 4 deg C	G	28 Days	8 oz.
Organochlorine	-----	8081A	Cool to 4 deg C	P or G	14 Days	8 oz.
Paint Filter Liquids Test	-----	9095A	Cool to 4 deg C	P or G	-----	8 oz.
PCBs	-----	8082	Cool to 4 deg C	G, Amber Teflon-lined screw cap	14 Days	4 oz.
pH	-----	9045C	Cool to 4 deg C	G, Amber	Analyze Immediately	4 oz.
pH, Soil and Waste	-----	9045A	Cool to 4 deg C	G	Analyze Immediately	8 oz.
Phenol	-----	9065, 9066, 9067	Cool to 4 deg C	G, Amber	28 Days	4 oz.
Radiological	-----	-----	Cool to 4 deg C	G	6 Months	8 oz.
Reactivity Cyanide	-----	SW-846 7.3.3.2	Cool to 4 deg C	P	14 Days	8 oz.
Reactivity Sulfide	-----	SW-846 7.3.4.2	Cool to 4 deg C	P	14 Days	8 oz.
Semivolatile Organics	-----	8270C	Cool to 4 deg C	G, Amber	14 Days	8 oz.

Table 1

Laboratory Analysis	EPA Method	Standard Method and/or SW846 Method	Preservation	Container	Holding Time	Minimum Volume
Sulfate	-----	9035, 9036, 9038	Cool to 4 deg C	P or G	28 Days	8 oz.
Sulfides	-----	9215	Cool to 4 deg C	P or G	7 Days	8 oz.
TCLP Metals	-----	1311, 6010B, 6020, 7000A, 7470A	Cool to 4 deg C	G, Amber	180 Days (Hg 28 days)	8 oz
TCLP Herbicides	-----	1311	Cool to 4 deg C	G, Amber	14 Days	8 oz.
TCLP Pesticides	-----	1311	Cool to 4 deg C	G, Amber	14 Days	8 oz.
TCLP Semivolatile Organics	-----	1311, 8270C, 8081A, 8151A	Cool to 4 deg C	G, Amber Teflon Lined	14 Days	8 oz.
TCLP Volatile Organics	-----	1311, 8260B	Cool to 4 deg C	G, Amber VOA Vial Teflon Lined	14 Days	8 oz.
Temperature	-----	2550	-----	P	Analyze Immediately	4 oz.
TOC		Lloyd Kahn Method	Cool to 4 deg C	G, Amber	14 days	4 oz.
Total Coliform	-----	9131	Cool to 4 deg C	Sterile, P or G	6 Hrs	4 oz.
Total Coliform	-----	9132	Cool to 4 deg C	Sterile, P or G	6 Hrs	4 oz.
Total Cyanide	-----	9013	Cool to 4 deg C	P or G	14 Days	8 oz.
Volatile Organic Compounds	-----	8260B	Cool to 4 deg C Check individual state regulations for proper preservative. NJ (methanol), PA (encore samplers), NY (cool to 4 deg C)	G, wide mouth, teflon liner	14 Days	4 oz.
Volatile Organic Compounds	-----	8021		G, wide mouth, teflon liner	14 Days	4 oz.
CLP Sampling and Holding Time Information						
Cyanide (aqueous)	ILM04.1		NaOH to pH>12, Cool to 4 deg C	P	12 Days VTSR	1000ml
Cyanide**	ILM04.1		Cool to 4 deg C	G		8 oz
Mercury (aqueous)	ILM04.1		HNO3 to pH<2, Cool to 4 deg C	P	26 Days VTSR	1000ml
Mercury (solid/soils)	ILM04.1		Cool to 4 deg C	G		8 oz
Metals (aqueous)	ILM04.1		HNO3 to pH<2, Cool to 4 deg C	P	180 Days VTSR	1000ml
Metals (solid/soils)	ILM04.1		Cool to 4 deg C	G		8 oz
PCBs (aqueous)	OLM04.2		Na2S203, Cool to 4 deg C	G	See Note 7	1000ml
PCBs (solid/soils)	OLM04.2		Cool to 4 deg C	G	See Note 6	8 oz
Pesticides (aqueous)	OLM04.2		Na2S203, Cool to 4 deg C	G	See Note 7	1000ml
Pesticides (solid/soils)	OLM04.2		Cool to 4 deg C	G	See Note 6	8 oz
Semivolatile Organic Compounds (aqueous)	OMLO4.2		Cool to 4 deg C	G	See Note 8	1000ml
Semivolatile Organic Compounds (solid/soils)	OLM04.2		Cool to 4 deg C	G	See Note 6	8 oz
Volatile Organic Compounds (aqueous)	OLM04.2		HCL pH < 2, Cool to 4 deg C	G	W/preservative: 10 days VTSR; W/O: 7 days VTSR	40ml
Volatile Organic Compounds (solid/soils)	OLM04.2		Cool to 4 deg C	G	10 Days VTSR	4 oz

Table 1

Laboratory Analysis	EPA Method	Standard Method and/or SW846 Method	Preservation	Container	Holding Time	Minimum Volume

Notes:

1. P - Plastic.
2. G - Glass.
3. Minimum volume is the minimum volume required by the laboratory to conduct the analysis. The laboratory will likely require additional sample volume.
4. * Extraction within seven (7) days of collection; analysis within 40 days of extraction.
5. **When chlorine is present ascorbic acid is used to remove the interference (0.6 g ascorbic acid).
6. VTSR - Validated time of sample receipt.
7. Ten (10) days from VTSR for extraction and 40 days following extraction.
8. Five (5) days from VTSR for extration 14 days after extraction.
9. Five (5) days from VTSR for extraction 40 days after extraction.
10. Holding times are from the time of sample collection unless otherwise noted.

Table 1

Laboratory Analysis	EPA Method	Standard Method and/or SW846 Method	Preservation	Container	Holding Time	Minimum Volume
1, 4 Dioxane (Soil)	-	8270D	Cool to 4 deg C	G, Amber	14 Days	4 oz.
1,4 Dioxane (Water)	-	8270 SIM	Cool to 4 deg C	G, Amber	14 Days	1000 mL
PFAS (Soil)	-	1633	Cool to 4 deg C	P, Non-Teflon Lined	28 Days	8 oz.
PFAS (Water)	-	1633	Cool to 4 deg C	P, Non-Teflon Lined	28 Days	250 mL

Notes:

1. P - Plastic
2. G - Glass
3. Minimum volume is the minimum volume required by the laboratory to conduct analysis. The laboratory will likely require additional sample volume.
4. * Extraction within seven (7) days of collection; analysis within 40 days of extraction.
5. ** When chlorine is present ascorbis is used to remove the interference (0.6 g ascorbic acid).
6. VTSR - Validated time of sample receipt.
7. Ten (10) days from VTSR for extraction and 40 days following extraction.
8. Five (5) days from VTSR for extraction 14 days after extraction.
9. Five (5) days from VTSR for extraction 40 days after extraction.
10. Holding times are from the time of sample collection unless otherwise noted.

Completing a Chain of Custody Record

Standard Operating Procedure #004

A. Purpose and Scope:

This protocol provides a standard operating procedure (SOP) for initiating and maintaining a Chain of Custody (COC) document. A COC is a legal document designed to track persons who are responsible for the preparation of the sample container, sample collection, sample delivery, sample storage, and sample analysis. A COC is an appropriate format to record important data associated with each individual sample. In general, a sample requiring a COC will follow a path as follows:

Sample Collector → Sample Courier/Operator → Sample Manager

Verification of who has possessed the samples and data and where the samples have been is completed when staff follow chain-of-custody procedures.

B. Equipment and Materials:

- Chain of Custody form
- Ball-point/permanent pens
- Gallon sized Ziploc Bag (to keep document dry)
- Field Logbook
- Custody seals
- Padlock(s) (if needed)

C. Procedure:

1. Once a sample has been determined to require a COC, the Sample Collector must initiate the COC. The Sample Collector must fill in the fields provided on the COC. The words "Chain of Custody" must be located in a conspicuous location at the top of the document.

2. The form is generally a three-page carbon copy document, including a white, yellow and pink sheet. While LaBella generally uses COCs provided by the applicable laboratory, it is important to ensure that the COC from each lab contains places for all necessary information.

3. The COC at that time should include the applicable project number, the project name and location.

4. The Client Information Section must be completed. In most cases the "client" will be LaBella Associates or entity procuring services.

5. The first field of information is the Sample Identification or Sample Identification Number. This identification/number must match the identification/number located on the sample container.

6. An information line for the date, time, phone number, printed name of Sample Collector, signature of Sample Collector, organization name (no acronyms), organization's full mailing address, and sample description must also be included.

7. Sampling personnel should enter the sample Identification or number(s) (which should correspond with a unique number on each sample container, and parameters to be analyzed. The "Sample ID" must be included and must match the number on the sample.

8. Subsequent fields must be provided to allow for documentation of information about any subsequent Sample Couriers/Operators or Sample Managers. These fields must contain the date, time, phone number, printed name of person taking custody of sample, signature of person taking custody of sample and organization name (no acronyms).

9. Field Information - The COC must contain places to enter the following field information: sample number, sampling date, and type of sample. Other field information may be recorded as specified in the field sampling plan or proposal for the project. It is imperative that there be only one (1) sample with a particular sample number per project/study so as to prevent duplicates in Excel files and EQuIS databases.

10. Laboratory Information - Once the sample is delivered to the lab, the laboratory personnel will sign and date the "received by" line located at the bottom of the COC. Other laboratory information may be recorded as specified in the project/study work plan/proposal.

11. Signatures - The COC must contain places for all people who handle the sample to sign his/her name. This is a record of persons who had custody of the sample during all steps of the process from container preparation, sample collection, sample storage and transport, and sample analysis. There should be signature lines to relinquish custody of the sample and to receive custody of the sample.

D. QA/QC Requirements:

The Field Team Leader or senior person on the sampling team will review the completed COC form to verify that all fields are properly completed. For purposes of this SOP, signing the form under Collected/Delivered by is considered evidence that the COC form has been checked for accuracy and completeness. Any project related questions concerning the COC should be directed toward the Project Manager.

E. Special Conditions:

Whenever samples are split with a source or government agency, a separate chain of custody form should be completed for the samples and the relinquisher (sampler) and recipient should sign. If a representative is unavailable or refuses to sign for the samples, this can be noted in the "remarks" area of the form. When appropriate, as in the case where the representative is unavailable, the custody record should contain a statement that the samples were delivered to the designated location at the designated time. A copy of the chain of custody form for split samples must be kept with the project file.

Samples may require short term storage in field locations prior to delivery to the laboratory for analyses. The storage may be in vehicles or lodging locations. The samples must be secured to limit access to them. A locked vehicle is considered controlled access. However, simply a locked lodging room is not secure due to potential custodial access. If an unattended lodging room is used for sample storage, the samples must be further secured. This may entail a padlock on the ice chest, samples in an ice chest secured in an inner bag with a custody seal on it, and/or ice chest taped shut with custody seal on the outside of it.

F. References:

Sampling Guidelines and Protocols, NYSDEC
https://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpintro.pdf

G. Appendices or Forms:

The COC used should be specific to each laboratory.

Quality Assurance Quality Control Samples

Standard Operating Procedure #005

A. Purpose and Scope:

This standard operating procedure explains the purpose and correct usage of Quality Assurance/Quality Control (QA/QC) samples. QA/QC samples are intended to validate the results of sample analysis by providing the means to determine the influence of outside factors on the sample and analysis. There are several types of QA/QC samples in use to ensure the best practices are being followed by both the laboratory preforming the analysis and the sampling team in the field. This is a general procedure for the use of QA/QC samples. Also refer to any guidelines provided by the laboratory.

B. Equipment and Materials:

QA/QC samples require the following materials:

- Sample containers:
  - They should be the same containers in number and type of preservative as the containers for the samples for which QA/QC samples are being taken
- Analyte-free water
- Any laboratory supplied QA/QC materials

C. Procedure:

The following are types of QA/QC samples.

1. Duplicate Sample

   A duplicate sample is a sample that is collected concurrently with the routine samples. It consists of an additional set of sample containers to be analyzed for the same parameters as the routine samples. It is taken at a sample point of the samplers choosing and at the same time as the routine sample for that sample point is taken. It is labeled and included on the Chain of Custody (COC) with a name unknown to the laboratory.

   Example:
   - Sample Point ID is **MW-1**
   - Duplicate Sample ID is **LBA-1-MMDDYY or FD-1-MMDDYY**

   The duplicate sample is submitted as a 'blind' sample to the laboratory. The purpose of a duplicate sample is to allow the sampler to determine the precision of laboratory analysis. The results of the duplicate sample are compared with the results of the concurrent routine sample by the sampler. These results should be within the margin of error for the test being performed.

   One (1) duplicate sample should be taken for every twenty (20) routine samples. For example if 16 samples points were sampled, there would be 1 duplicate sample taken at one (1) of the sample points for a total of 17 sample sets submitted to the lab.

2. Field Blank

   The Field Blank sample is a type of QA/QC sample used to account for possible external contamination of the routine samples, usually by exposure to the air from being on site. It consists

of an additional set of sample containers to be analyzed for the same parameters as the routine samples. It is common to only conduct a Field Blank for volatile organic compound (VOC) parameters even when sampling to additional parameters. This is because VOCs are more likely to be present in the atmosphere at the site then a parameter like metals. However a Field Blank can be conducted for any parameter.

The containers are prepared prior to sampling by filling the containers with analyte-free water. The containers are then transported with the routine sample containers to the site. Once at the site the containers are placed in a location representative of the site conditions and their caps are removed. At the end of the sampling event the caps are then replaced. The sample is labeled and included on the COC as **Field Blank** or **FB**.

If any results are positive for the Field Blank it can be assumed that the routine samples have also been exposed to a similar amount of contaminant and that contaminant is probably present in the atmosphere at the site.

One (1) Field Blank should be taken as required for each day of sampling at the site. They are only used for the collection of aqueous samples.

3. Equipment Blank

An Equipment Blank is a QA/QC sample designed to measure the effectiveness of the decontamination of field equipment. It consists of an additional set of sample containers being analyzed for the same parameters as the routine samples.

An Equipment Blank is collected by pouring analyte-free water directly over/on/into the decontaminated sampling equipment coming into contact with the samples being collected. The water is then collected in the sample containers. Once the containers are filled they are capped and sent to the lab with the other routine samples. The sample is labeled and included on the COC as **Equipment Blank** or **EQ Blank**.

A positive result for the analysis of the Equipment Blank could signal inadequate decontamination of the equipment which may result in cross-contaminated samples and thus suspect results.

One (1) Equipment Blank should be taken for every twenty (20) routine samples collected. The Equipment Blank is not necessary when using dedicated sampling equipment or sampling equipment that is disposed of between each sample point.

4. Matrix Spike/Matrix Spike Duplicate Sample

The Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample is a quality control system used by the laboratory to check the accuracy of their instruments. It consists of a set of two (2) samples taken at a sample point concurrently with the routine sample for a total of three (3) sets of containers for that sample point. Therefore, the MS/MSD samples should be collected from sample points with sufficient sample volume (e.g., monitoring wells that have low recharge are not good candidates). They are labeled and included on the COC as 'Sample ID' MS and 'Sample ID MSD'

Example:

- Sample Point ID is **MW-1**
- Matrix Spike would be **MW-1 MS**
- Matrix Spike Duplicate would be **MW-1 MSD**

The MS/MSD samples are submitted to the laboratory with the routine samples. Once at the laboratory, they will have a known amount of an analyte added, known as the spike. The sample will then be run as a routine sample. Once the results are received they are compared to the results of the routine sample (MW-1 results are compared to MW-1 MS results). There should be a difference in the amount of analyte detected between the samples that should be within the margin of error of the amount of analyte spike that was added to the MS sample. This process is repeated for the MSD sample. This process is an internal review of results for the laboratory to determine the accuracy of their instruments.

One (1) MS/MSD set should be taken for every twenty (20) samples (including Duplicate Samples and Field or Equipment Blank Samples). For example if 12 samples are taken, there should also be a set of MS/MSD samples taken for a total of 14 sample sets submitted to the lab. If 20 samples will be taken, only one set of MS/MSD samples needs to be submitted (total number of samples being 22).

The following QA/QC samples are used for only specific analyses or functions.

5. Trip Blank

A Trip Blank is a form of QA/QC that is utilized to account for possible exposure to an external source of VOCs during storage and transport of the sample containers and samples to and from the laboratory. It consists of a VOC sample container prepared by the laboratory and filled with analyte-free water. Trip Blanks are only required when aqueous samples are being collected for VOC analysis, all other parameters do not need one.

The Trip Blank is placed in the cooler with the sample containers when they are sent form the lab to the client. The Trip Blanks will remain in the cooler with the sample containers at all times. When the samples are collected they are placed in the cooler and put on ice with the Trip Blanks for shipment to the lab. At no time should the Trip Blanks be opened or removed from the coolers containing VOC samples. The Trip Blank should be labeled and included on the COC as **Trip Blank** or **TB**.

Each cooler that contains samples for VOC analysis must have a Trip Blank. It is good practice to combine all VOC containers from a site into one (1) cooler to minimize the number of Trip Blanks required. For example if there are five (5) coolers of samples, place all the VOC containers into one (1) cooler and the remaining containers in the other four (4) coolers. Thus only the VOC cooler requires a Trip Blank, which saves on the cost of analysis.

A positive result on the Trip Blank for a VOC could indicate the samples had been exposed during transportation which can have an effect on the results of the routine samples.

Different laboratories have different practices concerning their Trip Blanks. For example some laboratories will include just one (1) VOA vial as their trip blank while others will utilize multiple vials for theirs. The extra vials are often included only as a backup in the event one of the Trip Blank vials is broken during transport, and will not be analyzed unless necessary.

D. QA/QC Requirements:

None

A. Special Conditions:

Temperature Blanks are a type of QA/QC that fall outside of the umbrella of QA/QC Samples.

A Temperature Blank is a container provided by the lab and is used to obtain the temperature of the cooler upon receipt at the lab, usually with an infrared thermometer. It is generally a ~125 mL plastic bottle filled with tap water.

- The Temperature Blank should be left in the cooler during sampling. When the cooler is being prepared for shipment, place the Temperature Blank in the center of the cooler next to the sample containers. There is no need to open the container; it is filled with tap water and therefore harmless unless otherwise noted on the container.

- It should be noted that not all laboratories require a Temperature Blank. There is no cost associated with the Temperature Blanks in the coolers.

B. References:

United States Environmental Protection Agency (July 2007), *Samplers Guide, Contract Laboratory Program Guidance for Field Samplers*, Section 3.4, retrieved April 6, 2009, from http://www.epa.gov/superfund/programs/clp/download/sampler/clp_sampler_guidance.pdf

United States Environmental Protection Agency (May 2002), *Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers*, Page 34, retrieved December 15, 2010, from http://www.epa.gov/tio/tsp/download/gw_sampling_guide.pdf

C. Appendices or Forms:

None

Sampling Perfluoroalkyl Substances (PFAS) and Perfluorinated Compounds (PFCS)

Standard Operating Procedure #006

A. Purpose and Scope:

The objective of this SOP is to ensure proper and uncontaminated collection of Perfluoroalkyl Substances (PFASs) and other Perfluorinated Compounds (PFCs). PFASs and PFCs are large groups of compounds used in industrial applications, applied to many household products for grease, water, and stain resistance, and heavily used in Aqueous Film Forming Foams (AFFF) which are often used in firefighting. Although there are no federal regulations currently requiring remedial action for these chemicals, many states are adopting rules and regulations regarding these compounds. As rules continue to develop for these contaminants, permitted and non-permitted equipment, materials, and procedures are subject to change. The user of this SOP should consult with applicable regulatory agencies to determine a final list of compounds that need to be analyzed.

Note: This SOP has been developed assuming that there are no elevated concentrations of more toxic chemicals present at the site warranting additional personal protective equipment. However, prior to commencing sampling activities, the sampler should consider all potential contaminants at the site and determine if additional protocols are necessary.

Due to the prevalence of these chemicals in common goods, it is imperative that field personnel are conscious of potential cross contamination. This contamination can be from field equipment, field clothing and PPE, sample containers, decontamination, and food.

B. Equipment and Materials:

Field equipment, field clothing, PPE, sample containers, and any other items used or present on site made of or containing the following materials **ARE NOT PERMITTED**:

- Low Density Polyethylene (LDPE) – pumps and tubing Only [permitted for sample containers]
- Aluminum foil
- Glass
- Polytetrafluoroethylene (PTFE) / Teflon™
- Waterproofed clothing or boots
- Clothing containing PTFE material (i.e. GORE-TEX®)
- New clothing (clothing not washed a minimum of 6 times) or clothing washed with fabric softeners
- Tyvek® material
- Waterproof/treated paper or field books
- Plastic clipboards, binders, or spiral hard cover notebooks
- Post-it notes or other adhesives
- Sharpies or other permanent markers
- Paint pens, marking paint, etc.
- Most repellents, sunscreens, moisturizers, cosmetics, or other related products
- Decon 90

This list is a general guideline for items not permitted other items may also not be permitted. Check with the LaBella Project Manager before using an uncertain item.

Materials such as Teflon™ or PTFE may be found in common sampling equipment. It is important that field personnel examine and assess existing equipment to avoid accidental contamination. The following materials are **ALWAYS PERMITTED** in sampling equipment:

- Stainless steel
- High density polyethylene (HDPE)
- PVC
- Silicone
- Acetate
- Polypropylene
- Loose paper on aluminum clipboards
- Ballpoint pens

The following equipment considerations should be noted when sampling for PFASs and PFCs.

Borehole Installation and Sampling:

- If using hollow stem augers/split spoons or similar, they must be carbon steel and not coated
- If collecting a soil or sediment core sample (e.g. Geoprobe®), it must be collected directly from single-use PVC liners that must not be decontaminated or reused at different locations.

Soil Sampling with a Hand Auger:

- A stainless-steel hand auger without any coatings must be used when sampling.
- Scoops and spatula used must be stainless steel.

Well Development:

- Do not use bailers, unless entirely made of PVC or stainless steel. Teflon in any part of the bailer is not acceptable.
- Do not use bladder pumps, most bladders are made of Teflon. Only bladder pumps with a bladder made of natural rubber are acceptable.
- Other pump types are typically okay but should still be examined for Teflon or other prohibited materials.

Conventional Groundwater Sampling / Low-Flow Groundwater Purging/ Residential Well Sampling:

- Bailers should not be used unless entirely made of PVC or stainless steel. Teflon is not acceptable. Single use disposable polyethylene or silicone materials are also acceptable.
- Tubing can only be made of HDPE or silicone.
- Do not use bladder pumps, most bladders are made of Teflon. Only bladder pumps with a bladder made of natural rubber are acceptable.

- Other pump types are typically okay but should still be examined for Teflon or other prohibited materials.

Surface Soil Sampling:

- A stainless steel spoon and bowl should be used. Cover the bowl with a stainless steel lid where possible between the addition of each aliquot. Do NOT cover the bowl with aluminum foil.

Small Equipment Decontamination:

- Water used for decontamination on site should be laboratory certified "PFAS-free" water.

Field Handling, Packaging, and Shipping:

- Plastic bags must be polyethylene.
- Only ice from water should be used, not chemical (blue) ice.
- These equipment changes can be applied to other SOPs if PFASs and/or PFCs are being sampled.
- Separate coolers that have not stored PTFE or Teflon lids.

C. Procedure:

Standard operating procedures for sampling as outlined in a number of LaBella SOPs should be followed, but with the specific considerations noted below:

Borehole Installation and Sampling:

- When drilling the well use PFAS-free drilling fluids.
- Don't use detergent to decon drilling equipment with the exception of Alconox and Liquinox. Scrub equipment with a plastic brush to remove heavy soiling and rinse thoroughly in tap water. Use a steam cleaner or a triple-rinse of PFOA-free water as the final step. If large quantities of PFOA-free water are not available from the lab, additional QA/QC sampling may be required to verify the source as a potential source of cross-contamination, then triple-rinse in distilled or deionized water.
- Collect a representative water sample used during drilling activities.
- If using an auger, it must be carbon steel and un-coated.

Conventional Groundwater Sampling / Low-Flow Groundwater Purging/ Residential Well Sampling:

- Collect samples from the pump discharge tubing only. Never collect a water sample that has passed through a flow through cell or similar.
- When sampling prioritize drinking water, followed by surface water, followed by groundwater.
- When sampling groundwater; start with the upgradient well(s), then the furthest downgradient of the interpreted or known source, then wells downgradient to the source, and lastly the wells closest to the interpreted or known source.
- When sampling residential wells, any plumber's sealing tape should be noted, as these typically contain PFCs.

- Prior to sample collection, field personnel must wash their hands and wear a new set of nitrile gloves.
- PFAS/PFC samples should be taken first, prior to collecting samples for any other parameters into any other containers. Field personnel should avoid contact with any other type of sample container or package materials.
- When samples are collected and capped, place the sample bottle(s) in an individual sealed plastic bag (i.e. Ziploc®) separate from all other sample parameter bottles, and place in a shipping container packed only with ice made from frozen water.
- After collecting PFOA samples conduct the "Shaker Test:" A small portion of the sample (~10-25 ml) should be shaken by the sample collector on site. If foaming is noted within the sample, this should be documented when samples are submitted for analysis.

Surface Water Sampling:

- Surface water must be collected by inserting a capped sampling container with the opening pointing down to avoid the collection of surface films.
- Where conditions permit, sampling devices should be rinsed with site medium to be sampled prior to collection of the sample.

Surface Soil Sampling:

- PFAS/PFC samples should be taken first, prior to collecting samples for any other parameters into any other containers. Field personnel should avoid contact with any other type of sample container or package materials.

Large Equipment Decontamination:

- Don't use detergent to decon drilling equipment, scrub with a plastic brush and rinse thoroughly in tap water, then triple-rinse in distilled or deionized water.

Field Handling, Packaging, and Shipping:

- Ice should be double bagged and secured to avoid meltwater from contacting sample containers, and/or samples should be in an individual sealed plastic bag.

D. QA/QC Requirements:

A variety of blanks should be collected to trace the sources of any artificially introduced contamination. Rinsate or equipment blanks, field blanks, and trip or travel blanks should all be collected during the sampling event. Rinsate or equipment blanks and field blanks should be collected once per day per matrix or once per 20 samples per matrix, whichever comes first. One trip blank is required per cooler. Matrix Spike and Matrix Spike Duplicate samples should be collect at the same one (1) per 20 frequency as noted above.

Samples should be immediately placed in a cooler maintained at 4±2º Celsius.

E. Special Conditions:

In the event of wet weather field personnel must avoid using personal waterproof or water-resistant rain gear unless the gear is made of PVC or Polypropylene. An alternative is to use a gazebo tent that is only touched or moved prior to or after sampling activities.

No food or drink is permitted on-site, except for bottled water and hydration drinks, such as Gatorade. These drinks should only be consumed in the staging area. When field personnel require a break to eat or drink, they should remove their gloves and coveralls and move away from the sampling location, preferably downwind. When finished eating, field personnel should clean up and put their coveralls back on and don a new pair of gloves prior to returning to the work area.

Visitors to the site are asked to remain at least 30 feet from sampling areas.

F. References:

NYSDEC Guidelines for Sampling and Analysis of PFAS (1/2020)

Chiang, D., Ph.D., P.E., Davis, K., Ph.D., Bogdan, D., Ph.D., Aucoin, M., & Woodward, D. (n.d.). PFAS Sampling. AECOM.

Shoemaker, J. A., Grimmet, P. E., & Boutin, B. K. (2009). Method 537. Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) (EPA/600/R-08/092) (USA, EPA, Office of Research and Development). Cincinnati, OH: U.S. Environmental Protection Agency.

G. Appendices or Forms:

None

Small Equipment Decontamination

Standard Operating Procedure #007

A. Purpose and Scope:

The Proper decontamination of small equipment prevents cross-contamination of samples, introduction of contaminants to clean sites, and the mixture of incompatible substances. Equipment decontamination also assures the health and safety of all equipment users. Procedures for decontamination procedures vary depending on the matrix sampled, level of contamination, type of contaminants, and the target analytes of the sampling event. The procedure outlined in this SOP is a general procedure for field/ warehouse decontamination of equipment associated with water, soil and other surficial sampling activities.

Decontamination should be performed before sampling work commences and after each sampling event. Decontaminated equipment should be protected from contact with surroundings during storage and transport, and should be handled as little as possible before its use and always with disposable gloves. Note that all waste generated by decontamination procedures including liquids, solids, rags, gloves, etc., will be collected and disposed of properly.

B. Equipment and Materials:

- Alconox®
- Tap water
- Distilled and deionized water
- 10% Nitric acid rinse
- Acetone (or other pesticide grade organic solvent)
- 1-Gallon pressure spray bottles
- Long-handled brushes
- 5-Gallon plastic buckets

C. Procedure:

Note that if it is logistically impractical/ impossible to complete all steps listed below at the field site, Steps 1-4 should be performed prior to transport of equipment to a facility where all steps can be completed if required. All field decontamination should take place over a container and liquids should be properly disposed of.

