SITE MANAGEMENT PLAN

for

250 WATER STREET
New York, NY 10038
NYSDEC BCP Site No. C231127

Prepared for:

250 Seaport District, LLC
c/o The Howard Hughes Corporation
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New York, NY 10038

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Revisions to Final Approved Site Management Plan:

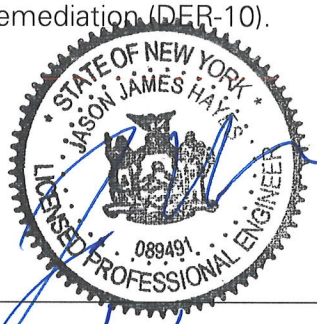
Revision No.	Date Submitted	Summary of Revision(s)	NYSDEC Approval Date

LANGAN

December 28, 2023
Langan Project No. 170381202

CERTIFICATION STATEMENT

I, Jason J. Hayes, certify that I am currently a New York State registered professional engineer and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10).



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12/28/2023 DATE

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LIST OF ACRONYMS

6 NYCRR	Title 6 of the New York Codes, Rules and Regulations
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
bgs	Below Surface Grade
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CAMP	Community Air Monitoring Plan
C&D	Construction and Demolition Debris
CHASP	Construction Health and Safety Plan
CMWP	Corrective Measures Work Plan
COC	Certificate of Completion
CRFN	City Register File Number
CVOC	Chlorinated Volatile Organic Compound
DD	Decision Document
DER	Division of Environmental Remediation
DER-10	Technical Guidance for Site Investigation and Remediation

ECL	Environmental Conservation Law
EE	Environmental Easement
el	Elevation
ELAP	Environmental Laboratory Approval Program
ESA	Environmental Site Assessment
ESI	Environmental Site Investigation
EWP	Excavation Work Plan
FEMA	Federal Emergency Management Agency
HASP	Health and Safety Plan
IC	Institutional Control
mg/kg	milligrams per kilogram
µg/m^3	micrograms per cubic meter
µg/L	microgram per liter
NAVD88	North American Vertical Datum of 1988
NYCDEP	New York City Department of Environmental Protection
NYCDOHMH	New York City Department of Health and Mental Hygiene
NYSBCP	New York State Brownfield Cleanup Program
NYSDEC	New York State Department of Environmental Conservation
NYSDEC SGVs	Division of Water Technical and Operational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules and Regulations
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethene
PE	Professional Engineer
PFAS	Per- and Polyfluoroalkyl Substances
PGW	Protection of Groundwater
PID	Photoionization Detector

PRR	Periodic Review Report
PVC	Polyvinyl Chloride
QAPP	Quality Assurance Project Plan
QEP	Qualified Environmental Professional
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RDIWP	Remedial Design Investigation Work Plan
RI	Remedial Investigation
RIR	Remedial Investigation Report
RIWP	Remedial Investigation Work Plan
RURR	Restricted Use Restricted-Residential
SCO	Soil Cleanup Objective
SMP	Site Management Plan
SVOC	Semivolatile Organic Compound
TCE	Trichloroethene
TOGS	Technical and Operational Guidance Series
USGS	United States Geological Survey
UST	Underground Storage Tank
UU	Unrestricted Use
VOC	Volatile Organic Compounds
WCR	Waste Characterization Report

EXECUTIVE SUMMARY

This Site Management Plan (SMP) was prepared for the property located at 250 Water Street (Tax Block 98, Lot 1) in the South Street Seaport neighborhood of New York, New York (the site), which was remediated pursuant to a Brownfield Cleanup Agreement (BCA), Index No. C231127-04-19, executed between the New York State Department of Environmental Conservation (NYSDEC) and 250 Seaport District, LLC (the Volunteer) on August 1, 2019 for New York State Brownfield Cleanup Program (NYSBCP) Site No. C231127.

The following provides a brief summary of the controls implemented for the site, as well as the inspections, monitoring and reporting activities required by this SMP:

Site Identification:	Brownfield Cleanup Program (BCP) Site No. C231127 250 Water Street, New York, NY
Institutional Control Summary	
Institutional Controls (IC):	1. The site may only be used for Restricted-Residential use as defined in 6 New York Codes, Rules and Regulations (NYCRR) Part 375-1.8(g)(2)(ii), Commercial use as defined in 6 NYCRR Part 375-1.8(g)(2)(iii), and Industrial use as defined in 6 NYCRR Part 375-1.8(g)(2)(iv), subject to local zoning requirements.
	2. The site may not be used for a higher level of use, such as Residential (single family) use as defined in 6 NYCRR Part 375-1.8(g)(2)(i), or Unrestricted Use (UU) as defined in 6 NYCRR Part 375-1.8(g)(1)(i), without additional remediation and amendment of the Environmental Easement (EE), as approved by the New York State Department of Environmental Conservation (NYSDEC).
	3. All future activities on the site that will disturb residual contaminated soil and liquids must be conducted in accordance with this SMP.

Site Identification:	Brownfield Cleanup Program (BCP) Site No. C231127 250 Water Street, New York, NY
	4. The use of the groundwater underlying the site is prohibited without necessary water quality treatment as determined by the New York State Department of Health (NYSDOH), the New York City Department of Health and Mental Hygiene (NYCDOHMH), or the New York City Department of Environmental Protection (NYCDEP) to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.
	5. Groundwater and other public health monitoring must be performed as defined in this SMP
	6. Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP.
	7. Vegetable gardens and farming in residual site soil are prohibited.
	8. The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on Figure 2 of this SMP, and appropriate actions to address exposures must be implemented.
	9. Compliance with the EE by the Grantor and the Grantor's successors and assigns, and compliance with this SMP by the remedial party and its successors and assigns.
	10. Data and information pertinent to site management must be reported at the frequency and in a manner defined in this SMP.

Site Identification:	Brownfield Cleanup Program (BCP) Site No. C231127 250 Water Street, New York, NY
	11. Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the EE.
	12. The Grantor agrees to submit to NYSDEC an annual written statement that certifies, under penalty of perjury, that: a. controls employed at the site are unchanged from the previous certification or that any changes to the controls were NYSDEC-approved; and b. nothing has occurred that impairs the ability of the controls to protect public health and the environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access the site at any time.

Inspections:	**Frequency**
1. Site-Wide Inspection	Annually
Monitoring:	**Frequency**
1. Groundwater Monitoring Wells (TMW35 and TMW36)	Quarterly
Evaluations:	**Frequency**
1. Soil Vapor Intrusion Evaluation for New Buildings	As needed
Reporting:	**Frequency**
1. Periodic Review Report/Certification	First periodic review report/certification issued 16 months after issuance of the Certificate of Completion (COC) and annually thereafter.

Site Identification:	Brownfield Cleanup Program (BCP) Site No. C231127 250 Water Street, New York, NY
2. Groundwater Monitoring Data	Quarterly

Detailed descriptions of the above requirements are provided this SMP.

1.0 INTRODUCTION

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the 250 Water Street site located in New York, New York (the site). The site is currently in the New York State (NYS) Brownfield Cleanup Program (BCP), which is administered by New York State Department of Environmental Conservation (NYSDEC), as Site No. C231127.

250 Seaport District, LLC (the Volunteer) entered into a Brownfield Cleanup Agreement (BCA), Index No. C231127-04-19, with the NYSDEC on August 1, 2019 to investigate and remediate the site. The approximately 48,057-square-foot (±1.103 acres) site is identified as Block 98, Lot 1 on the Borough of Manhattan tax map and occupies the entire city block bound by Pearl Street to the northwest (project north), Peck Slip to the northeast (project east), Water Street to the southeast (project south), and Beekman Street to the southwest (project west). A site location map and site plan are provided as Figures 1 and 2, respectively. The boundaries of the site are described in the metes and bounds description that is provided in the Environmental Easement (EE), which is included as Appendix A.

Institutional controls (ICs) have been incorporated into the site remedy to control exposure to remaining contamination for the protection of public health and the environment. An EE was executed by the Department on October 20, 2023, and was filed with the Office of the New York County Clerk on November 8, 2023 (City Register File Number [CRFN]: 2023000290323). The EE requires compliance with this SMP and all ICs placed on the site.

This SMP was prepared to manage remaining contamination at the site until the EE is extinguished in accordance with Environmental Conservation Law (ECL) Article 71, Title 36. This plan has been approved by the NYSDEC in consultation with the New York State Department of Health (NYSDOH), and compliance with this plan is required by the grantor of the EE and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC in consultation with the NYDSOH.

Failure to properly implement the SMP is a violation of the EE, which is grounds for revocation of the Certificate of Completion (COC). Failure to comply with this SMP is also a violation of the ECL, Title 6 of the New York Codes, Rules and Regulations (6 NYCRR) Part 375 and the BCA (Index No. C231127-04-19; Site No. C231127) for the site, and thereby subject to applicable penalties.

Reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the site is provided in Appendix B of this SMP.

This SMP was prepared by Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Langan), on behalf of the Volunteer, in accordance with the requirements of the NYSDEC's May 3, 2010 Technical Guidance for Site Investigation and Remediation (Division of Environmental Remediation [DER-10]), and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs that are required by the EE for the site.

1.2 Revisions

Revisions to this SMP will be proposed in writing to the NYSDEC's project manager in consultation with the NYSDOH project manager. The NYSDEC can also make changes to this SMP or request revisions from the remedial party. Revisions will be necessary upon, but not limited to, the following occurring: post-remedial removal of contaminated sediment, soil or groundwater, or other significant change to the site conditions. All approved alterations must conform with Article 145 Section 7209 of the Education Law regarding the application of professional seals and alterations. For example, any changes to as-built drawings must be stamped by a New York State Professional Engineer. In accordance with the EE for the site, the NYSDEC project manager, in consultation with the NYSDOH project manager, will provide a notice of any approved changes to the SMP and append these notices to the SMP that is retained in its files.

1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with DER-10 for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the BCA, 6 NYCRR Part 375 and/or ECL.
- 7-day advance notice of any field activity associated with the remedial program.
- 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan (EWP). If the ground-intrusive activity qualifies as a change of use as defined in 6 NYCRR Part 375, the above mentioned 60-day advance notice is also required.

Any change in the ownership of the site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the BCA, and all approved work plans and reports, including this SMP.
- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

The following Table 1.3 includes contact information for the above notifications. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix B.

Table 1.3: Notification Contact List*

Name	Contact Information
NYSDEC Project Manager	Rafi Alam (518) 402-8606 rafi.alam@dec.ny.gov
NYSDEC Section Chief	Heidi Dudek (518) 402-0193 heidi.dudek@dec.ny.gov
NYSDEC Senior Attorney	Jennifer Andaloro (518) 402-9507 jennifer.andaloro@dec.ny.gov
NYSDOH Project Manager	Sarita Wagh (518) 402-7860 sarita.wagh@health.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

2.0 SUMMARY OF PREVIOUS REMEDIAL INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The site is located at 250 Water Street, in New York, New York and is identified as Block 98, Lot 1 on the Borough of Manhattan Tax Map. The site is approximately 48,057 square feet (±1.103 acres) in area and is bound by Pearl Street to the northwest (project north), Peck Slip to the northeast (project east), Water Street to the southeast (project south), and Beekman Street to the southwest (project west). The boundaries of the site are more fully described in the metes and bounds description that is provided in the EE included as Appendix A. A site location map and site plan are presented on Figures 1 and 2, respectively. The owner and operator of the site at the time of issuance of this SMP is 250 Seaport District, LLC (c/o The Howard Hughes Corporation).

2.2 Physical Setting

2.2.1 Land Use

The Site is zoned in a C6-2A commercial district, which allows for residential, commercial, and community uses, and the currently contemplated redevelopment plan is multi-family residential, including affordable housing, office, retail and community space.

The site is in an urban setting characterized by commercial, institutional, and residential properties. The site is bordered by Pearl Street followed by multiple-story residential buildings (at least one with a first-floor parking garage) known as Southbridge Towers to the north; Peck Slip followed by the seven-story Peck Slip School (P.S. 343) building to the east; Water Street followed by multiple five- and six-story residential and commercial buildings to the south; and Beekman Street followed by a seven-story residential and commercial building to the west. The following table includes a summary of surrounding properties and uses:

Table 2.2.1: Summary of Adjoining and Surrounding Properties

Direction	Adjoining Properties			Surrounding Properties
	Block	Lot No.	Description	
North, across Pearl Street	94	1	Multiple-story residential buildings (at least one with first-floor parking garage) - Southbridge Towers	Multiple-story residential and commercial buildings
East, across Peck Slip	106	9	Seven-story institutional building (Peck Slip School - P.S. 343)	Multiple-story residential and commercial buildings
South, across Water Street	97	49, 55, 57, 7501, 7502, and 7505	Multiple five- and six-story residential and commercial buildings	Multiple-story residential and commercial buildings
West, across Beekman Street	95	7501	Seven-story residential and commercial building	Public parkland, multiple-story residential and commercial buildings

2.2.2 Regional and Site Geology

According to the Sanitary and Topographical Map of the City and Island of New York created by Egbert L. Viele in 1865 (Viele Map), the site is located within a former meadow on the edge of the historical shoreline of the East River. The area was infilled for development purposes in the 1700s. According to a historical map obtained from the New York Public Library online Digital Collections, the historical shoreline ran through the center of the site, parallel with Water and Pearl Streets.

The United States Geological Survey (USGS) "Bedrock and Engineering Geologic Maps of New York County and Parts of Kings and Queens Counties, New York, and Parts of Bergen and Hudson Counties, New Jersey, dated 1994" indicates that the bedrock underlying the site is Manhattan Schist, and is comprised primarily of gray, medium- to coarse grained, layered sillimanite-muscovite-biotite-kyanite schist and gneiss interlayered with layered tourmaline-garnet-plagioclase-biotite-quartz schist and gneiss with blank amphibolite layers. Bedrock was encountered at depths ranging from approximately 90 to 125 feet below grade surface (bgs) during installation of support-of-excavation elements to facilitate remediation of the site.

Site stratigraphy previously consisted of historic fill underlain by sand with varying amounts of silt, gravel and clay. Historic fill, predominantly consisting of grey to brown fine sand with varying proportions of silt, gravel, brick, concrete, wood, ceramic, and coal,

was encountered from immediately below the former site cover to depths ranging from approximately 5 to 17 feet bgs.

2.2.3 Regional and Site Hydrogeology

Groundwater flow is typically topographically influenced, as shallow groundwater tends to originate in areas of topographic highs and flows toward areas of topographic lows, such as rivers, stream valleys, ponds, and wetlands. A broader, interconnected hydrogeological network often governs groundwater flow at depth or in the bedrock aquifer. Groundwater depth and flow direction are also subject to hydrogeologic and anthropogenic variables such as precipitation, evaporation, extent of vegetation cover, and coverage by impervious surfaces. Other factors influencing groundwater flow include depth to bedrock, the presence of artificial fill, and variability in local geology and groundwater sources or sinks. The majority of runoff in this area drains to the New York City sewers, which connect to one of the several wastewater treatment plants servicing the City. Groundwater in New York City is not used as a potable water source. Potable water provided to New York City is sourced from reservoirs in the Catskill and Delaware watersheds.

Groundwater was observed during the remedial investigation (RI) at elevations (el) ranging from approximately el -0.65 to -1.10, referenced to the North American Vertical Datum of 1988 (NAVD88). Groundwater flow direction was evaluated during the RI and was determined to flow to the southeast. Tidal influence on groundwater elevations resulted in a maximum fluctuation between approximately 0.1 to 0.2 feet per cycle across the site.

2.3 Investigation and Remediation History

The following narrative provides a remedial history timeline and brief summary of the available project records to document key investigative and remedial milestones. Full titles for each of the reports referenced below are provided in Section 7.0.

2.3.1 Site History

The site and surrounding area are in an urban setting historically characterized by residential, commercial, and industrial development. Historical uses of the site include a factory (cast-iron stoves, boilers, radiators, and other unknown uses), an oil company, a printer, a metal works, a chemicals and glue company, a chemical company, thermometer factories/workshops, a garage with two 550-gallon underground storage tanks (USTs), a machine shop, and a gasoline service station.

2.3.2 Previous Environmental Reports

The investigations listed below describe original site conditions prior to implementation of the remedy and were performed to characterize the nature and extent of site contamination and confirm environmental conditions and subsurface geology. This information was used to develop remediation and mitigation strategies for the site:

- September 2015 Phase I Environmental Site Assessment (ESA), prepared by Langan
- November 2015 Phase II Environmental Site Investigation (ESI) Report, prepared by Langan
- June 2018 Phase I Environmental Site Assessment, prepared by Langan
- May 2020 Remedial Investigation Work Plan (RIWP), prepared by Langan
- June 2021 Remedial Investigation Report (RIR), prepared by Langan

The following additional reports were prepared on behalf of the Volunteer prior to remedy implementation:

- November 2021 Remedial Action Work Plan (RAWP), prepared by Langan
- February 2022 Remedial Design Investigation Work Plan (RDIWP), prepared by Langan
- May 2022 Remedial Design Report (RDR), prepared by Langan
- May 2022 Waste Characterization Report (WCR), prepared by Langan

2.3.3 Summary of Subsurface Investigations

Langan implemented the RI between June 15 and October 12, 2020 to further investigate and characterize the nature and extent of environmental impacts at the site, which were previously identified during subsurface investigations in support of due diligence prior to the sale of the site to the Volunteer. Collectively, the investigations consisted of geophysical surveys, soil boring advancement, monitoring well installation, and collection and analysis of soil, groundwater, and soil vapor samples. The pre-remediation findings and conclusions of the RI were as follows:

1. Stratigraphy: Site stratigraphy consists of historic fill underlain by sand with varying amounts of silt, gravel and clay. Historic fill, characterized as grey to brown fine sand with varying proportions of silt, gravel, brick, concrete, wood, ceramic, and coal, was encountered to depths ranging from approximately 5 to 17 feet bgs.

Bedrock was not encountered and was expected to be approximately 125 feet bgs. The historical shoreline ran through the center of the site, parallel with Water and Pearl Streets.

2. Hydrogeology: Groundwater was observed at elevations ranging from approximately -0.65 to -1.10 (approximately 15.5 to 8.9 feet bgs) during the RI. The groundwater flow direction is to the southeast. Based on the results collected from pressure transducers, groundwater does not appear to be significantly tidally influenced. The tidal cycle fluctuation is approximately ±0.1 to 0.2 feet.

3. Historic Fill: Historic fill was encountered in all soil borings beneath the asphalt cover to depths ranging from approximately 5 to 17 feet bgs. Historic fill impacts included semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and metals in soil at concentrations above Unrestricted Use (UU), Protection of Groundwater (PGW), and/or Restricted Use Restricted-Residential (RURR) soil cleanup objectives (SCOs).

4. Petroleum and Tar Impacts: Petroleum- and tar-related impacts, as evidenced by field observations and/or analytical data, were identified and are attributed to the former USTs and associated open spill, historical site uses, and treated timber pile/cribbing.

    a. Petroleum impacts attributed to the open spill (Spill No. 1507371) were identified in soil borings SB9, SB10, and SB31 through SB34 and in monitoring wells TMW09 and MW31 through MW34. A subsurface anomaly indicative of four USTs was identified in this area. Field observations within the capillary fringe and below the groundwater interface included petroleum-like odor, staining and/or photoionization detector (PID) readings above background concentrations. Petroleum-related volatile organic compounds (VOCs) and/or SVOCs were detected in soil samples at concentrations above UU, PGW, and/or RURR SCOs and in groundwater samples at concentrations above the NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values (collectively referred to as the NYSDEC SGVs). Petroleum-related VOCs were also detected in all soil vapor samples, with the highest benzene, toluene, ethylbenzene, and xylenes (BTEX) concentrations detected in soil vapor locations in this spill area (SV32).

    b. Petroleum impacts attributed to the historical site use as an oil company and garage with two 550-gallon USTs were identified within the northeast

corner of the site in borings SB8, SB29, SB30, and SB36 and monitoring wells TMW08 and MW30. Field observations in unsaturated soil, the capillary fringe, and below the groundwater interface include petroleum-like odor, staining and PID readings above background. Petroleum-related VOCs and/or SVOCs were detected in soil samples at concentrations above UU and/or RURR SCOs and in groundwater samples at concentrations above NYSDEC SGVs. Petroleum-related VOCs were detected in soil vapor samples in this area.

c. Creosote impacts attributed to treated timber piles or cribbing were generally identified within the southern half of the site in soil borings SB3, SB17, SB20, SB21, SB23, SB27, SB35, SB4NE3, SB4S3, SB4SE3, and SB4S2, and in monitoring well TMW03. Wood/timber was observed in several soil borings. Field observations within the capillary fringe and below the groundwater interface included tar-like odor, staining and/or PID readings above background. No petroleum-related VOCs and SVOCs were detected above UU SCOs in the soil borings. One petroleum-related VOC was detected at a concentration above the NYSDEC SGV in temporary monitoring well MW03. Petroleum/creosote-related VOCs were detected in soil vapor samples in this area of the site.

5. Mercury Impacts Related to Historical Site Uses: Mercury impacts to soil are related to historical site uses, including a thermometer factory and three additional thermometer factories/workshops. The highest mercury concentrations in soil were detected primarily within the historical fill layer in and around the former thermometer factory located at 302 Pearl Street and, to a lesser extent, within the three additional thermometer factories/workshops (298 Pearl Street, 236 Water Street and 240 Water Street). The former thermometer factories/workshops were located in the central part of the site, with those towards the northwestern part of the site (298 Pearl Street and 302 Pearl Street) extending into the current Pearl Street right-of-way. The major mercury species identified were mercury salts. Elemental mercury made up 0.01% to 10.87% of the total mercury concentrations in speciated samples. Mercury was not detected in groundwater samples. Mercury vapor was not detected in on-site soil vapor samples; however, mercury vapor was detected in soil vapor samples collected from 15 feet below the Pearl Street sidewalk adjoining the site at concentrations of 0.222 micrograms per cubic meter ($\mu g/m^3$) in SV39 and 0.271 $\mu g/m^3$ in SV38. The source of mercury contamination in soil was likely from the use of mercury-impacted building

materials used as backfill within the historic fill layer in and around the former factory/workshop footprints.

6. PCB Impacts Related to Historical Site Uses: PCB-impacted soil was identified and may be related to historical site uses. PCB impacts to soil were observed primarily within the historical fill layer in and around the former oil company in the northeastern part of the site and the former oil company and factory on the western part of the site.
7. Chlorinated VOCs (CVOCs) in Soil Vapor: The soil vapor samples collected at the site contained PCE and TCE. Soil vapor samples from the center of the site and from near the northeastern corner of the site contained the highest concentrations of CVOCs. CVOCs were detected in soil and groundwater sample below regulatory criteria. An on-site source of CVOCs was not identified.
8. PFAS in Soil and Groundwater: Per- and polyfluoroalkyl substances (PFAS)-impacted soil and groundwater was identified at the site. No historical use consistent with PFAS use was identified for the site. Based on the evaluation of the soil guidance values, per NYSDECs PFAS guidance document, no on-site source of PFAS was identified.

2.4 Remedial Action Objectives

Objectives for the remedial action program were established through the remedy selection process contained in 6 NYCRR Part 375. The Remedial Action Objectives (RAOs) for the Site as listed in the Decision Document (DD) dated November 15, 2021 are as follows:

RAOs	RAOs for Public Health Protection	RAOs for Environmental Protection
Soil	• Prevent ingestion/direct contact with contaminated soil • Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil	• Prevent migration of contaminants that would result in groundwater or surface water contamination

RAOs	RAOs for Public Health Protection	RAOs for Environmental Protection
Groundwater	• Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards • Prevent contact with, or inhalation of, volatiles from contaminated groundwater	• Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable • Remove the source of ground or surface water contamination
Soil Vapor	• Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.	

2.4.1 Remedy Implementation

The remedy was implemented in accordance with the NYSDEC-approved November 9, 2021 Remedial Action Work Plan (RAWP). The following activities were completed to achieve RAOs:

1. Development and implementation of a Construction Health and Safety Plan (CHASP) and Community Air Monitoring Plan (CAMP) for the protection of on-site workers, visitors, and the environment during remediation activities
2. As a pre-requisite to site remediation, removal of the surficial asphalt cover by the contractor and management of removed asphalt as construction and demolition (C&D) debris in accordance with Part 360 and 361 regulations.
3. A remedial design investigation including a waste characterization and test pit investigation to refine mitigation measures with respect to air quality prior to remediation.
4. Installation of SOE, which included:
    a. A shallow perimeter SOE system, consisting of soldier piles, lagging, tiebacks, walers, and a shallow soil mix wall to accommodate remedial excavation to depths immediately above the groundwater table;
    b. Steel sheet pile walls to accommodate remedial excavation for the removal of the RAWP-defined petroleum hotspot and for the installation of a building foundation element; and

c. A perimeter containment cut-off wall (soil mix/secant pile wall), spanning from above the groundwater table to bedrock, to facilitate site-wide dewatering and to accommodate remedial excavation below the groundwater table.

5. Dewatering to accommodate remedial excavations and to remediate on-site petroleum-impacted groundwater. Approximately 12,886,600 gallons of petroleum-impacted groundwater were extracted and treated through on-site treatment systems (settling tank, particulate bag filters, and activated carbon tanks) prior to permitted discharge to the combined sewer in accordance with New York City Department of Environmental Protection (NYCDEP) temporary discharge Permit Nos. C001446396, C001712214, and C002547552.
6. Import and temporary placement of 3,064.96 tons of NYSDEC-approved virgin crushed stone and/or clean bluestone for stabilization of the site and installation/maintenance of stabilized construction entrances during remediation, and for the installation of a temporary site cover following achievement of the Track 2 remedy.
7. Excavation and removal of soil/fill in the following areas:

    a. Excavation of soil/fill to approximately 16 feet bgs (el -1.5 feet NAVD88) for removal and off-site disposal of approximately 9,475.77 tons of mercury-impacted soil/fill in the RAWP-defined mercury hotspot.

    b. Excavation of soil/fill to approximately 16 to 19 feet bgs (el -8.0 feet NAVD88) for removal and off-site disposal of approximately 7,420.22 tons of the petroleum-impacted soil/fill in the RAWP-defined petroleum hotspot.

    c. Excavation across the site to approximately 11 to 16 feet bgs (ranging from about el -6 to el 3 feet) for removal and off-site disposal of approximately 22,771.82 tons of contaminated soil/fill (including approximately 4,172.52 tons of hazardous lead-impacted soil/fill) for the achievement of Track 2 RURR SCOs.

    The extents of excavation completed during remediation are shown on Figure 3.

8. Screening of soil/fill for visual, olfactory, and instrumental (PID and mercury vapor analyzer) evidence of contamination during intrusive work.
9. Off-site disposal of 39,667.81 tons of contaminated soil/fill in accordance with federal, state, and local rules and regulations for handling, transport, and disposal, which included:

a. Approximately 9,475.77 tons of non-hazardous mercury-impacted soil/fill;
b. Approximately 7,420.22 tons of non-hazardous petroleum-impacted soil/fill;
c. Approximately 18,599.30 tons of non-hazardous soil/fill; and
d. Approximately 4,172.52 tons of hazardous lead-impacted soil/fill.

10. Decommissioning, removal, and administrative closure of nine 550-gallon USTs and one 1,080-gallon UST in accordance with applicable federal, state, and local regulations. The approximate locations of the former USTs are shown on Figure 4.
11. Collection and analysis of 54 confirmation endpoint soil samples (plus quality assurance/quality control [QA/QC] samples) from the base of the excavation to confirm achievement of the Track 2 RURR SCOs and to document post-remediation soil quality.
12. Installation of temporary groundwater monitoring wells, and collection of four groundwater samples in accordance with the Remedial Design for Groundwater Monitoring to evaluate the performance of the groundwater remedy.
13. Import and placement of approximately 12,308.05 tons of NYSDEC-approved fill meeting the lower of the NYSDEC Part 375 RURR and/or PGW SCOs to backfill over-excavated areas of the site to depths above the groundwater table and to cover areas of the site where endpoint samples exceeded the RURR SCOs at a depth of 15 feet bgs.

Following the completion of remediation at the site, a temporary site cover was installed, which consisted of geotextile fabric atop the Track 2-compliant soil followed by an about 6-inch-thick layer of imported 3/4-inch virgin stone. A figure showing the extents of backfill placed at the site is provided as Figure 5.

2.5 Remaining Contamination

Following completion of the Track 2 remedy in accordance with the NYSDEC-approved November 9, 2021 RAWP, excavation of soil/fill across the site was completed for the achievement of Track 2 RURR SCOs or to a depth of at least 15 feet below the initial grade surface. As described in Section 2.5.1, remaining contamination is present in soil at locations where confirmation endpoint soil samples exceeded the Track 2 RURR and/or PGW SCOs but which were excavated to the minimum depth required by the Track 2 remediation (15 feet bgs). The remaining contamination is not considered a source of groundwater or soil vapor impacts. A confirmation endpoint soil sample location and

analytical results map and a map showing the extents of remaining contamination at the site are included as Figures 6A and 6B, respectively. As-built excavation and backfill surveys documenting the final excavation depths and backfilled conditions are provided as Appendix C.

Due to remaining contamination in soil below 15 feet below initial grade surface, future ground-intrusive activities at the site that occur below a minimum depth of 15 feet below the initial grade surface must be conducted in accordance with the EWP, which is provided as Appendix D of this SMP. The EWP outlines the requirements for the proper handling of remaining contamination that may be disturbed during future maintenance or redevelopment work on the site. Any work conducted pursuant to the EWP must also be conducted in accordance with the Health and Safety Plan (HASP) and associated CAMP prepared for the site and provided in Appendix E. Additional sampling and analyses that may be required at the site must be performed in accordance with the QAPP, which is provided as Appendix F.

2.5.1 Soil

In accordance with the NYSDEC-approved RAWP, confirmation endpoint soil samples were collected per every 900 square feet of excavation base and analyzed for NYSDEC Part 375/target compound list (TCL) VOCs, SVOCs, PCBs, pesticides, herbicides, metals (including trivalent and hexavalent chromium), total cyanide, and emerging contaminants (PFAS and 1,4-dioxane). Confirmation endpoint soil samples were not collected from the sidewalls of the excavation area due to precluded access by support-of-excavation elements. Confirmation endpoint soil samples were compared to the Track 2 RURR SCOs, which are provided as Table 1 of this SMP, and the PGW SCOs.

Of the 54 confirmation endpoint soil samples collected, 47 samples achieved the Track 2 RURR SCOs. Confirmation endpoint soil samples with marginal exceedances of the Track 2 RURR and/or PGW SCOs are discussed below:

VOCs

- Confirmation endpoint soil sample EP51 was collected from el 0 feet NAVD88 (approximately 12.5 feet bgs) and contained concentrations of total xylenes that exceeded the PGW SCO (1.6 mg/kg) by less than one order of magnitude. The concentration of total xylenes at sample EP51 was 3.8 mg/kg. Over-excavation was completed, and an additional sample was collected from the base of the excavation for analysis of Part 375/TCL VOCs and SVOCs. Total xylenes in confirmation soil sample BEP01_10122022 were measured at 0.32 mg/kg (below the PGW SCO) and as such, total xylenes do not represent a source of

contamination to groundwater. Additionally, groundwater samples were collected to demonstrate a bulk reduction in petroleum-related VOCs in groundwater and total xylenes were not detected in groundwater samples collected on December 7, 2023. Based on the soil and groundwater sample analytical results, the NYSDEC confirmed that no further excavation was required in this area.

- Confirmation endpoint soil samples EP13, EP26, EP27, EP32, EP42, EP48, EP49, and EP50 were collected from between elevation approximately el -8.0 and -1.2 NAVD88 (between approximately 11.2 and 19 feet below the initial grade surface) and contained concentrations of acetone that exceeded the PGW SCO (0.05 mg/kg) by less than one order of magnitude. Concentrations of acetone exceeding the PGW SCO ranged from 0.063 mg/kg in sample EP13 to 0.18 mg/kg in sample EP48. Acetone represents a common laboratory contaminant, was not detected at concentrations above the NYSDEC SGVs during the RI, and is not a not a source contaminant of concern to groundwater at the site.

SVOCs

- Confirmation endpoint soil sample EP03 was collected in the southwestern corner of the site at el -3.0 feet NAVD88 (approximately 15 feet bgs) and contained SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(a,h)anthracene) at concentrations exceeding the Track 2 RURR and/or PGW SCOs by less than one order of magnitude. The SVOCs detected in confirmation endpoint soil sample EP03 are polycyclic aromatic hydrocarbons (PAHs) typically associated with historic fill throughout NYC. Groundwater samples collected during the RI identified PAHs (with the exception of dibenzo[a,h]anthracene) at concentrations exceeding the NYSDEC SGVs; however, the SVOCs were primarily detected in the southern and eastern parts of the site and the RI attributed the SVOCs in groundwater to petroleum-related contamination associated with the former petroleum hotspot. In the absence of petroleum-related impacts, the SVOCs were attributed to turbidity and entrained historic fill material during sample collection.

  Additionally, one groundwater sample was collected during the RI (MW11_090120) in proximity to confirmation endpoint soil sample EP03. Only one of the five SVOCs (benzo(b)fluoranthene) identified in sample EP03 was detected in groundwater at a concentration of 0.01 µg/m^3, which exceeds the NYSDEC SGV of 0.002 µg/m^3 by less than one order of magnitude. Benzo(b)fluoranthene was detected in confirmation endpoint soil sample EP03 at a concentration of 1.33 mg/kg, which is above the Track 2 RURR SCO (1 mg/kg),

but below the PGW SCO of 1.7 mg/kg. As such, the SVOCs detected in confirmation endpoint sample EP03 do not represent a source for groundwater contamination at the site.

Metals

- Confirmation endpoint soil samples EP18, EP24, EP25, EP28, and EP34 were collected from between el 0 and el 1 NAVD88 (between 15 and 16 feet below the initial grade surface) and contained concentrations of mercury that exceeded the Track 2 RURR SCO (0.81 mg/kg) by less than one order of magnitude. Concentrations of mercury exceeding the Track 2 RURR SCO ranged from 0.897 mg/kg in sample EP18 to 2.63 mg/kg in the duplicate sample collected from EP25. Additionally, mercury was detected in one soil sample (SB4_EP_EL_-1.5) collected from the base of the former mercury-impacted hotspot (approximately 16 feet bgs) at 2.92 mg/kg.

  Confirmation endpoint soil samples EP30 and EP51 contained concentrations of mercury below the Track 2 RURR SCO, but above the PGW SCO (0.73 mg/kg). Concentrations of mercury exceeding the PGW SCO ranged from 0.767 mg/kg in sample EP30 to 0.797 mg/kg in sample EP51. Mercury was not detected in groundwater during the RI and is not a not a source contaminant of concern to groundwater at the site.

- Confirmation endpoint soil sample EP32 was collected from el -5.5 feet NAVD88 (about 15.5 feet bgs) and contained concentrations of copper that exceeded the Track 2 RURR SCO (456 mg/kg), but was below the PGW SCO (1,720 mg/kg). Copper was not detected in groundwater during the RI and is not a source contaminant of concern to groundwater at the site.

The concentrations of total xylenes, acetone, PAHs, mercury, and/or copper in the endpoint samples described above do not represent an on-site source of contamination to groundwater due to the following:

- Acetone not a source contaminant of concern to groundwater at the site, and is a common laboratory contaminant because it is regularly used in solvent extraction processes.
- Over-excavation was completed in the area surrounding endpoint sample EP51, and total xylenes were detected below the PGW SCO.
- On-site groundwater was sampled during the RI and during site-wide dewatering. Mercury, copper, and acetone were not detected in on-site groundwater at concentrations above the NYSDEC SGVs.

- On-site groundwater use is restricted by the ICs outlined in the SMP without necessary water quality treatment as determined by the NYSDOH and the NYCDOHMH, with prior notice to and written approval by NYSDEC.

The remaining confirmation endpoint soil sample analytical results are below the Track 2 RURR and/or PGW SCOs. A confirmation endpoint soil sample location and analytical results map is included as Figure 6A, and analytical results are presented in Tables 2 through 4.

Nuisance Odors

In addition to the confirmation endpoint soil samples described above, nuisance odors were observed at the base of the remedial excavation in the areas surrounding endpoint samples EP22 and EP27. The nuisance odors were previously identified during the RI and were attributed to treated timbers/cribbing in the southern part of the site. The odorous material does not represent a source for groundwater contamination at the site, as evidenced by the confirmation soil sample analytical results for endpoint samples EP22 and EP27, and no additional excavation was required by the NYSDEC. In accordance with the CHASP and associated CAMP (Appendix E), odor/vapor mitigation measures will be available for use during future ground-intrusive activities in this area.

A physical demarcation layer was placed above remaining soil/fill with remaining contamination followed by imported fill. Figure 5 presents the location of backfill and demarcation layers.

The EWP provided in Appendix D outlines the procedures required to be implemented in the event ground-intrusive work occurs below the demarcation layer or to below 15 feet bgs site-wide, whichever is shallower.

2.5.2 Groundwater

During remediation, an on-site dewatering and treatment system was installed to facilitate the remedial excavation and to remediate groundwater across the site. Groundwater samples were collected from temporary groundwater monitoring wells TMW35 and TMW36, as described in the NYSDEC-approved Remedial Design for Groundwater Monitoring, to document groundwater quality following the removal of source material across the site and following dewatering and treatment during remediation. Based on the analytical results over two consecutive sampling events, on-site groundwater experienced a 96 to 99% reduction in petroleum-related contaminants (VOCs and SVOCs) when compared to concentrations identified during the RI. As such, bulk reduction was achieved in accordance with the Remedial Design. The baseline concentrations of

groundwater contaminants identified during the RI and groundwater sampling data from remedial sampling conducted between October 17, 2023 and December 7, 2023 are summarized on Figure 7 and in Table 5. A groundwater elevation contour map is provided as Figure 8.

Exposure to remaining contamination (if present) is also prevented by ICs and a local prohibition which restricts site groundwater use.

2.5.3 Soil Vapor

Soil vapor sampling results from previous environmental investigations performed prior to implementation of the RAWP indicated the presence of petroleum-related VOCs (BTEX compounds) and CVOCs. BTEX concentrations in soil vapor samples ranged from 15.8 µg/m^3 to 6,030 µg/m^3. Concentrations of CVOCs, including 1,1,1–TCA, cis-1,2-dichloroethene, methylene chloride, PCE, and TCE, are summarized below.

Analyte	Min. Concentration (µg/m^3)	Max. Concentration (µg/m^3)
1,1,1–TCA (1)	1.51 in SV12_070920	
Cis-1,2-Dichloroethene (1)	3.14 in SV28_070920	
Methylene Chloride (2)	3.05 in SV17 duplicate	3.34 in SV17_070920
PCE (14)	6.39 in SV37_070920	827 in SV28_070920
TCE (7)	1.1 in SV37_070920	27.3 in SV28_070920

Remediation primarily included:

- excavation and removal of soil/fill across the site for removal of grossly contaminated material to 15 feet bgs and to achieve Track 2 RURR SCOs;
- excavation and removal of soil/fill to depths between about 16 and 19 feet bgs for removal of the RAWP-defined petroleum hotspot;
- excavation and removal of soil/fill to a depth of about 16 feet bgs for removal of the RAWP-defined mercury hotspot;
- UST removal; and
- in-situ groundwater treatment (via dewatering and treatment) to reduce petroleum-related VOCs in groundwater.

As described in the NYSDEC-approved RAWP, soil vapor intrusion into future buildings is not expected to be a concern due to the method of remediation and anticipated development construction (i.e., concrete foundation below the water table, monolithic

waterproofing/vapor barrier membrane, cellar mechanical ventilation, and the perimeter containment cutoff wall); however, a soil vapor intrusion evaluation will be conducted prior to occupancy of future buildings at the site. The soil vapor intrusion evaluation will include documentation of the installation of the above-listed construction measures in addition to indoor air sampling prior to occupancy of the future building.

3.0 INSTITUTIONAL CONTROL PLAN

3.1 General

Since remaining contamination exists at the site, ICs are required to protect human health and the environment. This IC Plan describes the procedures for the implementation and management of ICs at the site. The IC Plan is one component of the SMP and is subject to revision by the NYSDEC project manager in consultation with the NYSDOH project manager.

This plan provides:

- A description of all ICs on the site;
- The basic implementation and intended role of each IC;
- A description of the key components of the ICs set forth in the EE;
- A description of the controls to be evaluated during each required inspection and periodic review;
- Implementation of a Health and Safety Plan, which is included as Appendix E;
- A description of plans and procedures to be followed for implementation of ICs, such as the implementation of the EWP (as provided in Appendix D) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
- Any other provisions necessary to identify or establish methods for implementing the ICs required by the site remedy, as determined by the NYSDEC project manager in consultation with the NYSDOH project manager.