1. Disassemble equipment as necessary.
2. Remove gross contamination from equipment by scraping, brushing and rinsing with tap water
3. Wash with Alconox® or other laboratory grade detergent to remove all visible particulate matter and residual oils and grease.
4. Rinse with tap water to remove detergent.
5. Rinse with distilled and deionized water.
6. Field personnel will use a new pair of outer gloves before handling sample equipment after it is cleaned.
7. If equipment will not be used immediately, wrap in aluminum foil (unless sampling for metals or PFAS analysis) or seal in plastic bags (unless sampling for organics analysis) and store.
8. Record the date and method of decontamination on foil/bag and equipment log

D. QA/QC Requirements:

When necessary, field equipment rinsate blanks will be collected by pouring analyte-free water over decontaminated equipment and submitting them to the lab with the other blanks and samples. These blanks are used to assess the quality of equipment decontamination.

E. Special Conditions:

Reusable PPE such as respirators, chemical-resistant overboots and gloves shall also undergo the equipment decontamination sequence.

If acetone is a known or expected contaminant another solvent may be substituted. Note that methanol cannot be used for decontamination when sampling gasoline or its by-products. Additional decontamination procedures may be required for particular contaminants or when samples are to be analyzed at very low concentrations.

F. References:

NYSDEC "Spill Guidance Manual," Section 2.4, https://www.dec.ny.gov/regulations/2634.html.

USEPA, 1994. Sampling Equipment Decontamination. Environmental Response Team SOP #2006, Revision #0.0. Edison, NJ. http://www.ert.org.

USEPA, 1996. *Environmental Investigations Standard Operating Procedures and Quality Assurance Manual*. Region 4, Science and Ecosystem Support Division. Athens, GA. http://www.epa.gov/region04/sesd/eisopqam/eisopqam.html

Wilde, F.D., ed., 2004. *Cleaning of Equipment for water sampling (ver. 2.0)*: U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A3, April, accessed January 5, 2009 at http://pubs.water.usgs.gov/twri9A3/

G. Appendices or Forms:

None

Residual Waste Management

Standard Operating Procedure #008

A. Purpose and Scope:

The following standard operating procedure (SOP) presents a description of the methods generally employed for the management of residual waste. Field personnel are responsible for ensuring that state-specific standards/guidelines/regulations are followed, where applicable. In addition, field personnel are responsible for coordination efforts associated with the waste disposal facility, if known.

Improper handling and storage of residual waste can result in leaks and spills and pose a serious threat to the quality of the environment. Timely characterization and disposal of residual wastes shall be conducted in order to not exceed onsite quantity and/or storage regulations.

B. Equipment and Materials:

Off-Site transportation and disposal of residual waste will be performed by a licensed waste hauler under the direction of LaBella. The company will supply the necessary equipment and materials needed to remove the residual waste from the Site and transport it to an approved waste disposal facility.

The field geologist/engineer will obtain the necessary sample bottles with the associated preservatives, if required, from the analytical laboratory. In addition, a flame ionization detector (FID), photoionization detector (PID) and/or gas meter will be used to screen waste containers soils for the presence of volatile organic compounds (VOCs).

All other equipment required during transportation/disposal activities is the responsibility of the Contractor (waste hauler).

C. Procedure:

1. During remedial activities all residual waste, including, but not limited to, soil cuttings, decontamination wash/rinse water, purge water and personal protective equipment (PPE) shall be containerized in United States Department of Transportation (USDOT) approved 55-gallon drums or similar waste containers, unless the Work Plan indicates otherwise. Each drum shall contain similar materials/matrices (e.g., soil, water, PPE).

2. Label each waste container using a permanent marker and weather proof label with the following:
   a. Description of the container contents
   b. Site name and address
   c. Name of Site contact and associated phone number

Waste container labels shall be legible and easily understood by those unfamiliar with the Site.

3. Upon completion of remedial activities, the field geologist/engineer will conduct waste characterization of the residual waste prior to off-Site transportation and disposal. Depending upon the type of waste present, various waste disposal facilities may have different testing requirements. LaBella will complete the required analytical testing. Upon receipt of analytical data and

coordination with the disposal facility, the field geologist/engineer will supervise the removal of the waste from the Site

4. Waste containers shall be transported and stored in a secure location on-Site. All waste containers shall be located in one location, if possible.

5. If waste containers are stored for a period of time prior to collecting waste characterization samples, all waste containers shall be inspected for signs of the potential presence of explosive/flammable gases and/or toxic vapors. These signs include pressurization (bulging/dimples); crystals formed around the drum opening; leaks, holes, stains; labels, marking; composition and type (steel/poly and open/bung); condition, age, rust; and sampling accessibility. Drums showing evidence of pressurization and crystals shall be further assessed to determine proper drum opening techniques.

6. All metal waste containers not in direct contact with the earth shall be grounded.

7. Open the waste container with spark resistant tools (e.g., brass, beryllium).

8. Screen the waste containers for explosive gases and/or toxic vapor with appropriate air monitoring instruments as necessary.

9. Obtain the necessary sample bottles with the associated preservatives, if required, from the analytical laboratory.

10. Each matrix (e.g., soil, water) shall be sampled for waste characterization purposes. The field geologist/engineer shall determine the quantity of similar waste characterization samples to be collected from the waste containers in conjunction with the project manager and/or waste disposal facility. Containers with similar wastes (e.g., soil, water) generated from one area of the site may require only one composite sample from each of the waste containers. This determination shall also be made in conjunction with the project manager and/or waste disposal facility.

11. Use a decontaminated spade or shovel to collect representative solid waste samples from each waste container or use a beaker, bailer or similar mechanism to collect representative liquid waste samples from each waste container.

12. Immediately place sample in the pre-preserved sample containers and close the waste container(s).

13. Chill all samples to 4^{o}C from sample collection until laboratory analysis.

14. Package and ship samples or arrange courier service.

D. QA/QC Requirements:

This section includes QA/QC requirements associated with waste management activities. The following general requirements apply to this SOP:

1. All data must be documented on field data sheets or within site logbooks.
2. All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified in the work plan.
3. Equipment checkout and calibration activities must occur prior to sampling/operation, and must be documented.

E. Waste Determination:

A Contained-In Determination shall be submitted to the NYSDEC Division of Materials Management for review/approval to dispose of waste containing listed Hazardous Waste as non-hazardous waste, and specific sampling and analyses may be necessary for the NYSDEC Contained-In Determination decision.

F. Special Conditions:

In no case will LaBella be considered the generator of the waste. The site owner shall always take responsibility for waste disposal. Additionally, LaBella may only act as agent for the owner relative to signing manifests with specific permission from LaBella in-house counsel. In most every case, the owner should sign waste manifests.

G. References:

United States Environmental Protection Agency, Science and Ecosystem Support Division, Waste Sampling Standard Operating Procedure: http://www.epa.gov/region4/sesd/fbqstp/Waste-Sampling.pdf

H. Appendices or Forms:

None

Borehole Installation and Sampling

Standard Operating Procedure #009

A. Purpose and Scope:

The following SOP presents a description of the methods generally employed for the installation of boreholes and the collection of subsurface soil samples. Boreholes are typically advanced to define geologic conditions; allow the installation of monitoring wells and piezometers; and allow the collection of subsurface soil samples (generally above the water table) for chemical analysis. Although several manual methods are available for the collection of subsurface soils samples (e.g. hand augers, post-hole augers, the most common method used by LaBella to advance boreholes is a drill rig equipped with hollow-stem augers (HSA) or direct-push technology (DPT). Representative samples are most often collected utilizing split-spoon samplers or Macrocore technology.

The purpose of drilling test borings is typically to characterize the lateral and vertical extent of contamination in the unsaturated zone. The test borings may also be used to allow the installation of ground water monitoring wells. Test borings may also be used to determine the subsurface characteristics for the purpose of geotechnical investigations.

B. Equipment and Materials:

Drilling will be performed either by LaBella or by a licensed drilling firm under the direction of LaBella staff. The drilling field crew will consist of a driller, a driller's assistant, and a LaBella field geologist/engineer. The field geologist/engineer will supervise drilling operations and conduct the geologic logging of the boreholes. Typical equipment needed for installation of monitoring wells will vary somewhat between drill rigs but will generally include the following:

- Truck or Track mounted Drill Rig equipped with a rotary head
- Rig with hydraulic hammer for direct push methods
- Split spoon or Macrocore sample Barrels
- Hollow stem augers with cutter head lead auger
- Auger fork
- Flush joint casing with a drive shoe
- Drill rods
- Auger plug or disposable point

C. Procedure:

1. Subcontractor Responsible for Utility Clearance - Subcontractor shall take all reasonable precautions, including contacting the appropriate utility organizations (UFPO, Dig Safe, etc.), in order to verify there are no buried utilities at the test boring and test pit locations.

2. The drilling rig and sampling equipment may be required to be decontaminated by steam-cleaning (high pressure, hot water) prior to drilling and in between borings, depending on the job requirements.

3. The borings will be drilled with direct push technology (DPT), hollow-stem augers, flush joint casing, open hole or any combination depending on the type of information needed, geologic

conditions, and other limitations that may be imposed due to contamination or state or federal guidelines. The boring shall be advanced to match the sampling interval (continuous or standard sampling).

4. Drilling progress and information about the formations encountered shall be recorded by the geologist on the field boring log. The information should include total depth drilled, depths and thickness of strata, problems with borehole advancement, fill materials encountered, and water levels.

Hollow Stem Auger/Flush Joint Driven Casing

a) At the chosen depth interval, drive a clean, standard, 24-inch long, 2-inch O.D. split-spoon sampler into the soil a distance of 24 inches using a 140 lb hammer, free falling 30 inches. Record the number of blows required to drive the sampler every 6 inches on the field boring log. Discontinue driving the sampler if 100 blows have been applied and the sampler has not been driven 6 inches. If 6 inches of penetration has been achieved, discontinue driving the sampler after 50 blows has failed to penetrate fully any of the remaining 6 inch intervals. The first six inches seats the spoon, the next 12 inches represents the Standard Penetration Resistance, and the last six inches is driven to insure sample recovery.

b) Retrieve the sampler from the borehole and place it on a clean, flat surface. Open the sampler and immediately scan the sample with an air monitoring instrument (e.g., PID) if appropriate to the purpose of the investigation. Record instrument readings on the field boring log.

Direct Push Technology

a) The DPT is hydraulically powered and mounted in a customized four-wheel drive vehicle. Position the base of the sampling device on the ground over the sampling location and hydraulically raise the vehicle on the base. As the weight of the vehicle is transferred to the probe, the probe is pushed into the ground.

b) Soil samples will be collected with a Macrocore (or equivalent). The sample tube is pushed and/or vibrated to a specified depth. The interior plug of the sample tube is then removed by inserting small-diameter threaded rods and retracting the plug. Drive the sample tube an additional four (4) to five (5) feet to the sampler terminal depth. Withdraw the probe sections and sample tube.

Sample Review

a) Further, describe and record the following properties of the sample: Sample length recovered, presence of any slough in sampler, basic soil type (e.g., sand, gravel, clay), structure, texture, sorting, grain size, grain shape, degree of saturation, competency, color, odor, staining, and presence of foreign material(s).

b) After the soil within the sampler has been described, it will be placed in sealed sample jars directly from the sampling device.

c) If appropriate to the investigation, the air space surrounding the borehole shall be scanned with a FID or PID and Explosimeter during all drilling activities to determine the presence or absence of volatile organic compounds. Results of this air monitoring shall be recorded on the Geologic Field Log. Activities shall proceed according to the site HASP if the presence of volatile organic compounds is indicated.

5. Upon completion of the test boring, all drill cuttings shall either be placed back in the borehole or will be drummed based on potential contaminants encountered.

6. Note the locations of the borings on a site map and/or mark the locations of the boreholes with a labeled wooden stake

D. QA/QC Requirements:

Follow QA/QC requirements for field documentation.

E. Special Conditions:

1. Drilling Subcontract - The Field Team Leader must be familiar with the scope, fee, schedule, and all the terms and conditions of the drilling subcontract. When contractual issues or questions arise during the fieldwork, the Field Team Leader should communicate with the Project Manager and with the owner/client as appropriate.

2. Abandoned Borehole - If the contractor is not able to finish the drilling or has to abandon the borehole due to loss of tools, accidents or any unforeseeable circumstances, the contractor should remove the casings or drive pipes already in the hole and refill it with native soil cuttings, sand, grout, or as approved by the Engineer and NYSDEC Project Manager. All materials extracted from the hole, after refilling it will be managed as investigation derived material and will be disposed of accordingly. Typically, another borehole will be attempted in the area of the initial borehole attempt.

3. Subcontractor/Driller Standby Time - Document any conditions that may result in driller/subcontractor standby time. Such conditions may include adverse weather conditions, lack of access to the property, utilities not marked out, etc. Standby time may result in additional costs from our subcontractor that may not be planned for or approved. Communicate any conditions that may result in standby time to the LaBella Project Manager as soon as possible.

F. References:

ASTM Standard D 1586
NYSDEC DER-10, May 2010 (or current version)

G. Appendices or Forms:

Standard Boring Log Form

Field Description of Soils

Standard Operating Procedure #010

A. Purpose and Scope:

The objective of this SOP is to establish a consistent method for field staff to follow when completing the description of soil samples and entry onto borehole logs. Consistency with description is important because many employees are involved in logging soils, frequently within the same project. Uniformity is critical to allowing meaningful subsurface interpretations using data generated from multiple sources.

This procedure will be used during all field activities when borehole subsurface drilling or surface soil sampling is occurring. These activities should be documented as described herein.

B. Equipment and Materials:

Some or all of the following equipment may be required for completing the procedures outlined in this SOP:

- Hand lens
- Field notebook and borehole log forms
- Pencils
- Stiff scraper
- Standard grain size examples
- Squirt bottle with water
- Small clear containers with lids

C. Procedure:

a. LaBella utilizes a combination of the USCS and Modified Burmister methods of soil descriptions.

The Unified Soil Classification System (USCS) is the most widely used engineering/geotechnical soil classification method. The USCS is based on engineering properties of soil which are effected by grain size, water content, grain size distribution, and compaction. This system is often used for classifying soils encountered in boreholes, test pits, and at the surface. The following properties form the basis of USCS soil classification: SOP:

- Hand lens
- Percentage of gravel, sand, and fines;

1. Shape of the grain size distribution curve; and
2. Plasticity and compressibility characteristics.

b. The Modified Burmister Method is used for the verbal description of soil samples. The Modified Burmister classification system is based on grain size and plasticity, but differs from the Unified Soil Classification System in that it includes nomenclature to describe the soil's texture, color, mineralogy, and geological origin.
c. The following step by step procedure will be used for the field classification of soils encountered during subsurface activities (i.e. borehole drilling, trenching, etc.). References to aid in the development of a soil description are included in Appendix A and Appendix B.

A complete soil description should contain the following information in the order indicated:

1. Color
2. Soil Moisture
3. Major grain size component.
4. Minor grain size component(s) with modifier
5. Gradation or Plasticity
6. Density/Consistency
7. Soil Structure or Mineralogy (if necessary)
8. Evidence of Contamination (odor, staining, etc.)
9. USCS symbol

Example: Brown, wet, SAND, some Silt, trace gravel, no petroleum odor.

a. Grain Size: There are five major grain sizes: Boulders, Cobbles, Gravel, Sand, and Silt/Clay.

- Boulders are > 8"
- Cobbles are 3" to 8"
- Gravels range in size from 0.2" to 3.0" in diameter and are subdivided into Fine gravel (>0.2" to 0.75") in diameter and Coarse gravel (>0.75" to 3.0")
- Sands range in size from 0.002" to 0.2" and are subdivided into coarse, medium and fine. Standard comparison cards are available for field use.
- Silt and clay are difficult to distinguish in the field. An attempt is made, however, to describe the soil as one of the six following classifications: silt, clayey silt, silt and clay, clay and silt, silty clay, or clay. The field description may be later verified in a lab hydrometer test if required by the project. For field descriptions of silts and clays, the following guidelines should be used:

SILT: ----------gritty, no threads can be rolled
Clayey SILT: ----------rough to smooth, difficult to roll threads
SILT and CLAY: -------rough to smooth, difficult to roll threads
CLAY and SILT: -------smooth and dull, threads can be rolled readily
Silty CLAY: ----------smooth and shiny, threads can be rolled very readily
CLAY: ----------very shiny and waxy, threads can be rolled very easily

Grain size descriptions are written with the major grain size component listed first. In order to be considered a major grain size component, the component must constitute greater than 50% of the sample. Major grain size components are written in all capital letters and are underlined. If no grain size component constitutes greater than 50% of the sample, the sample is classified by describing the distribution of the sand component of the sample first (ex. f.m. Sand). Then, the other grain size components are described and the appropriate percentage modifier (see below) is assigned. The reader can then determine the percentage of sand in the sample by subtracting the sum of the modifier percentages from 100%. An example is shown below.

Other grain size components, if present, are listed in order of decreasing percentage.

The following modifiers are used to indicate the relative proportion of a minor grain size component in the soil:

Estimated amount: Modifier

- 35 percent to 50 percent: .... And
- 20 percent to 35 percent: .... Some
- 10 percent to 20 percent: .... Little
- < 10 percent: ..... Trace

Minor grain size components assigned a trace or little modifier are written in lower case letters. Minor grain size components assigned a "some" or "and" modifier are written with the first letter of the grain size capitalized (ex. f. Sand). When multiple minor grain size components are described with the same modifier, finer grain sizes precede coarser grain sizes.

b. Gradation or Plasticity. Granular soils (i.e., sands or gravels) should be described as well- graded, poorly-graded, uniform, or gap-graded, depending on the gradation of the minus 3-inch fraction. Cohesive soils (i.e., silts and clays) should be described as nonplastic, slightly plastic, moderately plastic, or highly plastic, depending on results of the manual evaluation for plasticity.

c. Color: Common colors and their abbreviations are listed below.
   - Orange: ----Or
   - Tan: ---------Tan
   - Black: -------Blk
   - Brown: -----Br
   - Grey: -------Gr
   - Red: --------Red

d. Moisture Content: The moisture content is determined in the field and is described using the following terms:
   - Dry: ---------- (dab finger in soil, no moisture on finger)
   - Moist: ---------- (dab finger in soil, moisture on finger)
   - Wet:---------- (water visible)
   - Saturated: ------ (all pore spaces filled

e. Density/Consistency: The density or consistency of the soils is classified according to the "N" value of the soil. The "N" value is the sum of the middle two blow counts determined during a standard penetration test. The following classifications are used:

Table 1
Standard Penetration Test for Soil Density

N-Blows/Feet	Relative Density
Cohesionless Soils	
0 - 4	Very loose
5 - 10	Loose
11 - 30	Medium
31 - 50	Dense
>50	Very dense
Cohesive Soils	
0 - 2	Very soft
3 - 4	Soft
5 - 8	Medium
9 - 15	Stiff
16 - 30	Very stiff
>30	Hard

f. Odor (if present): Odor is described from a warm, moist sample. The odor should only be described it is organic or unusual. An organic odor will have distinctive decaying vegetation smell. Unusual odors such as petroleum product, chemical, etc. should be described appropriately.

g. Soil Texture and Structure (if present): Description of particle size distribution, arrangement of particles into aggregates, and their structure. This description includes joints, fissures, slicked sides, mottling, bedding, veins, root holes, debris, organic content, and residual or relict structure (laminations, etc.), as well as other characteristics that may influence the movement or retention of water or contaminants.

h. USCS symbol: A USCS symbol is assigned to each symbol. The USCS recognizes 15 soil groups and uses names and letter symbols to distinguish between these groups.

The coarse grained soils are subdivided into gravels (G) and sands (S). Both the gravel and sand groups are divided into four secondary groups. Fine grained soils are subdivided into silts (M) and clays (C).

Soils are also classified according to their plasticity and grading. Plastic soils are able to change shape under the influence of applied stress and to retain the shape once the stress is removed. Soils are referred to either low (L) or high (H) plasticity. The grading of a soil sample refers to the particle size distribution of the sample. A well graded (W) sand or gravel has a wide range of particle sizes and substantial amounts of particles sized between the coarsest and finest grains. A poorly graded (P) sand or gravel consists predominately of one size or has a wide range of sizes with some intermediate sizes missing.

Soils which have characteristics of two groups are given boundary classifications using the names that most nearly describe the soil. The two groups are separated by a slash. The same is true when a soil could be well or poorly graded. Again the two groups are separated by a slash

First and/or second letters	
Symbol	**Definition**
G	gravel
S	sand
M	silt
C	clay
O	organic

Second letter	
Letter	**Definition**
P	poorly graded (uniform particle sizes)
W	well graded (diversified particle sizes)
H	high plasticity
L	low plasticity

Example:

A. Sample with Major Component:
Brown, wet, **f. SAND**, Some Silt, little m.c. sand and f. gravel, trace c. gravel, , m. compact, petroleum odor (SM)

B. Sample with No Major Component:
Brown, moist, f.m.c. Sand, Some Silt and f. Gravel, , v. compact, no evidence of contamination (SM)
(In this sample, the describer classified the sample as containing 30% silt and 30% f. gravel. The percentage of sand would then be determined as: 100%-30%-30%=40%).

D. QA/QC Requirements:

None

C. Special Conditions:

None

D. References:

Burmister, D.M., Suggested Methods of Test for Identification of Soils.

The Unified Soil Classification System (USCS).

Classification of Soils for Engineering Purposes: Annual Book of ASTM Standards, D 2487-83, American Society for Testing and Materials.

E. Appendices or Forms:

ASTM Criteria for Describing Soils

Legend to Subsurface Logs

Low Flow Groundwater Purging and Sampling

Standard Operating Procedure #011

A. Purpose and Scope:

Low-flow purging is purging using a pumping mechanism that produces low-flow rates [less than 1 liter per minute (lpm) or less than 0.26 gallon per minute (gpm)] that cause minimal drawdown of the static water table and usually employs a flow-through cell in which geochemical parameters are continuously monitored. These parameters may include dissolved oxygen content, oxidation-reduction potential (redox), conductivity, turbidity, and pH.

The intent of this sampling protocol is to collect a representative sample from the monitored groundwater zone. A representative sample may be obtained when all the monitored chemical parameters have stabilized, thus qualitatively demonstrating that the groundwater being purged is in equilibrium (refer to Table 3). Samples are collected directly from the pumping mechanism with minimum disturbance to the aquifer groundwater. The low-flow/low volume purging method (purging to parameter stability) tends to isolate the interval being sampled, which provides more accurate water quality measurements and reduces the volume of purge water generated. This method has an advantage in that it can limit vertical mixing and volatilization of volatile organic compounds in solution within the well casing or borehole as compared to high-flow purging and sampling.

Low-flow purging and sampling is appropriate for collection of groundwater samples for all groundwater contaminants, including inorganic compounds, metals, pesticides, PCBs, volatile and semi-volatile organic compounds (VOCs and SVOCs), other organic compounds, radiochemical and microbiological constituents. This method is not applicable to the collection LNAPL or DNAPL.

B. Equipment and Materials:

The require equipment and materials include the following:

- Inertial pump
- Submersible pump
- Disposable bailers
- Generator
- Sample bottles
- Bailing twine and rope
- Field analyses meters
- Sampling gloves
- Water level meters
- Filtration system
- 2-Inch grundfos rediflow pump and controller
- Well sampling forms

Depending on the purging method to be used, there are specific equipment limitations. **Table 1** provides a description of the various methodologies and their applicability. The proper selection of sampling devices or pumps is critical to the quality and representation of the sampling results. The following table provides a summary of the acceptable sampling methods for the various compounds of concern.

LOW-FLOW GROUNDWATER PURGING/SAMPLING

Table 1

Acceptable Sampling Methods for Compounds of Concern

Method	VOCs	Semi-VOCs	Metals and Inorganics	PFAS	Petroleum Hydrocarbons		General Chemistry
					C3-C16	C16+	
Peristaltic Pump	X	1	3	3	X	1	2
Centrifugal Pump	2	3	3	2	2	2	3
Submersible Pump W/Controller	2	3	3	2	2	3	3
Bailer	2	2	2	2	2	2	2
Bladder Pump	3	3	3	2	3	3	3
DPIS	3	3	2	1	2	2	2
Diffusion Sampler	2	2	X	1	2	2	X

1 – Not Recommended
2 – Useful with limitations
3 – Recommended method
X – Unacceptable
Note: Centrifugal Pump – assumed at a low-flow rate (no greater than 1 Lpm)

C. Procedure:

The following procedures should be followed:

1. The wells will be sampled in order from the least contaminated well to the most contaminated well.
2. Using a decontaminated measurement probe, determine the water level in the well; then calculate the fluid volume in the casing.
3. Setting up the Pump:
   a. Dedicated Systems

      Installation of any device into a well disturbs the stratification typically exhibited in a well due to laminar flow of groundwater in the well. Insertion also potentially mobilizes suspended solids in the water column due to disturbance of settled and solids in the casing and agitation of water in the filter pack. Dedicated systems result in lower initial turbidity values and lower purge volumes to achieve stabilized indicator parameter readings, and should be considered when a well will be sampled multiple times.

b. Portable Systems

If portable systems are used, they must be placed carefully into the well and lowered into the screen zone as slowly as possible to avoid disturbance of the groundwater resulting in non-equilibrium conditions. As a result, longer purge times and greater purge volumes may be necessary to achieve indicator parameter stabilization. In general, this may require that after installation, the portable pump should remain in place for a minimum of 1-2 hours to allow settling of solids and re- establishment of horizontal flow through the screen zone. If initial turbidity readings are excessive (>50 NTU), pumping should cease and the well should rest for another 1-2 hours before initiating pumping again. In wells set in very fine-grained formations, longer waiting periods may be required.

4. The flow rate used during purging must be low enough to avoid increasing the water turbidity. The following measures should be taken to determine the appropriate flow rate:
    a. The flow rate shall be determined for each well, based on the hydraulic performance of the well.
    b. The flow must be adjusted to obtain stabilization of the water level in the well as quickly as possible.
    c. The maximum flow rate used should not exceed 1 liter per minute (0.26 gpm).
    d. Once established, this rate should be reproduced with each subsequent sampling event.
    e. If a significant change in initial water level occurs between events, it may be necessary to re- establish the optimum flow rate at each sampling event.
5. Water Level Monitoring:
    a. Should not fluctuate more than 0.1 meters (~4 inches).

6. Measurement of indicator parameters (Dissolved oxygen content, redox potential, specific conductance, temperature and pH) is required. Continuous monitoring of water quality indicator parameters is used to determine when purging is competed and sampling should begin. Stabilized values, based on selected criteria listed in **Table 2** should be met prior to sampling. The use of an in-line flow cell (closed) system is recommended for measuring indicator parameters, except for turbidity.

    For turbidity measurement, a separate field nephalometer should be used. Indicator parameter collection is more important when low-flow purging is used compared to the high-flow purging method. Generally, measurements are taken every 3 to 5 minutes and water chemistry parameters are considered to be stable when they are within the following ranges for three (3) consecutive readings:

Table 2
Stability Criteria for Low-Flow Purging

Constituent	Criteria
Dissolved Oxygen Content (DO)	± 10%
Oxidation-Reduction Potential (redox)	± 10 mv
Specific Conductance	± 03% of reading
pH	± 0.1 units
Turbidity	± 10%
Temperature	NA

Turbidity should be below 50 NTU, if possible. If sample turbidity cannot be reduced below 50 NTU, a field filtered sample shall be collected for metals analysis in addition to an unfiltered sample. Record these readings on the well sampling log.

7. The order in which samples are to be collected is as follows:
    - Per- and polyfluoroalkyl substances (PFAS)
    - Volatile Organic Compounds (VOCs)
    - Semi-Volatile Organic Compounds (SVOCs)
    - Purgeable organic carbon (POC)
    - Purgeable organic halogens (POX)
    - Total organic carbon (TOC)
    - Total organic halogens (TOX)
    - Extractable organics
    - Total metals
    - Dissolved metals
    - Phenols
    - Cyanide
    - Sulfate and chloride
    - Turbidity
    - Nitrate and ammonia
    - Radionuclides

8. When collecting aliquots for analysis of volatile organic compounds, make absolutely certain that there are no bubbles adhering to the walls or the top of the VOA container.
9. Add appropriate preservatives to samples, as required.
10. Label the sample containers with all necessary information and complete all chain-of-custody documents and seals.
11. Place the properly labeled and sealed sample bottles in a cooler with ice and maintain at 4°C for the duration of the sampling and transportation period. Do not allow samples to freeze.

D. QA/QC Requirements:

To the extent possible, all samples should be collected using the same type of equipment and in the same manner to ensure comparability of data.

E. Special Conditions:

Because the methodology requires that disturbance to the water column in the well be minimized, the same pumping device used for purging should be used for sampling.

Sample collection will be performed utilizing either an inertial pump system or disposable bailer. If the inertial pump system is used, samples will be obtained through the dedicated polyethylene tubing while maintaining a low-flow. Should disposable bailers be utilized, the sampling will be performed as follows:

Attach a new bailer line to the disposable bailer equipped with a single check valve. Check the operation of the check valve assembly to confirm free operation. Lower the single check valve bailer slowly into the well until it contacts the water surface. Then lower the bailer just below the water surface with a minimum of disturbance. When filled with groundwater, slowly raise the bailer to the surface. Tip the bailer to allow the water to slowly discharge from the top and to flow gently down the inside of the sample bottle with minimum entry turbulence and aeration.

F. References:

Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures" by Robert Puls and Michael J. Barcelona dated April 1996.

G. Appendices or Forms:

Low Flow Sampling Form

Sub-Slab Vapor Sampling and Analysis Using T0-15 Method

Standard Operating Procedure #012

A. Purpose and Scope:

This standard operating procedure (SOP) describes the procedures to install a sub-slab sampling port and collect sub-slab vapor samples for the analysis of volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method TO-15 (TO-15). The TO-15 method uses a 6-liter SUMMA® passivated stainless-steel canister. An evacuated SUMMA canister (less than 28 inches of mercury [Hg]) will provide a recoverable whole-gas sample of approximately 5.5 liters when allowed to fill to a vacuum of 2 inches of Hg. The whole-air sample is then analyzed for VOCs using a quadrupole or ion-trap gas chromatograph/mass spectrometer (GS/MS) system to provide compound detection limits of 0.5 parts per billion volume (ppbv). The following sections list the necessary equipment and detailed instructions for installing sub-slab vapor probes and collecting samples for VOC analysis.

B. Equipment and Materials:

The equipment required to install a **permanent sub-slab vapor probe** is presented below:

- Electric impact drill
- 5/8-inch and 1-inch-diameter concrete drill bits for impact drill
- Stainless steel vapor probe (typically 3/8-inch outside diameter [OD], 2- to 2.5- inch long [length will ultimately depend on slab thickness], 1/8-inch inside diameter [ID] pipe, stainless steel pipe nipples with 0.5-inch OD stainless steel coupling, and recessed stainless steel plugs
- Photoionization detector (PID), Report in Parts per billion with PPB Rae
- Polyethylene tubing
- Quick-setting hydraulic cement powder

The equipment required to install a **temporary sub-slab vapor probe** is presented below:

- Electric impact drill
- 5/8-inch-diameter concrete drill bit for impact drill
- 3/8-inch high density polyethylene (HDPE) tubing
- PID
- Hydrated bentonite

The equipment required for vapor sample collection is presented below:

- Stainless steel SUMMA® canisters (order at least one extra, if feasible)
- Flow controllers with in-line particulate filters and vacuum gauges; flow controllers are pre-calibrated to specified sample duration (e.g., 30 minutes, 8 hours, 24 hours) or flow rate (e.g., 200 milliliters per minute [mL/min]); confirm with the laboratory that the flow controller comes with an in-line particulate filter and pressure gauge (order at least one extra, if feasible)
- 1/4-inch ID HDPE tubing
- Twist-to-lock fittings
- Stainless steel “T” fitting (if collecting duplicate [i.e., split] samples)
- Portable vacuum pump capable of producing very low flow rates (e.g., 100 to 200 mL/min)
- Rotameter or an electric flow sensor if vacuum pump does not have a flow gauge

- Tracer gas source (e.g., helium)
- PID
- Appropriate-sized open-end wrench (typically 9/16-inch)
- Chain-of-custody (COC) form
- Sample collection log
- Field notebook

C. Procedure:

The following procedures should be followed:

1. Temporary Vapor Probe Installation:

Temporary sub-slab soil vapor probes are installed using an electric drill and manual placement of tubing. The drill will be advanced to approximately 2 inches beneath the bottom of the slab. A 3/8-inch ID hole is installed through the slab. The tubing is inserted into the hole and purged prior to collection of a vapor sample. Probe locations are resealed after sampling is complete.

a. Remove, only to the extent necessary, any covering on top of the slab (e.g., carpet).
b. Drill a 3/8-inch-diameter hole through the concrete slab using the electric drill.
c. Advance the drill bit approximately 2 inches into the sub-slab material to create an open cavity.
d. Insert the tubing approximately 1.5 inches into the sub-slab material.
e. Prepare a hydrated bentonite mixture and apply bentonite at slab surface around the tubing.
f. Purge the soil vapor probe and tubing with a portable sampling pump prior to collecting the vapor sample (see sample collection section below).
g. Proceed to vapor sample collection.
h. When the sub-slab vapor sampling is complete, remove the tubing and grout the hole in the slab with quick-setting hydraulic cement powder or other material similar to the slab.

2. Sub-Slab Vapor Sample Collection:

a. Record the following information in the field notebook, if appropriate (contact the local airport or other suitable information source [e.g., site-specific measurements, weatherunderground.com] to obtain the information):
    i. wind speed and direction
    ii. ambient temperature
    iii. barometric pressure
    iv. relative humidity

b. Connect a portable vacuum pump to the sample tubing. Purge 1 to 2 (target 1.5) volumes of air from the vapor probe and sampling line using a portable pump [purge

volume = 1.5 πr^2h] at a rate of approximately 100 mL/min. Measure organic vapor levels with the PID.

c. If necessary, check the seal established around the soil vapor probe by using a tracer gas (e.g., helium) or other method established in the state guidance documents. [Note: Some states (e.g., New York) may not require use of a tracer gas in connection with sub-slab sampling. See Special Conditions Section of this SOP.
d. Remove the brass plug from the SUMMA® canister and connect the flow controller with in-line particulate filter and vacuum gauge to the SUMMA® canister. Do not open the valve on the SUMMA® canister. Record in the field notebook and on the COC form the flow controller number with the appropriate SUMMA® canister number.
e. Connect the polyethylene sample collection tubing to the flow controller and the SUMMA® canister valve. Record in the field notebook the time sampling began and the canister pressure.
f. Open the SUMMA® canister valves. Record in the field notebook the time sampling began and the canister pressure.
g. Take a photograph of the SUMMA® canister and surrounding area.

3. Termination of Sample Collection:

a. Arrive at the SUMMA® canister location at least 10 to 15 minutes prior to the end of the required sampling interval.
b. Record the final vacuum pressure. Stop collecting the sample by closing the SUMMA® canister valves. The canister should have a minimum amount of vacuum (approximately 2 inches of Hg or slightly greater).
c. Record the date and local time (e.g. 24-hour basis) of valve closing in the field notebook, sample collection log (attached), and COC form.
d. Remove the particulate filter and flow controller from the SUMMA® canister, reinstall the brass plug on the canister fitting, and tighten with the appropriate wrench.
e. Package the canister and flow controller in the shipping container supplied by the laboratory for return shipment to the laboratory. The SUMMA® canister does not require preservation with ice or refrigeration during shipment.
f. Complete the appropriate forms and sample labels as directed by the laboratory (e.g., affix card with a string).
g. Complete the COC form and place the requisite copies in a shipping container. Close the shipping container and affix a custody seal to the container closure. Ship the container to the laboratory via overnight carrier (e.g., Federal Express) for analysis.

4. Vapor Monitoring Point Abandonment:

a. Once the vapor samples have been collected, a temporary vapor monitoring point will be abandoned by removing the sampling materials and filling the resulting hole with concrete. Replace the surface covering (e.g., carpet) to the extent practicable.

D. QA/QC Requirements:

Vapor sample analysis will be performed using USEPA TO-15 methodology. This method uses a quadrupole or ion-trap GC/MS with a capillary column to provide optimum detection limits. The GC/MS system requires a 1-liter gas sample (which can easily be recovered from a 6-liter canister) to provide a 0.5-ppbv detection limit. The 6-liter canister also provides several additional 1-liter samples in case subsequent re-analyses or dilutions are required. This system also offers the advantage of the GC/MS detector, which confirms the identity of detected compounds by evaluating their mass spectra in either the SCAN or SIM mode. Therefore, separate Matrix Spike/Matrix Spike Duplicate samples are not required.

Field Duplicate samples should be collected at a frequency of one (1) per 20 samples. The field duplicate should be collected using a stainless steel Tee, supplied by the laboratory, and tethered to the SUMMA canister being duplicated.

E. Special Conditions:

a. General Conditions:

Sampling personnel should not handle hazardous substances (such as gasoline), permanent marking pens, wear/apply fragrances, or smoke cigarettes/cigars before and/or during the sampling event.

Care should also be taken to ensure that the flow controller is pre-calibrated to the proper sample collection time (confirm with laboratory). Sample integrity is maintained if the sampling event is shorter than the target duration, but sample integrity can be compromised if the event is extended to the point that the canister reaches atmospheric pressure.

Care must be taken to properly seal around the vapor probe at slab surface to prevent leakage of atmosphere into the soil vapor probe during purging and sampling. Temporary points are fit snug into the pre-drilled hole using a hydrated bentonite seal at the surface. Permanent points are fit snug using quick-setting hydraulic cement powder.

b. Administering Tracer Gas:

When collecting subsurface vapor samples as part of a vapor intrusion evaluation, a tracer gas serves as a quality assurance/quality control device to verify the integrity of the vapor probe seal. Without the use of a tracer, verification that a soil vapor sample has not been diluted by surface air is difficult.

Depending on the nature of the contaminants of concern, a number of different compounds can be used as a tracer. Typically, helium or sulfur hexafluoride (SF6) are used as tracers because they are readily available, have low toxicity, and can be monitored with portable measurement devices. Butane and propane (or other gases) could also be used as a tracer in some situations. Helium is the preferred tracer gas and will generally be used unless site conditions require use of an alternate tracer gas or do not require use of a tracer gas.

The protocol for using a tracer gas is straightforward: simply enrich the atmosphere in the immediate vicinity of the area where the probe intersects the surface with the tracer gas and measure a vapor sample from the probe for the presence of high concentrations (> 10%) of the tracer. A cardboard box, plastic pail, or even a plastic bag can serve to keep the tracer gas in contact with the probe during the testing.

There are two basic approaches to testing for the tracer gas:

1. Include the tracer gas in the list of target analytes reported by the laboratory; or
2. Use a portable monitoring device to analyze a sample of soil vapor for the tracer prior to and after sampling for the compounds of concern. (Note that tracer gas samples can be collected via vacuum pump, syringe, Tedlar bag, etc. They need not be collected in SUMMA® canisters or minicans).

The advantage of the second approach is that the real-time tracer sampling results can be used to confirm the integrity of the probe seals prior to formal sample collection.

Because minor leakage around the probe seal should not materially affect the usability of the soil vapor sampling results, the mere presence of the tracer gas in the sample should not be a cause for alarm. Consequently, portable field monitoring devices with detection limits in the low ppm range are more than adequate for screening samples for the tracer. If high concentrations (> 10%) of tracer gas are observed in a sample, the probe seal should be enhanced to reduce the infiltration of ambient air.

During the initial stages of a subsurface vapor sampling program, tracer gas samples should be collected at each of the sampling probes. If the results of the initial samples indicate that the probe seals are adequate, the Project Manager can consider reducing the number of locations at which tracer gas samples are used. At a minimum, at least 10% of the subsequent samples should be supported with tracer gas analyses. When using permanent soil vapor probes as part of a long-term monitoring program, annual testing of the probe integrity is recommended.

A. References:

New York State Department of Health (NYSDOH). 2006. “Guidance for Evaluating Soil Vapor Intrusion in the State of New York” October 2006.

B. Appendices or Forms:

SVI Sampling Form

ATTACHMENT D of QAPP
EXAMPLE FIELD FORMS

LaBella
Powered by partnership.

5 MCCREA HILL RD, BALLSTON SPA, NY
ENVIRONMENTAL ENGINEERING CONSULTANTS

PROJECT

BORING: SB -
SHEET __ of __
JOB:
CHKD BY:
DATE:

CONTRACTOR: LaBella Env. LLC
DRILLER:
LABELLA REPRESENTATIVE:

BORING LOCATION:
GROUND SURFACE ELEVATION NA
START DATE: END DATE:

TIME: ___ TO ___
DATUM: NA
WEATHER:

TYPE OF DRILL RIG: Geoprobe _____
AUGER SIZE AND TYPE: NA
OVERBURDEN SAMPLING METHOD: Direct Push

DRIVE SAMPLER TYPE: Macrocore
INSIDE DIAMETER: 2"
OTHER:

DEPTH (FEET BGS)	SAMPLE			VISUAL CLASSIFICATION	PID FIELD SCREEN (PPM)	REMARKS
	SAMPLE RECOVERY (INCHES)	SAMPLE NO. AND DEPTH	STRATA CHANGE (FEET BGS)			
0						
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

WATER LEVEL DATA			DEPTH (FT)			NOTES:
DATE	TIME	ELAPSED TIME	BOTTOM OF CASING	BOTTOM OF BORING	GROUNDWATER ENCOUNTERED	

GENERAL NOTES

1) STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARY BETWEEN SOIL TYPES, TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE AT TIMES AND UNDER CONDITIONS STATED, FLUCTUATIONS OF GROUNDWATER

BGS = Below Ground Surface
NA = Not Applicable

and = 35 - 50%
some = 20 - 35%
little = 10 - 20%
trace = 1 - 10%

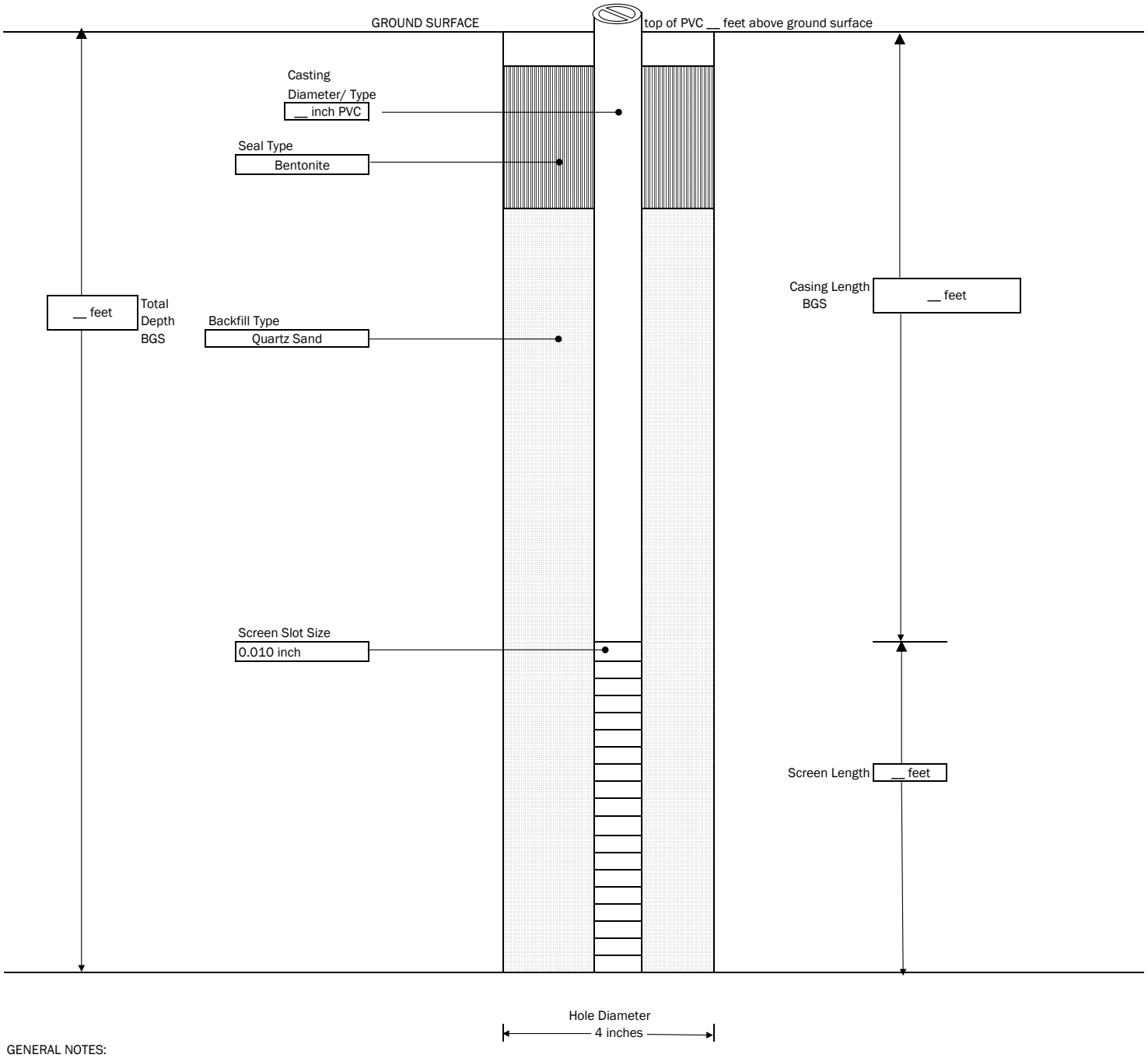
C = Coarse
M = Medium
F = Fine
VF = Very Fine

R = Rounded
A = Angular
SR = Subrounded
SA = Subangular

BORING: SB -

LaBella Powered by partnership. 5 MCCREA HILL RD, BALLSTON SPA, NEW YORK ENVIRONMENTAL ENGINEERING CONSULTANTS	**PROJECT** PROJECT NAME LOCATION	**MONITORING WELL :** MW-__ **BORING LOCATION :** SB-__ **SHEET** 1 OF 1 **JOB #**

CONTRACTOR: LaBella Environmental LLC			TYPE OF DRILL RIG:	Geoprobe _____
DRILLER:	START TIME:	END TIME:	AUGER SIZE AND TYPE:	NA
LABELLA REPRESENTATIVE:	GROUND SURFACE ELEVATION:	DATUM:	OVERBURDEN SAMPLING METHOD:	Macrocore



GENERAL NOTES:

1) NOT TO SCALE
2) DEPTHS ARE APPROXIMATE

LaBella
Powered by partnership.
5 MCCREA HILL RD, BALLSTON SPA, NY
PH: (518) 885-5383 FAX:(518)885-5385

GROUNDWATER DEVELOPMENT FORM

WELL I.D. _____

Project Name: _____ Project No.: _____
Location: _____
Development By: _____ Date: _____
Weather: _____

PURGE VOLUME CALCULATION

Well Diameter: -Inch Static Water Level: -Feet
Depth of Well: -Feet Single Well Volume: -Gallons

PURGE & SAMPLING METHOD

☐ Bailer - Type: _____ ☐ Pump - Type _____
Sampling Device: _____ Pump Rate: _____

FIELD PARAMETER MEASUREMENTS

Time	Gallons Purged	pH	Temp (oC)	Conductivity (mS/cm)	Turbidity (NTU)		Comments
							Color =
							LNAPL or DNAPL observed = No
							Odor: YES / NO
							Sheen: YES / NO

Total _____ Gallons Purged Purge Start Time: Purge End Time:

OBSERVATIONS:

Well Volume (1" well) = 0.0408-gal/ft.	Well Volume (4" well) = 0.65-gal/ft.
Well Volume (2" well) = 0.163-gal/ft.	

LaBella
Powered by partnership.

Well ID: _____ Client: _____
Date: _____ Project Name: _____
Weather: _____ Project Location: _____
Sampled By: _____ Project No.: _____

WELL SAMPLING INFORMATION

Well Diameter: _____ Static Depth to Water (Ft): _____ Tubing Type: _____
Well Depth: _____ Static Depth to Product (Ft): _____ Tubing Dia (in.): _____
Measuring Pt.: _____ Water Column (Ft): _____ Depth of Pump/Tubing: _____
Measuring Pt Elev.: _____ Well Volume (Gal): _____ Equipment Decontamination: Alconox wash followed by triple rinse between wells

WELL CASING VOLUME CALCULATION

Water Level/Interface probe #: _____
Peristaltic Pump #: _____
YSI / Horiba #: _____
Other Equipment used: _____

Well Dia. (in)	Gal/Ft Depth	Well Dia. (in)	Gal/Ft Depth
1	0.0408	6	1.4681
1.5	0.0918	8	2.6100
2	0.1631	10	4.0782
3	0.3670	12	5.8726
4	0.6525	16	10.440
5	1.0195	24	23.500

Well Volume Gallons = Water Column (ft) X Gal/Ft. depth

Stabilization is achieved when the following changes are noted over three consecutive 3-5 minute readings:
± 0.1 change in pH
± 3% change in conductivity
± 10 millivolt change in ORP
± 10% change in DO
± 10% change in Turbidity

FIELD PARAMETER MEASUREMENTS

Purge Start Time: _____ Purge End Time: _____ Well Headspace (ppm): _____
Groundwater Color: _____ Groundwater Odor: _____ Sheen, Product or NAPL Present: _____

Time	Pumping Rate (mL/min)	Gals. Purged	pH	Turbidity (NTU)	Temp. (^{O}C)	D.O. (mg/L)	ORP (mV)	S.C. (mS/cm)	Depth to Water (Ft)

Total Gallons Purged: _____ Final Depth to Water (Ft): _____ Sample time: _____

APPENDIX C OF RIWP
HEALTH AND SAFETY PLAN

Site-Specific Health and Safety Plan (HASP)

BCP No. C442068

Location:

Taylor Apartments II
Site No. C442068
125 River Street, Buildings 3 and 4
Troy, New York 12180

Prepared for:

Taylor II LLC
230 Wyoming Avenue
Kingston, PA 18704

LaBella Project No. 2241307

August 25, 2025
Revised November 18, 2025

LaBella
Powered by partnership.

TABLE OF CONTENTS

ATTACHMENTS

0.0 HASP Acknowledgment

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

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

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

Name	Company	Date

1.0 Introduction

The purpose of this Site-Specific Health and Safety Plan (HASP) is to provide a mechanism for establishing safe working conditions and guidelines for responding to potential health and safety issues that may be encountered during remedial investigation field activities at the project site, located at 125 River Street, Buildings 3 and 4 Troy, Rensselaer County, New York 12180. Site location is depicted on the attached Figure 1. This HASP only reflects the policies of LaBella Associates D.P.C. and its affiliated companies LaBella Environmental, LLC, collectively referred to as "LaBella". This document's project specifications are to be consulted for guidance in preventing and quickly abating any threat to human safety or the environment. The provisions of the HASP do not replace or supersede any federal, state or local regulatory requirements.

This HASP discusses general safety hazards associated with the planned work and specifies minimum safety precautions for various field activities. All subcontractors must review these activities and safety procedures with respect to their own standard safe operating procedures, provided the minimum requirements set forth in this HASP, 29 CFR 1910 and 29 CFR 1926 are met. All subcontractors are responsible for operating in a safe and healthy manner in order to protect their own staff as well as all other personnel concurrently on the property.

2.0 Responsibilities

This HASP presents guidelines to minimize the risk of injury to project personnel, and to provide rapid response in the event of injury. All personnel will be responsible for continuous adherence to the procedures set forth in the HASP during the performance of investigation activities. In no case should work be performed that conflicts with the intent-of (or the inherent safety and environmental cautions expressed-in) these procedures. The HASP is applicable only to activities of approved LaBella personnel and their authorized visitors specific to this project. The Project Manager shall implement the provisions of this HASP for the duration of the project. The Project Manager is also responsible for resolution of any questions with regard to safety procedures and/or levels of protection to be used. It is the responsibility of LaBella employees to follow the requirements of this HASP, and all applicable company safety procedures.

3.0 Daily Pre-Job Safety Meetings

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

4.0 Site Information

Project Name:	Taylor Apartments II (BCP Site No. C442068)
LaBella Project No.:	2241307
Project Location:	125 River Street, Buildings 3 and 4 Troy, New York 12180
Current Use of Project Location:	Two, vacant (as of May 2025), 9-story apartment buildings, a garage building, maintained yard areas, and paved parking areas. The Site is situated in an urban area with mixed commercial, residential, and institutional uses
Uses of Surrounding Areas (Res Vacant Land, Commercial, etc.):	Mixed-use buildings to the north; Taylor Apartments I and Russell Sage College to the east (across River Street); a structurally undeveloped parcel and synagogue to the south, and the Hudson River to the west (across Front Street)
Known Environmental Hazards	Existing information indicates that site soils are impacted by semi-volatile organic compounds (SVOCs) and metals, likely associated by historical operations and the presence of contaminated historic fill. The Remedial Investigation will consist of more expansive sampling to determine whether additional contamination is present on-site.

Additional details regarding the property background are summarized in the Remedial Investigation Work Plan (RIWP).

5.0 Scope of Work

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

- installing soil borings, groundwater monitoring wells, and soil vapor/sub-slab vapor points
- collection of surface soil, subsurface soil, soil vapor/sub-slab vapor, and groundwater samples
- management of investigation-derived waste

6.0 Emergency Information

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

Project Personnel		
Contact	**Name**	**Phone**
LaBella Project Manager	Caroline Bardwell	838-946-5170
LaBella Site Supervisor	Branson Fields	518-824-1928
Corporate Safety Manager	Catherine Monian	845-486-1557
Environmental Division Safety Program Manager	Tim Ruddy	315-440-5125
Site Safety Officer	Field Lead (TBD)	Cell TBD
Property Site Contact	Deborah Witkowski	518-273-3600 ext 420
Human Resources	Shameka McDuffie	518-540-4932

Emergency Personnel including Police and Fire Dept and Ambulance – Dial 911		
Hospital- *see Hospital Route Section below for directions*	Samaritan Hospital-Emergency Room 2215 Burdett Ave, Troy, NY 12180	518-271-3300
Poison Control		800-336-6997
NYSDEC Spill Response Hotline		800-457-7362
Police Dept	City of Troy	911 (Emergency) 518-270-4411 (Non-emergency)
Fire Dept	City of Troy	911 (Emergency) 518-270-4471 (Non-emergency)
Dept. of Public Utilities	City of Troy	518-237-0611
Gas/Electric	National Grid	800-867-5222 (electric) 800-892-2345 (gas)
National Response Center	US Coast Guard	800-424-8802

First Aid

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

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

Incident Reporting

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

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

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

7.0 Potential Health and Safety Hazards and Controls

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

7.1 Physical Hazards

The following table presents the types of physical hazards that could present themselves during the site work.

Physical Hazards		
Work Action or Condition	**Potential Safety Hazard**	**Controls (including PPE)**
Drilling Activities	Potential presence of underground or overhead utilities, rotating and moving parts, pinch point hazards, falling objects/debris, high noise levels, ergonomic issues related to lifting heavy drill tooling and supplies (e.g., augers, bags of sand or grout).	• Prior to initiating drilling activities conduct a utility stakeout via the state one call system (e.g., UDig NY). A private utility location service may be required if private utilities may be present. • Ensure safe distance from overhead utilities such as electric, telephone and fiber optic/cable lines. • Wear appropriate PPE and avoid loose clothing or jewelry. • Stay clear of moving parts and know the location of emergency shut-off switches. • Take particular caution when raising/lowering the mast and near rotating augers/drill rods. • Practice safe lifting techniques. • Where possible use winches/cables to lift heavy tooling. • Use team lifting where mechanical lifting is not practical.
Concrete Dust	Inhalation of respirable silica dust	• Use wet/misting suppression methods to minimize dust. • Do not use compressed air to clean surfaces. • Wear appropriate PPE and refer to exposure control plan for silica.
Heavy Equipment - Working Near	Struck by, Caught in between, Causing an obstruction on existing roadway, Rollaway, and hearing damage.	Working near heavy equipment presents struck-by and caught-in or in-between risks. Heavy equipment can also rollaway or obstruct roadways, limiting visibility. The following hazard control measures will be applied: • Maintain 360 degrees of awareness of your surroundings. • Meet the Operator, discuss work operations, and stay in line of sight. • Wear high visibility clothing (outer layer), hard hat, safety glasses, work boots. • Stand in safe zone away from blind areas. Never walk behind or to the side of heavy equipment without the operator's knowledge. Have an escape plan. • Stay out of the swing zone of heavy equipment such as excavators or traditional auger rigs. The swing zone is defined as an entire 360 degree circle equipment may move within as measured from a central location point. • Only approach drill rig after auger has stopped rotating and the operator has given the OK for you to

Physical Hazards		
Work Action or Condition	**Potential Safety Hazard**	**Controls (including PPE)**
		approach to collect a sample. • Wear hearing protection when working near heavy or moving equipment.
Drum Handling	Physical Injury – pinches, strains, splashing, tripping, physical damage	See Drum Task Hazard Analysis in Attachment B
Hand Tools	Physical injury	• Do not use a tool if you have not been trained. Inspect tool before use and do not use damaged tools. • Maintain tools in good condition and follow manufacturers' instructions. • Wear gloves, safety glasses and appropriate PPE /apparel, avoiding loose clothing; secure long hair. • When using a cutting tool hold its handle firmly and cut away from your body, never towards it. • If working on a ladder or scaffold raise and lower tools using a bucket and hand line; never carry tools in a way that prevents using both hands on a ladder (maintain three points of contact)
Blades and Sharp Objects	Injury	Blades and Sharp objects are likely to be present on site, presenting risk of physical injury. The following hazard control measures will be applied: • Only use tools designed for the task. Do not improvise. • Inspect the tool before use; do not use dull or damaged blades. • Carry blades with tip sheathed or pointed down and away from the body. • Cut on a stable surface with sufficient lighting. • Wear appropriate PPE (gloves, safety glasses, etc.).
Hot Weather & Sun, Other Heat Hazards	Prickly Heat (Heat rash), Heat Cramps, Heat Exhaustion Heat Fatigue, Heat Collapse, Heat Stroke, Sunburn	Environmental heat hazards, whether indoors or outdoors, present physical injury risks. Exercise caution when working in hot temperatures or around hot tar or other materials, hot ovens or other equipment, heat absorbing surfaces such as roofs and roads, and reflective surfaces such as water or metal. The following hazard control measures will be applied: • Have sunscreen available for ultraviolet protection on sunny days. • Have water or electrolyte drinks for dehydration. • Check the weather and adjust work schedules if heat is excessive. Work early or later in day.