3.2 Institutional Controls

A series of ICs is required by the RAWP and DD to:

1. Prevent future exposure to remaining contamination; and,
2. Limit the use and development of the site to restricted-residential, commercial, and industrial uses only.

Adherence to these ICs is required by the EE and will be implemented in accordance with this SMP. ICs identified in the EE may not be discontinued without an amendment to or extinguishment of the EE. These ICs are:

- The remedial party or site owner must complete and submit to the NYSDEC a periodic certification of institutional controls in accordance with Part 375-1.8 (h)(3).
- The site may be used for: Restricted-Residential Use as described in 6 NYCRR Part 375-1.8(g)(2)(ii); Commercial Use as described in 6 NYCRR Part 375-1.8(g)(2)(iii); and Industrial Use as described in 6 NYCRR Part 375-1.8(g)(2)(iv), subject to local zoning requirements.
- The site may not be used for a higher level of use, such as Residential (single family) use as defined in 6 NYCRR Part 375-1.8(g)(2)(i), or UU as defined in 6 NYCRR Part 375-1.8(g)(1)(i), without additional remediation and amendment of the EE, as approved by the NYSDEC.
- All future activities that will disturb remaining contaminated soil and liquids must be conducted in accordance with this SMP and the EWP.
- Restrict the use of groundwater as a source of potable or process water, without water quality treatment as determined by the NYSDOH and NYCDOHMH.
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP;
- Vegetable gardens and farming in residual soil on the site are prohibited;
- The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on Figure 2, and appropriate actions to address exposures must be implemented;
- Require compliance with the NYSDEC-approved SMP.
- Data and information pertinent to site management must be reported at the frequency and in the manner as defined in this SMP;
- Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the EE.

3.3 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the RAOs identified by the decision document. The framework

for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10.

As discussed below, the NYSDEC may approve termination of a groundwater monitoring program. When a remedial party receives this approval, the remedial party will decommission all site-related monitoring, injection and recovery wells as per the NYSDEC CP-43 policy.

The remedial party will also conduct any needed site restoration activities, such as asphalt patching and decommissioning treatment system equipment. In addition, the remedial party will conduct any necessary restoration of vegetation coverage, trees and wetlands, and will comply with NYSDEC and United States Army Corps of Engineers regulations and guidance. Also, the remedial party will ensure that no ongoing erosion is occurring on the site.

3.3.1 Post-Treatment Groundwater Monitoring

Groundwater monitoring activities to assess the efficacy of the source material excavation and groundwater extraction and treatment via dewatering will continue, as determined by the NYSDEC project manager in consultation with NYSDOH project manager, on a quarterly basis until residual groundwater concentrations are found to be below ambient water quality standards or the site SGVs, or have become asymptotic at an acceptable level over an extended period. If monitoring data indicates that monitoring may no longer be required, a proposal to discontinue the remedy will be submitted by the Volunteer. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC project manager. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the NYSDEC, additional source removal, treatment and/or control measures will be evaluated.

4.0 MONITORING AND SAMPLING PLAN

4.1 General

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC project manager. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the site are included in the Quality Assurance Project Plan (QAPP) provided in Appendix F.

The Monitoring and Sampling Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor, soils);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance (SCGs), particularly groundwater standards and Part 375 SCOs for soil; and
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment.

To adequately address these issues, this Monitoring and Sampling Plan provides information on:

- Sampling locations, protocol and frequency;
- Information on all designed monitoring systems;
- Analytical sampling program requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Reporting requirements are provided in Section 6.0 of this SMP.

4.2 Site-Wide Inspection

Site-wide inspections will be performed annually. These periodic inspections must be conducted when the ground surface is visible (i.e., no snow cover). Site-wide inspections will be performed by a qualified environmental professional (QEP) as defined in 6 NYCRR Part 375, a professional engineer (PE) who is licensed and registered in New York State,

or a qualified person who directly reports to a PE who is licensed and registered in New York State. Modifications to the frequency or duration of the inspections will require approval from the NYSDEC project manager in consultation with the NYSDOH project manager. Site-wide inspections will also be performed after all severe weather conditions that may affect the remaining contamination at the site. During these inspections, an inspection form will be completed as provided in Appendix G. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- General site conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm site records are complete and up to date.

A comprehensive site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report (PRR). The inspections will determine and document the following:

- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the EE;
- Whether site records are complete and up to date.

Reporting requirements are outlined in Section 6.0 of this plan.

Inspections will also be performed in the event of an emergency. An inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the ICs implemented at the site by a QEP, as defined in 6 NYCRR Part 375. Written confirmation must be provided to the NYSDEC project manager within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

4.3 Post-Remedy Groundwater Monitoring

Groundwater monitoring activities to assess the efficacy of the source material excavation and the groundwater extraction and treatment performed during the remedy will continue, as determined by the NYSDEC project manager in consultation with the NYSDOH project manager, on a quarterly basis until residual groundwater concentrations are found to be below ambient water quality standards or have become asymptotic at an acceptable level over an extended period. If monitoring data indicates that monitoring

may no longer be required, a proposal to discontinue groundwater monitoring will be submitted by the Volunteer. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC project manager. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the NYSDEC, additional treatment and/or control measures will be evaluated.

In accordance with the general procedure outlined in the July 27, 2023 Remedial Design: Groundwater Monitoring, an environmental drilling subcontractor will use a direct-push drill rig to install two groundwater monitoring wells as follows:

- One monitoring well (MW35) will be installed at the location of TMW35
- One monitoring well (MW36) will be installed at the location of TMW36

The groundwater monitoring well locations are shown on Figure 7.

Prior to monitoring well installation, each borehole will be expanded using a 6-inch-diameter hollow stem auger to maintain a minimum annular space of 2 inches around the well. Each monitoring well will be constructed using 2-foot-long, 2-inch-diameter polyvinyl chloride (PVC) riser pipe attached to 10-foot-long, schedule-40, 0.01-inch slotted, 2-inch-diameter PVC screen. The well annulus around the screen will be backfilled with clean sand to about 1 foot above the top of the screen and a minimum 1-foot-thick bentonite seal will be installed above the sand to surface grade.

Following installation, the wells will be developed by surging a surge block and/or weighted bailer across the well screen to agitate and remove fine particles. The surge block and/or bailer will be surged across the submerged well screen in 2- to 3-foot increments for approximately 2 minutes per increment. After surging, the well will be purged via pumping until the water is clear.

The monitoring well installation will be implemented in accordance with the attached EWP, CHASP and CAMP.

Prior to sampling, the monitoring wells will be gauged for static water levels and each well will be purged. Physical and chemical parameters (e.g., temperature, dissolved oxygen, oxidation-reduction potential, pH, turbidity) will be allowed to stabilize to the ranges specified in the United States Environmental Protection Agency (US EPA) Low Stress Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells, dated July 30, 1996 (revised September 19, 2017). Samples will be collected with a peristaltic or submersible pump, or equivalent, and dedicated polyethylene tubing. If a submersible pump is used, the pump will be decontaminated with Alconox® (or similar) and water between each sample location. Development and purge water will be containerized for off-site disposal.

Groundwater samples will be analyzed for NYSDEC Part 375/Target Compound List (TCL) VOCs and SVOCs via US EPA Method 8260C and 8270D, respectively. Quality assurance/quality control (QA/QC) samples, including duplicate samples and field blank samples, will be collected in accordance with the Quality Assurance Project Plan (QAPP), which is included as Appendix F. Laboratory analysis will be conducted in accordance with US EPA SW-846 methods and NYSDEC ASP Category B deliverable format. QA/QC procedures required by the NYSDEC ASP and SW-846 methods will be followed, including instrument calibration, standard compound spikes, surrogate compound spikes, and analysis of quality control samples. Where there are differences in the SW-846 and NYSDEC ASP requirements, the NYSDEC ASP shall take precedence.

Groundwater samples will be collected into laboratory-supplied containers and will be sealed, labeled, and placed in a cooler containing ice (to attempt to maintain a temperature of approximately 4 degrees Celsius) for delivery to a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified analytical laboratory under standard chain-of-custody protocols.

4.4 Monitoring and Sampling Protocol

All sampling activities will be recorded in a field book and associated sampling log as provided in Appendix G. Other observations (e.g., groundwater monitoring well integrity) will be noted on the sampling log. The sampling log will serve as the inspection form for the monitoring network.

4.5 Inspection Schedule

Table 4.5: Inspection Schedule

Monitoring Program	Frequency*	Analysis
Site-wide Inspections	Annually	Visual inspection of general site conditions
Groundwater Monitoring	Quarterly	Collection and analysis of groundwater samples for Part 375/TCL VOCs and SVOCs from temporary and/or permanent monitoring wells TMW35 and TMW36
Soil Vapor Intrusion Evaluation	As Needed	Documentation of construction elements for the minimization of soil vapor intrusion into the future building and indoor air sampling prior to building occupancy or installation of a passive vapor mitigation system and additional soil vapor sampling to determine if the system must be converted to an active vapor mitigation system

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH

5.0 PERIODIC ASSESSMENTS/EVALUATIONS

5.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the protectiveness of a given site. Vulnerability assessments provide information so that the site is prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

This section provides a summary of vulnerability assessments that will be conducted for the site during periodic assessments, and briefly summarizes the vulnerability of the site to severe storms/weather events and associated flooding.

According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Rate Map (Panel No. 3604970184F, dated September 5, 2007), the southern part of the site is located within the 0.1 percent Annual Chance Flood Hazard Area "special flood hazard", as defined by the 2014 New York City Building Code. The northern part of the site is located within Zone X, which is defined as a 0.2% annual chance flood area.

Site erosion is not expected during severe weather or precipitation events. Following the completion of remediation, the site was backfilled to above the groundwater table using NYSDEC-approved imported fill, followed by a layer of geotextile fabric and an about 6-inch-thick layer of 3/4-inch virgin stone. As such, the site will remain unpaved to mitigate the potential for flooding. The site is anticipated to be redeveloped with an impervious cover (i.e., the future building foundation slab) over remaining site soil to mitigate site erosion under post-development conditions. Flooding after installation of the building foundation slab will be mitigated through site-wide dewatering until such time that stormwater discharge infrastructure is installed for the future building.

The site is not susceptible to a spill or contaminant release because source material and USTs have been removed.

5.2 Soil Vapor Intrusion Evaluation

Soil vapor intrusion into future buildings is not expected to be a concern due to the anticipated method of construction (i.e., concrete foundation below the water table, monolithic waterproofing/vapor barrier membrane, cellar mechanical ventilation, and the perimeter containment cutoff wall). A soil vapor intrusion evaluation will be conducted

prior to occupancy of the future building at the site. The soil vapor intrusion evaluation will include documentation of the installation of the above-listed construction measures in addition to indoor air sampling prior to occupancy of the future building.

Should development plans change such that the deepest level of the future building is above the groundwater table, an alternate soil vapor intrusion evaluation must be performed prior to occupancy of the new building. The breadth of this evaluation will be determined based upon discussion with the NYSDEC and NYDOH project managers. Based upon these discussions and agency requirements, a work plan may be required for installation of a passive vapor mitigation system and additional soil vapor sampling to determine if the system must be converted to an active vapor mitigation system. The soil vapor sampling work plan would include, at a minimum:

- A figure showing the proposed soil vapor sample locations;
- The depths of the proposed soil vapor samples; and
- A table of sample locations and analytical parameters to be analyzed along with the minimum reporting limits to be achieved by the New York State ELAP-certified laboratory.

Upon completion of the evaluation, any actions taken or to be taken must be reflected in an updated SMP (if required).

6.0 REPORTING REQUIREMENTS

6.1 Site Management Reports

All site management inspection events will be recorded on the appropriate site management forms provided in Appendix G. These forms are subject to NYSDEC revision. All site management inspection events will be conducted by a QEP as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State.

All applicable inspection forms generated for the site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of the table below and summarized in the PRR (see Section 6.2).

Table 6.1: Schedule of Inspection Reports

Task/Report	Reporting Frequency*
PRR	First PRR/certification issued 16 months after issuance of the Certificate of Completion (COC) and annually thereafter.
Groundwater Monitoring	Quarterly
Soil Vapor Intrusion Evaluation	Prior to initial occupancy of new buildings

* The frequency of events will be conducted as specified until otherwise modified by the NYSDEC project manager.

All inspections reports will include, at a minimum:

- Date of event or reporting period;
- Name, company, and position of person(s) conducting monitoring/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);
- Any observations, conclusions, or recommendations; and

- A determination as to whether contaminant conditions have changed since the last reporting event.

Non-routine inspection event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Description of non-routine activities performed; and
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet).

6.2 Periodic Review Report

A PRR will be submitted to the NYSDEC beginning 16 months after the CoC is issued. After submittal of the initial PRR, the next PRR will be submitted annually to the NYSDEC project manager or at another frequency as may be required by the NYSDEC project manager in consultation with the NYSDOH project manager. In the event that the site is subdivided into separate parcels with different ownership, a single PRR will be prepared that addresses the site described in Appendix A. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. The report will include:

- Identification, assessment and certification of all ICs required by the remedy for the site.
- Results of the required annual site inspections and severe condition inspections, as applicable.
- Applicable site management forms and other records generated for the site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
- A summary of any data and/or information generated during the reporting period, with comments and conclusions, if any
- A site evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the site-specific RAWP or DD;

- Any new conclusions or observations regarding site contamination based on inspections or data generated;
- Recommendations regarding any necessary changes to the remedy; and
- The overall performance and effectiveness of the remedy.

6.2.1 Certification of Institutional Controls

Following the last inspection of the reporting period, a PE licensed to practice and registered in New York State will prepare, and include in the PRR, the following certification as per the requirements of DER-10:

"For each IC identified for the site, I certify to the best of my knowledge that all of the following statements are true:

- *The inspection of the site to confirm the effectiveness of the ICs required by the remedial program was performed under my direction;*
- *The IC employed at this site is unchanged from the date the control was put in place, or last approved by the NYSDEC;*
- *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*
- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;*
- *Access to the site will continue to be provided to the NYSDEC to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
- *If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;*
- *Use of the site is compliant with the environmental easement.*
- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and generally accepted engineering practices; and*
- *The information presented in this report is accurate and complete.*
- *No new information has come to the site owner's attention, including groundwater monitoring data from wells located at the site boundary, to indicate*

that the assumptions made in the qualitative exposure assessment of off-site contamination are no longer valid.

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I, Jason J. Hayes, PE, of Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C., have been authorized and designated by the Volunteer to sign this certification for the site."

Every five years, the following certification will be added to the above list (if true at the time of certification):

- *Based on the data provided in the RIR and FER and future data that may be generated in accordance with the SMP, the assumptions made in the qualitative exposure assessment remain valid.*

The signed certification will be included in the PRR. The PRR will be submitted, in electronic format, to the NYSDEC project manager and the NYSDOH project manager. The PRR also may need to be submitted in hard-copy format if requested by the NYSDEC project manager.

6.3 Quarterly Groundwater Monitoring Report

A Quarterly Groundwater Monitoring Report will be submitted to the NYSDEC, containing the following:

- Data summary tables and graphical representations of groundwater contaminants, which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These tables and figures will include a presentation of past data as part of an evaluation of contaminant concentration trends, including but not limited to:
    - Trend monitoring graphs that present groundwater contaminant levels from before the start of the remedy implementation to the most current sampling data; and
    - Trend monitoring graphs depicting system influent analytical data on a per event and cumulative basis.

Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is supplied electronically and

submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.

6.4 Corrective Measures Work Plan

If there is any evidence that a component of the remedy has failed, or if the periodic certification cannot be provided due to the failure of an institutional control or failure to conduct site management activities, a Corrective Measures Work Plan (CMWP) will be submitted to the NYSDEC project manager, in consultation with the NYSDOH project manager, for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the CMWP until it has been approved by the NYSDEC project manager, in consultation with the NYSDOH project manager. Upon completion of the Corrective Measure, a signed certification form must be submitted to the Department.

7.0 REFERENCES

The following references were reviewed as part of this SMP. Note that site-related documents can be accessed through the DECInfo Locator online at: https://gisservices.dec.ny.gov/gis/dil/ or https://www.dec.ny.gov/data/DecDocs/C231127

6 NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.

NYSDEC DER-10: "Technical Guidance for Site Investigation and Remediation"

NYSDEC Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1, dated June 1998 (April 2000 addendum)

FEMA, National Flood Rate Insurance Map Panel No. 3604970184F, dated September 5, 2007.

Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C., Phase I Environmental Site Assessment, dated September 2015

Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C., Phase II Environmental Site Investigation Report, dated November 2015

Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C., Phase I Environmental Site Assessment, dated June 7, 2018

Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C., Remedial Investigation Work Plan, dated May 13, 2020

Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C., Remedial Investigation Report, dated May 14, 2021

Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C., Remedial Action Work Plan, dated November 5, 2021

NYSDEC Decision Document, dated November 15, 2021

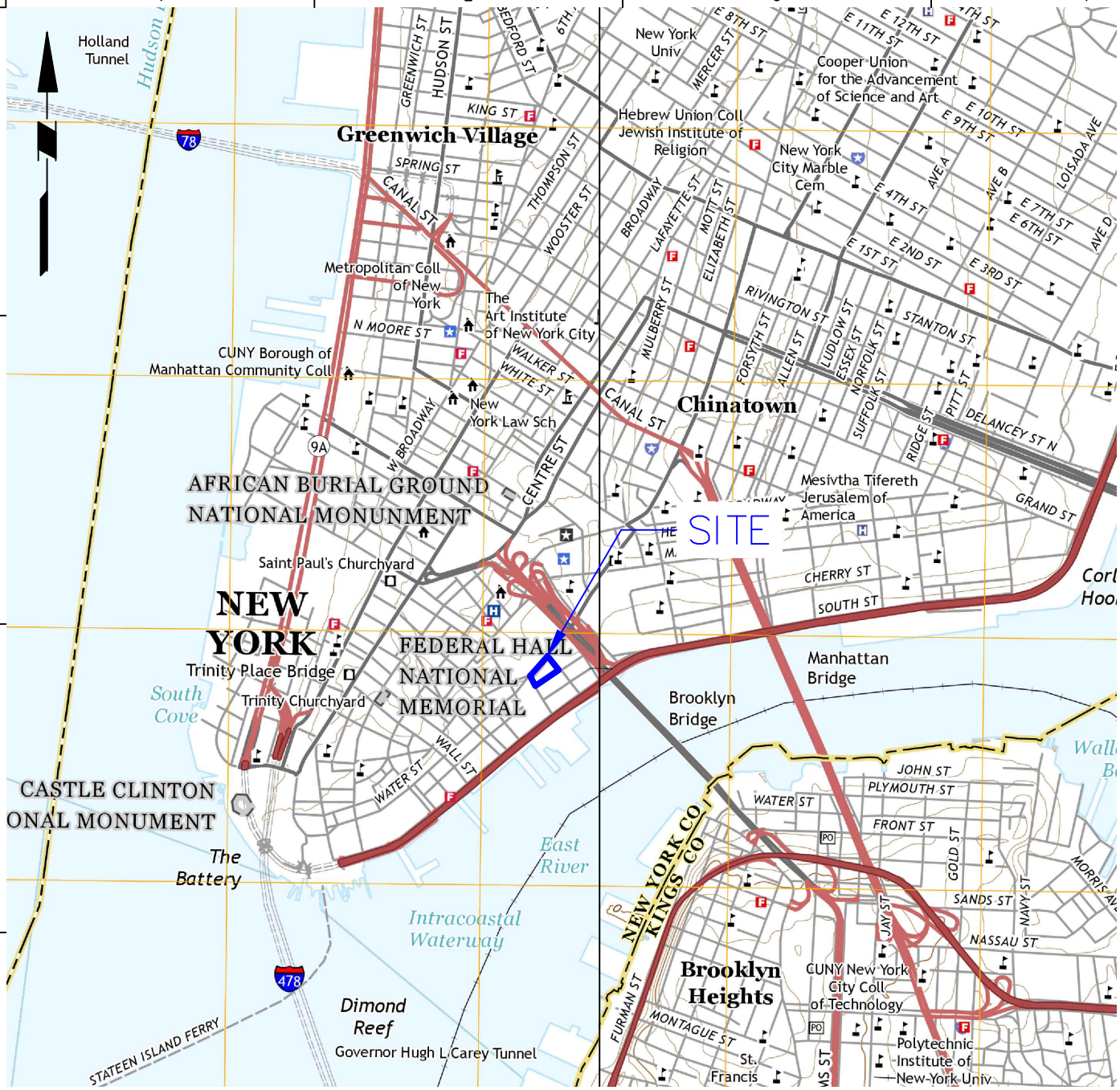
Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C., Remedial Design Investigation Work Plan, dated February 11, 2022

Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C., Remedial Design Report – Test Pit Investigation, dated May 9, 2022

Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C., Waste Characterization Report, dated May 25, 2022

Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C., Remedial Design – Groundwater Monitoring, dated July 27, 2023

FIGURES



NOTES

1. BASE MAP IS REFERENCED FROM THE UNITED STATES GEOLOGICAL SURVEY 7.5 MINUTE SERIES QUADRANGLE MAP OF JERSEY CITY, NEW JERSEY, AND BROOKLYN, NEW YORK, DATED 2016.