Physical Hazards		
Work Action or Condition	**Potential Safety Hazard**	**Controls (including PPE)**
		• Perform work during cooler hours of the day or at night if adequate lighting can be provided. • Utilize shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods. • Use cooling devices such as fans and water misters. • Allow workers to take breaks in air-conditioned vehicles.
Cold Stress and Cold Weather Hazards	Wind chill, frostbite, hypothermia	Dress appropriately for the weather. Take warming breaks as necessary. Be alert for signs of cold stress. Set up work areas away from direct wind if feasible.
Working on Wet, Icy, and Slippery Surfaces	Bodily harm (e.g. high falls, impalement) Bodily injury (e.g. strain muscles, broken bones)	• Report unsafe conditions. Help identify areas where accidents are likely to occur so we can take steps to keep site safe. *Note: The routine application of salt on icy surface on a project is commonly covered in contract but not always utilized. Personal Protective Equipment and work practice: Wear slip-resistant footwear that has good traction. Avoid shoes with smooth soles. Take shorter steps at a slower pace on icy pavement. Hold onto the handrails when using stairs. Keep your hands free to catch yourself if you start to fall. Use a cart and take the elevator when carrying large items. Avoid walking while distracted; put away your mobile device. Use caution when stepping off curbs and walking up or down steep slopes. • Don't rush! Give yourself extra time to get to your destination. • Wipe your feet on a mat when you enter a building to remove excess water.
Parking Vehicle	Struck by, caught in between, causing an obstruction on existing roadway. Fire from plants under hot exhaust	• Workers will park far enough off the edge of the road to stay well clear of traffic. • Put on high-visibility vest before exiting parked car. • Use appropriate number of cones to mark for oncoming traffic as needed. • Do not park on/in flammable vegetation. • Keys stay on field person.
Power Tools	Injury from improper use Electrical shock and electrocution	• Unplug power tools when not in use. • Do not use a tool if you have not been trained. Inspect tool and cord before use and do not use damaged tools. • Maintain tools in good condition and follow manufacturers' instructions.

Physical Hazards		
Work Action or Condition	**Potential Safety Hazard**	**Controls (including PPE)**
		• Wear gloves, safety glasses and appropriate PPE /apparel, avoiding loose clothing; secure long hair. • Never remove a safety guard when a tool is being used. • Only plug electric tools into a grounded receptacle with a GFCI. Stop using tool if slight shock or tingling is felt. • Secure work with clamps to have both hands free to use the tool. • Keep power tool cords away from heat, oil and sharp edges. • Tag all damaged tools with "Do Not Use".
Underground Utilities	Damage to utility infrastructure, Electrocution, Fire/Explosion	• Utility marking is needed for this project. • Prior to the commencement of ground intrusive activities, underground utilities will be located by a third-party locator. • Workers will not stand within 20 feet of any active excavations or boreholes if they are not actively working in those areas.
Slip-Trip-Fall	Injury	• Reduce and avoid slippery (wet, icy, oily, muddy, etc.) and uneven surfaces. • Workers will watch where they step and wear proper footwear. • Keep work areas free of obstructions and debris.
Uneven or Wet Terrain (Slopes, Leaves, Holes, etc.)	Slip, Trip, Fall	• Wear appropriate footwear for the site and conditions: steel toe or composite boots for construction sites, skid-resistant, hiking boots for other field work if indicated. • Use walking stick or other object for additional support/balance and to check for animal burrows/holes. • Watch for trip hazards such as uneven terrain, holes, ditches, puddles (if raining) stretched wires or ropes, or other materials or pieces of equipment in path.
Winds/Dust Storms	Particulates	• Wear goggles if dust/debris is visible. • Seek shelter in vehicle or another safe location during dangerously strong wind.

7.2 Biological and Environmental Hazards

The following table presents the types of biological and environmental hazards that could present themselves during the site work.

Biological and Environmental Hazards		
Work Action or Condition	**Potential Safety Hazard**	**Controls (including PPE)**
Allergens	Allergic reaction	Common workplace allergens like dust mites, mold, pollen, fungi, and metal can trigger a dangerous reaction along with insects and poisonous plants. The following hazard control measures will be applied: • Take medication (i.e., antihistamine) to minimize allergic reaction to pollen or other allergens as directed by your medical care practitioner, and bring it with you in the field. • Wear a dust mask, if necessary.
Animals	Bites/Scratches/ Infection	It is possible that dogs, cats, rats, and/or mice or other animals may come onto the site. Workers shall use discretion and avoid all contact with animals to avoid accident or injury.
Hazardous Insects	Injury from hazardous insects, including allergic reactions	Hazardous animals and insects may be encountered on a variety of properties, including rural sites. The following hazard control measures will be applied: • Apply bug repellant spray or lotion to exposed skin. • If you have been prescribed medication for stings, bring it with you. • Be cautious of walking path and foot placement to avoid places where snakes/spiders may be, (e.g., stepping over logs). • Stay on trails away from high grassy areas/bushes. Tuck pants into boots, wear tall boots if going through tall grass/bush. • For Ticks: Conduct daily tick check, wear long pants/long-sleeved shirts/hats/socks that are light in color, put hair up, carry tick removal kit. • For Spiders: Don't put unprotected hands inside items that might have spiders and be careful moving undisturbed piles of materials. • For Bears: Make noise and use bear spray. • For Snakes: Stay away - striking distance is 1/2 to 2/3 their body length.
Poisonous Plants	Potentially severe allergic rashes	Wear protective clothing and avoid contact with poisonous plants on the site or objects that have contacted poisonous plants. Wash immediately any area where skin contact is made.
Thunderstorms, Lightning	Lightning, Severe Thunderstorms, Tornados, Hail, Snow/Sleet	• Check the weather and adjust work schedules. • Do not begin or continue work until lightning subsides for 20 minutes. • Take shelter immediately, 360 degrees of awareness. • Thunderstorms - do not stand under a tree, near

Biological and Environmental Hazards		
Work Action or Condition	**Potential Safety Hazard**	**Controls (including PPE)**
		water or in the middle of a field. • Tornado: lie flat on the ground, preferably a low shallow space (ditch)

7.3 Ergonomic Hazards

The following table presents the types of ergonomic hazards that could present themselves during the site work.

Ergonomic Hazards		
Work Action or Condition	**Potential Safety Hazard**	**Controls (including PPE)**
Lifting Heavy Objects	Injury from Improper Lifting/Lifting weights that are too heavy	• When lifting heavy objects, keep the load close to the body and use the leg muscles instead of the back muscles to perform lifting tasks. • Do not attempt to lift large, heavy (especially over 50 lbs), or awkwardly shaped objects without assistance from another employee or from a manual lifting devise.
Noise (Loud, Sustained)	Hearing Damage	• Ear protection will be worn at all times when personnel are within 20 feet of operating equipment or when noise level becomes consistently loud enough to have to raise voice to communicate with someone. • Hearing protection will also be worn in the vicinity of generators, concrete cutters, and any other high noise emitting equipment.

7.4 Chemical and Individual Contaminant Hazards

Chemical hazards associated with the property involve potential contact with soil and water containing property-related contaminants of concern (COCs). Specific COCs related to the property are identified in Section 1.2. This investigation will identify whether additional compounds should be included in that grouping. In general, skin absorption, inhalation and ingestion are identified as three (3) potential routes of exposure for the COCs identified herein. These routes of chemical exposure will be significantly reduced through the proper use of personal protective equipment (PPE) and good personal hygiene. The following table presents the types of chemical hazards that could present themselves during the site work.

Chemical Hazards (General)		
Work Action or Condition	**Potential Safety Hazard**	**Controls (including PPE)**
Chemical Exposure - Heavy Metals	Contaminants identified in testing locations at the Site include low-level heavy metals, primarily associated with Site contamination. Heavy metal-impacted media including fill material may be encountered during subsurface activities at the project work site.	The presence of heavy metals in site media may be difficult to ascertain in the field. Heavy metal concentrations at this site may exceed PELs. The following hazard control measures will be applied: • Workers shall wear appropriate PPE and follow listed decontamination procedures to prevent exposures. Refer to the relevant sections of this HASP for more detail regarding PPE and decontamination procedures. • A Community Air Monitoring Plan (CAMP) will be implemented during fieldwork activities. The CAMP will monitor fugitive dust (potentially containing heavy metals) at the site perimeter and include appropriate response activities to prevent and/or mitigate fugitive dust generation.
Chemical Exposure - Semi-Volatile Organic Compounds (SVOC)	Contaminants identified in testing locations at the Site include SVOCs. SVOC-impacted media including fill material may be encountered during subsurface activities at the project work site.	The presence of SVOCs in site media may be detected by their odor and monitoring instrumentation. SVOC concentrations at this Site are not anticipated to exceed PELs. The following hazard control measures will be applied, however: • Workers should be wearing appropriate PPE and following listed decontamination procedures to prevent exposures. Refer to the relevant sections of this HASP for more details regarding PPE and decontamination procedures.
Sample Collection - Soil or Groundwater	Exposure to contaminants and laboratory preservatives. Hand injury from cutting, crushing, tool or glass breakage. Back strain from lifting cooler.	• When collecting samples, workers will utilize nitrile gloves, safety glasses or goggles. If the material being sampled potentially contains fill or other sharp material, use a stainless steel spoon (or similar) as a tool to collect the sample. Any such tool should be dedicated or properly decontaminated between samples. • When lifting sample coolers, workers will use proper lifting techniques and get assistance, when possible, especially for containers heavier than 50 lbs. • Use proper PPE when handling laboratory bottleware that may be filled with preservatives.
Equipment Decontamination	Splashing	Use non-toxic detergents and proper PPE while decontaminating field equipment. Flush immediately with water if exposed.

Individual Contaminant Hazards			
Chemical	**OSHA Permissible Exposure Limit (PEL)/ NIOSH Recommended Exposure Limit (REL) or Immediately dangerous to life or health air concentration values (IDLH)**	**Routes of Exposure**	**Symptoms of Overexposure**
Arsenic (Metal)	**TWA 0.010 mg/m3 NIOSH REL/IDLH: REL: Ca C 0.002 mg/m3 [15-minute]**	inhalation, skin absorption, skin and/or eye contact, ingestion	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin
Mercury (Metal)	**OSHA PEL TWA 0.1 mg/m3 NIOSH REL/IDLH: REL: Hg Vapor: TWA 0.05 mg/m3 [skin] Other: C 0.1 mg/m3 [skin] IDLH: 10 mg/m3**	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude
Cadmium (Metal)	**TWA 0.005 mg/m3 NIOSH REL/IDLH: TWA 0.5 mg/m3**	inhalation, ingestion	Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia
Chromium (Metal)	**TWA 1 mg/m3 NIOSH REL/IDLH: REL: TWA 0.5 mg/m3 IDLH: 250 mg/m3**	inhalation, ingestion, skin and/or eye contact	irritation eyes, skin; lung fibrosis (histologic)
Selenium (Metal)	**TWA 0.2 mg/m3 [*Note: The PEL also applies to other selenium compounds (as Se) except Selenium hexafluoride.] NIOSH REL/IDLH: REL: TWA 0.2 mg/m3 IDLH :1 mg/m3**	inhalation, ingestion, skin and/or eye contact	irritation eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye, skin burns; In Animals: anemia; liver necrosis, cirrhosis; kidney, spleen damage
Benzo (b) Fluoranthene and Benzo(K) Fluoranthene (SVOC)	**NA**	The substance can be absorbed into the body by inhalation of its aerosol and through the skin.	Generally, have a low degree of acute toxicity to humans. Some studies have shown noncarcinogenic effects that are based on PAH exposure dose

8.0 Personal Protective Equipment (PPE)

All site workers will have appropriate training as identified in Section 9.0. Training includes the identification of PPE necessary for various tasks; how to don, doff, adjust, and wear PPE; limitations of PPE; and proper care, inspection, testing, maintenance, useful life, storage, and disposal of the PPE. PPE will be inspected on a regular basis.

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

9.0 Employee Training

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

All personnel permitted to access the property shall (at a minimum) receive OSHA 24-hr HAZWOPER training to satisfy the standards set forth in 29CFR 1910.120(e). Personnel who have previously received training for OSHA 40-hr HAZWOPER will supersede the OSHA 24-hr requirement. In addition to holding the proper HAZWOPER certificate, each employee permitted to work on the property will be required to maintain a current 8-hr OSHA refresher certificate.

10.0 Exposure Monitoring

Air monitoring for volatile organic compounds will be periodically performed in the work area breathing zone during outdoor site activities. Monitoring will be performed with a hand-held PID. Results will be compared to exposure values and appropriate responsive action taken, as needed, including moving to upwind locations, reducing scale or pace of work advance, or adjustments of PPE. No particulate monitoring of the work zone will be conducted.

Periodic or continuous air monitoring will also be conducted as described in the Community Air Monitoring Plan (CAMP), to document ambient concentrations of particulates and VOCs at the downwind perimeter of the work zone and at an upwind location.

11.0 Site Control and Communication

Contaminant Exclusion or Reduction zone is not required at the site. Drums of IDW will be stored in a designated area. Each team member will have a cell phone for communication with the PM, SHSO,

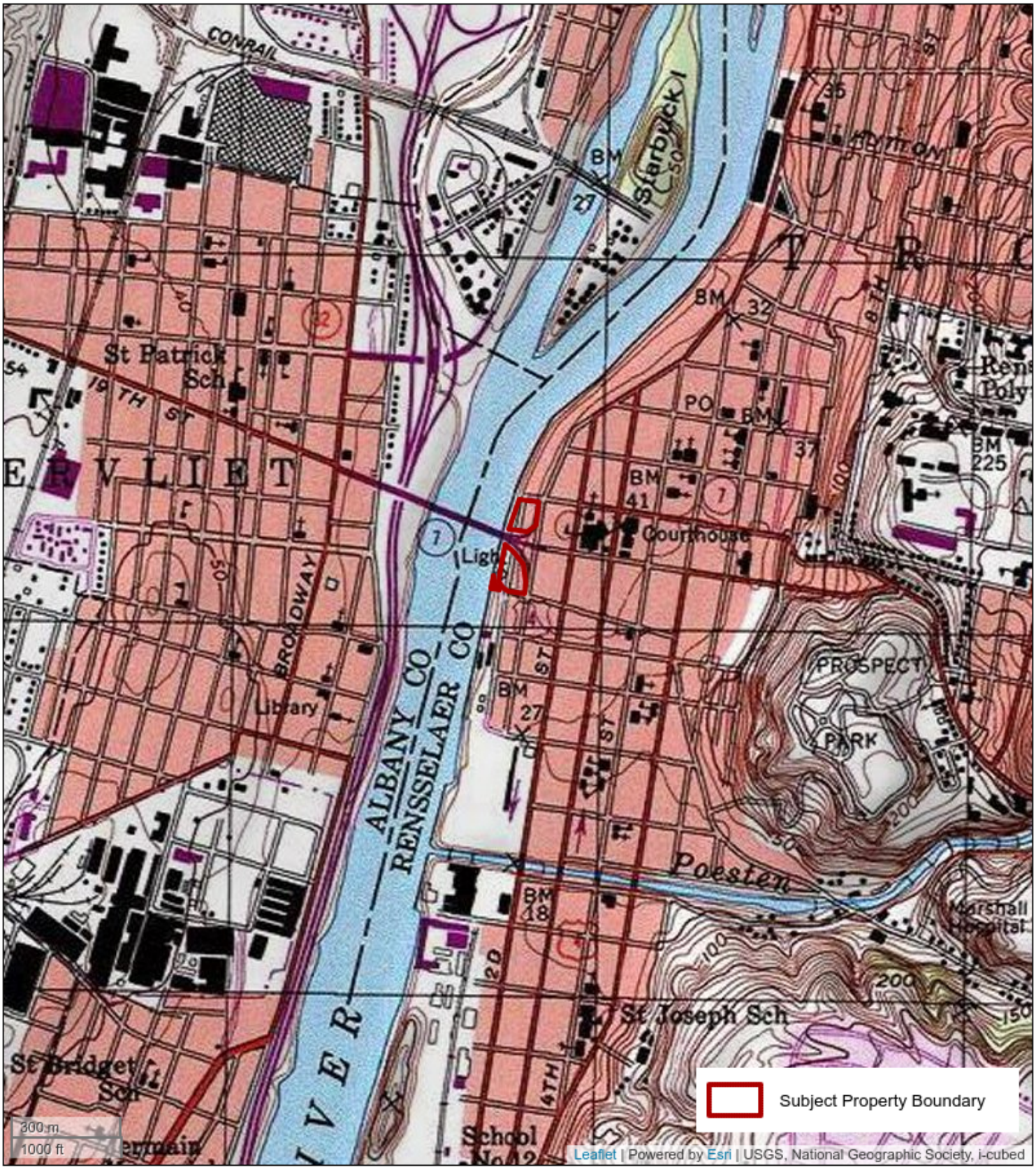
and other team members during field activities. Field team members will identify a rally point for emergencies prior to initiation of field activities.

12.0 Recordkeeping

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

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

Incident reporting will be completed in accordance with LaBella policies.



Rensselaer County

N

LaBella
Powered by partnership.

Remedial Investigation Work Plan
Taylor Apartments II
BCP Site 442068
125 River Street
City of Troy,
Rensselaer County, NY 12180

Site Location Map

FIGURE #1

HASP ATTACHMENT A

Directions to Nearest Medical Facility

bing maps

A 121 River St, Troy, NY 12180, United States

B Samaritan Hospital-Emergency Room, 2215 Burdett Ave, Troy, Ny 12180

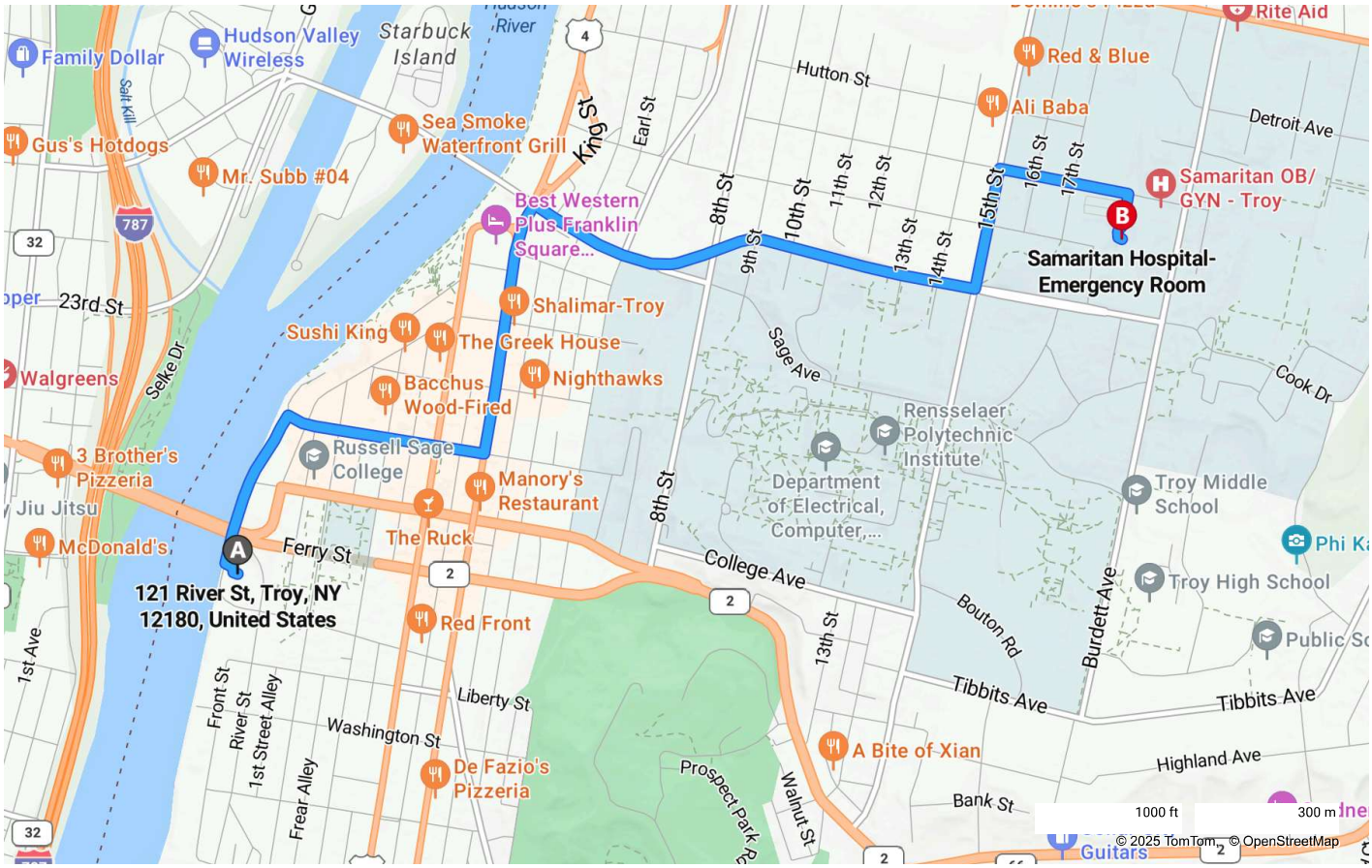
10 min , 1.9 miles
Light traffic
Via US-4 N, Peoples Ave

depart from parking lot from either Building 3 or Building 4 and take a right onto Front Street heading north to State St and take right.

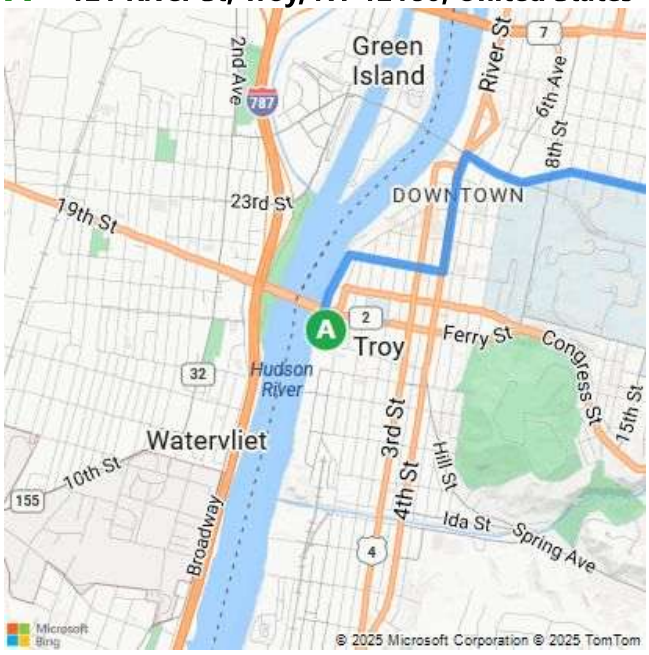
A 121 River St, Troy, NY 12180, United States

↑	1.	Leave	30 ft
↱	2.	Turn right onto **Front St**	98 ft
↱	3.	Turn right onto **Front St**	0.2 mi
↱	4.	Turn right onto **State St**	0.3 mi
↰	5.	Turn left onto **4th St/US-4 N**	0.3 mi
↱	6.	Turn right onto **Federal St**	0.2 mi
↖	7.	Bear left at **Peoples Ave**	0.4 mi
↰	8.	Turn left onto **15th St**	0.2 mi
↱	9.	Turn right onto **Eagle St**	0.2 mi
↱	10.	Turn right	213 ft
↗	11.	Bear right	135 ft
	12.	You have arrived. Your destination is on the right	

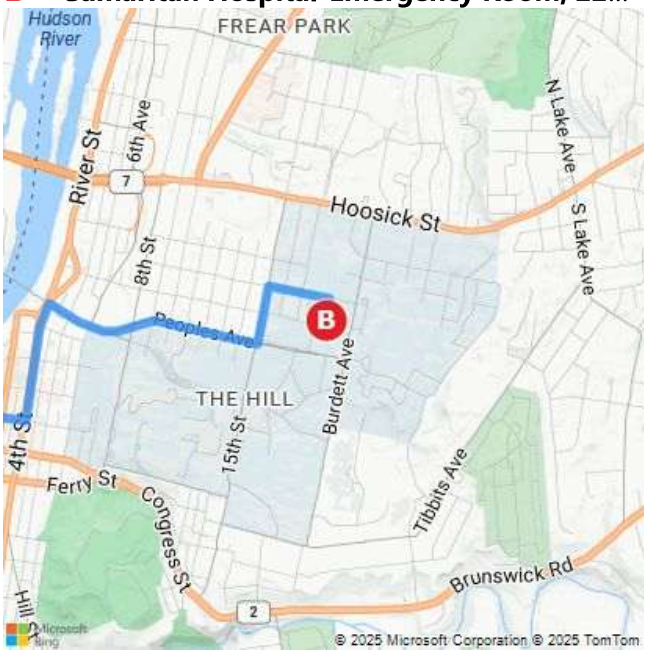
B Samaritan Hospital-Emergency Room



A 121 River St, Troy, NY 12180, United States



B Samaritan Hospital-Emergency Room, 22...



HASP ATTACHMENT B

Task Hazard Analysis Forms

JOB SAFETY ANALYSIS

6.02 Task Hazard Analysis (THA) Form

THA Title or Work Activity:	Division:	Project #:	THA ID#:	Date:	Revised Date:
USING HAND TOOLS (AUGER)	Environmental	2241307	UHT001	8/13/2025	

Person Preparing THA:	Position / Title:	Person Assisting with THA:	Position / Title:
Amanda Hens	Geologist		

Reviewer w/ Relevant Task Experience	Position / Title:	Safety Manager Sign off for High Risk or Very High Risk THAs	Position / Title:
Caroline Bardwell	Sr. Project Manager		

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

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

Materials, Equipment &Tools Needed

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

SEQUENCE OF STEPS	POTENTIAL HAZARDS	Recommended Control Measures/PPE/ Training
1. Load tools and travel to site	1a. Strains, sprains from lifting heavy loads 1b. Pinches from caught between hazards 1	1a. Use proper lifting techniques, keep back straight. Bend knees, and lift with legs. Use two people if load is heavier than 50lbs, or awkward to handle. 1b. Wear gloves and keep hands and fingers clear of areas that have hinges, articulation, moving parts, and lift gate guide track. Load and unloads heavy tools carefully, keep fingers clear of the point of contact between the tools and the tool box
2. set up	2a. Hazardous site conditions from other activities 2b.Lacerations. 2c. Electrocution	2a. Conduct site reconnaissance by walking site to become familiar with conditions, identify methods of ingress and egress for work and for emergencies, note weather conditions and forecast, etc. Conduct Safe Performance Self Assessment 2b. Avoid contact with blade teeth. wear cut resistant gloves 2c. Make sure that cutting will not come into contact with any utilities.
3. Operating Hand Auger	3a. Lacerations and other injuries.	3a. Always wear safety goggles. Evaluate surroundings before turning tool and be aware of others. Make sure that cutting will not come into contact with any utilities. Don't wear loose clothing. Make sure the blade or bit is not binding as it goes into the work. If blade or bit is binding, cease operation of the tool and evaluate reasons for binding.
On-site edits:		

RISK ASSESSMENT CODES

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

Definitions

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

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

JOB SAFETY ANALYSIS

6.02 Task Hazard Analysis (THA) Form

THA Title or Work Activity:	Division:	Project #:	THA ID#:	Date:	Revised Date:
CHEMICAL HANDLING/WORK PRACTICES (AQUA-CLEAR MGA/AQUA-CLEAR AE)	Environmental	2241307	CH002	8/13/2025	

Person Preparing THA:	Position / Title:	Person Assisting with THA:	Position / Title:
Amanda Hens	Geologist		

Reviewer w/ Relevant Task Experience	Position / Title:	Safety Manager Sign off for High Risk or Very High Risk THAs	Position / Title:
Caroline Bardwell	Sr. Project Manager		

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

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

Materials, Equipment &Tools Needed

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

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

RISK ASSESSMENT CODES

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

Definitions

Likelihood of Harm Categories:

-Very Unlikely: Will not occur except in rare instances under certain conditions

-Unlikely: Typically would not occur

-Likely: May occur on a regular basis

-Very Likely: Will occur in most instances

Severity of Harm Categories:

-Slight harm: Only first aid required

-Moderate harm: Injury or illness resulting in inability to work for a short period of time

-Extreme harm: Death or serious injury or illness resulting in inability to work indefinitely

JOB SAFETY ANALYSIS

6.02 Task Hazard Analysis (THA) Form

THA Title or Work Activity:	Division:	Project #:	THA ID#:	Date:	Revised Date:
EQUIPMENT DECONTAMINATION / PRESSURE WASHER	Environmental	2241307	ED003	8/13/2025	

Person Preparing THA:	Position / Title:	Person Assisting with THA:	Position / Title:
Amanda Hens	Geologist		

Reviewer w/ Relevant Task Experience	Position / Title:	Safety Manager Sign off for High Risk or Very High Risk THAs	Position / Title:
Caroline Bardwell	Sr. Project Manager		

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

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

Materials, Equipment &Tools Needed

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

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

RISK ASSESSMENT CODES

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

JOB SAFETY ANALYSIS

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

JOB SAFETY ANALYSIS

6.02 Task Hazard Analysis (THA) Form

THA Title or Work Activity:	Division:	Project #:	THA ID#:	Date:	Revised Date:
55 GALLON DRUM HANDLING	Environmental	2241307	DH004	8/13/2025	

Person Preparing THA:	Position / Title:	Person Assisting with THA:	Position / Title:
Amanda Hens	Geologist		

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

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

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

Materials, Equipment &Tools Needed

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

SEQUENCE OF STEPS	POTENTIAL HAZARDS	Recommended Control Measures/PPE/ Training
1. Loading and Unloading EMPTY DRUMS	1a. Pinches from metal to metal contact 1b. Strains from improper lifting technique or moving too much weight without help 1c. Drums rolling off truck or trailer	1a. Wear leather or PVC gloves and keep body parts clear of pinch points. Never put your hands under the drum where it contacts the ground. 1b. Use proper lifting technique. Bend your knees, keep your back straight up and down, and lift with your legs. If load is more than 50 lbs. or is awkward to handle, get another person to help. If a lift gate is available, use it to load the drums on the truck. 1c. Keep drums secure using the appropriate sized strap until needed/after removing straps store drums in vertical position. Put strap away so that it does not become a trip hazard.
Opening Empty Drums for Use	2a. Pinches from wrench and lid contact 2b. Uncontrolled air pressure releasing debris or lid causing bodily harm	2a. Wear leather or PVC gloves/use the correct wrench or socket and ratchet to open drums. Never use a worn or malfunctioning socket, ratchet, or wrench. If possible, a socket and ratchet is the preferred tool. 2b. Keep clear of drum lid while opening. Wear safety glasses and all listed PPE. Keep adequate pressure on drum lid to keep lid from releasing air pressure too quickly.
3. Filling Drum - liquids or solids	3a. Trip hazards from drum lid, ring and tools laying on ground 3b. Splashing contaminated spoils on the body 3c. Drum weight too heavy to move safely	3a. Stage drum and open lid in safe area behind rig or work area. Keep control of the immediate area where the drums are being handled and do not allow other to enter your work area without permission. Communicate to others that there are tools laying on the ground. Do not leave tools and drums that are being filled unattended. Replace the lid, lay the ring on top of the lid, and pick up your tools before leaving the area. 3b. Lower materials into drum to minimize splashing/wear gloves and safety glasses. If the material can not be loaded into drum without containing the splash hazard, a face shield and outer garment must be worn. 3c. Allow for expansion - do not fill drum more than 2/3 full.
4. Refastening drum lid	4a. Striking with hammer creating pinch point 4b. Pinches from ring and lid contact 4c. Container leaking from lid not being fastened correctly	4a. Wear gloves, use caution while hammering the retaining ring into place. Keep body parts clear where the lid, ring, and hammer contact each other. 4b. Keep fingers clear of retaining ring while fastening/wear gloves. 4c. Ensure gasket is in place/fasten lid completely ensuring retaining ring is in place all the way around drum.
5. Moving and Staging full drums with drum dolly	5a. Rough surfaces that could cause uncontrolled movement of drum	5a. Ensure drum dolly has the correct wheels for the surface it is being used on - pneumatic tires for grass and gravel/solid tires for concrete and asphalt.

JOB SAFETY ANALYSIS

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

RISK ASSESSMENT CODES

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

Definitions

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

JOB SAFETY ANALYSIS

6.02 Task Hazard Analysis (THA) Form

THA Title or Work Activity:	Division:	Project #:	THA ID#:	Date:	Revised Date:
CONCRETE CUTTING & DRILLING	Environmental	2241307	CC005	8/15/2025	

Person Preparing THA:	Position / Title:	Person Assisting with THA:	Position / Title:
Amanda Hens	**Geologist**		

Reviewer w/ Relevant Task Experience	Position / Title:	Safety Manager Sign off for High Risk or Very High Risk THAs	Position / Title:
Caroline Bardwell	**Sr. Project Manager**		

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

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

Materials, Equipment &Tools Needed

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

SEQUENCE OF STEPS	POTENTIAL HAZARDS	Recommended Control Measures/PPE/ Training
1. Set up equipment and work area	Risk of injury to bystanders	Clearly define work area with barricades and signs.
2. Locate utilities	Risk of hitting shallow burried utilties	Ensure that utility location has been completed.
3. Saw or corre drill use	Risk of injury from improper set up or operation	Inspect all connections, guards and controls on equipment prior to use
		Operators must be properly trained on use of equipment
		Minimum required PPE worn at all times
	Electrocution	Use GFCI on all electric equipment (e.g., vacuums, pumps, etc.)
	Respirable Crystaline Silica	Use integrated water delivery system to continuoulsy feed water to blade/bit.
		Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.
4. Clean up	Electrocution	Use GFCI on all electric equipment (e.g., vacuums, pumps, etc.)
	Respirable Crystaline Silica	Use integrated water delivery system to continuoulsy feed water to blade/bit.
		Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.
		No dry sweeping
On-site edits:		

RISK ASSESSMENT CODES

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

Definitions

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

JOB SAFETY ANALYSIS

6.02 Task Hazard Analysis (THA) Form

THA Title or Work Activity:	Division:	Project #:	THA ID#:	Date:	Revised Date:
Use of Power Tools	Environmental	2241307	UPT006	8/13/2025	

Person Preparing THA:	Position / Title:	Person Assisting with THA:	Position / Title:
Amanda Hens	Geologist		

Reviewer w/ Relevant Task Experience	Position / Title:	Safety Manager Sign off for High Risk or Very High Risk THAs	Position / Title:
Caroline Bardwell	Sr. Project Manager		

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

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

Materials, Equipment &Tools Needed

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

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

RISK ASSESSMENT CODES

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

Definitions

Likelihood of Harm Categories:

-Very Unlikely: Will not occur except in rare instances under certain conditions

-Unlikely: Typically would not occur

-Likely: May occur on a regular basis

-Very Likely: Will occur in most instances

Severity of Harm Categories:

-Slight harm: Only first aid required

-Moderate harm: Injury or illness resulting in inability to work for a short period of time

-Extreme harm: Death or serious injury or illness resulting in inability to work indefinitely

JOB SAFETY ANALYSIS

6.02 Task Hazard Analysis (THA) Form

THA Title or Work Activity:	Division:	Project #:	THA ID#:	Date:	Revised Date:
DIRECT PUSH SAMPLING	Environmental	2241307	DPS007	8/13/2025	

Person Preparing THA:	Position / Title:	Person Assisting with THA:	Position / Title:
Amanda Hens	Geologist		

Reviewer w/ Relevant Task Experience	Position / Title:	Safety Manager Sign off for High Risk or Very High Risk THAs	Position / Title:
Caroline Bardwell	Sr. Project Manager		

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

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

Materials, Equipment &Tools Needed

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

SEQUENCE OF STEPS	POTENTIAL HAZARDS	Recommended Control Measures/PPE/ Training
1. Load tools and travel to site	1a. Strains 1b. Pinches 1c. Traffic Accidents 1d. Striking or crushing from loose or shifting loads	1a. Use proper lifting techniques. 1b. Wear gloves. 1c. Check brakes, lights, mirrors, and clear windows on drill rig and support trucks. Check for safety flairs, triangles, fire extinguisher, and first aid kit in vehicles. Drive defensively. 1d. Secure loads with ratchet tie down straps, chain binders or other appropriate means.
2. Site set up	2a. Hazardous site conditions from other's activities 2b. Traffic, getting hit by public, drill rig or support vehicles. 2c. Slips, trips, and falls from obstacles restricting movement around rig.	2a. Review work scope with client. Conduct site reconnaissance by walking site to become familiar with visible utilities, non-NYEG Drilling workers and operations, identify methods of ingress and egress for work and for emergencies, note weather conditions and forecast, anticipate site changes due to retail customer activities, shift changes, deliveries, etc. Conduct Safe Performance Self Assessment (SPSA) for drill location and tool and material lay down areas. 2b.Wear highly visible clothing, set up work zone suitable to site conditions (i.e. traffic cones, caution tape, vehicle placement). Follow traffic control plan, if required. Use spotter standing to side of vehicle (not behind) when backing. 2c. Maintain good housekeeping around rig and in work zone. Use equipment racks on rig and store tools and supplies neatly away from borehole and moving parts. Use proper lifting techniques - lift with legs, straight back, do not twist while lifting heavy loads.
3. Borehole set up	3a. Traffic, getting hit by public, drill rig, or support vehicles 3b. Tripping over on uneven terrain 3c. Electrocution from overhead power lines 3d. Explosion, electrocution, utility damage from underground utilities	3a. Wear highly visible clothing, set up work zone suitable to site conditions (i.e. traffic cones, caution tape, vehicle placement). Follow traffic control plan , if required. Use spotter standing to side of rig (not behind) when backing drill rig. Confirm proper operation of back-up alarm. Position drill rig and support vehicles to shield borehole and work zone from on-site traffic. 3b. Choose level, open areas to drill whenever possible. Use jackets and proper blocking to level rig. 3c. Avoid borehole locations near overhead lines, if possible. Do not move drill rig with tower up. Maintain distance of at least 30 feet from overhead power lines. 3d. Confirm local "One Call" or other appropriate locaters have been called (call Bonnie, Lawrie or Project Manager if necessary) and have responded to mark-out requests. Identify utility markings near boring, if appropriate. Check for signs of buried utilities including pavement patches, gas and water meters, manholes, vertical conduit or vents on building or utility poles, etc.
4. Connecting drill tools to drive head or other tools	4a. Pinching, crushing, striking	4a. Wear gloves when connecting tools. Keep hands clear of joints when aligning drill tools for connection. If joining tools requires operation of winch or feed controls, have 2 workers present: one to operate controls and one to align tools. One person should not operate controls and join tolls simultaneously.
5. Advancing percussion tools, (driving sampler, driving casing, direct push hammering)	5a. Pinching, crushing, striking	5a. Keep hands clear of pinch points and joints. Maintain percussion force in-line with hammer and tool string (minimize bending of tool string or driving at an angle).

JOB SAFETY ANALYSIS

THA Title or Work Activity:	Division:	Project #:	THA ID#:	Date:	Revised Date:
DIRECT PUSH SAMPLING	Environmental	2241307	DPS007	8/13/2025	

Person Preparing THA:	Position / Title:	Person Assisting with THA:	Position / Title:
Amanda Hens	Geologist		

Reviewer w/ Relevant Task Experience	Position / Title:	Safety Manager Sign off for High Risk or Very High Risk THAs	Position / Title:
Caroline Bardwell	Sr. Project Manager		

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

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

Materials, Equipment &Tools Needed

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

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

Very Unlikely	Low Risk	High Risk	Very High Risk

Definitions

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

6.02 Task Hazard Analysis (THA) Form

THA Title or Work Activity:	Division:	Project #:	THA ID#:	Revision Date:	Risk Code:
Drilling/Well Construction	Enivronmental	2241307		8/13/2025	Medium Risk

Person Preparing THA:	Position / Title:	Person Assisting with THA:	Position / Title:
Amanda Hens	Geologist		

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

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT

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

Materials, Equipment &Tools Needed

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

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

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

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

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

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

HASP ATTACHMENT C

Safety Data Sheets

Safety Data Sheet Digital Library for Reference

SAFETY DATA SHEET

Revision Date 09-Feb-2024 **Revision Number** 5

1. Identification

Product Name **1,2-Benzanthracene**

Cat No. : **AC105250000; AC105250010; AC105252500**

CAS No 56-55-3
Synonyms Benzóa!anthracene; Tetraphene

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No. **US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Carcinogenicity	Category 1B

Label Elements

Signal Word
Danger

Hazard Statements
May cause cancer

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Response
IF exposed or concerned: Get medical attention/advice
Storage
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
WARNING. Cancer - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Benz[a]anthracene	56-55-3	99

4. First-aid measures

Eye Contact Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Skin Contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Immediate medical attention is required.

Inhalation Remove from exposure, lie down. Remove to fresh air. If not breathing, give artificial respiration. Immediate medical attention is required.

Ingestion Call a physician immediately. Clean mouth with water.

Most important symptoms and effects No information available.

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Water spray. Carbon dioxide (CO_2). Dry chemical. Chemical foam.

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature Not applicable

Explosion Limits
Upper No data available

Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Do not allow run-off from fire-fighting to enter drains or water courses.

Hazardous Combustion Products
Carbon monoxide (CO). Carbon dioxide (CO_2).
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
0	1	0	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment as required.
Environmental Precautions	Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.
Methods for Containment and Clean Up	Sweep up and shovel into suitable containers for disposal.

7. Handling and storage

Handling	Do not breathe dust. Do not get in eyes, on skin, or on clothing. Handle product only in closed system or provide appropriate exhaust ventilation.
Storage.	Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Incompatible Materials. Strong oxidizing agents.

8. Exposure controls / personal protection

Exposure Guidelines	This product does not contain any hazardous materials with occupational exposure limitsestablished by the region specific regulatory bodies.
Engineering Measures	Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Recommended Filter type:	Particulates filter conforming to EN 143.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Powder Solid
Appearance	Beige
Odor	Odorless
Odor Threshold	No information available
pH	No information available
Melting Point/Range	158 - 161 °C / 316.4 - 321.8 °F
Boiling Point/Range	437.6 °C / 819.7 °F
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Specific Gravity	No information available
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	Not applicable
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	C18 H12
Molecular Weight	228.29

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products.

Incompatible Materials Strong oxidizing agents

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization No information available.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information No acute toxicity information is available for this product

Component Information

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Benz[a]anthracene	56-55-3	Group 2B	Reasonably Anticipated	A2	X	A2

Mutagenic Effects Ames test: positive.

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
Benz[a]anthracene	Group III Chemical	Not applicable	Not applicable

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity
The product contains following substances which are hazardous for the environment. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Benz[a]anthracene	Not listed	Not listed	EC50 = 0.26 mg/L 15 min	EC50: = 0.0042 mg/L, 48h (Daphnia magna)

Persistence and Degradability May persist

Bioaccumulation/ Accumulation No information available.

Mobility . Is not likely mobile in the environment due its low water solubility.

Component	log Pow
Benz[a]anthracene	5.61

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Benz[a]anthracene - 56-55-3	U018	-

14. Transport information

DOT Not regulated
TDG Not regulated
IATA
UN-No UN3077
Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.*
Hazard Class 9
Packing Group III
IMDG/IMO
UN-No UN3077

Proper Shipping Name	Environmentally hazardous substances, solid, n.o.s.
Hazard Class	9
Packing Group	III

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Benz[a]anthracene	56-55-3	X	ACTIVE	-

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT) Not applicable

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Benz[a]anthracene	56-55-3	-	X	200-280-6	-	-		-	X	-

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372. Note that PBT chemicals are not eligible for the de minimis exemption. For these chemicals, supplier notification limits are provided.
> 0 % = no low concentration cut-off set, supplier notification limit applies.

Component	CAS No	Weight %	SARA 313 - Threshold Values %	SARA 313 - Reporting threasholds
Benz[a]anthracene	56-55-3	99	> 0 %	RT = 100 lb

SARA 311/312 Hazard Categories
Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Benz[a]anthracene	-	-	-	X

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive

Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

Component	Hazardous Substances RQs	CERCLA Extremely Hazardous Substances RQs	SARA Reportable Quantity (RQ)
Benz[a]anthracene	10 lb	-	10 lb 4.54 kg

California Proposition 65 This product contains the following Proposition 65 chemicals.

Component	CAS No	California Prop. 65	Prop 65 NSRL	Category
Benz[a]anthracene	56-55-3	Carcinogen	0.033 µg/day	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Benz[a]anthracene	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Benz[a]anthracene	56-55-3	-	Use restricted. See item 72. (see link for restriction details) Use restricted. See item 28. (see link for restriction details) Use restricted. See item 50[c]. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	SVHC Candidate list - 200-280-6 - Carcinogenic, Article 57a;PBT, Article 57d;vPvB, Article 57e

After the sunset date the use of this substance requires either an authorization or can only be used for exempted uses, e.g. use in scientific research and development which includes routine analytics or use as intermediate.

REACH links

https://echa.europa.eu/authorisation-list
https://echa.europa.eu/substances-restricted-under-reach
https://echa.europa.eu/candidate-list-table

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Benz[a]anthracene	56-55-3	Not applicable	Not applicable	Not applicable	Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?
Not applicable

Other International Regulations

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Benz[a]anthracene	56-55-3	Not applicable	Not applicable	Not applicable	Not applicable

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Revision Date 09-Feb-2024
Print Date 09-Feb-2024
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Revision Date 30-Mar-2024 **Revision Number** 3

1. Identification

Product Name **Arsenic powder**

Cat No. : **10101**

CAS No 7440-38-2
Synonyms No information available

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Thermo Fisher Scientific Chemicals, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Tel: 800-343-0660
Fax: 800-322-4757

Emergency Telephone Number
For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No. **US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute oral toxicity	Category 3
Acute Inhalation Toxicity - Dusts and Mists	Category 3
Carcinogenicity	Category 1A

Label Elements

Signal Word
Danger

Hazard Statements
May cause cancer
Toxic if swallowed or if inhaled

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician
Ingestion
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Rinse mouth
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
WARNING. Cancer - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Arsenic	7440-38-2	<=100

4. First-aid measures

General Advice
Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Eye Contact
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Skin Contact
Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation
Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion
Do NOT induce vomiting. Call a physician or poison control center immediately.

Most important symptoms and effects	None reasonably foreseeable.
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	approved class D extinguishers. Do not use water or foam.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Do not allow run-off from fire-fighting to enter drains or water courses.

Hazardous Combustion Products
arsenic oxides.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
3	0	0	-

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.
Environmental Precautions	Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained. Should not be released into the environment.
Methods for Containment and Clean Up	Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

7. Handling and storage

Handling	Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Avoid dust formation. Use only under a chemical fume hood. Do not breathe (dust, vapor, mist, gas). Do not ingest. If swallowed then seek immediate medical assistance.
Storage.	Keep containers tightly closed in a dry, cool and well-ventilated place. Incompatible Materials. Oxidizing agent.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH	Mexico OEL (TWA)
Arsenic	TWA: 0.01 mg/m³	(Vacated) TWA: 0.5 mg/m³	IDLH: 5 mg/m³ Ceiling: 0.002 mg/m³	TWA: 0.01 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Recommended Filter type: Particulates filter conforming to EN 143.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Solid
Appearance	No information available
Odor	Odorless
Odor Threshold	No information available
pH	No information available
Melting Point/Range	817 °C / 1502.6 °F
Boiling Point/Range	614 °C / 1137.2 °F
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	23 hPa @ 20 °C
Vapor Density	Not applicable
Specific Gravity	5.778 g/cm3
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	As
Molecular Weight	74.92

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products.

Incompatible Materials Oxidizing agent

Hazardous Decomposition Products arsenic oxides

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Arsenic	LD50 = 15 mg/kg (Rat)	Not listed	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Arsenic	7440-38-2	Group 1	Known	A1	X	A1

IARC (International Agency for Research on Cancer)

IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans

NTP: (National Toxicity Program)

NTP: (National Toxicity Program)
Known - Known Carcinogen
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

ACGIH: (American Conference of Governmental Industrial Hygienists)

A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
ACGIH: (American Conference of Governmental Industrial Hygienists)

Mexico - Occupational Exposure Limits - Carcinogens

Mexico - Occupational Exposure Limits - Carcinogens
A1 - Confirmed Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Confirmed Animal Carcinogen
A4 - Not Classifiable as a Human Carcinogen
A5 - Not Suspected as a Human Carcinogen

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment. May cause long-term adverse effects in the environment. Do not allow material to contaminate ground water system.

Persistence and Degradability Insoluble in water May persist

Bioaccumulation/ Accumulation No information available.

Mobility Is not likely mobile in the environment due its low water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No	UN1558
Proper Shipping Name	ARSENIC
Hazard Class	6.1
Packing Group	II

TDG

UN-No	UN1558
Proper Shipping Name	ARSENIC
Hazard Class	6.1
Packing Group	II

IATA

UN-No	UN1558
Proper Shipping Name	ARSENIC
Hazard Class	6.1
Packing Group	II

IMDG/IMO

UN-No	UN1558
Proper Shipping Name	ARSENIC
Hazard Class	6.1
Packing Group	II

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Arsenic	7440-38-2	X	ACTIVE	-

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT) Not applicable

TSCA 12(b) - Notices of Export Not applicable

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Arsenic	7440-38-2	X	-	231-148-6	X	X		X	X	KE-01933

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

Component	CAS No	Weight %	SARA 313 - Threshold Values %	SARA 313 - Reporting threasholds
Arsenic	7440-38-2	<=100	0.1 %	-

SARA 311/312 Hazard Categories

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Arsenic	-	-	X	X

Clean Air Act

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

Component	Hazardous Substances RQs	CERCLA Extremely Hazardous Substances RQs	SARA Reportable Quantity (RQ)
Arsenic	1 lb	-	1 lb 0.454 kg

California Proposition 65 This product contains the following Proposition 65 chemicals.

Component	CAS No	California Prop. 65	Prop 65 NSRL	Category
Arsenic	7440-38-2	-	0.06 µg/day 10 µg/day	

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Arsenic	X	X	X	X	X

U.S. Department of Transportation
Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Arsenic	7440-38-2	-	Use restricted. See item 75. (see link for restriction details)	-

REACH links
https://echa.europa.eu/substances-restricted-under-reach

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Arsenic	7440-38-2	Listed	Not applicable	Not applicable	Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?
Not applicable

Other International Regulations

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Arsenic	7440-38-2	Not applicable	Not applicable	Not applicable	Annex I - Y24

16. Other information

Prepared By Health, Safety and Environmental Department
Email: chem.techinfo@thermofisher.com
www.thermofisher.com

Revision Date 30-Mar-2024
Print Date 30-Mar-2024
Revision Summary New emergency telephone response service provider.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Creation Date 09-Mar-2018 **Revision Date** 19-May-2022 **Revision Number** 7

1. Identification

Product Name **Barium**

Cat No. : **AC317860000; AC317860250; AC317861000; AC317865000**

CAS No 7440-39-3
Synonyms No information available

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company

Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable solids	Category 2
Substances/mixtures which, in contact with water, emit flammable gases	Category 1
Acute oral toxicity	Category 3
Skin Corrosion/Irritation	Category 1 B
Serious Eye Damage/Eye Irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

Label Elements

Signal Word
Danger

Hazard Statements

Flammable solid
In contact with water releases flammable gases which may ignite spontaneously
Toxic if swallowed
Causes severe skin burns and eye damage
May cause respiratory irritation

Precautionary Statements
Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Wear protective gloves/protective clothing/eye protection/face protection
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting equipment
Keep away from any possible contact with water, because of violent reaction and possible flash fire
Handle under inert gas. Protect from moisture
Response
Immediately call a POISON CENTER or doctor/physician
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Brush off loose particles from skin. Immerse in cool water/wrap with wet bandages
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Ingestion
Rinse mouth
Do NOT induce vomiting
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Store in a dry place. Store in a closed container
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Barium	7440-39-3	<=100

4. First-aid measures

General Advice	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.
Eye Contact	In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.
Ingestion	Do NOT induce vomiting. Call a physician or poison control center immediately.
Most important symptoms and effects	Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	CO_2, dry chemical, dry sand, alcohol-resistant foam.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
The product causes burns of eyes, skin and mucous membranes.

Hazardous Combustion Products
Barium oxides.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
3	3	2	W

6. Accidental release measures

Personal Precautions	Use personal protective equipment as required. Evacuate personnel to safe areas. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid dust formation.
Environmental Precautions	Should not be released into the environment.
Methods for Containment and Clean Up	Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not ingest. If swallowed then seek immediate medical assistance. Do not breathe (dust, vapor, mist, gas). Avoid dust formation.

Storage. Corrosives area. Store contents under argon. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep from any possible contact with water. Incompatible Materials. Water.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Barium	TWA: 0.5 mg/m³	(Vacated) TWA: 0.5 mg/m³		TWA: 0.5 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration

Engineering Measures Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Solid
Appearance	Grey Gold
Odor	No information available
Odor Threshold	No information available
pH	No information available
Melting Point/Range	727 °C / 1340.6 °F
Boiling Point/Range	1640 °C / 2984 °F
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Density	3.62
Specific Gravity	No information available
Solubility	No information available
Partition coefficient; n-octanol/water	No data available

Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	Ba
Molecular Weight	137.33

10. Stability and reactivity

Reactive Hazard Yes

Stability Stable under normal conditions.

Conditions to Avoid Exposure to moist air or water.

Incompatible Materials Water

Hazardous Decomposition Products Barium oxides

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Barium	LD50 = 132 mg/kg (Rat)	Not listed	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Barium	7440-39-3	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system

STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Barium	Not listed	LC50: > 500 mg/L/96h (Cyprinodon variegatus)	Not listed	Not listed

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility No information available.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No UN1400
Proper Shipping Name BARIUM
Hazard Class 4.3
Packing Group II

TDG

UN-No UN1400
Proper Shipping Name BARIUM
Hazard Class 4.3
Packing Group II

IATA

UN-No UN1400
Proper Shipping Name BARIUM
Hazard Class 4.3
Packing Group II

IMDG/IMO

UN-No UN1400
Proper Shipping Name BARIUM
Hazard Class 4.3
Packing Group II

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Barium	7440-39-3	X	ACTIVE	-

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT) Not applicable

TSCA 12(b) - Notices of Export Not applicable

International Inventories
X = listed.

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Barium	7440-39-3	X	-	231-149-1	X	X		X	X	KE-02022

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313

Component	CAS No	Weight %	SARA 313 - Threshold Values %
Barium	7440-39-3	<=100	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA Not applicable

Component	Hazardous Substances RQs	CERCLA EHS RQs
Barium	1000 lb	-

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Barium	X	X	X	-	X

U.S. Department of Transportation
Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH Not applicable

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Barium	7440-39-3	-	-	-

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Barium	7440-39-3	Not applicable	Not applicable	Not applicable	Not applicable

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Barium	7440-39-3	Not applicable	Not applicable	Not applicable	Not applicable

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 09-Mar-2018
Revision Date 19-May-2022
Print Date 19-May-2022
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

Safety Data Sheet
acc. to OSHA HCS

Revision date: 01/08/2025

*
1 Identification

· **Product identifier**

· **Product Name: Benzo(b)fluoranthene Standard (1X1 mL)**

· **Part no. :** P-660-1
· **Restrictions**
After February 3, 2025, this chemical substance (as defined in TSCA section 3(2))/ product cannot be distributed in commerce to retailers. After January 28, 2026, this chemical substance (as defined in TSCA section 3(2))/ product is and can only be distributed in commerce or processed with a concentration of methylene chloride equal to or greater than 0.1% by weight for the following purposes: (1) Processing as a reactant; (2) Processing for incorporation into a formulation, mixture, or reaction product; (3) Processing for repackaging; (4) Processing for recycling; (5) Industrial or commercial use as a laboratory chemical; (6) Industrial or commercial use as a bonding agent for solvent welding; (7) Industrial and commercial use as a paint and coating remover from safety critical, corrosion sensitive components of aircraft and spacecraft; (8) Industrial and commercial use as a processing aid; (9) Industrial and commercial use for plastic and rubber products manufacturing; (10) Industrial and commercial use as a solvent that becomes part of a formulation or mixture, where that formulation or mixture will be used inside a manufacturing process, and the solvent (methylene chloride) will be reclaimed; (11) Industrial and commercial use in the refinishing for wooden furniture, decorative pieces, and architectural fixtures of artistic, cultural or historic value until May 8, 2029; (12) Industrial and commercial use in adhesives and sealants in aircraft, space vehicle, and turbine applications for structural and safety critical non-structural applications until May 8, 2029; (13) Disposal; and (14) Export.
· **Application of the substance / the mixture** Reagents and Standards for Analytical Chemical Laboratory Use

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Agilent Technologies, Inc.
5301 Stevens Creek Blvd.
Santa Clara, CA 95051 USA

· **Information department:**
Telephone: 800-227-9770
e-mail: pdl-msds_author@agilent.com
· **Emergency telephone number:** CHEMTREC®: 1-800-424-9300

*
2 Hazard(s) identification

· **Classification of the substance or mixture**

GHS08 Health hazard

Carcinogenicity 1B	H350 May cause cancer.
Specific Target Organ Toxicity - Repeated Exposure 2	H373 May cause damage to organs through prolonged or repeated exposure.