2000 0 1000 2000

SCALE IN FEET

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LANGAN

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.

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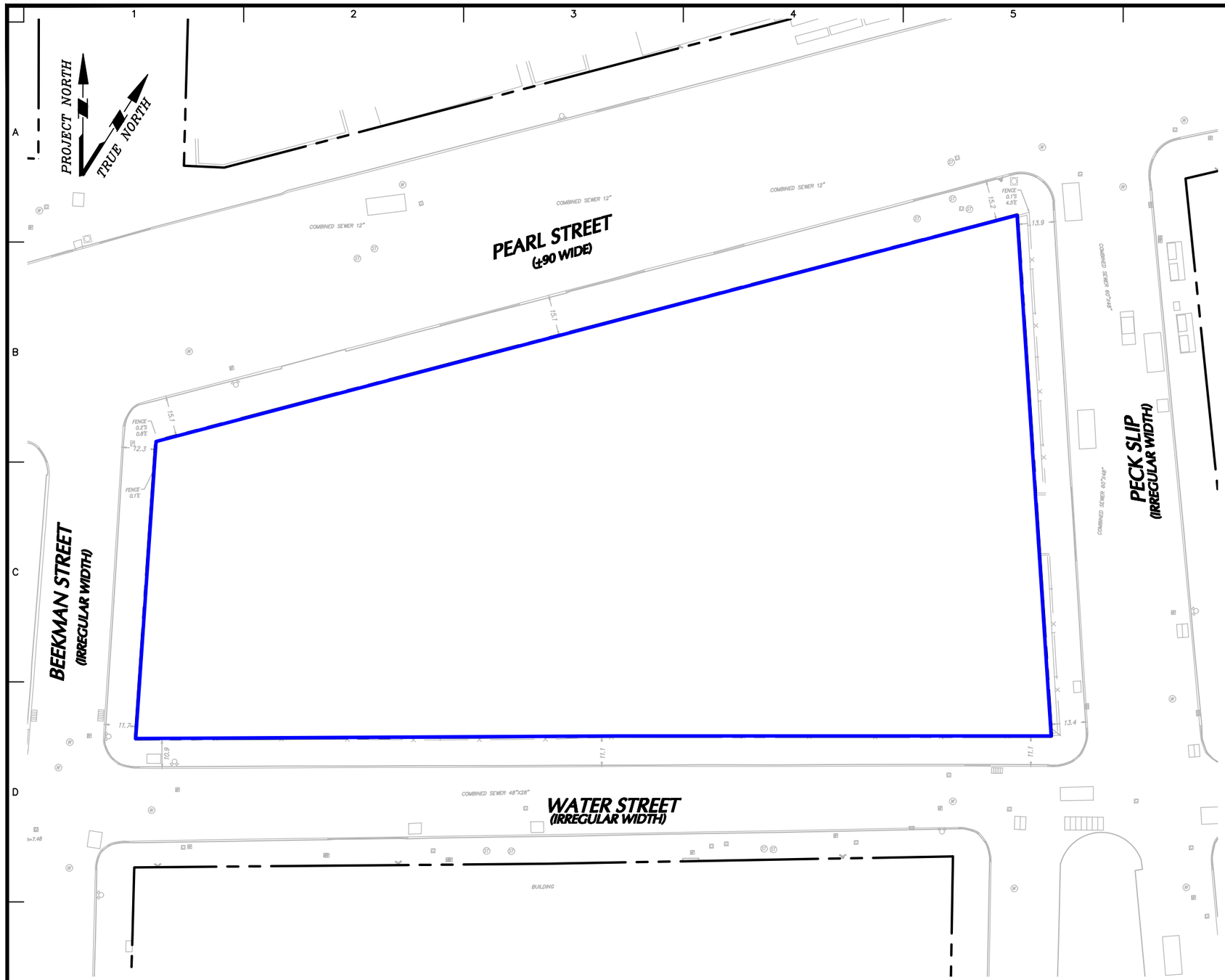
Project	Figure Title	Project No.	Figure No.
250 WATER STREET BLOCK No. 98, LOT No. 1 CITY NEW YORK NEW YORK	SITE LOCATION MAP	170381202 Date 12/15/2023 Drawn By MA Checked By PM	1

Filename: \\langan.com\data\NY\data2\170381202\Project Data\CAD\02\SheetFiles\Environmental\BCP FER\Figure 1 - Site Location Map.dwg Date: 12/26/2023 Time: 13:39 User: mau Style Table: Langan.stb Layout: ANSIA-BP



LEGEND

APPROXIMATE SITE BOUNDARY SUBJECT TO THE RECORDED ENVIRONMENTAL EASEMENT (APPENDIX A)

NOTES

1. BASE MAP IS FROM THE SURVEY DRAWING ALTA/NSPS LAND TITLE SURVEY, COMPLETED BY LANGAN, DATED JUNE 07, 2018.
2. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. THE METES AND BOUNDS OF THE PROPERTY ARE FULLY DESCRIBED IN THE RECORDED ENVIRONMENTAL EASEMENT, PROVIDED AS APPENDIX A.

STATE OF NEW YORK · JASON JAMES HAYES · 089491 · LICENSED PROFESSIONAL ENGINEER

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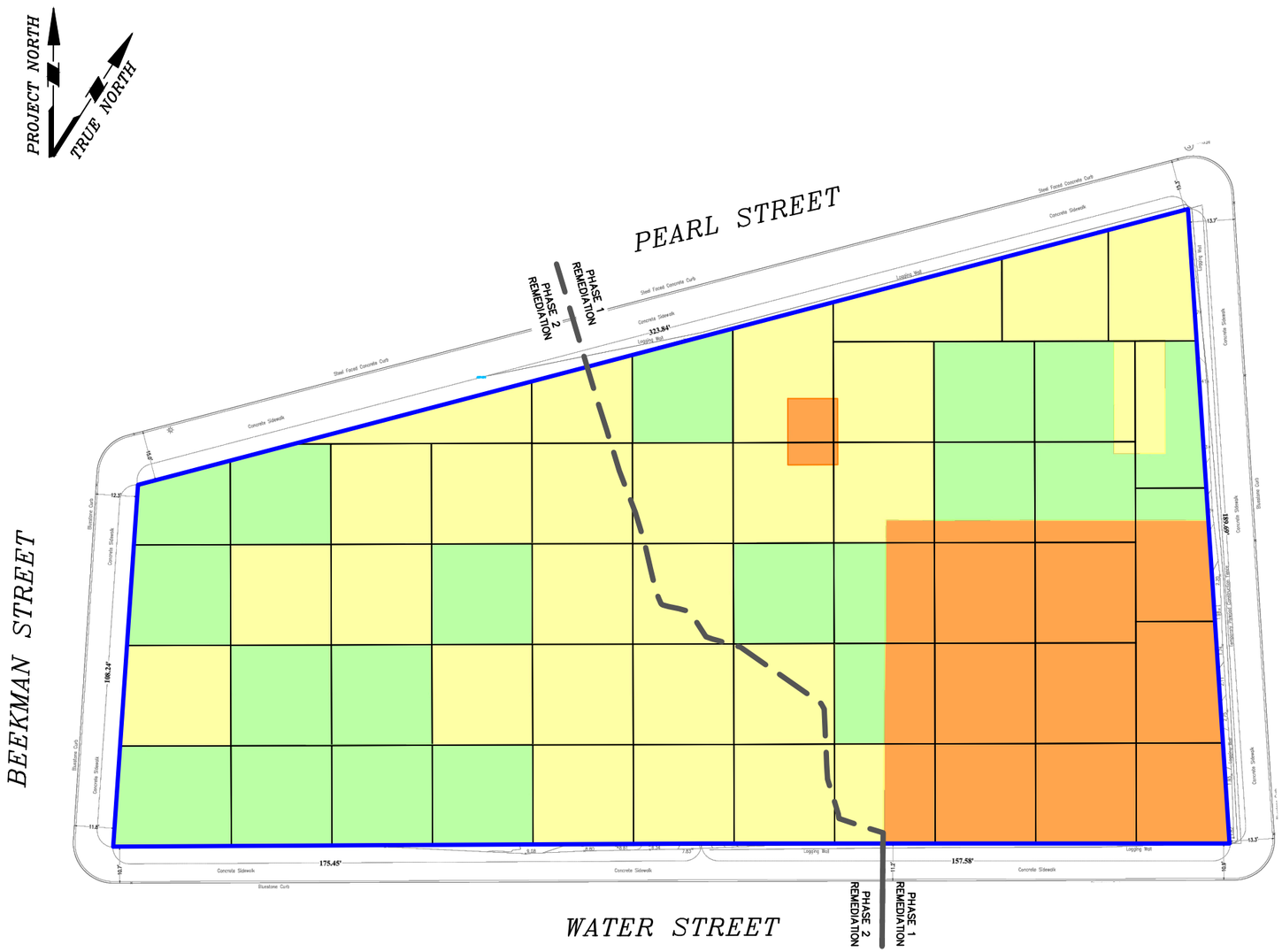
Project	250 WATER STREET
	BLOCK No. 98, LOT No. 1
	CITY NEW YORK NEW YORK
Figure Title	SITE PLAN
Project No.	170381202
Date	12/15/2023
Drawn By	JF
Checked By	PM
Figure No.	2

Filename: \\langan.com\data\NY\data2\170381202\Project Data\CAD\02\SheetFiles\Environmental\BCP FER\Figure 2 & 3 - Site Plan - Air Monitoring Location Map.dwg Date: 12/26/2023 Time: 12:18 User: mau Style Table: Langan.stb Layout: Figure 2



LEGEND

- APPROXIMATE SITE BOUNDARY
- APPROXIMATE EXTENT OF EXCAVATION TO BETWEEN 11 AND 14 FEET BGS
- APPROXIMATE EXTENT OF EXCAVATION TO BETWEEN 14 AND 16 FEET BGS
- APPROXIMATE EXTENT OF EXCAVATION TO BETWEEN 16 AND 19 FEET BGS

STATE OF NEW YORK
JASON JAMES HAYES
089491
LICENSED PROFESSIONAL ENGINEER
12/28

NOTES

1. BASE MAP IS FROM THE TOPO SURVEY - CONTOUR, PREPARED FOR 250 WATER STREET, COMPLETED BY NEW YORK CITY LAND SURVEYORS, PC, DATED DECEMBER 27, 2022.
2. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. BGS = BELOW GRADE SURFACE

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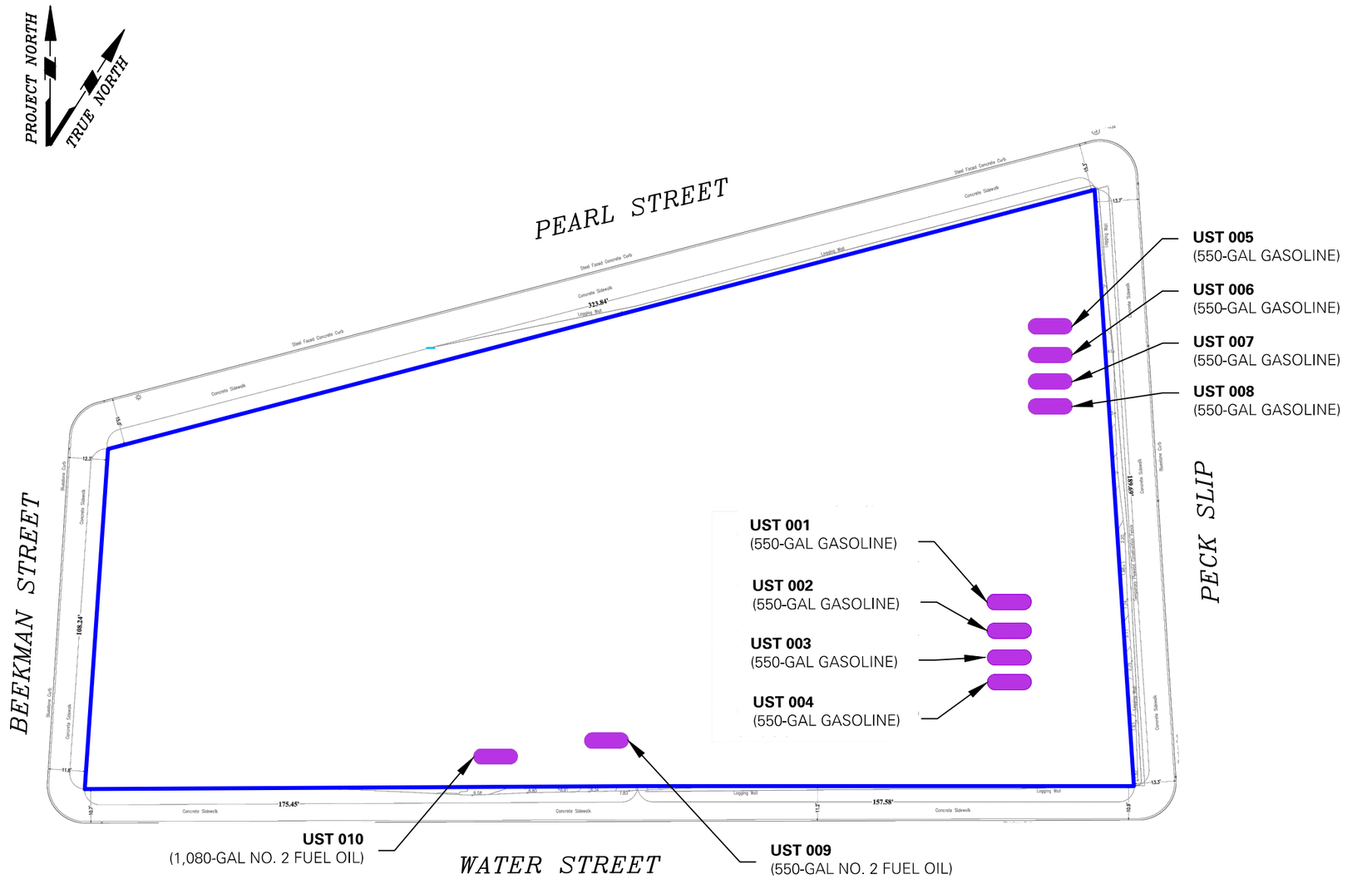
Project	Figure Title	Project No.	Figure
250 WATER STREET BLOCK No. 98, LOT No. 1 CITY NEW YORK NEW YORK	REMEDIAL EXCAVATION EXTENTS MAP	170381202 Date 12/15/2023 Drawn By JF Checked By PM	3

Filename: \\langan.com\data\NY\data2\170381202\Project Data\CAD\02\SheetFiles\Environmental\BCP FER\Figure 4 - Remedial Excavation Extents Map.dwg Date: 12/27/2023 Time: 16:55 User: mau Style Table: Langan.stb Layout: Figure 4 - Remedial Excavation Extents Map



LEGEND

APPROXIMATE SITE BOUNDARY

APPROXIMATE LOCATION OF FORMER USTs

STATE OF NEW YORK
JASON JAMES HAYES
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LICENSED PROFESSIONAL ENGINEER
12/28

NOTES

1. BASE MAP IS FROM THE TOPO SURVEY - CONTOUR, PREPARED FOR 250 WATER STREET, COMPLETED BY NEW YORK CITY LAND SURVEYORS, PC, DATED DECEMBER 27, 2022.
2. UST = UNDERGROUND STORAGE TANK
3. UST 001, UST 002, UST 003, AND UST 004 (ABOUT 550 GALLONS EACH) WERE CLEANED AND DECOMMISSIONED ON JULY 15, 2022 BY BROOKSIDE ENVIRONMENTAL, INC.
4. UST 005, UST 006, UST 007, AND UST 008 (ABOUT 550 GALLONS EACH) WERE CLEANED AND DECOMMISSIONED ON SEPTEMBER 12, 2022 BY BROOKSIDE ENVIRONMENTAL, INC.
5. UST 009 (ABOUT 550 GALLONS) WAS CLEANED AND DECOMMISSIONED ON SEPTEMBER 18, 2023 BY INNOVATIVE RECYCLING TECHNOLOGIES, INC.
6. UST 010 (ABOUT 1,080 GALLONS) WAS CLEANED AND DECOMMISSIONED ON OCTOBER 18, 2023 BY INNOVATIVE RECYCLING TECHNOLOGIES, INC.
7. LOCATIONS OF THE FORMER USTs ARE APPROXIMATE AND BASED ON DOCUMENTATION PROVIDED BY THE TANK REMOVAL CONTRACTORS.

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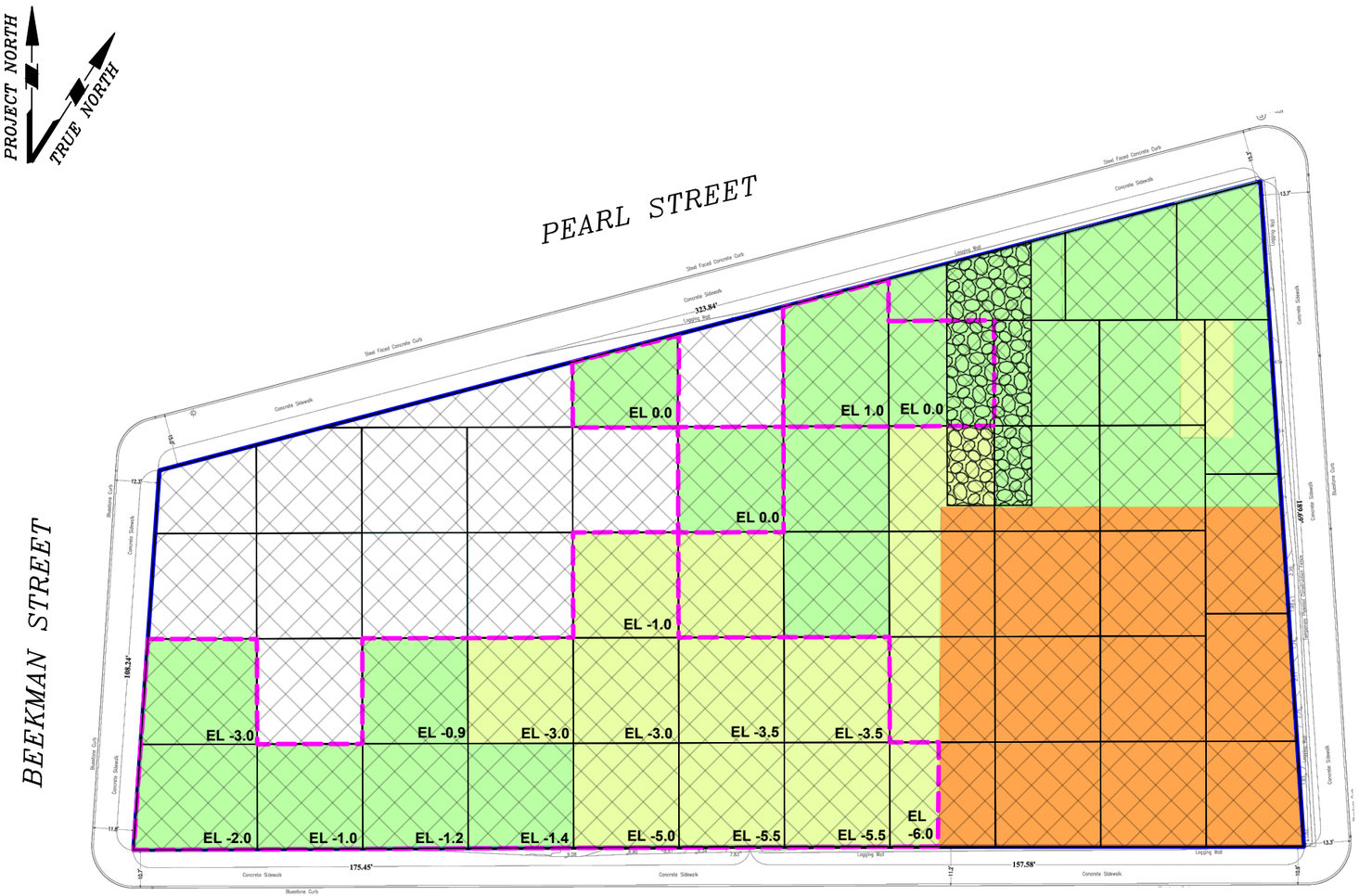
Project
250 WATER STREET
BLOCK No. 98, LOT No. 1
CITY
NEW YORK NEW YORK

Figure Title
UST LOCATION MAP

Project No. 170381202
Date 12/15/2023
Drawn By JF
Checked By PM

Figure 4

Filename: \\langan.com\data\NY\data2\170381202\Project Data\CAD\02\SheetFiles\Environmental\BCP FER\Figure 5 - UST Location Map.dwg Date: 12/27/2023 Time: 16:54 User: mau Style Table: Langan.stb Layout: Figure 1 - UST Location Map



LEGEND

- APPROXIMATE SITE BOUNDARY
- BACKFILLED WITH BETWEEN 0.5 TO 2 FEET OF IMPORTED 3/4-INCH VIRGIN STONE ABOVE A LAYER OF GEOTEXTILE FILTER FABRIC
- BACKFILLED WITH BETWEEN ABOUT 1 AND 3 FEET OF IMPORTED FILL MEETING THE LOWER OF THE NYSDEC PART 375 PGW AND/OR RURR SCOs
- BACKFILLED WITH BETWEEN ABOUT 3 AND 6 FEET OF IMPORTED FILL MEETING THE LOWER OF THE NYSDEC PART 375 PGW AND/OR RURR SCOs
- BACKFILLED WITH ABOUT 9 FEET OF IMPORTED FILL MEETING THE LOWER OF THE NYSDEC PART 375 PGW AND/OR RURR SCOs
- APPROXIMATE LOCATION OF CONSTRUCTION RAMP CONSISTING OF IMPORTED FILL MEETING THE LOWER OF THE NYSDEC PART 375 PGW AND/OR RURR SCOs FOLLOWED BY IMPORTED 1.5-INCH STONE
- EL X.X — APPROXIMATE EXTENTS OF DEMARCATION LAYER CONSISTING OF GEOTEXTILE FILTER FABRIC (APPROXIMATE ELEVATION OF THE DEMARCATION LAYER IS SHOWN IN EACH AREA)

NOTES

1. BASE MAP IS FROM THE TOPO SURVEY - CONTOUR, PREPARED FOR 250 WATER STREET, COMPLETED BY NEW YORK CITY LAND SURVEYORS, PC, DATED DECEMBER 27, 2022.
2. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. BACKFILL AREAS ARE APPROXIMATE AND BASED ON FIELD MEASUREMENTS.
4. FINAL BACKFILLED CONDITION RANGES FROM ABOUT ± EL 1 TO ± EL -1 FEET NAVD88. FINAL ELEVATIONS ARE INCLUDED IN THE "TOP OF BACKFILL" SURVEY PROVIDED AS APPENDIX C OF THE SITE MANAGEMENT PLAN.
5. NYSDEC = NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
6. SCO = SOIL CLEANUP OBJECTIVE
8. PGW = PROTECTION OF GROUNDWATER
9. RURR = RESTRICTED USE RESTRICTED-RESIDENTIAL

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Project	250 WATER STREET BLOCK No. 98, LOT No. 1 CITY NEW YORK NEW YORK
Figure Title	BACKFILL EXTENTS MAP
Project No.	170381202
Date	12/15/2023
Drawn By	JF
Checked By	PM
Figure	5

Filename: \\langan.com\data\NY\data2\170381202\Project Data\CAD\02\SheetFiles\Environmental\BCP FER\Figure 8 - Backfill Extents Map.dwg Date: 12/27/2023 Time: 16:57 User: mau Style Table: Langan.stb Layout: Figure 8 - Backfill Extents Map

Location	EP24
Sample Name	EP24_EL_0.0
Sample Date	9/1/2022
Sample Elevation	0
VOCs	
Acetone	<0.015 U
Total Xylenes	<0.0015 U
SVOCs	
Benzo(a)anthracene	0.2
Benzo(a)pyrene	0.22
Benzo(b)fluoranthene	0.24
Chrysene	0.22
Dibenz(a,h)anthracene	0.03 J
Indeno(1,2,3-cd)pyrene	0.12 J
Metals	
Copper	12.7
Mercury	**1.6**

Location	EP18
Sample Name	EP18_EL_0.0
Sample Date	9/1/2022
Sample Elevation	0
VOCs	
Acetone	<0.012 U
Total Xylenes	<0.0012 U
SVOCs	
Benzo(a)anthracene	0.026 J
Benzo(a)pyrene	<0.14 U
Benzo(b)fluoranthene	<0.1 U
Chrysene	0.024 J
Dibenz(a,h)anthracene	<0.1 U
Indeno(1,2,3-cd)pyrene	<0.14 U
Metals	
Copper	10.6
Mercury	**0.897**

Location	EP28
Sample Name	EP28_EL_1
Sample Date	8/19/2022
Sample Elevation	1
VOCs	
Acetone	<0.0098 U
Total Xylenes	<0.00098 U
SVOCs	
Benzo(a)anthracene	0.021 J
Benzo(a)pyrene	<0.14 U
Benzo(b)fluoranthene	<0.1 U
Chrysene	0.022 J
Dibenz(a,h)anthracene	<0.1 U
Indeno(1,2,3-cd)pyrene	<0.14 U
Metals	
Copper	14.6
Mercury	**1.85**

Location	EP34
Sample Name	EP34_EL_0
Sample Date	8/24/2022
Sample Elevation	0
VOCs	
Acetone	0.018
Total Xylenes	<0.0014 U
SVOCs	
Benzo(a)anthracene	0.63
Benzo(a)pyrene	0.55
Benzo(b)fluoranthene	0.69
Chrysene	0.62
Dibenz(a,h)anthracene	0.086 J
Indeno(1,2,3-cd)pyrene	0.44
Metals	
Copper	40.8
Mercury	**1.84**

Location	EP51
Sample Name	EP51_EL_0.0
Sample Date	10/12/2022
Sample Elevation	0
VOCs	
Acetone	<0.45 U
Total Xylenes	**3.8**
SVOCs	
Benzo(a)anthracene	0.21
Benzo(a)pyrene	0.26
Benzo(b)fluoranthene	0.31
Chrysene	0.22
Dibenz(a,h)anthracene	0.038 J
Indeno(1,2,3-cd)pyrene	0.18
Metals	
Copper	30.3
Mercury	**0.797**

Location	EP25	EP25
Sample Name	EP25_EL_-2	DUP01_101422
Sample Date	10/14/2022	10/14/2022
Sample Elevation	-2	-2
VOCs		
Acetone	0.0044 J	0.012 J
Total Xylenes	<0.00066 U	<0.0014 U
SVOCs		
Benzo(a)anthracene	0.13	0.18
Benzo(a)pyrene	0.12 J	0.16
Benzo(b)fluoranthene	0.14	0.18
Chrysene	0.12	0.16
Dibenz(a,h)anthracene	<0.12 U	<0.12 U
Indeno(1,2,3-cd)pyrene	0.073 J	0.091 J
Metals		
Copper	10.7 J	28 J
Mercury	0.55 J	**2.63 J**

Location	EP42
Sample Name	EP42_EL_-8.0
Sample Date	9/26/2022
Sample Elevation	-8
VOCs	
Acetone	**0.15 J**
Total Xylenes	0.0056 J
SVOCs	
Benzo(a)anthracene	<0.11 U
Benzo(a)pyrene	<0.14 U
Benzo(b)fluoranthene	<0.11 U
Chrysene	<0.11 U
Dibenz(a,h)anthracene	<0.11 U
Indeno(1,2,3-cd)pyrene	<0.14 U
Metals	
Copper	82.4
Mercury	<0.07 U

Location	EP48
Sample Name	EP48_EL_-8.0
Sample Date	9/26/2022
Sample Elevation	-8
VOCs	
Acetone	**0.18 J**
Total Xylenes	0.012 J
SVOCs	
Benzo(a)anthracene	<0.12 U
Benzo(a)pyrene	<0.16 U
Benzo(b)fluoranthene	<0.12 U
Chrysene	<0.12 U
Dibenz(a,h)anthracene	<0.12 U
Indeno(1,2,3-cd)pyrene	<0.16 U
Metals	
Copper	25.3
Mercury	<0.078 U

Location	EP49
Sample Name	EP49_EL_-8.0
Sample Date	9/26/2022
Sample Elevation	-8
VOCs	
Acetone	**0.071 J**
Total Xylenes	0.21 J
SVOCs	
Benzo(a)anthracene	<0.12 U
Benzo(a)pyrene	<0.15 U
Benzo(b)fluoranthene	<0.12 U
Chrysene	<0.12 U
Dibenz(a,h)anthracene	<0.12 U
Indeno(1,2,3-cd)pyrene	<0.15 U
Metals	
Copper	11.6
Mercury	<0.074 U

Location	EP03
Sample Name	EP03_EL_-3.0
Sample Date	12/6/2023
Sample Elevation	-3
VOCs	
Acetone	0.026 J
Total Xylenes	<0.013 U
SVOCs	
Benzo(a)anthracene	**2.46**
Benzo(a)pyrene	1.79
Benzo(b)fluoranthene	1.33
Chrysene	**1.69**
Dibenz(a,h)anthracene	0.343
Indeno(1,2,3-cd)pyrene	0.932
Metals	
Copper	14.5
Mercury	0.0654

Location	EP13	EP13
Sample Name	EP13_EL_-1.2	DUP02_112923
Sample Date	11/29/2023	11/29/2023
Sample Elevation	-1.2	-1.2
VOCs		
Acetone	**0.063 J**	0.013 J
Total Xylenes	<0.023 U	<0.011 U
SVOCs		
Benzo(a)anthracene	<0.0966 U	<0.0933 U
Benzo(a)pyrene	<0.0966 U	<0.0933 U
Benzo(b)fluoranthene	<0.0966 U	<0.0933 U
Chrysene	<0.0966 U	<0.0933 U
Dibenz(a,h)anthracene	<0.0966 U	<0.0933 U
Indeno(1,2,3-cd)pyrene	<0.0966 UJ	<0.0933 UJ
Metals		
Copper	11	11.7
Mercury	<0.0349 U	<0.0339 U

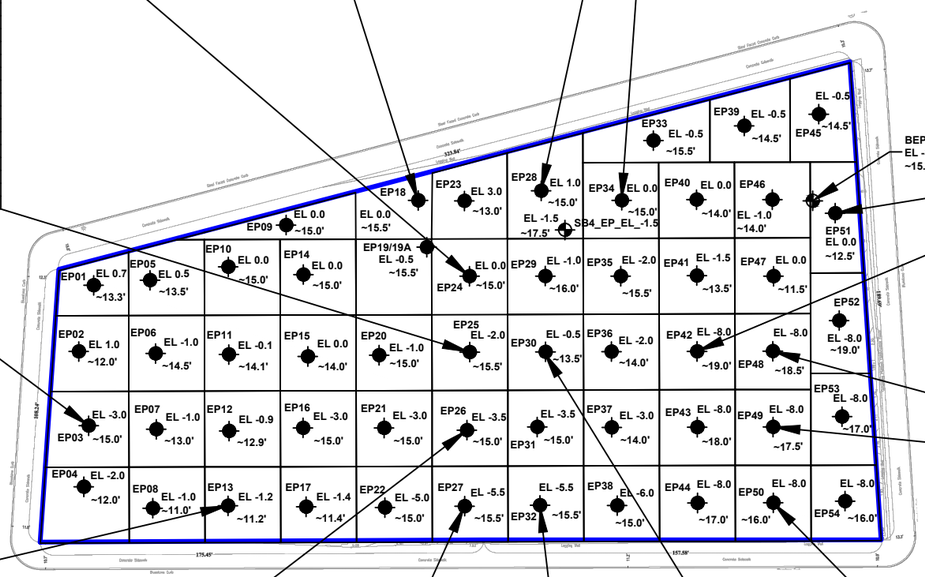
Location	EP26
Sample Name	EP26_EL_-3.5
Sample Date	12/4/2023
Sample Elevation	-3.5
VOCs	
Acetone	**0.064 J**
Total Xylenes	<0.036 U
SVOCs	
Benzo(a)anthracene	<0.103 U
Benzo(a)pyrene	<0.103 U
Benzo(b)fluoranthene	<0.103 U
Chrysene	<0.103 U
Dibenz(a,h)anthracene	<0.103 U
Indeno(1,2,3-cd)pyrene	<0.103 UJ
Metals	
Copper	161
Mercury	<0.037 U

Location	EP27	EP27
Sample Name	EP27_EL_-5.5	DUP03_120423
Sample Date	12/4/2023	12/4/2023
Sample Elevation	-5.5	-5.5
VOCs		
Acetone	0.034 J	**0.066 J**
Total Xylenes	<0.024 U	<0.038 U
SVOCs		
Benzo(a)anthracene	<0.106 U	0.151
Benzo(a)pyrene	<0.106 U	0.14
Benzo(b)fluoranthene	<0.106 U	0.164
Chrysene	<0.106 U	0.118
Dibenz(a,h)anthracene	<0.106 U	<0.101 U
Indeno(1,2,3-cd)pyrene	<0.106 UJ	0.0931 J
Metals		
Copper	51.4 J	116 J
Mercury	0.323 J	0.192 J

Location	EP32
Sample Name	EP32_EL_-5.5
Sample Date	12/4/2023
Sample Elevation	-5.5
VOCs	
Acetone	**0.092 J**
Total Xylenes	<0.017 U
SVOCs	
Benzo(a)anthracene	0.0551 J
Benzo(a)pyrene	<0.106 U
Benzo(b)fluoranthene	0.0576 J
Chrysene	<0.106 U
Dibenz(a,h)anthracene	<0.106 U
Indeno(1,2,3-cd)pyrene	<0.106 UJ
Metals	
Copper	456
Mercury	0.097

Location	EP30
Sample Name	EP30_EL_-0.5
Sample Date	9/2/2022
Sample Elevation	-0.5
VOCs	
Acetone	<0.013 U
Total Xylenes	<0.0013 U
SVOCs	
Benzo(a)anthracene	0.073 J
Benzo(a)pyrene	0.063 J
Benzo(b)fluoranthene	0.081 J
Chrysene	0.07 J
Dibenz(a,h)anthracene	<0.1 U
Indeno(1,2,3-cd)pyrene	0.043 J
Metals	
Copper	29.3 J
Mercury	**0.767 J**

Location	EP50
Sample Name	EP50_EL_-8.0
Sample Date	9/26/2022
Sample Elevation	-8
VOCs	
Acetone	**0.17 J**
Total Xylenes	0.012
SVOCs	
Benzo(a)anthracene	<0.13 U
Benzo(a)pyrene	<0.17 U
Benzo(b)fluoranthene	<0.13 U
Chrysene	<0.13 U
Dibenz(a,h)anthracene	<0.13 U
Indeno(1,2,3-cd)pyrene	<0.17 U
Metals	
Copper	12
Mercury	<0.081 U



LEGEND

APPROXIMATE SITE BOUNDARY

EP## APPROXIMATE CONFIRMATION ENDPOINT SOIL SAMPLE LOCATION

SB4 APPROXIMATE CONFIRMATION ENDPOINT SOIL SAMPLE LOCATION FOR MERCURY HOTSPOT AND/OR BENEATH USTs 005 THROUGH 008

BORING LEGEND

SAMPLE ID

SAMPLE ELEVATION (FEET NAVD88)

SAMPLE DEPTH (FEET BGS)

STATE OF NEW YORK JASON JAMES HAYES 089491 LICENSED PROFESSIONAL ENGINEER 12/15/23

Analyte	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs
VOCs		
Acetone	0.05	100
Total Xylenes	1.6	100
SVOCs		
Benzo(a)anthracene	1	1
Benzo(a)pyrene	22	1
Benzo(b)fluoranthene	1.7	1
Chrysene	1	3.9
Dibenz(a,h)anthracene	1000	0.33
Indeno(1,2,3-cd)pyrene	8.2	0.5
Metals		
Copper	1720	270
Mercury	0.73	0.81

Exceedance Summary:

10 - Result exceeds Protection of Groundwater SCOs

10 - Result exceeds Restricted Use Restricted-Residential SCOs

NOTES

1. BASE MAP IS FROM THE TOPO SURVEY - CONTOUR, PREPARED FOR 250 WATER STREET, COMPLETED BY NEW YORK CITY LAND SURVEYORS,PC, DATED DECEMBER 27, 2022.
2. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. SOIL SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TITLE 6 OF THE OFFICIAL COMPILATION OF NEW YORK CODES, RULES, AND REGULATIONS (NYCRR) PART 375 RESTRICTED USE RESTRICTED-RESIDENTIAL (RURR) AND PROTECTION OF GROUNDWATER (PGW) SOIL CLEANUP OBJECTIVES (SCOs). CONCENTRATIONS DETECTED ABOVE PGW SCOs ARE BOLDED AND CONCENTRATIONS DETECTED ABOVE RURR SCOs ARE BOLDED AND SHADED.
4. SOIL SAMPLE ANALYTICAL RESULTS ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg).
5. BGS = BELOW GRADE SURFACE
6. J = THE COMPOUND WAS DETECTED ABOVE THE METHOD DETECTION LIMIT, BUT BELOW THE REPORTING LIMIT; THEREFORE THE RESULT IS AN ESTIMATED CONCENTRATION.
7. U = THE ANALYTE WAS ANALYZED FOR, BUT WAS NOT DETECTED AT A LEVEL GREATER THAN OR EQUAL TO THE LEVEL OF THE REPORTING LIMIT OR THE SAMPLE CONCENTRATION FOR RESULTS IMPACTED BY BLANK CONTAMINATION.
8. UJ = THE ANALYTE WAS ANALYZED FOR, BUT WAS NOT DETECTED AT A LEVEL GREATER THAN OR EQUAL TO THE LEVEL OF THE REPORTING LIMIT OR THE SAMPLE CONCENTRATION FOR RESULTS IMPACTED BY BLANK CONTAMINATION.