GHS07

Skin Irritation 2	H315 Causes skin irritation.
Eye Irritation 2A	H319 Causes serious eye irritation.
Specific Target Organ Toxicity - Single Exposure 3	H335 May cause respiratory irritation.

· **Label elements**
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

(Contd. on page 2)

Safety Data Sheet
acc. to OSHA HCS

Printing date: 01/08/2025 Revision date: 01/08/2025

Product Name: Benzo(b)fluoranthene Standard (1X1 mL)

(Contd. of page 1)

· **Hazard pictograms**

GHS07 GHS08

· **Signal word** Danger

· **Hazard-determining components of labeling:**
dichloromethane

· **Hazard statements**
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H350 May cause cancer.
H335 May cause respiratory irritation.
H373 May cause damage to organs through prolonged or repeated exposure.

· **Precautionary statements**

P260	Do not breathe vapours.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P264	Wash thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P321	Specific treatment (see on this label).
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312	Call a poison center/doctor if you feel unwell.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P314	Get medical advice/attention if you feel unwell.
P302+P352	If on skin: Wash with plenty of water.
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P362+P364	Take off contaminated clothing and wash it before reuse.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**
· **NFPA ratings (scale 0 - 4)**

Health = 2
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = *2
Fire = 0
Reactivity = 0

(Contd. on page 3)

Safety Data Sheet
acc. to OSHA HCS

Printing date: 01/08/2025 Revision date: 01/08/2025

Product Name: Benzo(b)fluoranthene Standard (1X1 mL)

(Contd. of page 2)

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

*
3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**		
75-09-2	dichloromethane	99.9925%

*
4 First-aid measures

· **Description of first aid measures**
· **General information:**
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
· **After inhalation:** In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
· **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· **After swallowing:** If symptoms persist consult doctor.
· **Information for doctor:**
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

*
5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
· **Special hazards arising from the substance or mixture**
During heating or in case of fire poisonous gases are produced.
· **Advice for firefighters**
· **Protective equipment:** Mouth respiratory protective device.

*
6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures** Mount respiratory protective device.
· **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to section 13.
Ensure adequate ventilation.
· **Reference to other sections**
See Section 7 for information on safe handling.

(Contd. on page 4)

Safety Data Sheet
acc. to OSHA HCS

Printing date: 01/08/2025 Revision date: 01/08/2025

Product Name: Benzo(b)fluoranthene Standard (1X1 mL)

(Contd. of page 3)

See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

· **Protective Action Criteria for Chemicals**

· **PAC-1:**		
75-09-2	dichloromethane	200 ppm
205-99-2	benz[e]acephenanthrylene	0.12 mg/m³

· **PAC-2:**		
75-09-2	dichloromethane	560 ppm
205-99-2	benz[e]acephenanthrylene	1.3 mg/m³

· **PAC-3:**		
75-09-2	dichloromethane	6,900 ppm
205-99-2	benz[e]acephenanthrylene	7.9 mg/m³

*
7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
Prevent formation of aerosols.
· **Information about protection against explosions and fires:** Keep respiratory protective device available.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** Keep receptacle tightly sealed.
· **Specific end use(s)** No further relevant information available.

*
8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see section 7.

· **Control parameters**

· **Components with limit values that require monitoring at the workplace:**	
75-09-2 dichloromethane	
PEL	Short-term value: 125 ppm Long-term value: 25 ppm see 29 CFR 1910.1052
REL	See Pocket Guide App. A
TLV	Long-term value: 50 ppm BEI, A3

(Contd. on page 5)

Safety Data Sheet
acc. to OSHA HCS

Printing date: 01/08/2025 Revision date: 01/08/2025

Product Name: Benzo(b)fluoranthene Standard (1X1 mL)

(Contd. of page 4)

· **Ingredients with biological limit values:**

75-09-2 dichloromethane

BEI	0.3 mg/L Medium: urine Time: end of shift Parameter: Dichloromethane (semi-quantitative)

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Do not inhale gases / fumes / aerosols.
Avoid contact with the eyes and skin.
· **Breathing equipment:**
When used as intended with Agilent instruments, the use of the product under normal laboratory conditions and with standard practices does not result in significant airborne exposures and therefore respiratory protection is not needed.
Under an emergency condition where a respirator is deemed necessary, use a NIOSH or equivalent approved device/equipment with appropriate organic or acid gas cartridge.
· **Protection of hands:**
Although not recommended for constant contact with the chemicals or for clean-up, nitrile gloves 11-13 mil thickness are recommended for normal use. The breakthrough time is 1 hr. For cleaning a spill where there is direct contact of the chemical, butyl rubber gloves are recommended 12-15 mil thickness with breakthrough times exceeding 4 hrs. Supplier recommendations should be followed.
· **Material of gloves**
For normal use: nitrile rubber, 11-13 mil thickness
For direct contact with the chemical: butyl rubber, 12-15 mil thickness
· **Penetration time of glove material**
For normal use: nitrile rubber: 1 hour
For direct contact with the chemical: butyl rubber: >4 hours
· **Eye protection:**
Safety glasses

Tightly sealed goggles

*
9 Physical and chemical properties

· **Information on basic physical and chemical properties**
· **General Information**
· **Appearance:**

Form:	Fluid
Color:	Colorless
· **Odor:**	Like chlorine

(Contd. on page 6)

Safety Data Sheet
acc. to OSHA HCS

Printing date: 01/08/2025 Revision date: 01/08/2025

Product Name: Benzo(b)fluoranthene Standard (1X1 mL)

(Contd. of page 5)

· **Odor threshold:**	Not determined.
· **pH-value:**	Not determined.
· **Change in condition**	
Melting point/Melting range:	-95.1 °C (-139.2 °F)
Boiling point/Boiling range:	40 °C (104 °F)
· **Flash point:**	Not applicable.
· **Flammability (solid, gaseous):**	Not applicable.
· **Auto igniting:**	605 °C (1,121 °F)
· **Decomposition temperature:**	Not determined.
· **Ignition temperature:**	Product is not selfigniting.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits:**	
Lower:	13 Vol %
Upper:	22 Vol %
· **Vapor pressure at 20 °C (68 °F):**	360 hPa (270 mm Hg)
· **Density at 20 °C (68 °F):**	1.3 g/cm³ (10.8485 lbs/gal)
· **Relative density**	Not determined.
· **Vapor density**	Not determined.
· **Evaporation rate**	Not determined.
· **Solubility in / Miscibility with**	
Water at 20 °C (68 °F):	20 g/l
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic at 20 °C (68 °F):	0.43 mPas
Kinematic:	Not determined.
· **Solvent content:**	
Organic solvents:	100.0 %
VOC content:	0.00 % 0.0 g/l / 0.00 lb/gal
Solids content:	0.0 %
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.

(Contd. on page 7)

Safety Data Sheet
acc. to OSHA HCS

Printing date: 01/08/2025 Revision date: 01/08/2025

Product Name: Benzo(b)fluoranthene Standard (1X1 mL)

(Contd. of page 6)

· **Hazardous decomposition products:** No dangerous decomposition products known.

*
11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**		
75-09-2 dichloromethane		
Oral	LD50	1,600 mg/kg (rat)
Dermal	LD50	>2,000 mg/kg (rat)
Inhalative	LC50/4 h	88 mg/L (rat)

· **Primary irritant effect:**
· **on the skin:** Irritant to skin and mucous membranes.
· **on the eye:** Irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
75-09-2	dichloromethane	2A
205-99-2	benz[e]acephenanthrylene	2B

· **NTP (National Toxicology Program)**
All components have the value R.

· **OSHA-Ca (Occupational Safety & Health Administration)**	
75-09-2	dichloromethane

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Water hazard class 2 (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

(Contd. on page 8)

Safety Data Sheet
acc. to OSHA HCS

Printing date: 01/08/2025 Revision date: 01/08/2025

Product Name: Benzo(b)fluoranthene Standard (1X1 mL)

(Contd. of page 7)

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.

*
14 Transport information

· **Not Regulated, De minimis Quantities**	-
· **UN-Number**	
· **DOT, IMDG, IATA**	UN1593
· **UN proper shipping name**	
· **DOT**	Dichloromethane
· **IMDG, IATA**	DICHLOROMETHANE
· **Transport hazard class(es)**	
· **DOT**	
· **Class**	6.1 Toxic substances
· **Label**	6.1
· **IMDG, IATA**	
· **Class**	6.1 Toxic substances
· **Label**	6.1
· **Packing group**	
· **DOT, IMDG, IATA**	III
· **Environmental hazards:**	Not applicable.
· **Special precautions for user**	Warning: Toxic substances
· **Hazard identification number (Kemler code):**	60
· **EMS Number:**	F-A,S-A
· **Segregation groups**	(SGG10) Liquid halogenated hydrocarbons
· **Stowage Category**	A
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.

(Contd. on page 9)

Safety Data Sheet
acc. to OSHA HCS

Printing date: 01/08/2025 Revision date: 01/08/2025

Product Name: Benzo(b)fluoranthene Standard (1X1 mL)

(Contd. of page 8)

· **Transport/Additional information:**

· **DOT**

· **Quantity limitations**	On passenger aircraft/rail: 60 L On cargo aircraft only: 220 L
· **Hazardous substance:**	1000 lbs, 454 kg

· **IMDG**

· **Limited quantities (LQ)**	5L
· **Excepted quantities (EQ)**	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· **UN "Model Regulation":**	UN 1593 DICHLOROMETHANE, 6.1, III

*
15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

All ingredients are listed.

· **TSCA (Toxic Substances Control Act):**
After February 3, 2025, this chemical substance (as defined in TSCA section 3(2))/ product cannot be distributed in commerce to retailers. After January 28, 2026, this chemical substance (as defined in TSCA section 3(2))/ product is and can only be distributed in commerce or processed with a concentration of methylene chloride equal to or greater than 0.1% by weight for the following purposes: (1) Processing as a reactant; (2) Processing for incorporation into a formulation, mixture, or reaction product; (3) Processing for repackaging; (4) Processing for recycling; (5) Industrial or commercial use as a laboratory chemical; (6) Industrial or commercial use as a bonding agent for solvent welding; (7) Industrial and commercial use as a paint and coating remover from safety critical, corrosion sensitive components of aircraft and spacecraft; (8) Industrial and commercial use as a processing aid; (9) Industrial and commercial use for plastic and rubber products manufacturing; (10) Industrial and commercial use as a solvent that becomes part of a formulation or mixture, where that formulation or mixture will be used inside a manufacturing process, and the solvent (methylene chloride) will be reclaimed; (11) Industrial and commercial use in the refinishing for wooden furniture, decorative pieces, and architectural fixtures of artistic, cultural or historic value until May 8, 2029; (12) Industrial and commercial use in adhesives and sealants in aircraft, space vehicle, and turbine applications for structural and safety critical non-structural applications until May 8, 2029; (13) Disposal; and (14) Export.

75-09-2	dichloromethane	ACTIVE

· **Hazardous Air Pollutants**

All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

All ingredients are listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

(Contd. on page 10)

Safety Data Sheet
acc. to OSHA HCS

Printing date: 01/08/2025 Revision date: 01/08/2025

Product Name: Benzo(b)fluoranthene Standard (1X1 mL)

(Contd. of page 9)

· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**
None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**		
75-09-2	dichloromethane	L
205-99-2	benz[e]acephenanthrylene	B2

· **TLV (Threshold Limit Value)**		
75-09-2	dichloromethane	A3
205-99-2	benz[e]acephenanthrylene	A2

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**	
75-09-2	dichloromethane

· **National regulations:**

· **Information about limitation of use:**
Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation.
Exceptions can be made by the authorities in certain cases.
· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

*
16 Other information

The information contained in this document is based on Agilent's state of knowledge at the time of preparation.
No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.

· **Department issuing SDS:** Document Control / Regulatory
· **Contact:** pdl-acg-regulatory-cq@agilent.com
· **Date of preparation / last revision** 01/08/2025 / 4
· **Abbreviations and acronyms:**
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
BEI: Biological Exposure Limit
Skin Irritation 2: Skin corrosion/irritation – Category 2
Eye Irritation 2A: Serious eye damage/eye irritation – Category 2A
Carcinogenicity 1B: Carcinogenicity – Category 1B

(Contd. on page 11)

Safety Data Sheet
acc. to OSHA HCS

Printing date: 01/08/2025 Revision date: 01/08/2025

Product Name: Benzo(b)fluoranthene Standard (1X1 mL)

(Contd. of page 10)

Specific Target Organ Toxicity - Single Exposure 3: Specific target organ toxicity (single exposure) – Category 3
Specific Target Organ Toxicity - Repeated Exposure 2: Specific target organ toxicity (repeated exposure) – Category 2

· *** Data compared to the previous version altered.**

SAFETY DATA SHEET

Version 6.11
Revision Date 09/08/2024
Print Date 09/09/2024

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Benzo[k]fluoranthene

Product Number : 392251
Brand : Aldrich
Index-No. : 601-036-00-5
CAS-No. : 207-08-9

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

Uses advised against : The product is being supplied under the TSCA R&D Exemption (40 CFR Section 720.36). It is the recipient's responsibility to comply with the requirements of the R&D exemption. The product may not be used for a non-exempt commercial purpose under TSCA unless appropriate consent is granted in writing by MilliporeSigma.

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Carcinogenicity (Category 1B), H350
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal Word Danger

Hazard Statements

H350	May cause cancer.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary Statements

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Formula	:	$C_{20}H_{12}$
Molecular weight	:	252.31 g/mol
CAS-No.	:	207-08-9
EC-No.	:	205-916-6
Index-No.	:	601-036-00-5

Component	Classification	Concentration
Benzo[k]fluoranthene		
	Carc. 1B; Aquatic Acute 1; Aquatic Chronic 1; H350, H400, H410 M-Factor - Aquatic Acute: 10 M-Factor - Aquatic Chronic: 10	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Call in physician.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Combustible.
Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Storage class
Storage class (TRGS 510): 6.1C: Combustible, acute toxic Cat.3 / toxic compounds or compounds which causing chronic effects

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Benzo[k]fluoranthene	207-08-9	PEL	0.2 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
Benzo[k]fluoranthene	207-08-9	1-Hydroxypyrene	2.5 µg/l	Urine	ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift at end of workweek			
		3-hydroxybenzo(a)pyrene		Urine	ACGIH - Biological Exposure Indices (BEI)
		End of shift at end of workweek			

8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
Handle with impervious gloves.

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

Body Protection
protective clothing

Respiratory protection
Recommended Filter type: Filter type P3
The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: crystalline Color: yellow
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/ range: 215 - 217 °C (419 - 423 °F) - lit.
f)	Initial boiling point and boiling range	480 °C 896 °F
g)	Flash point	No data available
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	No data available
l)	Vapor density	No data available
m)	Density	1.286 g/cm3 at 20 °C (68 °F)
	Relative density	No data available
n)	Water solubility	insoluble
o)	Partition coefficient: n-octanol/water	log Pow: 6.188 at 25 °C (77 °F) - Potential bioaccumulation
p)	Autoignition temperature	No data available
q)	Decomposition	No data available

temperature

r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	none

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
no information available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Oral: No data available
Inhalation: Irritating to respiratory system.
Dermal: No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

Presumed to have carcinogenic potential for humans

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Benzo[k]fluoranthene)

NTP: RAHC - Reasonably anticipated to be a human carcinogen (Benzo[k]fluoranthene)

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

RTECS: DF6350000
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties
No data available

12.7 Other adverse effects
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14: Transport information

DOT (US)
UN number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Benzo[k]fluoranthene)
Reportable Quantity (RQ): 5000 lbs
Poison Inhalation Hazard: No

IMDG
UN number: 3077 Class: 9 Packing group: III EMS-No: F-A, S-F
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Benzo[k]fluoranthene)
Marine pollutant : yes
Marine pollutant : no

IATA
UN number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Benzo[k]fluoranthene)

Further information
EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

SECTION 15: Regulatory information

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Benzo[k]fluoranthene	207-08-9	5000	5000

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity
This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Acute Health Hazard
Chronic Health Hazard

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Benzo[k]fluoranthene	207-08-9	>= 90 - <= 100 %

US State Regulations

Massachusetts Right To Know

Benzo[k]fluoranthene	207-08-9

Pennsylvania Right To Know

Benzo[k]fluoranthene	207-08-9

Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

Product does not contain any listed chemicals

Washington Chemicals of High Concern

Product does not contain any listed chemicals

California Prop. 65

WARNING: This product can expose you to chemicals including Benzo[k]fluoranthene, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

The ingredients of this product are reported in the following inventories:

TSCA : Product contains substance(s) not listed on TSCA inventory.

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16: Other information

Further information

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

SAFETY DATA SHEET

Revision Date 25-Mar-2024 **Revision Number** 4

1. Identification

Product Name **Benzo[a]pyrene**

Cat No. : **15856**

CAS No 50-32-8
Synonyms Benzo[def]chrysene.; 3,4-Benzopyrene; 3,4-Benzpyrene

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Thermo Fisher Scientific Chemicals, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Tel: 800-343-0660
Fax: 800-322-4757

Emergency Telephone Number
For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No. **US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 1B
Carcinogenicity	Category 1A
Reproductive Toxicity	Category 1B

Label Elements

Signal Word
Danger

Hazard Statements
May cause an allergic skin reaction
May cause genetic defects

May cause cancer
May damage fertility. May damage the unborn child

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Avoid breathing dust/fume/gas/mist/vapors/spray
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves
Response
IF exposed or concerned: Get medical attention/advice
Skin
IF ON SKIN: Wash with plenty of soap and water
If skin irritation or rash occurs: Get medical advice/attention
Wash contaminated clothing before reuse
Storage
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
WARNING. Cancer - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Benzo[a]pyrene	50-32-8	> 96

4. First-aid measures

General Advice If symptoms persist, call a physician.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.

Inhalation Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.

Ingestion Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur.

Most important symptoms and effects None reasonably foreseeable. . May cause allergic skin reaction. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature Not applicable
Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Do not allow run-off from fire-fighting to enter drains or water courses.

Hazardous Combustion Products
Carbon monoxide (CO). Carbon dioxide (CO_2).
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
2	1	0	N/A

6. Accidental release measures

Personal Precautions Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation.

Environmental Precautions Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

Methods for Containment and Clean Up Sweep up and shovel into suitable containers for disposal. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Avoid dust formation.

Storage. Keep containers tightly closed in a dry, cool and well-ventilated place. Incompatible Materials. Oxidizing agent.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH	Mexico OEL (TWA)
Benzo[a]pyrene		TWA: 0.2 mg/m³		

Legend

OSHA - Occupational Safety and Health Administration

Engineering Measures Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Recommended Filter type:	Particulates filter conforming to EN 143.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Powder Solid
Appearance	Dark yellow
Odor	aromatic
Odor Threshold	No information available
pH	Not applicable
Melting Point/Range	175 - 179 °C / 347 - 354.2 °F
Boiling Point/Range	495 °C / 923 °F @ 760 mmHg
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Specific Gravity	No information available
Solubility	Insoluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	Not applicable
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	C20H12
Molecular Weight	252.31

10. Stability and reactivity

Reactive Hazard	None known, based on information available
Stability	Stable under normal conditions.
Conditions to Avoid	Incompatible products.
Incompatible Materials	Oxidizing agent
Hazardous Decomposition Products	Carbon monoxide (CO), Carbon dioxide (CO_2)
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information
Component Information
Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization May cause sensitization by skin contact

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Benzo[a]pyrene	50-32-8	Group 1	Reasonably Anticipated	A2	X	A2

IARC (International Agency for Research on Cancer)

IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans

NTP: (National Toxicity Program)

NTP: (National Toxicity Program)
Known - Known Carcinogen
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

ACGIH: (American Conference of Governmental Industrial Hygienists)

A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
ACGIH: (American Conference of Governmental Industrial Hygienists)

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Endocrine Disruptor Information

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
Benzo[a]pyrene	Group III Chemical	Not applicable	Not applicable

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Persistence and Degradability May persist

Bioaccumulation/ Accumulation No information available.

Mobility Is not likely mobile in the environment due its low water solubility.

Component	log Pow
Benzo[a]pyrene	6.06

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Benzo[a]pyrene - 50-32-8	U022	-

14. Transport information

DOT

UN-No UN3077
Proper Shipping Name Environmentally hazardous substances, solid, n.o.s.
Technical Name Benzo[a]pyrene
Hazard Class 9
Packing Group III

TDG

UN-No UN3077
Proper Shipping Name Environmentally hazardous substances, solid, n.o.s.
Hazard Class 9
Packing Group III

IATA

UN-No UN3077
Proper Shipping Name Environmentally hazardous substances, solid, n.o.s.
Hazard Class 9
Packing Group III

IMDG/IMO

UN-No UN3077
Proper Shipping Name Environmentally hazardous substances, solid, n.o.s.
Hazard Class 9
Packing Group III

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Benzo[a]pyrene	50-32-8	X	ACTIVE	-

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT) Not applicable

TSCA 12(b) - Notices of Export Not applicable

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Benzo[a]pyrene	50-32-8	X	-	200-028-5	X	-		-	X	KE-05-0184

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372. Note that PBT chemicals are not eligible for the de minimis exemption. For these chemicals, supplier notification limits are provided.
> 0 % = no low concentration cut-off set, supplier notification limit applies.

Component	CAS No	Weight %	SARA 313 - Threshold Values %	SARA 313 - Reporting threasholds
Benzo[a]pyrene	50-32-8	> 96	> 0 %	RT = 100 lb

SARA 311/312 Hazard Categories
Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Benzo[a]pyrene	-	-	X	X

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

Component	Hazardous Substances RQs	CERCLA Extremely Hazardous Substances RQs	SARA Reportable Quantity (RQ)
Benzo[a]pyrene	1 lb	-	1 lb 0.454 kg

California Proposition 65 This product contains the following Proposition 65 chemicals.

Component	CAS No	California Prop. 65	Prop 65 NSRL	Category
Benzo[a]pyrene	50-32-8	Carcinogen	0.06 µg/day	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Benzo[a]pyrene	X	X	X	X	X

U.S. Department of Transportation
Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Benzo[a]pyrene	50-32-8	-	Use restricted. See item 72. (see link for restriction details) Use restricted. See item 30. (see link for restriction details) Use restricted. See item 28. (see link for restriction details) Use restricted. See item 50[a]. (see link for restriction details) Use restricted. See item 29. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	SVHC Candidate list - 200-028-5 - Carcinogenic (article 57a); Mutagenic (Article 57b); Toxic for reproduction (Article 57c); PBT (Article 57d); vPvB (Article 57e)

After the sunset date the use of this substance requires either an authorization or can only be used for exempted uses, e.g. use in scientific research and development which includes routine analytics or use as intermediate.

REACH links
https://echa.europa.eu/authorisation-list
https://echa.europa.eu/substances-restricted-under-reach
https://echa.europa.eu/candidate-list-table

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Benzo[a]pyrene	50-32-8	Not applicable	Annex III - Substance subject to release reduction	Not applicable	Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?
See table for values

PFAS Legend
Listed = Meets the PFAS definition of the named authority

Other International Regulations

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities	Seveso III Directive (2012/18/EC) - Qualifying Quantities	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)

		for Major Accident Notification	for Safety Report Requirements		
Benzo[a]pyrene	50-32-8	Not applicable	Not applicable	Not applicable	Not applicable

16. Other information

Prepared By
Health, Safety and Environmental Department
Email: chem.techinfo@thermofisher.com
www.thermofisher.com

Revision Date 25-Mar-2024
Print Date 25-Mar-2024
Revision Summary New emergency telephone response service provider.

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SAFETY DATA SHEET

Revision Date 24-Dec-2021 **Revision Number** 4

1. Identification

Product Name **Cadmium**

Cat No. : **C3-500**

CAS No 7440-43-9
Synonyms No information available

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable solids	Category 2
Acute oral toxicity	Category 4
Acute dermal toxicity	Category 4
Acute Inhalation Toxicity - Dusts and Mists	Category 2
Germ Cell Mutagenicity	Category 2
Carcinogenicity	Category 1A
Reproductive Toxicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	
Specific target organ toxicity - (repeated exposure)	Category 1
Target Organs - Kidney, Blood.	
Combustible dust	Yes

Label Elements

Signal Word

Danger

Hazard Statements
Flammable solid
May form combustible dust concentrations in air
Fatal if inhaled
Harmful if swallowed
Harmful in contact with skin
May cause respiratory irritation
Suspected of causing genetic defects
May cause cancer
Suspected of damaging fertility. Suspected of damaging the unborn child
Causes damage to organs through prolonged or repeated exposure

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting equipment
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
Skin
IF ON SKIN: Wash with plenty of soap and water
Wash contaminated clothing before reuse
Call a POISON CENTER or doctor/physician if you feel unwell
Ingestion
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Fire
Fight fire with normal precautions from a reasonable distance
Evacuate area
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
WARNING. Cancer and Reproductive Harm - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Cadmium	7440-43-9	100

4. First-aid measures

General Advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion Do NOT induce vomiting. Call a physician or poison control center immediately.

Most important symptoms and effects None reasonably foreseeable. . Kidney disorders: May cause harm to the unborn child: Blood disorders

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature No information available

Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors. Fine dust dispersed in air may ignite. Dust can form an explosive mixture with air. Pyrophoric properties of solids and liquids. Do not allow run-off from fire-fighting to enter drains or water courses.

Hazardous Combustion Products
Toxic fumes.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
4	1	0	N/A

6. Accidental release measures

Personal Precautions Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust

formation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.

Environmental Precautions Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

Methods for Containment and Clean Up Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Avoid dust formation. Use only under a chemical fume hood. Do not breathe (dust, vapor, mist, gas). Do not ingest. If swallowed then seek immediate medical assistance.

Storage. Keep containers tightly closed in a dry, cool and well-ventilated place. Store under an inert atmosphere. Incompatible Materials. Strong oxidizing agents. Strong acids. Sulfur oxides.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Cadmium	TWA: 0.01 mg/m³ TWA: 0.002 mg/m³	Ceiling: 0.3 mg/m³ Ceiling: 0.6 mg/m³ (Vacated) STEL: 0.3 ppm TWA: 0.1 mg/m³ TWA: 0.2 mg/m³ TWA: 5 µg/m³	IDLH: 9 mg/m³	TWA: 0.01 mg/m³ TWA: 0.002 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures When using do not eat, drink or smoke. Provide regular cleaning of equipment, work area and clothing. Avoid contact with skin, eyes or clothing. Wash hands before breaks and immediately after handling the product. Keep away from food, drink and animal feeding stuffs.

9. Physical and chemical properties

Physical State Solid

Appearance	Silver
Odor	Odorless
Odor Threshold	No information available
pH	No information available
Melting Point/Range	321 °C / 609.8 °F
Boiling Point/Range	765 °C / 1409 °F @ 760 mmHg
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Specific Gravity	8.64 @ 25°C
Solubility	Insoluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	Cd
Molecular Weight	112.40

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under recommended storage conditions. Moisture sensitive. Air sensitive.

Conditions to Avoid Incompatible products. Excess heat. Avoid dust formation. Exposure to air or moisture over prolonged periods.