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

60 0 30 60
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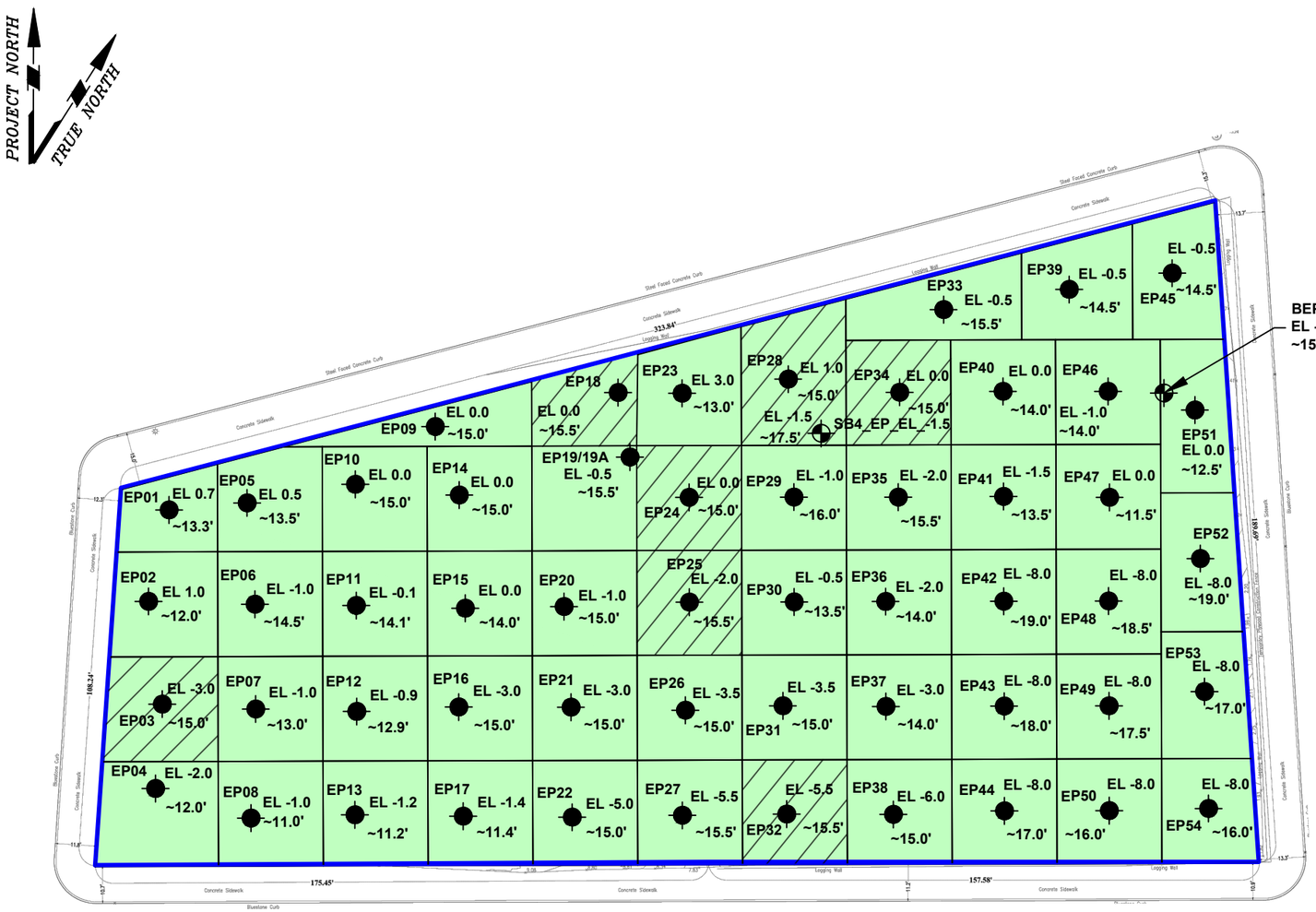
Project
250 WATER STREET
BLOCK No. 98, LOT No. 1
CITY
NEW YORK NEW YORK

Figure Title
CONFIRMATION ENDPOINT SOIL SAMPLE LOCATION AND ANALYTICAL RESULTS MAP

Project No.	170381202
Date	12/15/2023
Drawn By	JF
Checked By	PM

Figure 6A



LEGEND

- APPROXIMATE SITE BOUNDARY
- EP## — APPROXIMATE CONFIRMATION ENDPOINT SOIL SAMPLE LOCATION
- SB4 — APPROXIMATE CONFIRMATION ENDPOINT SOIL SAMPLE LOCATION FOR MERCURY HOTSPOT AND/OR BENEATH USTs 005 THROUGH 008
- APPROXIMATE EXTENT OF REMAINING SOIL/FILL MEETING TRACK 2 CRITERIA (THROUGH SCOs OR EXCAVATION DEPTH)
- APPROXIMATE EXTENT OF REMAINING SOIL/FILL EXCEEDING TRACK 2 RURR AND/OR PGW SCOs AT A DEPTH OF AT LEAST 15 FEET BGS (SEE NOTE 3)

BORING LEGEND

SAMPLE ID — SAMPLE ELEVATION (FEET NAVD88) / SAMPLE DEPTH (FEET BGS)

STATE OF NEW YORK
JASON JAMES HAYES
LICENSED PROFESSIONAL ENGINEER
089491
12/28

NOTES

1. BASE MAP IS FROM THE TOPO SURVEY - CONTOUR, PREPARED FOR 250 WATER STREET, COMPLETED BY NEW YORK CITY LAND SURVEYORS,PC, DATED DECEMBER 27, 2022.
2. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. THE EXTENTS OF REMAINING CONTAMINATION AT THE SITE WERE DETERMINED BASED ON CONFIRMATION ENDPOINT SOIL SAMPLE ANALYTICAL RESULTS. THE AREAS SHOWN ON THIS FIGURE INCLUDE THOSE WITH SOILS EXCEEDING THE TRACK 2 RESTRICTED USE RESTRICTED-RESIDENTIAL (RURR) SOIL CLEANUP OBJECTIVES (SCOs) AT A DEPTH OF AT LEAST 15 FEET BGS AND/OR EXCEEDING THE LOWER OF THE RURR/PROTECTION OF GROUNDWATER (PGW) SCOs FOR CONTAMINANTS FOUND IN SITE GROUNDWATER ABOVE DRINKING WATER STANDARDS.
4. FUTURE GROUND-INTRUSIVE ACTIVITIES AT THE SITE ARE SUBJECT TO THE REQUIREMENTS OF THE NYSDEC-APPROVED SITE MANAGEMENT PLAN.
5. BGS = BELOW GRADE SURFACE

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

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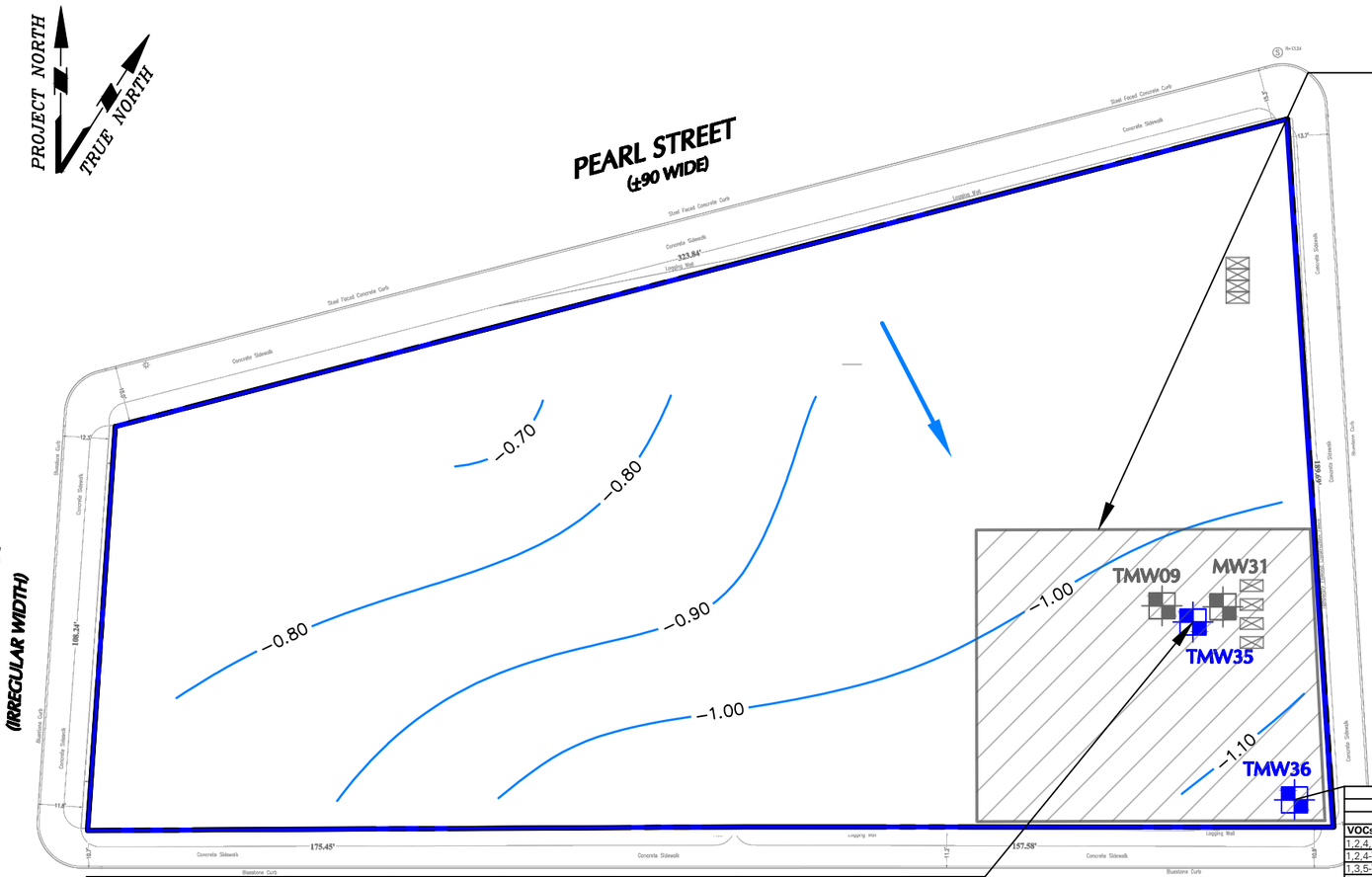
Project	250 WATER STREET BLOCK No. 98, LOT No. 1 CITY NEW YORK NEW YORK
Figure Title	REMAINING CONTAMINATION EXTENTS MAP
Project No.	170381202
Date	12/15/2023
Drawn By	JF
Checked By	PM
Figure	6B

Filename: \\langan.com\data\NY\data2\170381202\Project Data\CAD\02\SheetFiles\Environmental\BCP FER\Figure 6A and 6B.dwg Date: 12/27/2023 Time: 12:57 User: mau Style Table: Langan.stb Layout: Figure 6B - Remaining Contamination Extents Map



LEGEND

- APPROXIMATE SITE BOUNDARY
- −0.90 GROUNDWATER CONTOUR
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- TMW09 APPROXIMATE LOCATION OF PHASE II ESI OR RI GROUNDWATER MONITORING WELL
- TMW35 GROUNDWATER MONITORING WELL LOCATION
- APPROXIMATE LOCATION OF FORMER UNDERGROUND STORAGE TANK
- APPROXIMATE PHASE 1 DEWATERING AREA

Location	GW01	GW02
Sample Name	GW01_20220921	GW02_20221003
Sample Date	09/21/2022	10/03/2022
VOCs		
1,2,4,5-Tetramethylbenzene	**5.4**	**10**
1,2,4-Trimethylbenzene	<2.5 U	<2.5 U
1,3,5-Trimethylbenzene (Mesitylene)	<2.5 U	<2.5 U
Benzene	0.89	0.53
Cymene	<2.5 U	<2.5 U
Ethylbenzene	<2.5 U	<2.5 U
Isopropylbenzene (Cumene)	**7.6**	**10**
M,P-Xylene	<2.5 U	1.7 J
Naphthalene	<2.5 U	3.6
n-Butylbenzene	<2.5 U	1.4 J
n-Propylbenzene	**11**	**19**
o-Xylene (1,2-Dimethylbenzene)	<2.5 U	<2.5 U
Sec-Butylbenzene	0.94 J	1.4 J
Toluene	<2.5 U	<2.5 U
Total Xylenes	<2.5 U	1.7 J
Trichlorofluoromethane	**20 J**	**10**
Total BTEX	0.89	2.23
Total VOCs	45.83	59.33
SVOCs		
1,4-Dioxane (P-Dioxane)	NA	NA
2,4-Dimethylphenol	<5 U	<5 U
Acenaphthene	0.11	0.12
Benzo(a)anthracene	<0.1 U	**1.2**
Benzo(a)pyrene	<0.1 U	**0.98**
Benzo(b)fluoranthene	<0.1 U	**2.2**
Benzo(k)fluoranthene	<0.1 U	**0.64**
Biphenyl (Diphenyl)	<2 UJ	<2 U
Chrysene	<0.1 U	**1.6**
Indeno(1,2,3-cd)pyrene	<0.1 UJ	**1**
Naphthalene	0.38	2.7
Phenanthrene	0.03 J	0.11
Phenol	<5 U	<5 U

Analyte	NYSDEC SGVs
VOCs	
1,2,4,5-Tetramethylbenzene	5
1,2,4-Trimethylbenzene	5
1,3,5-Trimethylbenzene (Mesitylene)	5
Benzene	1
Cymene	5
Ethylbenzene	5
Isopropylbenzene (Cumene)	5
M,P-Xylene	5
Naphthalene	10
n-Butylbenzene	5
n-Propylbenzene	5
o-Xylene (1,2-Dimethylbenzene)	5
Sec-Butylbenzene	5
Toluene	5
Total Xylenes	5
Trichlorofluoromethane	5
SVOCs	
1,4-Dioxane (P-Dioxane)	0.35
2,4-Dimethylphenol	1
Acenaphthene	20
Benzo(a)anthracene	0.002
Benzo(a)pyrene	0
Benzo(b)fluoranthene	0.002
Benzo(k)fluoranthene	0.002
Biphenyl (Diphenyl)	5
Chrysene	0.002
Indeno(1,2,3-cd)pyrene	0.002
Naphthalene	10
Phenanthrene	50
Phenol	1

Location	TMW09	MW31	TMW35	Percent Reduction TMW09 vs. TMW35 (10/17/2023)	TMW35	Percent Reduction TMW09 vs. TMW35 (12/07/2023)
Sample Name	TMW09_100315	MW31_090220	TMW35_101723		TMW35_120723	
Sample Date	10/03/2015	09/02/2020	10/17/2023		12/07/2023	
VOCs						
1,2,4,5-Tetramethylbenzene	**550 J**	**35**	**20**	96.4%	0.58 J	99.9%
1,2,4-Trimethylbenzene	**6,100**	**550**	**18**	99.7%	<2.5 U	>99%
1,3,5-Trimethylbenzene (Mesitylene)	**1,800**	**140**	**15**	99.2%	<2.5 U	>99%
Benzene	**330**	**53**	**2.6**	99.2%	**2.6**	99.2%
Cymene	**83 J**	<12 U	1.1 J	98.7%	<2.5 U	>99%
Ethylbenzene	**1,800**	**390**	2.1 J	99.9%	<2.5 U	>99%
Isopropylbenzene (Cumene)	**240 J**	**34**	3.5	98.5%	1.2 J	99.5%
M,P-Xylene	**8,400**	**1,300**	**6.9**	99.9%	<2.5 U	>99%
Naphthalene	**1,700 J**	**240**	**12**	99.3%	1.4 J	99.9%
n-Butylbenzene	**240 J**	**6.6 J**	1.6 J	99.3%	<2.5 U	>99%
n-Propylbenzene	**760**	**74**	**7.5**	99.0%	<2.5 U	>99%
o-Xylene (1,2-Dimethylbenzene)	**3,400**	**390**	3.7	99.9%	<2.5 UJ	>99%
Sec-Butylbenzene	**86 J**	**5.8 J**	1.5 J	98.3%	0.92 J	98.9%
Toluene	**2,700**	**290**	<2.5 U	>99%	<2.5 U	>99%
Total Xylenes	**12,000**	**1,700**	**11**	99.9%	<2.5 U	>99%
Trichlorofluoromethane	<250 U	<12 U	<2.5 U	-	<2.5 U	-
Total BTEX	16630	2423	15.3	99.9%	2.6	99.9%
Total VOCs	40189	5208.4	106.5	99.7%	8.1	99.9%
SVOCs						
1,4-Dioxane (P-Dioxane)	NA	<0.15 U	**0.838**	-	0.222	
2,4-Dimethylphenol	**7.6**	**4.9 J**	<5 U	>99%	<5 U	>99%
Acenaphthene	**53**	12	1.8	96.6%	0.26	99.5%
Benzo(a)anthracene	**4.6 J**	<0.1 UJ	**0.12**	97.4%	<0.1 U	>99%
Benzo(a)pyrene	**2.2 J**	<0.1 U	**0.08 J**	96.4%	**0.03 J**	98.6%
Benzo(b)fluoranthene	**2.8 J**	<0.1 U	**0.1 J**	96.4%	<0.1 U	>99%
Benzo(k)fluoranthene	<10 U	<0.1 U	**0.04 J**	-	<0.1 U	-
Biphenyl (Diphenyl)	**28**	**7.9**	<2 U	>99%	<2 U	>99%
Chrysene	**3.7 J**	<0.1 U	**0.09 J**	97.6%	<0.1 U	>99%
Indeno(1,2,3-cd)pyrene	<10 U	<0.1 U	**0.05 J**	-	**0.02 J**	-
Naphthalene	**540**	**210**	6.6	98.8%	0.62	99.9%
Phenanthrene	**77**	7.5	1.4	98.2%	0.55	99.3%
Phenol	**44**	**2.5 J**	<5 U	>99%	<5 U	>99%

Location	TMW36	TMW36	TMW36
Sample Name	TMW36_101723	DUP_101723	TMW36_120723
Sample Date	10/17/2023	10/17/2023	12/07/2023
VOCs			
1,2,4,5-Tetramethylbenzene	<2 U	<2 U	<2 U
1,2,4-Trimethylbenzene	<2.5 U	<2.5 U	<2.5 U
1,3,5-Trimethylbenzene (Mesitylene)	<2.5 U	<2.5 U	<2.5 U
Benzene	0.27 J	0.27 J	0.23 J
Cymene	<2.5 U	<2.5 U	<2.5 U
Ethylbenzene	<2.5 U	<2.5 U	<2.5 U
Isopropylbenzene (Cumene)	<2.5 U	<2.5 U	<2.5 U
M,P-Xylene	<2.5 U	<2.5 U	<2.5 U
Naphthalene	2.6	2.7	<2.5 U
n-Butylbenzene	<2.5 U	<2.5 U	<2.5 U
n-Propylbenzene	<2.5 U	<2.5 U	<2.5 U
o-Xylene (1,2-Dimethylbenzene)	<2.5 U	<2.5 U	<2.5 UJ
Sec-Butylbenzene	<2.5 U	<2.5 U	<2.5 U
Toluene	<2.5 U	<2.5 U	<2.5 U
Total Xylenes	<2.5 U	<2.5 U	<2.5 U
Trichlorofluoromethane	<2.5 U	<2.5 U	<2.5 U
Total BTEX	0.27	0.27	0.23
Total VOCs	2.87	2.87	0.23
SVOCs			
1,4-Dioxane (P-Dioxane)	**2.96**	**3.13**	**0.941**
2,4-Dimethylphenol	<5 U	<5 U	<5 U
Acenaphthene	0.41	0.37	0.36
Benzo(a)anthracene	**0.08 J**	**0.06 J**	**0.34**
Benzo(a)pyrene	**0.04 J**	<0.1 U	**0.34**
Benzo(b)fluoranthene	**0.07 J**	<0.1 U	**0.44**
Benzo(k)fluoranthene	**0.06 J**	<0.1 U	**0.11**
Biphenyl (Diphenyl)	<2 U	<2 U	<2 U
Chrysene	**0.08 J**	**0.02 J**	**0.3**
Indeno(1,2,3-cd)pyrene	**0.05 J**	<0.1 U	**0.22**
Naphthalene	1.6	1.5	0.33
Phenanthrene	1	0.86	0.84
Phenol	**2.2 J**	**2.2 J**	<5 U

40 0 10 25 40

SCALE IN FEET

NOTES:

1. BASE MAP IS REFERENCED FROM THE DRAWING TITLED TOPO SURVEY - CONTOUR, PREPARED BY NEW YORK CITY LAND SURVEYORS, P.C., DATED DECEMBER 27, 2022.
2. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. GROUNDWATER ELEVATIONS ARE REFERENCED FROM FIGURE 6A INCLUDED IN THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC)-APPROVED REMEDIAL INVESTIGATION REPORT (RIR), TITLED 'GROUNDWATER ELEVATION CONTOUR MAP', DATED JANUARY 14, 2021.
4. GROUNDWATER ELEVATION CONTOUR INTERVAL IS 0.1 FOOT.
5. GROUNDWATER SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NYSDEC TECHNICAL AND OPERATIONAL GUIDANCE SERIES (TOGS) 1.1.1 AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES (SGVs) FOR DRINKING WATER (CLASS GA).
6. ONLY VOCs AND SVOCs DETECTED AT CONCENTRATIONS ABOVE THE NYSDEC SGVs ARE SHOWN.
7. NYSDEC SGV EXCEEDANCES ARE HIGHLIGHTED AND IN BOLD.
8. µg/L = MICROGRAM PER LITER
9. VOC = VOLATILE ORGANIC COMPOUND
10. SVOC = SEMIVOLATILE ORGANIC COMPOUND
11. J = THE ANALYTE WAS DETECTED ABOVE THE METHOD DETECTION LIMIT BUT BELOW THE REPORTING LIMIT; THEREFORE, THE RESULT IS AN ESTIMATE.
12. J- = THE REPORTED VALUE MAY BE BIASED LOW. THE ACTUAL VALUE IS EXPECTED TO BE GREATER THAN THE REPORTED VALUE.
13. UJ = THE ANALYTE WAS NOT DETECTED AT A LEVEL GREATER THAN OR EQUAL TO THE REPORTING LIMIT; HOWEVER, THE REPORTED REPORTING LIMIT IS APPROXIMATE AND MAY BE INACCURATE OR IMPRECISE.
14. U = THE ANALYTE WAS ANALYZED FOR, BUT WAS NOT DETECTED AT A LEVEL GREATER THAN OR EQUAL TO THE LEVEL OF THE REPORTING LIMIT OR THE SAMPLE CONCENTRATION FOR RESULTS IMPACTED BY BLANK CONTAMINATION.

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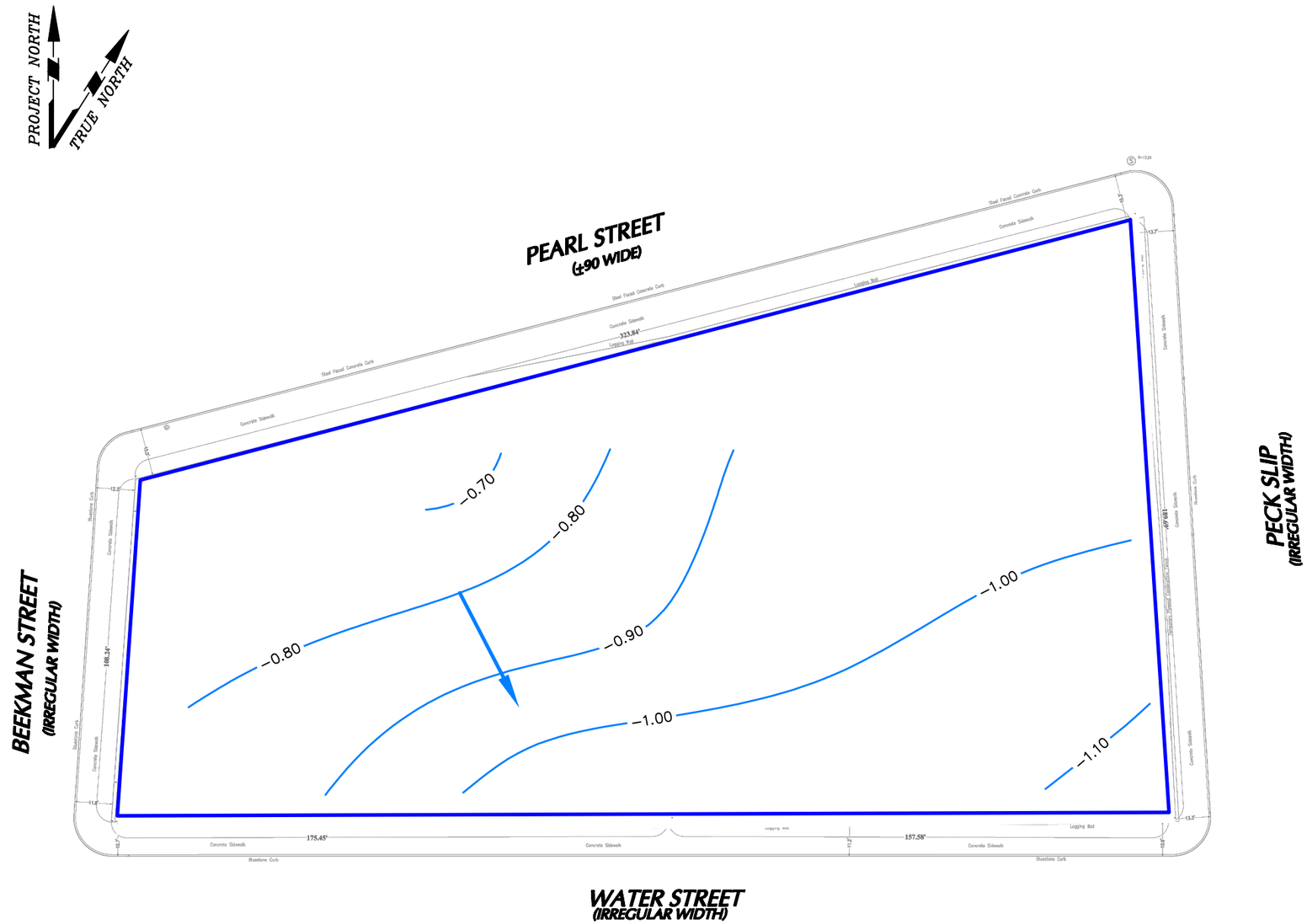
Project
250 WATER STREET
BLOCK No. 98, LOT No. 1
CITY NEW YORK NEW YORK

Figure Title
CONFIRMATION GROUNDWATER SAMPLE LOCATION AND ANALYTICAL RESULTS MAP

Project No. 170381202
Date 12/14/2023
Drawn By JF
Checked By PM

Figure 7



NOTES:

1. BASE MAP IS REFERENCED FROM THE DRAWING TITLED TOPO SURVEY - CONTOUR, PREPARED BY NEW YORK CITY LAND SURVEYORS, P.C., DATED DECEMBER 27,2022.
2. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. GROUNDWATER ELEVATIONS ARE BASED ON A SYNOPTIC ROUND OF GROUNDWATER GAUGING ON OCTOBER 10, 2020.
4. GROUNDWATER CONTOURS INTERVAL IS 0.1 FOOT

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

40 0 10 25 40
SCALE IN FEET

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Project	250 WATER STREET
	BLOCK No. 98, LOT No. 1
	CITY NEW YORK NEW YORK
Figure Title	GROUNDWATER ELEVATION CONTOUR MAP
Project No.	170381202
Date	12/15/2023
Drawn By	JF
Checked By	PM
Figure	8

Filename: \\langan.com\data\NY\data2\170381202\Project Data\CAD\02\SheetFiles\Environmental\BCP FER\Figure 9 - Groundwater Elevations Contour Map_v2.dwg Date: 12/27/2023 Time: 16:59 User: mau Style Table: Langan.stb Layout: ANSIB-BL

TABLES

Table 1
Track 2 Soil Cleanup Objectives
Site Management Plan

250 Water Street
New York, New York
BCP Site No.: C321127
Langan Project No.: 170381202

VOCs (mg/kg)	
1,1,1-Trichloroethane	100
1,1-Dichloroethane	26
1,1-Dichloroethene	100
1,2,4-Trimethylbenzene	52
1,2-Dichlorobenzene	100
1,2-Dichloroethane	3.1
1,3,5- Trimethylbenzene	52
1,3-Dichlorobenzene	49
1,4-Dichlorobenzene	13
1,4-Dioxane	13
Acetone	100
Benzene	4.8
Butylbenzene	100
Carbon tetrachloride	2.4
Chlorobenzene	100
Chloroform	49
cis-1,2-Dichloroethene	100
Ethylbenzene	41
Hexachlorobenzene	1.2
Methyl ethyl ketone	100
Methyl tert-butyl ether	100
Methylene chloride	100
n-Propylbenzene	100
sec-Butylbenzene	100
tert-Butylbenzene	100
Tetrachloroethene	19
Toluene	100
trans-1,2-Dichloroethene	100
Trichloroethene	21
Vinyl chloride	0.9
Xylene (mixed)	100
Metals (mg/kg)	
Arsenic	16
Barium	400
Beryllium	72
Cadmium	4.3
Chromium, hexavalent	110
Chromium, trivalent	180
Copper	270
Lead	400
Manganese	2000
Nickel	310
Selenium	180
Silver	180
Total Cyanide	27
Total Mercury	0.81
Zinc	10000

SVOCs (mg/kg)	
Acenaphthene	100
Acenapthylene	100
Anthracene	100
Benz(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(g,h,i)perylene	100
Benzo(k)fluoranthene	3.9
Chrysene	3.9
Dibenz(a,h)anthracene	0.33
Fluoranthene	100
Fluorene	100
Indeno(1,2,3-cd)pyrene	0.5
m-Cresol	100
Naphthalene	100
o-Cresol	100
p-Cresol	100
Pentachlorophenol	6.7
Phenanthrene	100
Phenol	100
Pyrene	100
PCBs/Pesticides (mg/kg)	
2,4,5-TP Acid (Silvex)	100
4,4'- DDD	13
4,4'-DDE	8.9
4,4'-DDT	7.9
Aldrin	0.097
alpha-BHC	0.48
beta-BHC	0.36
Chlordane (alpha)	4.2
delta-BHC	100
Dibenzofuran	59
Dieldrin	0.2
Endosulfan I	24
Endosulfan II	24
Endosulfan sulfate	24
Endrin	11
Heptachlor	2.1
Lindane	1.3
Polychlorinated biphenyls	1

Notes:

1. The above criteria are the Title 6 of the New York Codes, Rules and Regulations (6 NYCRR) Part 375 Restricted Use Restricted-Residential SCOs. (i.e., the Track 2 soil cleanup objectives)
2. SCO: Soil Cleanup Objective
3. SVOC: semivolatile organic compound
4. VOC: volatile organic compound
5. PCB: polychlorinated biphenyl
6. mg/kg: milligram per kilogram