Incompatible Materials Strong oxidizing agents, Strong acids, Sulfur oxides

Hazardous Decomposition Products Toxic fumes

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Cadmium	LD50 = 2330 mg/kg (Rat)	Not listed	LC50 = 25 mg/m³ (Rat) 30 min

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Cadmium	7440-43-9	Group 1	Known	A2	X	A2

IARC (International Agency for Research on Cancer)	*IARC (International Agency for Research on Cancer)* *Group 1 - Carcinogenic to Humans* *Group 2A - Probably Carcinogenic to Humans* *Group 2B - Possibly Carcinogenic to Humans*
NTP: (National Toxicity Program)	*NTP: (National Toxicity Program)* *Known - Known Carcinogen* *Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen*
ACGIH: (American Conference of Governmental Industrial Hygienists)	*A1 - Known Human Carcinogen* *A2 - Suspected Human Carcinogen* *A3 - Animal Carcinogen* *ACGIH: (American Conference of Governmental Industrial Hygienists)*

Mutagenic Effects Possible risk of irreversible effects

Reproductive Effects Possible risk of impaired fertility. May cause harm to the unborn child.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system
STOT - repeated exposure Kidney Blood

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Kidney disorders: May cause harm to the unborn child: Blood disorders

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

The product contains following substances which are hazardous for the environment. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Cadmium	Not listed	LC50: 0.0004 - 0.003 mg/L, 96h (Pimephales promelas) LC50: = 0.016 mg/L, 96h (Oryzias latipes) LC50: = 21.1 mg/L, 96h flow-through (Lepomis macrochirus) LC50: = 0.24 mg/L, 96h static (Cyprinus carpio) LC50: = 4.26 mg/L, 96h semi-static (Cyprinus carpio) LC50: = 0.002 mg/L, 96h	Not listed	EC50: = 0.0244 mg/L, 48h Static (Daphnia magna)

		(Cyprinus carpio) LC50: = 0.006 mg/L, 96h static (Oncorhynchus mykiss) LC50: = 0.003 mg/L, 96h flow-through (Oncorhynchus mykiss)		

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility No information available.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No	UN2930
Proper Shipping Name	Toxic solid, flammable, organic, n.o.s.
Technical Name	Cadmium
Hazard Class	6.1
Subsidiary Hazard Class	4.1
Packing Group	I

TDG

UN-No	UN2930
Proper Shipping Name	Toxic solid, flammable, organic, n.o.s.
Hazard Class	6.1
Subsidiary Hazard Class	4.1
Packing Group	I

IATA

UN-No	UN2930
Proper Shipping Name	Toxic solid, flammable, organic, n.o.s.
Hazard Class	6.1
Subsidiary Hazard Class	4.1
Packing Group	I

IMDG/IMO

UN-No	UN2930
Proper Shipping Name	Toxic solid, flammable, organic, n.o.s.
Hazard Class	6.1
Subsidiary Hazard Class	4.1
Packing Group	I

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Cadmium	7440-43-9	X	ACTIVE	-

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Cadmium	7440-43-9	X	-	231-152-8	X	X		X	X	KE-04397

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313

Component	CAS No	Weight %	SARA 313 - Threshold Values %
Cadmium	7440-43-9	100	0.1

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Cadmium	-	-	X	X

Clean Air Act

OSHA - Occupational Safety and Health Administration Not applicable

Component	Specifically Regulated Chemicals	Highly Hazardous Chemicals
Cadmium	5 µg/m³ TWA 2.5 µg/m³ Action Level	-

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Cadmium	10 lb	-

California Proposition 65 This product contains the following Proposition 65 chemicals.

Component	CAS No	California Prop. 65	Prop 65 NSRL	Category
Cadmium	7440-43-9	Carcinogen Developmental Male Reproductive	0.05 µg/day	Developmental Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Cadmium	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Component	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Cadmium	-	Use restricted. See item 72. (see link for restriction details) Use restricted. See item 23. (see link for restriction details) Use restricted. See item 28. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	SVHC Candidate list - 231-152-8 - Carcinogenic, Article 57a;Specific target organ toxicity after repeated exposure, Article 57(f) - human health

After the sunset date the use of this substance requires either an authorization or can only be used for exempted uses, e.g. use in scientific research and development which includes routine analytics or use as intermediate.

https://echa.europa.eu/authorisation-list
https://echa.europa.eu/substances-restricted-under-reach
https://echa.europa.eu/candidate-list-table

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Cadmium	7440-43-9	Listed	Not applicable	Not applicable	0.01% (Max. Conc.)

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Cadmium	7440-43-9	Not applicable	Not applicable	Not applicable	Annex I - Y26

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Revision Date 24-Dec-2021
Print Date 24-Dec-2021
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

Safety Data Sheet
acc. to OSHA HCS

Revision date: 01/08/2025

*
1 Identification

· **Product identifier**

· **Product Name: Indeno(1,2,3-cd)pyrene Standard (1X1 mL)**

· **Part no. :** P-730-1
· **Restrictions**
After February 3, 2025, this chemical substance (as defined in TSCA section 3(2))/ product cannot be distributed in commerce to retailers. After January 28, 2026, this chemical substance (as defined in TSCA section 3(2))/ product is and can only be distributed in commerce or processed with a concentration of methylene chloride equal to or greater than 0.1% by weight for the following purposes: (1) Processing as a reactant; (2) Processing for incorporation into a formulation, mixture, or reaction product; (3) Processing for repackaging; (4) Processing for recycling; (5) Industrial or commercial use as a laboratory chemical; (6) Industrial or commercial use as a bonding agent for solvent welding; (7) Industrial and commercial use as a paint and coating remover from safety critical, corrosion sensitive components of aircraft and spacecraft; (8) Industrial and commercial use as a processing aid; (9) Industrial and commercial use for plastic and rubber products manufacturing; (10) Industrial and commercial use as a solvent that becomes part of a formulation or mixture, where that formulation or mixture will be used inside a manufacturing process, and the solvent (methylene chloride) will be reclaimed; (11) Industrial and commercial use in the refinishing for wooden furniture, decorative pieces, and architectural fixtures of artistic, cultural or historic value until May 8, 2029; (12) Industrial and commercial use in adhesives and sealants in aircraft, space vehicle, and turbine applications for structural and safety critical non-structural applications until May 8, 2029; (13) Disposal; and (14) Export.
· **Application of the substance / the mixture** Reagents and Standards for Analytical Chemical Laboratory Use

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Agilent Technologies, Inc.
5301 Stevens Creek Blvd.
Santa Clara, CA 95051 USA

· **Information department:**
Telephone: 800-227-9770
e-mail: pdl-msds_author@agilent.com
· **Emergency telephone number:** CHEMTREC®: 1-800-424-9300

*
2 Hazard(s) identification

· **Classification of the substance or mixture**

GHS08 Health hazard

Carcinogenicity 1B	H350 May cause cancer.
Specific Target Organ Toxicity - Repeated Exposure 2	H373 May cause damage to organs through prolonged or repeated exposure.

GHS07

Skin Irritation 2	H315 Causes skin irritation.
Eye Irritation 2A	H319 Causes serious eye irritation.
Specific Target Organ Toxicity - Single Exposure 3	H335 May cause respiratory irritation.

· **Label elements**
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

(Contd. on page 2)

Safety Data Sheet
acc. to OSHA HCS

Printing date: 01/08/2025 Revision date: 01/08/2025

Product Name: Indeno(1,2,3-cd)pyrene Standard (1X1 mL)

(Contd. of page 1)

· **Hazard pictograms**

GHS07 GHS08

· **Signal word** Danger

· **Hazard-determining components of labeling:**
dichloromethane

· **Hazard statements**
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H350 May cause cancer.
H335 May cause respiratory irritation.
H373 May cause damage to organs through prolonged or repeated exposure.

· **Precautionary statements**

P260	Do not breathe vapours.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P264	Wash thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P321	Specific treatment (see on this label).
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312	Call a poison center/doctor if you feel unwell.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P314	Get medical advice/attention if you feel unwell.
P302+P352	If on skin: Wash with plenty of water.
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P362+P364	Take off contaminated clothing and wash it before reuse.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**
· **NFPA ratings (scale 0 - 4)**

Health = 2
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = *2
Fire = 0
Reactivity = 0

(Contd. on page 3)

Safety Data Sheet
acc. to OSHA HCS

Printing date: 01/08/2025 Revision date: 01/08/2025

Product Name: Indeno(1,2,3-cd)pyrene Standard (1X1 mL)

(Contd. of page 2)

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

*
3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**		
75-09-2	dichloromethane	99.9925%

*
4 First-aid measures

· **Description of first aid measures**
· **General information:**
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
· **After inhalation:** In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
· **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· **After swallowing:** If symptoms persist consult doctor.
· **Information for doctor:**
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

*
5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
· **Special hazards arising from the substance or mixture**
During heating or in case of fire poisonous gases are produced.
· **Advice for firefighters**
· **Protective equipment:** Mouth respiratory protective device.

*
6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures** Mount respiratory protective device.
· **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to section 13.
Ensure adequate ventilation.
· **Reference to other sections**
See Section 7 for information on safe handling.

(Contd. on page 4)

Safety Data Sheet
acc. to OSHA HCS

(Contd. of page 3)

See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

· **Protective Action Criteria for Chemicals**

· **PAC-1:**		
75-09-2	dichloromethane	200 ppm
193-39-5	indeno[1,2,3-cd]pyrene	1.2 mg/m³
· **PAC-2:**		
75-09-2	dichloromethane	560 ppm
193-39-5	indeno[1,2,3-cd]pyrene	13 mg/m³
· **PAC-3:**		
75-09-2	dichloromethane	6,900 ppm
193-39-5	indeno[1,2,3-cd]pyrene	79 mg/m³

*
7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
Prevent formation of aerosols.
· **Information about protection against explosions and fires:** Keep respiratory protective device available.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** Keep receptacle tightly sealed.
· **Specific end use(s)** No further relevant information available.

*
8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see section 7.

· **Control parameters**

· **Components with limit values that require monitoring at the workplace:**	
75-09-2 dichloromethane	
PEL	Short-term value: 125 ppm Long-term value: 25 ppm see 29 CFR 1910.1052
REL	See Pocket Guide App. A
TLV	Long-term value: 50 ppm BEI, A3

(Contd. on page 5)

Safety Data Sheet
acc. to OSHA HCS

Printing date: 01/08/2025 Revision date: 01/08/2025

Product Name: Indeno(1,2,3-cd)pyrene Standard (1X1 mL)

(Contd. of page 4)

· **Ingredients with biological limit values:**

75-09-2 dichloromethane

BEI	0.3 mg/L Medium: urine Time: end of shift Parameter: Dichloromethane (semi-quantitative)

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Do not inhale gases / fumes / aerosols.
Avoid contact with the eyes and skin.
· **Breathing equipment:**
When used as intended with Agilent instruments, the use of the product under normal laboratory conditions and with standard practices does not result in significant airborne exposures and therefore respiratory protection is not needed.
Under an emergency condition where a respirator is deemed necessary, use a NIOSH or equivalent approved device/equipment with appropriate organic or acid gas cartridge.
· **Protection of hands:**
Although not recommended for constant contact with the chemicals or for clean-up, nitrile gloves 11-13 mil thickness are recommended for normal use. The breakthrough time is 1 hr. For cleaning a spill where there is direct contact of the chemical, butyl rubber gloves are recommended 12-15 mil thickness with breakthrough times exceeding 4 hrs. Supplier recommendations should be followed.
· **Material of gloves**
For normal use: nitrile rubber, 11-13 mil thickness
For direct contact with the chemical: butyl rubber, 12-15 mil thickness
· **Penetration time of glove material**
For normal use: nitrile rubber: 1 hour
For direct contact with the chemical: butyl rubber: >4 hours
· **Eye protection:**
Safety glasses

Tightly sealed goggles

9 Physical and chemical properties

· **Information on basic physical and chemical properties**
· **General Information**
· **Appearance:**

Form:	Fluid
Color:	Colorless
· **Odor:**	Like chlorine

(Contd. on page 6)

Safety Data Sheet
acc. to OSHA HCS

(Contd. of page 5)

· **Odor threshold:**	Not determined.
· **pH-value:**	Not determined.
· **Change in condition**	
Melting point/Melting range:	-95.1 °C (-139.2 °F)
Boiling point/Boiling range:	40 °C (104 °F)
· **Flash point:**	Not applicable.
· **Flammability (solid, gaseous):**	Not applicable.
· **Auto igniting:**	605 °C (1,121 °F)
· **Decomposition temperature:**	Not determined.
· **Ignition temperature:**	Product is not selfigniting.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits:**	
Lower:	13 Vol %
Upper:	22 Vol %
· **Vapor pressure at 20 °C (68 °F):**	360 hPa (270 mm Hg)
· **Density at 20 °C (68 °F):**	1.3 g/cm³ (10.8485 lbs/gal)
· **Relative density**	Not determined.
· **Vapor density**	Not determined.
· **Evaporation rate**	Not determined.
· **Solubility in / Miscibility with**	
Water at 20 °C (68 °F):	20 g/l
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic:	Not determined.
Kinematic:	Not determined.
· **Solvent content:**	
Organic solvents:	100.0 %
VOC content:	0.00 % 0.0 g/l / 0.00 lb/gal
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** No dangerous decomposition products known.

(Contd. on page 7)

Safety Data Sheet
acc. to OSHA HCS

(Contd. of page 6)

*
11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**		
75-09-2 dichloromethane		
Oral	LD50	1,600 mg/kg (rat)
Dermal	LD50	>2,000 mg/kg (rat)
Inhalative	LC50/4 h	88 mg/L (rat)

· **Primary irritant effect:**
· **on the skin:** Irritant to skin and mucous membranes.
· **on the eye:** Irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
75-09-2	dichloromethane	2A
193-39-5	indeno[1,2,3-cd]pyrene	2B

· **NTP (National Toxicology Program)**
All components have the value R.

· **OSHA-Ca (Occupational Safety & Health Administration)**	
75-09-2	dichloromethane

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Water hazard class 2 (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

(Contd. on page 8)

Safety Data Sheet
acc. to OSHA HCS

(Contd. of page 7)

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

· **Not Regulated, De minimis Quantities**	-
· **UN-Number** · **DOT, ADN, IMDG, IATA**	not regulated
· **UN proper shipping name** · **DOT, ADN, IMDG, IATA**	not regulated
· **Transport hazard class(es)** · **DOT, ADN, IMDG, IATA** · **Class**	not regulated
· **Packing group** · **DOT, IMDG, IATA**	not regulated
· **Environmental hazards:**	Not applicable.
· **Special precautions for user**	Not applicable.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **UN "Model Regulation":**	not regulated

*
15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **Section 355 (extremely hazardous substances):**
None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**
All ingredients are listed.

· **TSCA (Toxic Substances Control Act):**
After February 3, 2025, this chemical substance (as defined in TSCA section 3(2))/ product cannot be distributed in commerce to retailers. After January 28, 2026, this chemical substance (as defined in TSCA section 3(2))/ product is and can only be distributed in commerce or processed with a concentration of methylene chloride equal to or greater than 0.1% by weight for the following purposes: (1) Processing as a reactant; (2) Processing for incorporation into a formulation, mixture, or reaction product; (3) Processing for repackaging; (4) Processing for recycling; (5) Industrial or commercial use as a laboratory chemical; (6) Industrial or commercial use as a bonding agent for solvent welding; (7) Industrial and commercial use as a paint and coating remover from safety critical, corrosion sensitive components of aircraft and spacecraft; (8) Industrial and commercial use as a processing aid; (9) Industrial and commercial use for plastic and rubber products manufacturing; (10) Industrial and commercial

(Contd. on page 9)

Safety Data Sheet
acc. to OSHA HCS

(Contd. of page 8)

use as a solvent that becomes part of a formulation or mixture, where that formulation or mixture will be used inside a manufacturing process, and the solvent (methylene chloride) will be reclaimed; (11) Industrial and commercial use in the refinishing for wooden furniture, decorative pieces, and architectural fixtures of artistic, cultural or historic value until May 8, 2029; (12) Industrial and commercial use in adhesives and sealants in aircraft, space vehicle, and turbine applications for structural and safety critical non-structural applications until May 8, 2029; (13) Disposal; and (14) Export.

All components have the value ACTIVE.

· **Hazardous Air Pollutants**

All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

All ingredients are listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

75-09-2	dichloromethane	L
193-39-5	indeno[1,2,3-cd]pyrene	B2

· **TLV (Threshold Limit Value)**

75-09-2	dichloromethane	A3

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

75-09-2	dichloromethane

· **National regulations:**

· **Additional classification according to Decree on Hazardous Materials:**
Carcinogenic hazardous material group III (dangerous).

· **Information about limitation of use:**
Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation.
Exceptions can be made by the authorities in certain cases.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

*
16 Other information

The information contained in this document is based on Agilent's state of knowledge at the time of preparation.
No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.

· **Department issuing SDS:** Document Control / Regulatory
· **Contact:** pdl-acg-regulatory-cq@agilent.com
· **Date of preparation / last revision** 01/08/2025 / 3
· **Abbreviations and acronyms:**
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods

(Contd. on page 10)

Safety Data Sheet
acc. to OSHA HCS

Printing date: 01/08/2025 Revision date: 01/08/2025

Product Name: Indeno(1,2,3-cd)pyrene Standard (1X1 mL)

(Contd. of page 9)

DOT: US Department of Transportation
IATA: International Air Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
BEI: Biological Exposure Limit
Skin Irritation 2: Skin corrosion/irritation – Category 2
Eye Irritation 2A: Serious eye damage/eye irritation – Category 2A
Carcinogenicity 1B: Carcinogenicity – Category 1B
Specific Target Organ Toxicity - Single Exposure 3: Specific target organ toxicity (single exposure) – Category 3
Specific Target Organ Toxicity - Repeated Exposure 2: Specific target organ toxicity (repeated exposure) – Category 2

· *** Data compared to the previous version altered.**

Lead

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 12/15/2014 Revision date: 12/15/2014 Version: 1.1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Substance

CAS No : 7439-92-1

Formula : Pb

Synonyms : C.I. 77575, in massive state / elemental lead, in massive state / glover, in massive state

BIG no : 10073

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Solder
Battery: component
Construction
Electrodes

1.3. Details of the supplier of the safety data sheet

GSC International, Inc.
1747 N. Deffer Drive
Nixa,
MO 65714
United States of America

Tel: 417-374-7431
Fax: 417-374-7442
Email: info@gscinternationalinc.com

1.4. Emergency telephone number

Country	Organization/Company	Address	Emergency number
MEXICO	Servicio de Informacion Toxicologica Sintox	Tintoreto #32 Edif. a Desp. Col. Nochebuena Mixcoac México, D.F.	1 800 009 2800 +52 55 5611 2634 /+52 55 5598 9095
UNITED STATES OF AMERICA	American Association of Poison Control Centers		1-800-222-1222

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Acute Tox. 4 (Oral)	H302
Acute Tox. 4 (Inhalation)	H332
Carc. 1B	H350
Repr. 1A	H360
STOT RE 2	H373
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :

GHS07 GHS08 GHS09

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H302+H332 - Harmful if swallowed or if inhaled
H350 - May cause cancer
H360 - May damage fertility or the unborn child
H373 - May cause damage to organs through prolonged or repeated exposure

H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements (GHS-US) : P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P260 - Do not breathe dust, fume
P264 - Wash hands thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P273 - Avoid release to the environment
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P308+P313 - If exposed or concerned: Get medical advice/attention
P314 - Get medical advice/attention if you feel unwell
P501 - Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Name	Product identifier	%	Classification (GHS-US)
Lead (Main constituent)	(CAS No) 7439-92-1	> 99,9	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Carc. 1B, H350 Repr. 1A, H360 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

Full text of H-phrases: see section 16

3.2. Mixture

Not applicable

4.1. Description of first aid measures

First-aid measures general : If you feel unwell, seek medical advice. IF exposed or concerned: Get medical advice/attention. Call a poison center/doctor/physician if you feel unwell.

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. Not applicable. Call a poison center/doctor/physician if you feel unwell.

First-aid measures after skin contact : Not applicable. Wash skin with plenty of water.

First-aid measures after eye contact : Not applicable. Rinse eyes with water as a precaution.

First-aid measures after ingestion : Not applicable. Rinse mouth. Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : No effects known.

Symptoms/injuries after skin contact : No effects known.

Symptoms/injuries after eye contact : No effects known.

Symptoms/injuries after ingestion : No effects known.

Chronic symptoms : No effects known.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Adapt extinguishing media to the environment.

Unsuitable extinguishing media : No unsuitable extinguishing media known.

5.2. Special hazards arising from the substance or mixture

Fire hazard : DIRECT FIRE HAZARD. Non combustible.

Explosion hazard	:	DIRECT EXPLOSION HAZARD. No data available on direct explosion hazard. INDIRECT EXPLOSION HAZARD. No data available on indirect explosion hazard.
Reactivity	:	On burning: formation of metallic fumes. Oxidizes on exposure to air.

5.3. Advice for firefighters

Precautionary measures fire	:	Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to heat: have neighborhood close doors and windows.
Firefighting instructions	:	Dilute toxic gases with water spray. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.
Protection during firefighting	:	Heat/fire exposure: compressed air/oxygen apparatus. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment	:	Gloves. Protective clothing. See "Material-Handling" to select protective clothing.
Emergency procedures	:	Mark the danger area. No naked flames.

6.1.2. For emergency responders

Protective equipment	:	Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment. Prevent soil and water pollution. Prevent spreading in sewers. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment	:	Not applicable. Collect spillage.
Methods for cleaning up	:	Recover mechanically the product. Pick-up the material. Take collected spill to manufacturer/competent authority. Notify authorities if product enters sewers or public waters.
Other information	:	Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	:	Meet the legal requirements. Do not discharge the waste into the drain. Handle unclean empty containers as full ones. Observe strict hygiene. Measure the concentration in the atmosphere. Carry out operations in the open/under local exhaust/ventilation or with respiratory protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust, fume. Use only outdoors or in a well-ventilated area. Take all necessary technical measures to avoid or minimize the release of the product on the workplace. Limit quantities of product at the minimum necessary for handling and limit the number of exposed workers. Provide local exhaust or general room ventilation. Wear personal protective equipment. Floors, walls and other surfaces in the hazard area must be cleaned regularly.
Hygiene measures	:	Separate working clothes from town clothes. Launder separately. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	:	Does not require any specific or particular technical measures. Comply with applicable regulations.
Storage conditions	:	Store locked up. Store in a well-ventilated place. Keep cool.
Incompatible materials	:	Strong acids, strong bases and oxidation agents.
Heat-ignition	:	KEEP SUBSTANCE AWAY FROM: heat sources.
Prohibitions on mixed storage	:	KEEP SUBSTANCE AWAY FROM: oxidizing agents. Strong acids. Strong bases.
Storage area	:	Meet the legal requirements.
Special rules on packaging	:	SPECIAL REQUIREMENTS: closing. correctly labeled. meet the legal requirements. Secure fragile packaging in solid containers.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Lead (7439-92-1)		
ACGIH	ACGIH TWA (mg/m³)	0,05 mg/m³
ACGIH	Remark (ACGIH)	CNS & PNS impair
OSHA	Not applicable	

8.2. Exposure controls

Appropriate engineering controls : Provide adequate general and local exhaust ventilation. Ensure good ventilation of the work station.

Personal protective equipment : Protective goggles. Gloves.

Materials for protective clothing : GIVE EXCELLENT RESISTANCE: No data available. GIVE GOOD RESISTANCE: butyl rubber. PVC. GIVE LESS RESISTANCE: No data available. GIVE POOR RESISTANCE: No data available.

Hand protection : protective gloves.

Eye protection : Safety glasses.

Skin and body protection : Not required for normal conditions of use.

Respiratory protection : Wear respiratory protection.

Environmental exposure controls : Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Solid

Appearance : Metal.

Molecular mass : 207,20 g/mol

Color : White to blue-grey

Odor : Odorless

Odor threshold : No data available

pH : No data available

Relative evaporation rate (butyl acetate=1) : No data available

Melting point : 327 °C

Freezing point : No data available

Boiling point : 1740 °C

Flash point : Not applicable

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Flammability (solid, gas) : No data available

Vapor pressure : < 0,1 hPa

Relative vapor density at 20 °C : No data available

Relative density : 11,3

Specific gravity / density : 11340 kg/m³

Solubility : insoluble in water. Substance sinks in water. Soluble in nitric acid. Insoluble in organic solvents. Water: < 0,1 g/100ml

Log Pow : 0,73 (Estimated value)

Log Kow : No data available

Viscosity, kinematic	:	Not applicable
Viscosity, dynamic	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available
Explosive limits	:	No data available

9.2. Other information

VOC content : Not applicable (inorganic)

SECTION 10: Stability and reactivity

10.1. Reactivity

On burning: formation of metallic fumes. Oxidizes on exposure to air.

10.2. Chemical stability

Unstable on exposure to air.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

No additional information available

10.5. Incompatible materials

Acids. Bases.

10.6. Hazardous decomposition products

Thermal decomposition generates : fume.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Oral: Harmful if swallowed. Inhalation: Harmful if inhaled.

Lead (\f)7439-92-1	
LD50 oral rat	> 2000 mg/kg body weight (Rat; Weight of evidence)
LD50 dermal rat	> 2000 mg/kg body weight (Rat; Experimental value; OECD 402: Acute Dermal Toxicity)
ATE US (oral)	500,000 mg/kg body weight
ATE US (gases)	4500,000 ppmV/4h
ATE US (vapors)	11,000 mg/l/4h
ATE US (dust, mist)	1,500 mg/l/4h
Additional information	Lead massive metal is not considered to be acutely toxic. It is not easily inhaled or ingested, and if it is accidentally ingested normally passes through the gastrointestinal system without significant absorption into the body. Lead is not easily absorbed through the skin.

Skin corrosion/irritation : Not classified
(Based on available data, the classification criteria are not met)

Serious eye damage/irritation : Not classified
(Based on available data, the classification criteria are not met)

Respiratory or skin sensitization : Not classified
(Based on available data, the classification criteria are not met)

Germ cell mutagenicity : Not classified
(Based on available data, the classification criteria are not met)

Carcinogenicity : May cause cancer.

Lead (7439-92-1)	
Additional information	There is some evidence that inorganic lead compounds may have a carcinogenic effect, and they have been classified by IARC as probably carcinogenic to humans. However, it is considered that this classification does not apply to lead in articles, given the very low bioavailability of metallic lead. Carcinogenicity studies of lead metal powder have been negative. Epidemiology studies of workers exposed to inorganic lead compounds have found a limited association with stomach cancer. IARC has concluded that lead metal is possibly carcinogenic to humans (Group aB).
IARC group	2B - Possibly carcinogenic to humans
National Toxicology Program (NTP) Status	3 - Reasonably anticipated to be Human Carcinogen

Reproductive toxicity : May damage fertility or the unborn child.

Specific target organ toxicity (single exposure) : Not classified

(Based on available data, the classification criteria are not met)

Specific target organ toxicity (repeated exposure) : May cause damage to organs through prolonged or repeated exposure.

Lead (7439-92-1)	
Additional information	Lead is a cumulative poison and may be absorbed into the body through ingestion or inhalation. Although inhalation and ingestion of lead in massive form are unlikely, poor hygiene practises may result in hand to mouth transfer which maybe significant over a prolonged period of time. Inorganic lead compounds have been documented in observational human studies to produce toxicity in multiple organ systems and body function including the haemotopoetic (blood) system, kidney function, reproductive function and the central nervous system.

Aspiration hazard : Not classified

(Based on available data, the classification criteria are not met)

Symptoms/injuries after inhalation : No effects known.

Symptoms/injuries after skin contact : No effects known.

Symptoms/injuries after eye contact : No effects known.

Symptoms/injuries after ingestion : No effects known.

Chronic symptoms : No effects known.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Dangerous for the environment. Very toxic to aquatic life with long lasting effects.

Ecology - air : Not dangerous for the ozone layer (Regulation (EC) No 1005/2009). Not included in the list of fluorinated greenhouse gases (Regulation (EC) No 842/2006). TA-Luft Klasse 5.2.2/II.

Ecology - water : No water pollutant (surface water). Maximum concentration in drinking water: 0.010 mg/l (lead) (Directive 98/83/EC). Highly toxic to aquatic organisms.

Lead (7439-92-1)	
LC50 fish 1	2,8 (0,44 - 542) mg/l (96h) Coughlan, D.J., S.P. Gloss, and J. Kubota 1986. Acute and Sub-Chronic Toxicity of Lead to the Early Life Stages of Small mouth Bass (Micropterus dolomieui). Water Air Soil Pollut. 28(3/4):265-275
EC50 Daphnia 1	4,46 (0,53 - 5,1) mg/l (48h) Govindarajan, S., C.P. Valsaraj, R. Mohan, V. Hariprasad, and R. Ramasubramanian 1993. Toxicity of Heavy Metals in Aquaculture Organisms: Penaeus indicus, Perna viridis, Artemia salina and Skeletonema costatum. Pollut.Res. 12(3):187-189

12.2. Persistence and degradability

Lead (7439-92-1)	
Persistence and degradability	Biodegradability: Not applicable. No (test)data available on mobility of the substance.
ThOD	Not applicable (inorganic)

12.3. Bioaccumulative potential

Lead (7439-92-1)	
Log Pow	0,73 (Estimated value)
Bioaccumulative potential	Low bioaccumulation potential (Log Kow < 4).

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on ozone layer :

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Reuse or recycle following decontamination. Remove to an authorized dump (Class I). Do not discharge into surface water (2000/60/EC, Council decision 2455/2001/EC, O.J. L331 of 15/12/2001).

Additional information : LWCA (the Netherlands): KGA category 05. Hazardous waste according to Directive 2008/98/EC.

SECTION 14: Transport information

In accordance with DOT

Transport document description : UN3077 Environmentally hazardous substances, solid, n.o.s. Lead(7439-92-1), 9, III

UN-No.(DOT) : UN3077

Proper Shipping Name (DOT) : Environmentally hazardous substances, solid, n.o.s.
Lead(7439-92-1)

Department of Transportation (DOT) Hazard Classes : 9 - Class 9 - Miscellaneous hazardous material 49 CFR 173.140

Hazard labels (DOT) : 9 - Class 9 (Miscellaneous dangerous materials)

DOT Symbols : G - Identifies PSN requiring a technical name

Packing group (DOT) : III - Minor Danger

DOT Special Provisions (49 CFR 172.102)	:	8 - A hazardous substance that is not a hazardous waste may be shipped under the shipping description “Other regulated substances, liquid or solid, n.o.s.”, as appropriate. In addition, for solid materials, special provision B54 applies. 146 - This description may be used for a material that poses a hazard to the environment but does not meet the definition for a hazardous waste or a hazardous substance, as defined in 171.8 of this subchapter, or any hazard class as defined in Part 173 of this subchapter, if it is designated as environmentally hazardous by the Competent Authority of the country of origin, transit or destination. 335 - Mixtures of solids that are not subject to this subchapter and environmentally hazardous liquids or solids may be classified as “Environmentally hazardous substances, solid, n.o.s,” UN3077 and may be transported under this entry, provided there is no free liquid visible at the time the material is loaded or at the time the packaging or transport unit is closed. Each transport unit must be leak-proof when used as bulk packaging. A112 - Notwithstanding the quantity limits shown in Column (9A) and (9B) for this entry, the following IBCs are authorized for transportation aboard passenger and cargo-only aircraft. Each IBC may not exceed a maximum net quantity of 1,000 kg: a. Metal: 11A, 11B, 11N, 21A, 21B and 21N b. Rigid plastics: 11H1, 11H2, 21H1 and 21H2 c. Composite with plastic inner receptacle: 11HZ1, 11HZ2, 21HZ1 and 21HZ2 d. Fiberboard: 11G e. Wooden: 11C, 11D and 11F (with inner liners) f. Flexible: 13H2, 13H3, 13H4, 13H5, 13L2, 13L3, 13L4, 13M1 and 13M2 (flexible IBCs must be sift-proof and water resistant or must be fitted with a sift-proof and water resistant liner). B54 - Open-top, sift-proof rail cars are also authorized. IB8 - Authorized IBCs: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Fiberboard (11G); Wooden (11C, 11D and 11F); Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2). IP3 - Flexible IBCs must be sift-proof and water-resistant or must be fitted with a sift-proof and water-resistant liner. N20 - A 5M1 multi-wall paper bag is authorized if transported in a closed transport vehicle. T1 - 1.5 178.274(d)(2) Normal..... 178.275(d)(2) TP33 - The portable tank instruction assigned for this substance applies for granular and powdered solids and for solids which are filled and discharged at temperatures above their melting point which are cooled and transported as a solid mass. Solid substances transported or offered for transport above their melting point are authorized for transportation in portable tanks conforming to the provisions of portable tank instruction T4 for solid substances of packing group III or T7 for solid substances of packing group II, unless a tank with more stringent requirements for minimum shell thickness, maximum allowable working pressure, pressure-relief devices or bottom outlets are assigned in which case the more stringent tank instruction and special provisions shall apply. Filling limits must be in accordance with portable tank special provision TP3. Solids meeting the definition of an elevated temperature material must be transported in accordance with the applicable requirements of this subchapter.
DOT Packaging Exceptions (49 CFR 173.xxx)	:	155
DOT Packaging Non Bulk (49 CFR 173.xxx)	:	213
DOT Packaging Bulk (49 CFR 173.xxx)	:	240
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	:	No limit
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	:	No limit
DOT Vessel Stowage Location	:	A - The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel.

Additional information

Other information : No supplementary information available.

ADR

No additional information available

Transport by sea

UN-No. (IMDG)	:	3077
Proper Shipping Name (IMDG)	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Class (IMDG)	:	9 - Miscellaneous dangerous compounds
Packing group (IMDG)	:	III - substances presenting low danger

Air transport

UN-No.(IATA)	:	3077
Proper Shipping Name (IATA)	:	Environmentally hazardous substance, solid, n.o.s.
Class (IATA)	:	9 - Miscellaneous Dangerous Goods
Packing group (IATA)	:	III - Minor Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

Lead (7439-92-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on United States SARA Section 313 Not listed on the United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists)	10 lb

15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Repr. 1A	H360Df
Acute Tox. 4 (Inhalation)	H332
Acute Tox. 4 (Oral)	H302
STOT RE 2	H373
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

Repr.Cat.1; R61
Repr.Cat.3; R62
Xn; R20/22
R33
N; R50/53

Full text of R-phrases: see section 16

15.2.2. National regulations

Lead (7439-92-1)
Listed on IARC (International Agency for Research on Cancer) Listed as carcinogen on NTP (National Toxicology Program)

15.3. US State regulations

No additional information available

SECTION 16: Other information

Revision date	:	12/15/2014

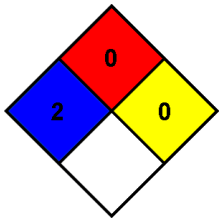
Full text of H-phrases:

Acute Tox. 4 (Inhalation)	Acute toxicity (inhalation) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Carc. 1B	Carcinogenicity Category 1B
Repr. 1A	Reproductive toxicity Category 1A
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
H302	Harmful if swallowed
H332	Harmful if inhaled
H350	May cause cancer
H360	May damage fertility or the unborn child
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects

NFPA health hazard : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard : 0 - Materials that will not burn.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : * Chronic Hazard - Chronic (long-term) health effects may result from repeated overexposure

Flammability : 0 Minimal Hazard

Physical : 0 Minimal Hazard

Personal Protection : B

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

SAFETY DATA SHEET

Creation Date 20-Aug-2014 **Revision Date** 09-Feb-2024 **Revision Number** 5

1. Identification

Product Name **Mercury (Certified ACS)**

Cat No. : **M141-1LB; M141-6LB**

Synonyms Colloidal mercury; Hydrargyrum; Metallic mercury

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute Inhalation Toxicity - Vapors	Category 2
Reproductive Toxicity	Category 1B
Specific target organ toxicity - (repeated exposure)	Category 1
Target Organs - Central nervous system (CNS), Kidney.	

Label Elements

Signal Word
Danger

Hazard Statements
Fatal if inhaled
May damage the unborn child
Causes damage to organs through prolonged or repeated exposure

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear respiratory protection
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
WARNING. Reproductive Harm - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Mercury	7439-97-6	100

4. First-aid measures

General Advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion Do NOT induce vomiting. Call a physician or poison control center immediately.

Most important symptoms and effects None reasonably foreseeable.

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Substance is nonflammable; use agent most appropriate to extinguish surrounding fire. approved class D extinguishers.

Unsuitable Extinguishing Media Water may be ineffective

Flash Point Not applicable
Method - No information available

Autoignition Temperature No information available
Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Very toxic. Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. Keep product and empty container away from heat and sources of ignition. Do not allow run-off from fire-fighting to enter drains or water courses.

Hazardous Combustion Products
Mercury oxide. Toxic fumes.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
4	0	0	N/A

6. Accidental release measures

Personal Precautions Ensure adequate ventilation. Use personal protective equipment as required. No special precautions required. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.

Environmental Precautions Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Should not be released into the environment. Local authorities should be advised if significant spillages cannot be contained.

Methods for Containment and Clean Up Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Pick up and transfer to properly labelled containers.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance.

Storage. Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area. Keep in a dry place. Keep away from acids. Incompatible Materials. Strong oxidizing agents. Ammonia. Metals. Halogens.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH	Mexico OEL (TWA)
Mercury	TWA: 0.025 mg/m³ Skin	(Vacated) TWA: 0.05 mg/m³ Ceiling: 0.1 mg/m³ (Vacated) STEL: 0.03 mg/m³ Skin (Vacated) Ceiling: 0.1 mg/m³	IDLH: 10 mg/m³ TWA: 0.05 mg/m³ Ceiling: 0.1 mg/m³	TWA: 0.025 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. None under normal use conditions.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection No special protective equipment required.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Silver
Odor	Odorless
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-38.87 °C / -38 °F
Boiling Point/Range	356.72 °C / 674.1 °F
Flash Point	Not applicable
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	0.002 mmHg @ 25 °C
Vapor Density	7.0
Specific Gravity	13.59 (H2O=1)
Solubility	Insoluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	Hg
Molecular Weight	200.59

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products. Excess heat.

Incompatible Materials Strong oxidizing agents, Ammonia, Metals, Halogens

Hazardous Decomposition Products Mercury oxide, Toxic fumes

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Mercury	Not listed	Not listed	LC50 < 27 mg/m³ (Rat) 2 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Mercury	7439-97-6	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects May cause harm to the unborn child.

Teratogenicity No information available.

STOT - single exposure None known

STOT - repeated exposure Central nervous system (CNS) Kidney

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

The product contains following substances which are hazardous for the environment. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. May cause long-term adverse effects in the environment. Do not allow material to contaminate ground water system.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Mercury	Not listed	0.9 mg/L LC50 96h	Not listed	Not listed

		0.18 mg/L LC50 96h 0.16 mg/L LC50 96h 0.5 mg/L LC50 96h		

Persistence and Degradability Insoluble in water May persist

Bioaccumulation/ Accumulation No information available.

Mobility Is not likely mobile in the environment due its low water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Mercury - 7439-97-6	U151	-

14. Transport information

DOT

UN-No	UN2809
Proper Shipping Name	Mercury
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

TDG

UN-No	UN2809
Proper Shipping Name	Mercury
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

IATA

UN-No	UN2809
Proper Shipping Name	Mercury
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

IMDG/IMO

UN-No	UN2809
Proper Shipping Name	Mercury
Hazard Class	8
Packing Group	III

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Mercury	7439-97-6	X	ACTIVE	S;12C

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule.

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT) Not applicable

TSCA 12(b) - Notices of Export

Component	CAS No	**TSCA 12(b)** - Notices of Export
Mercury	7439-97-6	Section 5

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Mercury	7439-97-6	X	-	231-106-7	X	X		X	X	KE-23117

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372. Note that PBT chemicals are not eligible for the de minimis exemption. For these chemicals, supplier notification limits are provided.

> 0 % = no low concentration cut-off set, supplier notification limit applies.

Component	CAS No	Weight %	SARA 313 - Threshold Values %	SARA 313 - Reporting threasholds
Mercury	7439-97-6	100	> 0 %	RT = 10 lb

SARA 311/312 Hazard Categories

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Mercury	-	-	X	X

Clean Air Act

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

Component	Hazardous Substances RQs	CERCLA Extremely Hazardous Substances RQs	SARA Reportable Quantity (RQ)
Mercury	1 lb	-	1 lb 0.454 kg

California Proposition 65 This product contains the following Proposition 65 chemicals.

Component	CAS No	California Prop. 65	Prop 65 NSRL	Category
Mercury	7439-97-6	Developmental	-	Developmental

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Mercury	X	X	X	X	X

U.S. Department of Transportation
Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Mercury	7439-97-6	-	Use restricted. See item 18[a]. (see link for restriction details) Use restricted. See item 30. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	-

REACH links
https://echa.europa.eu/substances-restricted-under-reach

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Mercury	7439-97-6	Listed	Not applicable	Not applicable	0.1% (Max. Conc.)

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?
Not applicable

Other International Regulations

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Mercury	7439-97-6	Not applicable	Not applicable	X	Annex I - Y29

16. Other information

Prepared By Regulatory Affairs

Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date	20-Aug-2014
Revision Date	09-Feb-2024
Print Date	09-Feb-2024
Revision Summary	This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

HASP ATTACHMENT D

Daily Tailgate Safety Meeting Form

6.08 PRE-JOB SAFETY TAILGATE/TOOLBOX MEETING FORM

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

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

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

PLEASE SIGN THE BACK OF THIS SHEET

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

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

All Visitors and Contractors Must Print Their Company Name

Name	Signature	Company

HASP ATTACHMENT E

Silica Exposure Plan

6.17 SILICA EXPOSURE CONTROL PLAN

Silica Exposure Control Plans are Required for all Tasks with Potential Exposure to Silica See LaBella Safety Manual Policy 4.09 and Attachment A - Table 1 of OSHA 1926.1153

Exposure Control Plan Project Information

Person Completing the Plan: Caroline Bardwell	Date: October 23, 2025
Location: Ballston Spa office	Division: Environmental
Project Number:2241307	Phase: TBD

Description of Task

Concrete coring through basement floors for sample collection. A 1/8 or 1/4-inch diameter drill bit and/or a concrete core drill will be used to breach the concrete floor slabs in several basement areas at each building. Coring equipment will be equipped with a dust extraction vacuum with a HEPA filter.

Controls

OSHA requires that Silica Exposure Control Plans include the following:

- Engineering Controls - Work Practice Controls - Respiratory Protection
- Housekeeping Measures - Procedures Used to Restrict Access to Work Areas

Types of Controls:

Elimination or Substitution Controls:

- ☐ Other means of demo _____
- ☐ Different products _____
- ☐ Other _____

Engineering and Work Practice Controls:

- ☐ Doing work when concrete is wet _____
- ☐ Equipment with integrated water delivery _____
- ☐ Equipment w/ shroud/dust collection system _____
- X HEPA vacuuming Dust extraction vacuum with HEPA filter during drilling
- ☐ Water or water/surfactant for dust suppression _____
- ☐ Isolation/Enclosure _____
- ☐ Heavy equip. operation from enclosed cab _____
- ☐ Ventilation* _____
- ☐ Other _____

*When using ventilation, draw air out and don't expose others to exhaust dusts. See Ventilation section, below.

Restricted Access to Work Areas Measures:

- ☐ Signage _____
- ☐ Physical Barriers _____
- ☐ Dust Barriers _____
- ☐ Other _____

Housekeeping Measures:

- ☐ Wet mopping/wet sweeping _____
- X HEPA vacuuming of work area Dust extraction vacuum with HEPA filter during drilling
- ☐ HEPA vacuuming of clothing/coveralls _____
- ☐ Other _____

Administrative Controls:

6.17 SILICA EXPOSURE CONTROL PLAN

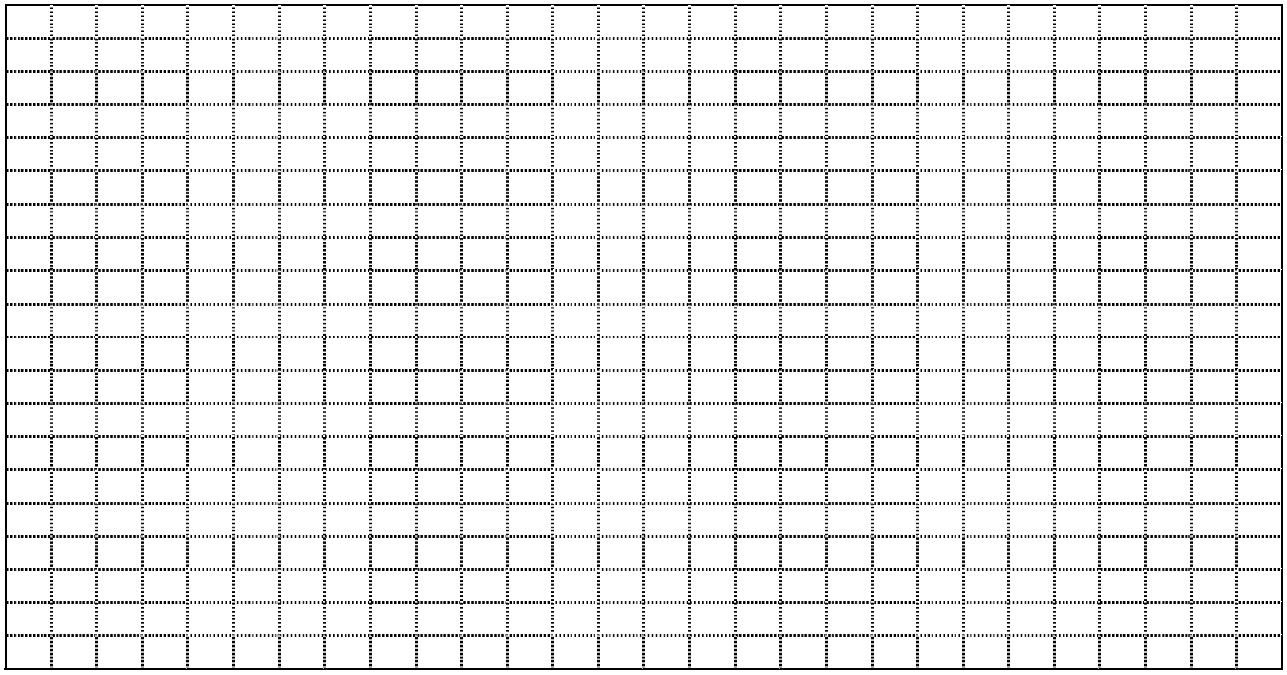
☐ Work schedules/coordination
X Inspections by competent persons — OSHA trained site supervisor
☐ Control points

Respiratory Protection and PPE:
X Half face: Level D — Cartridge Type: N95 or greater
☐ Full face: _____ — Cartridge Type: _____
☐ Supplied air units _____
☐ Coveralls: _____ — ☐ Other _____
X Gloves: Level D PPE — ☐ Other _____

Hygiene and Decontamination:
☐ Water or washing facilities on site
X Vacuuming clothing/self — Dust extraction vacuum
☐ Other

Ventilation

Ventilation Plan: Indicate number/location of fans (positive / negative), airflow direction air locations, discharge air outlets. ⇦ makeup



Area of location in building of ventilation plan: _____

Date Plan was posted/reviewed by workers: _____

Ventilation Safety Checklist:

☐ Makeup air free of contaminants
☐ Exhaust fan operation has failure warning
☐ Wetting of materials used to keep dust down
☐ Discharge not affecting others
☐ Dilution fans not stirring up dust
☐ All workers have approved respirators
☐ Workers not placed between contaminants created and exhaust inlet ports

ATTACHMENT

Table 1: Specified Exposure Control Methods When Working With Materials Containing Crystalline Silica

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
1	Stationary masonry saws	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
2a	Handheld power saws (any blade diameter) when used outdoors	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
2b	Handheld power saws (any blade diameter) when used indoors or in an enclosed area	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
3	Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less) for tasks performed outdoors only	• Use saw equipped with commercially available dust collection system. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency.	None	None
4a	Walk-behind saws when used outdoors	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
4b	Walk-behind saws when used indoors or in an enclosed area	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
5	Drivable saws for tasks performed outdoors only	• Use saw equipped with integrated water delivery system that continuously feeds water to the blade. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
6	Rig-mounted core saws or drills	• Use tool equipped with integrated water delivery system that supplies water to cutting surface. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
7	Handheld and stand-mounted drills (including	• Use drill equipped with commercially available shroud or cowling with dust	None	None

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
	impact and rotary hammer drills)	collection system. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. • Use a HEPA-filtered vacuum when cleaning holes.		
8	Dowel drilling rigs for concrete for tasks performed outdoors only	• Use shroud around drill bit with a dust collection system. • Dust collector must have a filter with 99% or greater efficiency and a filter cleaning mechanism. • Use a HEPA-filtered vacuum when cleaning holes.	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
9a	Vehicle-mounted drilling rigs for rock and concrete	• Use dust collection system with close capture hood or shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector.	None	None
9b	Vehicle-mounted drilling rigs for rock and concrete	• Operate from within an enclosed cab and use water for dust suppression on drill bit.	None	None
10a	Jackhammers and handheld powered chipping tools when used outdoors	• Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact.	None	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
10b	Jackhammers and handheld powered chipping tools when used indoors or in an enclosed area	• Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact.	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
10c	Jackhammers and handheld powered chipping tools when used outdoors	• Use tool equipped with commercially available shroud and dust collection system. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.	None	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
10d	Jackhammers and handheld powered chipping tools when used indoors or in an enclosed area	• Use tool equipped with commercially available shroud and dust collection system. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
11	Handheld grinders for mortar removal (i.e., tuckpointing)	• Use grinder equipped with commercially available shroud and dust collection system. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask	Powered Air-Purifying Respirator (PAPR) with P100 Filters
12a	Handheld grinders for uses other than mortar removal for tasks performed outdoors only	• Use grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
12b	Handheld grinders for uses other than mortar removal when used outdoors	• Use grinder equipped with commercially available shroud and dust collection system. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.	None	None
12c	Handheld grinders for uses other than mortar removal when used indoors or in an enclosed area	• Use grinder equipped with commercially available shroud and dust collection system. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.	None	N95 (or Greater Efficiency) Filtering Facepiece or Half Mask
13a	Walk-behind milling machines and floor grinders	• Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
13b	Walk-behind milling machines and floor grinders	• Use machine equipped with dust collection system recommended by the manufacturer. • Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. • Dust collector must provide the air flow	None	None

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
		recommended by the manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. • When used indoors or in an enclosed area, use a HEPA-filtered vacuum to remove loose dust in between passes.		
14	Small drivable milling machines (less than half- lane)	• Use a machine equipped with supplemental water sprays designed to suppress dust. • Water must be combined with a surfactant. • Operate and maintain machine to minimize dust emissions.	None	None
15a	Large drivable milling machines (half-lane and larger) for cuts of any depth on asphalt only	• Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust. • Operate and maintain machine to minimize dust emissions.	None	None
15b	Large drivable milling machines (half-lane and larger) for cuts of four inches in depth or less on any substrate	• Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust. • Operate and maintain machine to minimize dust emissions.	None	None
15c	Large drivable milling machines (half-lane and larger) for cuts of four inches in depth or less on any substrate	• Use a machine equipped with supplemental water spray designed to suppress dust. • Water must be combined with a surfactant. • Operate and maintain machine to minimize dust emissions.	None	None
16	Crushing machines	• Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated (e.g., hoppers, conveyers, sieves/sizing or vibrating components, and discharge points). • Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions. • Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote control station.	None	None
17a	Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (e.g., hoe- ramming, rock ripping) or used during demolition activities involving silica- containing materials	• Operate equipment from within an enclosed cab.	None	None
17b	Heavy equipment and utility vehicles used to abrade or fracture silica-containing	• When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary	None	None

Construction Task or Equipment Operation		Engineering and Work Practice Control Methods	Required Respiratory Protection	
			≤ 4 hours/shift	>4 hours/shift
	materials (e.g., hoe- ramming, rock ripping) or used during demolition activities involving silica- containing materials	to minimize dust emissions.		
18a	Heavy equipment and utility vehicles for tasks such as grading and excavating but not including demolishing, abrading, or fracturing silica-containing materials	• Apply water and/or dust suppressants as necessary to minimize dust emissions.	None	None
18b	Heavy equipment and utility vehicles for tasks such as grading and excavating but not including demolishing, abrading, or fracturing silica-containing materials	• When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab.	None	None

APPENDIX D OF RIWP
COMMUNITY AIR MONITORING PLAN

New York State Department of Health
Generic Community Air Monitoring Plan

Overview

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

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

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

Community Air Monitoring Plan

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

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

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

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

VOC Monitoring, Response Levels, and Actions

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

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

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

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

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

Particulate Monitoring, Response Levels, and Actions

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

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the

work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

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

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

December 2009

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 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 50^{o} C (14 to 122^{o} F);
(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.

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 PM10 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. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

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 prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

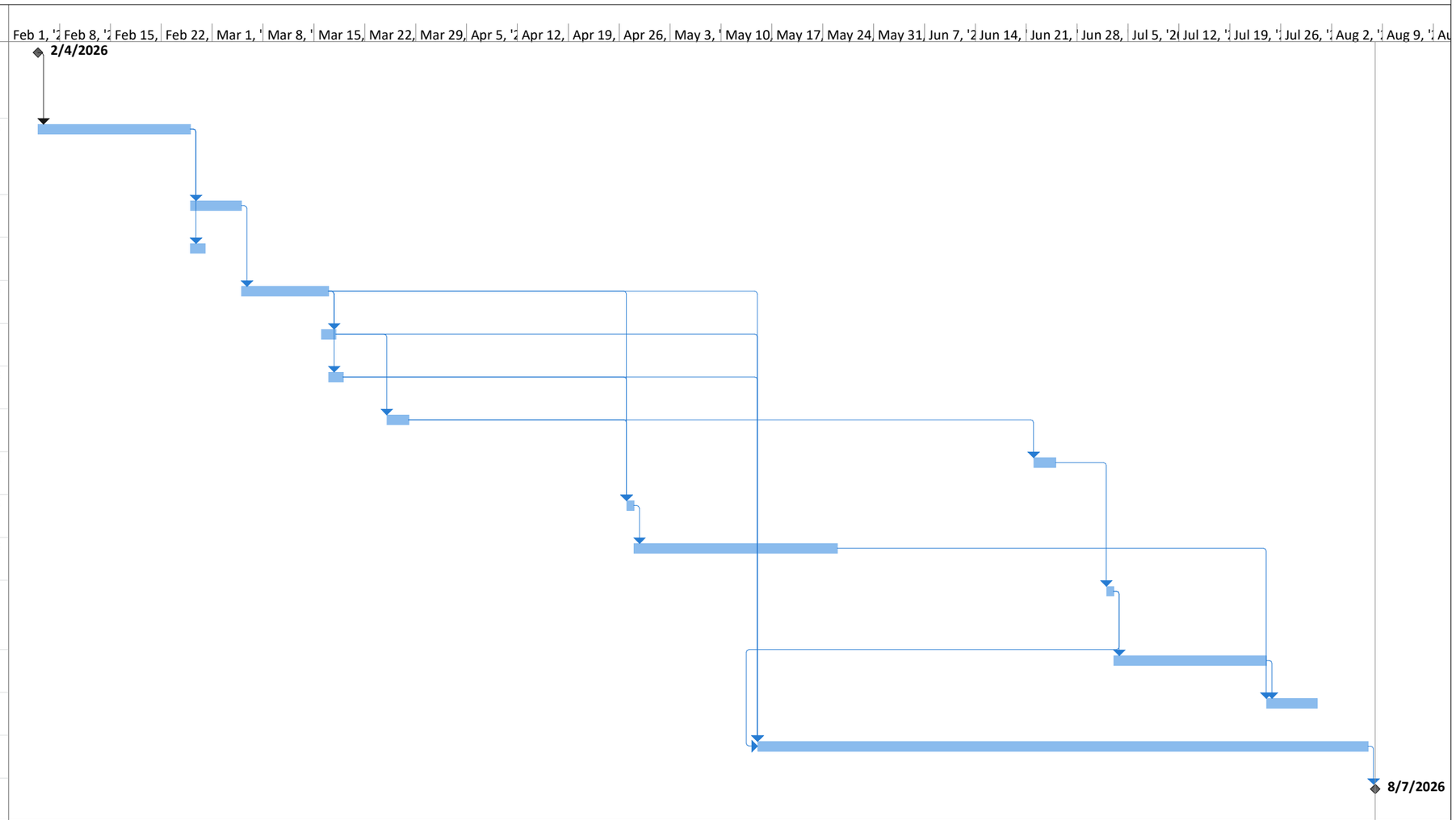
8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements 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.

APPENDIX E OF RIWP

PROJECT SCHEDULE

RIWP Implementation Schedule: Taylor Apartments Buildings 3 & 4 (BCP #C442068)
125 River Street, Troy, New York

ID	Task Name	Duration	Start	Finish
1	NYSDEC Approved RIWP and Completion of Public Comment	1 day	Wed 2/4/26	Wed 2/4/26
2	Coordinate and Schedule Staff/Equipment, Drilling, Subcontractors	3 wks	Thu 2/5/26	Wed 2/25/26
3	Fence Removal and Borehole Clearance	1 wk	Thu 2/26/26	Wed 3/4/26
4	Surface Soil Sampling and Basement Borings	2 days	Thu 2/26/26	Fri 2/27/26
5	Soil Borings/Monitoring Wells	8 days	Thu 3/5/26	Mon 3/16/26
6	Monitoring Well Development	2 days	Mon 3/16/26	Tue 3/17/26
7	Targeted Direct-Push Borings	2 days	Tue 3/17/26	Wed 3/18/26
8	1st Round GW Monitoring	3 days	Wed 3/25/26	Fri 3/27/26
9	2nd Round GW Monitoring	3 days	Mon 6/22/26	Wed 6/24/26
10	Receipt of Initial Category B Lab Results	1 day	Mon 4/27/26	Mon 4/27/26
11	Initial Data Validation	4 wks	Tue 4/28/26	Mon 5/25/26
12	Receipt of 2nd Round GW Category B Lab Results	1 day	Thu 7/2/26	Thu 7/2/26
13	Data Validation - 2nd Round GW	3 wks	Fri 7/3/26	Thu 7/23/26
14	EQuIS EDD Upload	1 wk	Fri 7/24/26	Thu 7/30/26
15	Preparation of RIR	3 mons	Fri 5/15/26	Thu 8/6/26
16	Submission of RIR	1 day	Fri 8/7/26	Fri 8/7/26



Project: Taylor Apartments Buildings 3 & 4
Date: Thu 11/20/25

Task Milestone Summary Progress