Table 2
Site Management Plan
Confirmation Endpoint Soil Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	EP01	EP02	EP03	EP04	EP05	EP06	EP07	EP08	EP09	EP10	EP11	EP12	EP13	EP13	EP14
				Sample Name	EP01_EL_0.7	EP02_EL_1	EP03_EL_-3.0	EP04_EL_-2.0	EP05_EL_-0.5	EP06_EL_-1.0	EP07_EL_-1.0	EP08_EL_-1.0	EP09_EL_0.0	EP10_EL_0.0	EP11_EL_-0.1	EP12_EL_-0.9	EP13_EL_-1.2	DUP02_112923	EP14_EL_0.0
				Sample Date	10/31/2023	10/31/2023	12/06/2023	12/06/2023	11/14/2023	11/14/2023	11/07/2023	11/29/2023	11/07/2023	11/06/2023	11/06/2023	11/30/2023	11/29/2023	11/29/2023	11/06/2023
				Sample Elevation	0.7	1	-3	-2	-0.5	-1	-1	-1	0	0	-0.1	-0.9	-1.2	-1.2	0
				Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Volatile Organic Compounds																			
1,1,1,2-Tetrachloroethane	630-20-6	NS	NS	mg/kg	<0.00089 U	<0.00072 U	<0.0043 U	<0.0038 U	<0.0005 UJ	<0.00052 UJ	<0.00054 U	<0.0068 U	<0.00063 U	<0.00058 U	<0.00056 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.00051 U
1,1,1-Trichloroethane	71-55-6	0.68	100	mg/kg	<0.00089 U	<0.00072 U	<0.0043 U	<0.0038 U	<0.0005 U	<0.00052 U	<0.00054 U	<0.0068 U	<0.00063 U	<0.00058 U	<0.00056 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.00051 U
1,1,2,2-Tetrachloroethane	79-34-5	NS	NS	mg/kg	<0.00089 U	<0.00072 U	<0.0043 U	<0.0038 U	<0.0005 U	<0.00052 U	<0.00054 U	NA	<0.00063 U	<0.00058 U	<0.00056 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.00051 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	NS	NS	mg/kg	NA	NA	<0.0043 U	<0.0038 U	NA	NA	NA	<0.0068 UJ	NA	NA	NA	<0.0082 U	<0.0075 UJ	<0.0038 UJ	NA
1,1,2-Trichloroethane	79-00-5	NS	NS	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 UJ	<0.001 UJ	<0.0011 U	<0.0068 U	<0.0012 U	<0.0012 UJ	<0.0011 UJ	<0.0082 U	<0.0075 U	<0.0038 U	<0.001 UJ
1,1-Dichloroethane	75-34-3	0.27	26	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 U	<0.001 U	<0.0011 U	<0.0068 U	<0.0012 U	<0.0012 U	<0.0011 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.001 U
1,1-Dichloroethene	75-35-4	0.33	100	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 U	<0.001 U	<0.0011 U	<0.0068 UJ	<0.0012 U	<0.0012 U	<0.0011 U	<0.0082 UJ	<0.0075 UJ	<0.0038 UJ	<0.001 U
1,1-Dichloropropene	563-58-6	NS	NS	mg/kg	<0.00089 UJ	<0.00072 UJ	NA	NA	<0.0005 U	<0.00052 U	<0.00054 U	NA	<0.00063 U	<0.00058 U	<0.00056 U	NA	NA	NA	<0.00051 U
1,2,3-Trichlorobenzene	87-61-6	NS	NS	mg/kg	<0.0036 U	<0.0029 U	<0.0043 UJ	<0.0038 UJ	<0.002 U	<0.0021 U	<0.0021 U	<0.0068 U	<0.0025 U	<0.0023 U	<0.0022 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.002 U
1,2,3-Trichloropropane	96-18-4	NS	NS	mg/kg	<0.0036 U	<0.0029 U	<0.0043 U	<0.0038 U	<0.002 U	<0.0021 U	<0.0021 U	<0.0068 U	<0.0025 U	<0.0023 U	<0.0022 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.002 U
1,2,4,5-Tetramethylbenzene	95-93-2	NS	NS	mg/kg	<0.0036 U	<0.0029 U	NA	NA	<0.002 U	<0.0021 U	<0.0021 U	NA	<0.0025 U	<0.0023 U	0.00039 J	NA	NA	NA	<0.002 U
1,2,4-Trichlorobenzene	120-82-1	NS	NS	mg/kg	<0.0036 U	<0.0029 U	<0.0043 U	<0.0038 U	<0.002 U	<0.0021 U	<0.0021 U	<0.0068 U	<0.0025 U	<0.0023 U	<0.0022 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.002 U
1,2,4-Trimethylbenzene	95-63-6	3.6	52	mg/kg	<0.0036 U	<0.0029 U	<0.0043 U	<0.0038 U	<0.002 U	<0.0021 U	<0.0021 U	<0.0068 U	<0.0025 U	<0.0023 U	0.0043	<0.0082 U	<0.0075 U	<0.0038 U	<0.002 U
1,2-Dibromo-3-Chloropropane	96-12-8	NS	NS	mg/kg	<0.0053 U	<0.0043 U	<0.0043 U	<0.0038 U	<0.003 U	<0.0031 U	<0.0032 UJ	<0.0068 U	<0.0038 UJ	<0.0034 U	<0.0033 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.003 U
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	NS	NS	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 U	<0.001 U	<0.0011 U	<0.0068 U	<0.0012 U	<0.0012 U	<0.0011 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.001 U
1,2-Dichlorobenzene	95-50-1	1.1	100	mg/kg	<0.0036 U	<0.0029 U	<0.0043 U	<0.0038 U	<0.002 U	<0.0021 U	<0.0021 U	<0.0068 U	<0.0025 U	<0.0023 U	<0.0022 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.002 U
1,2-Dichloroethane	107-06-2	0.02	3.1	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 U	<0.001 U	<0.0011 U	<0.0068 U	<0.0012 U	<0.0012 U	<0.0011 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.001 U
1,2-Dichloropropane	78-87-5	NS	NS	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 U	<0.001 U	<0.0011 U	<0.0068 U	<0.0012 U	<0.0012 U	<0.0011 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.001 U
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	8.4	52	mg/kg	<0.0036 U	<0.0029 U	<0.0043 U	<0.0038 U	<0.002 U	<0.0021 U	<0.0021 U	<0.0068 U	<0.0025 U	<0.0023 U	0.0018 J	<0.0082 U	<0.0075 U	<0.0038 U	<0.002 U
1,3-Dichlorobenzene	541-73-1	2.4	49	mg/kg	<0.0036 U	<0.0029 U	<0.0043 U	<0.0038 U	<0.002 U	<0.0021 U	<0.0021 U	<0.0068 U	<0.0025 U	<0.0023 U	<0.0022 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.002 U
1,3-Dichloropropane	142-28-9	NS	NS	mg/kg	<0.0036 U	<0.0029 U	NA	NA	<0.002 U	<0.0021 U	<0.0021 U	NA	<0.0025 U	<0.0023 U	<0.0022 U	NA	NA	NA	<0.002 U
1,4-Dichlorobenzene	106-46-7	1.8	13	mg/kg	<0.0036 U	<0.0029 U	<0.0043 U	<0.0038 U	<0.002 U	<0.0021 U	<0.0021 U	<0.0068 U	<0.0025 U	<0.0023 U	<0.0022 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.002 U
1,4-Diethyl Benzene	105-05-5	NS	NS	mg/kg	<0.0036 U	<0.0029 U	NA	NA	<0.002 U	<0.0021 U	<0.0021 U	NA	<0.0025 U	<0.0023 U	0.00062 J	NA	NA	NA	<0.002 U
1,4-Dioxane (P-Dioxane)	123-91-1	0.1	13	mg/kg	<0.14 UJ	<0.11 UJ	<0.086 UJ	<0.075 UJ	<0.079 UJ	<0.083 UJ	<0.086 U	<0.14 U	<0.1 U	<0.092 UJ	<0.089 UJ	<0.16 UJ	<0.15 U	<0.076 U	<0.082 UJ
2,2-Dichloropropane	594-20-7	NS	NS	mg/kg	<0.0036 UJ	<0.0029 UJ	NA	NA	<0.002 U	<0.0021 U	<0.0021 U	NA	<0.0025 U	<0.0023 U	<0.0022 U	NA	NA	NA	<0.002 U
2-Chlorotoluene	95-49-8	NS	NS	mg/kg	<0.0036 U	<0.0029 U	NA	NA	<0.002 U	<0.0021 U	<0.0021 U	NA	<0.0025 U	<0.0023 U	<0.0022 U	NA	NA	NA	<0.002 U
2-Hexanone (MBK)	591-78-6	NS	NS	mg/kg	<0.018 U	<0.014 U	<0.0043 UJ	<0.0038 UJ	<0.0099 UJ	<0.01 UJ	<0.011 U	<0.0068 UJ	<0.012 U	<0.012 U	<0.011 U	<0.0082 UJ	<0.0075 UJ	<0.0038 UJ	<0.01 U
4-Chlorotoluene	106-43-4	NS	NS	mg/kg	<0.0036 U	<0.0029 U	NA	NA	<0.002 U	<0.0021 U	<0.0021 U	NA	<0.0025 U	<0.0023 U	<0.0022 U	NA	NA	NA	<0.002 U
4-Ethyltoluene	622-96-8	NS	NS	mg/kg	<0.0036 U	<0.0029 U	NA	NA	<0.002 U	<0.0021 U	<0.0021 U	NA	<0.0025 U	<0.0023 U	0.0016 J	NA	NA	NA	<0.002 U
Acetone	67-64-1	**0.05**	100	mg/kg	<0.018 U	<0.014 U	0.026 J	0.03 J	<0.0099 UJ	0.032 J	<0.011 U	0.0095 J	<0.012 U	0.0088 J	<0.011 U	<0.016 UJ	**0.063 J**	0.013 J	<0.01 U
Acrolein	107-02-8	NS	NS	mg/kg	NA	NA	<0.0086 UJ	<0.0075 UJ	NA	NA	NA	NA	NA	NA	NA	<0.016 UJ	<0.015 UJ	<0.0076 UJ	NA
Acrylonitrile	107-13-1	NS	NS	mg/kg	<0.0071 U	<0.0057 U	<0.0043 U	<0.0038 U	<0.004 U	<0.0042 U	<0.0043 U	<0.0068 U	<0.005 U	<0.0046 U	<0.0044 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.0041 U
Benzene	71-43-2	0.06	4.8	mg/kg	<0.00089 U	<0.00072 U	<0.0043 U	<0.0038 U	<0.0005 U	<0.00052 U	<0.00054 U	<0.0068 U	<0.00063 U	<0.00058 U	0.0054	<0.0082 U	<0.0075 U	<0.0038 U	<0.00051 U
Bromobenzene	108-86-1	NS	NS	mg/kg	<0.0036 U	<0.0029 U	NA	NA	<0.002 U	<0.0021 U	<0.0021 U	NA	<0.0025 U	<0.0023 U	<0.0022 U	NA	NA	NA	<0.002 U
Bromochloromethane	74-97-5	NS	NS	mg/kg	<0.0036 U	<0.0029 U	<0.0043 UJ	<0.0038 UJ	<0.002 U	<0.0021 U	<0.0021 U	<0.0068 UJ	<0.0025 U	<0.0023 U	<0.0022 U	<0.0082 U	<0.0075 UJ	<0.0038 UJ	<0.002 U
Bromodichloromethane	75-27-4	NS	NS	mg/kg	<0.00089 U	<0.00072 U	<0.0043 U	<0.0038 U	<0.0005 U	<0.00052 U	<0.00054 U	<0.0068 U	<0.00063 U	<0.00058 U	<0.00056 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.00051 U
Bromoform	75-25-2	NS	NS	mg/kg	<0.0071 U	<0.0057 U	<0.0043 U	<0.0038 U	<0.004 U	<0.0042 U	<0.0043 U	<0.0068 U	<0.005 U	<0.0046 U	<0.0044 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.0041 U
Bromomethane	74-83-9	NS	NS	mg/kg	<0.0036 U	<0.0029 U	<0.0043 U	<0.0038 U	<0.002 U	<0.0021 U	<0.0021 U	<0.0068 U	<0.0025 U	<0.0023 U	<0.0022 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.002 U
Carbon Disulfide	75-15-0	NS	NS	mg/kg	<0.018 U	<0.014 U	<0.0043 UJ	<0.0038 UJ	<0.0099 UJ	<0.01 UJ	<0.011 UJ	<0.0068 UJ	<0.012 UJ	<0.012 UJ	<0.011 UJ	<0.0082 UJ	<0.0075 UJ	<0.0038 UJ	<0.01 UJ
Carbon Tetrachloride	56-23-5	0.76	2.4	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 U	<0.001 U	<0.0011 U	<0.0068 U	<0.0012 U	<0.0012 U	<0.0011 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.001 U
Chlorobenzene	108-90-7	1.1	100	mg/kg	<0.00089 U	<0.00072 U	<0.0043 U	<0.0038 U	<0.0005 U	<0.00052 U	<0.00054 U	<0.0068 U	<0.00063 U	<0.00058 U	<0.00056 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.00051 U
Chloroethane	75-00-3	NS	NS	mg/kg	<0.0036 U	<0.0029 U	<0.0043 U	<0.0038 U	<0.002 U	<0.0021 U	<0.0021 U	<0.0068 U	<0.0025 U	<0.0023 UJ	<0.0022 UJ	<0.0082 U	<0.0075 U	<0.0038 U	<0.002 UJ
Chloroform	67-66-3	0.37	49	mg/kg	<0.0027 U	0.00033 J	<0.0043 U	<0.0038 U	0.00028 J	<0.0016 U	<0.0016 U	<0.0068 U	0.00056 J	<0.0017 U	<0.0017 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.0015 U
Chloromethane	74-87-3	NS	NS	mg/kg	<0.0071 U	<0.0057 U	<0.0043 U	<0.0038 U	<0.004 U	<0.0042 U	<0.0043 U	<0.0068 UJ	<0.005 U	<0.0046 U	<0.0044 U	0.0046 J	<0.0075 UJ	<0.0038 UJ	<0.0041 U
Cis-1,2-Dichloroethene	156-59-2	0.25	100	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 U	<0.001 U	<0.0011 U	<0.0068 U	<0.0012 U	<0.0012 U	<0.0011 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.001 U
Cis-1,3-Dichloropropene	10061-01-5	NS	NS	mg/kg	<0.00089 U	<0.00072 U	<0.0043 U	<0.0038 U	<0.0005 U	<0.00052 U	<0.00054 U	<0.0068 U	<0.00063 U	<0.00058 U	<0.00056 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.00051 U
Cyclohexane	110-82-7	NS	NS	mg/kg	NA	NA	<0.0043 U	<0.0038 U	NA	NA	NA	<0.0068 UJ	NA	NA	NA	<0.0082 U	<0.0075 U	<0.0038 U	NA
Cymene	99-87-6	NS	NS	mg/kg	<0.0018 U	<0.0014 U	NA	NA	<0.00099 U	0.0014	<0.0011 U	NA	<0.0012 U	<0.0012 U	0.00033 J	NA	NA	NA	<0.001 U
Dibromochloromethane	124-48-1	NS	NS	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 U	<0.001 U	<0.0011 U	<0.0068 U	<0.0012 U	<0.0012 U	<0.0011 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.001 U
Dibromomethane	74-95-3	NS	NS	mg/kg	<0.0036 U	<0.0029 U	<0.0043 U	<0.0038 U	<0.002 U	<0.0021 U	<0.0021 U	<0.0068 U	<0.0025 U	<0.0023 U	<0.0022 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.002 U
Dichlorodifluoromethane	75-71-8	NS	NS	mg/kg	<0.018 U	<0.014 U	<0.0043 UJ	<0.0038 UJ	<0.0099 U	<0.01 U	<0.011 U	<0.0068 UJ	<0.012 U	<0.012 UJ	<0.011 UJ	<0.0082 UJ	<0.0075 UJ	<0.0038 UJ	<0.01 UJ
Diethyl Ether (Ethyl Ether)	60-29-7	NS	NS	mg/kg	<0.0036 U	<0.0029 U	NA	NA	<0.002 UJ	<0.0021 UJ	<0.0021 UJ	NA	<0.0025 UJ	<0.0023 U	<0.0022 U	NA	NA	NA	<0.002 U
Ethylbenzene	100-41-4	1	41	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 U	<0.001 U	<0.0011 U	<0.0068 U	<0.0012 U	<0.0012 U	0.0015	<0.0082 U	<0.0075 U	<0.0038 U	<0.001 U
Hexachlorobutadiene	87-68-3	NS	NS	mg/kg	<0.0071 UJ	<0.0057 UJ	<0.0043 UJ	<0.0038 UJ	<0.004 U	<0.0042 U	<0.0043 U	<0.0068 U	<0.005 U	<0.0046 U	<0.0044 U	<0.0082 UJ	<0.0075 U	<0.0038 U	<0.0041 U
Isopropylbenzene (Cumene)	98-82-8	NS	NS	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 U	<0.001 U	<0.0011 U	<0.0068 U	<0.0012 U	<0.0012 U	0.00016 J	<0.0082 U	<0.0075 U	<0.0038 U	<0.001 U
M,P-Xylene	179601-23-1	NS	NS	mg/kg	<0.0036 U	<0.0029 U	<0.0086 U	<0.0075 U	<0.002 U	<0.0021 U	<0.0021 U	<0.014 U	<0.0025 U	<0.0023 U	0.011	<0.016 U	<0.015 U	<0.0076 U	<0.002 U
Methyl Acetate	79-20-9	NS	NS	mg/kg	NA	NA	<0.0043 U	<0.0038 U	NA	NA	NA	<0.0068 U	NA	NA	NA	<0.0082 U	<0.0075 U	<0.0038 U	NA
Methyl Ethyl Ketone (2-Butanone)	78-93-3	0.12	100	mg/kg	<0.018 U	<0.014 U	<0.0043 U	<0.0038 U	<0.0099 UJ	<0.01 UJ	<0.011 U	<0.0068 UJ	<0.012 U	<0.012 U	<0.011 U	<0.0082 UJ	0.004 J	<0.0038 UJ	<0.01 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	NS	NS	mg/kg	<0.018 U	<0.014 U	<0.0043 U	<0.0038 U	<0.0099 UJ	<0.01 UJ	<0.011 U	<0.0068 UJ	<0.012 U	<0.012 U	<0.011 U	<0.0082 UJ	<0.0075 UJ	<0.0038 UJ	<0.01 U
Methylcyclohexane	108-87-2	NS	NS	mg/kg	NA	NA	<0.0043 U	<0.0038 U	NA	NA	NA	<0.0068 UJ	NA	NA	NA	<0.0082 U	<0.0075 U	<0.0038 U	NA
Methylene Chloride	75-09-2	0.05	100	mg/kg	<0.0089 U	<0.0072 U	<0.0086 U	<0.0075 U	<0.005 U	<0.0052 U	<0.0054 U	<0.014 U	<0.0063 U	<0.0058 U	<0.0056 U	<0.016 U	<0.015 U	<0.0076 U	<0.0051 U
Naphthalene	91-20-3	12	100	mg/kg	<0.0071 U	<0.0057 U	NA	NA	<0.004 U	0.0087	<0.0043 U	NA	<0.005 U	<0.0046 U	0.33	NA	NA	NA	<0.0041 U
n-Butylbenzene	104-51-8	12	100	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 U	<0.001 U	<0.0011 U	<0.0068 U	<0.0012 U	<0.0012 U	<0.0011 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.001 U
n-Propylbenzene	103-65-1	3.9	100	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 U	<0.001 U	<0.0011 U	<0.0068 U	<0.0012 U	<0.0012 U	<0.0011 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.001 U
o-Xylene (1,2-Dimethylbenzene)	95-47-6	NS	NS	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	0.00056 J	0.00064 J	<0.0011 U	<0.0068 U	<0.0012 U	<0.0012 U	0.0047	<0.0082 U	<0.0075 U	<0.0038 U	<0.001 U
p-Cymene (p-Isopropyltoluene)	CYMP	NS	NS	mg/kg	NA	NA	0.0051	<0.0038 U	NA	NA	NA	<0.0068 U	NA	NA	NA	<0.0082 U	<0.0075 U	<0.0038 U	NA
Sec-Butylbenzene	135-98-8	11	100	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 U	<0.001 U	<0.0011 U	<0.0068 U	<0.0012 U	<0.0012 U	<0.0011 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.001 U
Styrene	100-42-5	NS	NS	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 UJ	<0.001 UJ	<0.0011 U	<0.0068 U	<0.0012 U	<0.0012 U	0.0014	<0.0082 U	<0.0075 U	<0.0038 U	<0.001 U
T-Butylbenzene	98-06-6	5.9	100	mg/kg	<0.0036 U	<0.0029 U	<0.0043 U	<0.0038 U	<0.002 U	<0.0021 U	<0.0021 U	<0.0068 U	<0.0025 U	<0.0023 U	<0.0022 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.002 U
Tert-Butyl Alcohol	75-65-0	NS	NS	mg/kg	NA	NA	<0.0043 UJ	<0.0038 UJ	NA	NA	NA	<0.0068 UJ	NA	NA	NA	<0.0082 U	<0.0075 UJ	<0.0038 UJ	NA
Tert-Butyl Methyl Ether	1634-04-4	0.93	100	mg/kg	<0.0036 U	<0.0029 U	<0.0043 U	<0.0038 U	<0.002 UJ	<0.0021 UJ	<0.0021 UJ	<0.0068 U	<0.0025 UJ	<0.0023 U	<0.0022 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.002 U
Tetrachloroethene (PCE)	127-18-4	1.3	19	mg/kg	<0.00089 U	<0.00072 U	<0.0043 U	<0.0038 U	<0.0005 UJ	<0.00052 UJ	<0.00054 U	<0.0068 U	<0.00063 U	<0.00058 U	<0.00056 U	<0.0082 UJ	<0.0075 U	<0.0038 U	<0.00051 U
Toluene	108-88-3	0.7	100	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 U	<0.001 U	<0.0011 U	<0.0068 U	<0.0012 U	<0.0012 U	0.01	<0.0082 U	<0.0075 U	<0.0038 U	<0.001 U
Total 1,2-Dichloroethene (Cis and Trans)	540-59-0	NS	NS	mg/kg	<0.0018 U	<0.0014 U	NA	NA	<0.00099 U	<0.001 U	<0.0011 U	NA	<0.0012 U	<0.0012 U	<0.0011 U	NA	NA	NA	<0.001 U
Total Xylenes	1330-20-7	**1.6**	100	mg/kg	<0.0018 U	<0.0014 U	<0.013 U	<0.011 U	0.00056 J	0.00064 J	<0.0011 U	<0.021 U	<0.0012 U	<0.0012 U	0.016	<0.025 U	<0.023 U	<0.011 U	<0.001 U
Total, 1,3-Dichloropropene (Cis And Trans)	542-75-6	NS	NS	mg/kg	<0.00089 U	<0.00072 U	NA	NA	<0.0005 U	<0.00052 U	<0.00054 U	NA	<0.00063 U	<0.00058 U	<0.00056 U	NA	NA	NA	<0.00051 U
Trans-1,2-Dichloroethene	156-60-5	0.19	100	mg/kg	<0.0027 U	<0.0022 U	<0.0043 U	<0.0038 U	<0.0015 U	<0.0016 U	<0.0016 U	<0.0068 U	<0.0019 U	<0.0017 U	<0.0017 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.0015 U
Trans-1,3-Dichloropropene	10061-02-6	NS	NS	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 U	<0.001 U	<0.0011 U	<0.0068 U	<0.0012 U	<0.0012 U	<0.0011 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.001 U
Trans-1,4-Dichloro-2-Butene	110-57-6	NS	NS	mg/kg	<0.0089 U	<0.0072 U	NA	NA	<0.005 U	<0.0052 U	<0.0054 U	NA	<0.0063 U	<0.0058 U	<0.0056 U	NA	NA	NA	<0.0051 U
Trichloroethene (TCE)	79-01-6	0.47	21	mg/kg	<0.00089 U	<0.00072 U	<0.0043 U	<0.0038 U	<0.0005 U	<0.00052 U	<0.00054 U	<0.0068 U	<0.00063 U	<0.00058 U	<0.00056 U	<0.0082 U	<0.0075 U	<0.0038 U	<0.00051 U
Trichlorofluoromethane	75-69-4	NS	NS	mg/kg	<0.0071 U	<0.0057 U	<0.0043 U	<0.0038 U	<0.004 U	<0.0042 U	<0.0043 U	<0.0068 UJ	<0.005 U	<0.0046 UJ	<0.0044 UJ	<0.0082 UJ	<0.0075 UJ	<0.0038 UJ	<0.0041 UJ
Vinyl Acetate	108-05-4	NS	NS	mg/kg	<0.018 U	<0.014 U	NA	NA	<0.0099 U	<0.01 U	<0.011 U	NA	<0.012 U	<0.012 U	<0.011 U	NA	NA	NA	<0.01 U
Vinyl Chloride	75-01-4	0.02	0.9	mg/kg	<0.0018 U	<0.0014 U	<0.0043 U	<0.0038 U	<0.00099 U	<0.001 U	<0.0011 U	<0.0068 UJ	<0.0012 U	<0.0012 U	<0.0011 U	<0.0082 UJ	<0.0075 UJ	<0.0038 UJ	<0.001 U

Table 2
Site Management Plan
Confirmation Endpoint Soil Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	EP01	EP02	EP03	EP04	EP05	EP06	EP07	EP08	EP09	EP10	EP11	EP12	EP13	EP13	EP14
				Sample Name	EP01_EL_0.7	EP02_EL_1	EP03_EL_-3.0	EP04_EL_-2.0	EP05_EL_-0.5	EP06_EL_-1.0	EP07_EL_-1.0	EP08_EL_-1.0	EP09_EL_0.0	EP10_EL_0.0	EP11_EL_-0.1	EP12_EL_-0.9	EP13_EL_-1.2	DUP02_112923	EP14_EL_0.0
				Sample Date	10/31/2023	10/31/2023	12/06/2023	12/06/2023	11/14/2023	11/14/2023	11/07/2023	11/29/2023	11/07/2023	11/06/2023	11/06/2023	11/30/2023	11/29/2023	11/29/2023	11/06/2023
				Sample Elevation	0.7	1	-3	-2	-0.5	-1	-1	-1	0	0	-0.1	-0.9	-1.2	-1.2	0
				Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Semi-Volatile Organic Compounds																			
1,2,4,5-Tetrachlorobenzene	95-94-3	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.184 U	<0.185 U	<0.19 U	<0.19 U	<0.19 U	<0.183 U	<0.2 U	<0.21 U	<0.2 U	<0.194 U	<0.193 U	<0.186 U	<0.2 U
1,2,4-Trichlorobenzene	120-82-1	NS	NS	mg/kg	<0.19 U	<0.2 U	NA	NA	<0.19 U	<0.19 U	<0.19 U	NA	<0.2 U	<0.21 U	<0.2 U	NA	NA	NA	<0.2 U
1,2-Dichlorobenzene	95-50-1	1.1	100	mg/kg	<0.19 U	<0.2 U	NA	NA	<0.19 U	<0.19 U	<0.19 U	NA	<0.2 U	<0.21 U	<0.2 U	NA	NA	NA	<0.2 U
1,2-Diphenylhydrazine	122-66-7	NS	NS	mg/kg	NA	NA	<0.092 U	<0.0927 U	NA	NA	NA	<0.0918 U	NA	NA	NA	<0.0974 U	<0.0966 U	<0.0933 U	NA
1,3-Dichlorobenzene	541-73-1	2.4	49	mg/kg	<0.19 U	<0.2 U	NA	NA	<0.19 U	<0.19 U	<0.19 U	NA	<0.2 U	<0.21 U	<0.2 U	NA	NA	NA	<0.2 U
1,4-Dichlorobenzene	106-46-7	1.8	13	mg/kg	<0.19 U	<0.2 U	NA	NA	<0.19 U	<0.19 U	<0.19 U	NA	<0.2 U	<0.21 U	<0.2 U	NA	NA	NA	<0.2 U
1,4-Dioxane (P-Dioxane)	123-91-1	0.1	13	mg/kg	<0.028 U	<0.031 U	<0.0192 U	<0.0198 U	<0.028 U	<0.028 U	<0.028 U	<0.0198 U	<0.03 U	<0.032 UJ	<0.029 U	<0.019 U	<0.019 U	<0.019 U	<0.03 UJ
2,3,4,6-Tetrachlorophenol	58-90-2	NS	NS	mg/kg	NA	NA	<0.184 U	<0.185 U	NA	NA	NA	<0.183 UJ	NA	NA	NA	<0.194 U	<0.193 U	<0.186 U	NA
2,4,5-Trichlorophenol	95-95-4	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
2,4,6-Trichlorophenol	88-06-2	NS	NS	mg/kg	<0.11 U	<0.12 U	<0.092 U	<0.0927 U	<0.11 U	<0.11 U	<0.11 U	<0.0918 U	<0.12 U	<0.13 U	<0.12 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.12 U
2,4-Dichlorophenol	120-83-2	NS	NS	mg/kg	<0.17 U	<0.18 U	<0.092 U	<0.0927 U	<0.17 U	<0.17 U	<0.17 U	<0.0918 U	<0.18 U	<0.19 U	<0.18 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.18 U
2,4-Dimethylphenol	105-67-9	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 UJ	<0.2 U	<0.21 U	<0.2 UJ	<0.0974 UJ	<0.0966 UJ	<0.0933 UJ	<0.2 U
2,4-Dinitrophenol	51-28-5	NS	NS	mg/kg	<0.9 UJ	<0.98 UJ	<0.184 UJ	<0.185 UJ	<0.9 UJ	<0.91 UJ	<0.91 UJ	NA	<0.96 UJ	<1 UJ	<0.94 UJ	<0.194 UJ	<0.193 UJ	<0.186 UJ	<0.97 UJ
2,4-Dinitrotoluene	121-14-2	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 UJ	<0.0927 UJ	<0.19 UJ	<0.19 UJ	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
2,6-Dinitrotoluene	606-20-2	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 UJ	<0.0927 UJ	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
2-Chloronaphthalene	91-58-7	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 UJ	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 UJ
2-Chlorophenol	95-57-8	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
2-Methylnaphthalene	91-57-6	NS	NS	mg/kg	<0.22 U	<0.24 U	<0.092 U	<0.0927 U	<0.22 U	<0.23 U	<0.23 U	<0.0918 U	<0.24 U	<0.25 U	0.45	<0.0974 U	<0.0966 U	<0.0933 U	<0.24 U
2-Methylphenol (o-Cresol)	95-48-7	0.33	100	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
2-Nitroaniline	88-74-4	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.184 UJ	<0.185 UJ	<0.19 UJ	<0.19 UJ	<0.19 U	<0.183 U	<0.2 U	<0.21 U	<0.2 U	<0.194 U	<0.193 U	<0.186 U	<0.2 U
2-Nitrophenol	88-75-5	NS	NS	mg/kg	<0.4 UJ	<0.44 UJ	<0.092 U	<0.0927 U	<0.4 UJ	<0.41 UJ	<0.41 U	<0.0918 UJ	<0.43 U	<0.46 U	<0.42 U	<0.0974 U	<0.0966 UJ	<0.0933 UJ	<0.44 U
3 & 4 Methylphenol (m&p Cresol)	65794-96-9	0.33	100	mg/kg	<0.27 U	<0.3 U	<0.092 U	<0.0927 U	<0.27 U	<0.27 U	<0.27 U	<0.0918 U	<0.29 U	<0.3 U	<0.28 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.29 U
3,3'-Dichlorobenzidine	91-94-1	NS	NS	mg/kg	<0.19 UJ	<0.2 UJ	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 UJ	<0.2 U	<0.21 U	<0.2 U	<0.0974 UJ	<0.0966 UJ	<0.0933 UJ	<0.2 U
3-Nitroaniline	99-09-2	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.184 U	<0.185 U	<0.19 U	<0.19 U	<0.19 U	<0.183 UJ	<0.2 U	<0.21 U	<0.2 U	<0.194 U	<0.193 UJ	<0.186 UJ	<0.2 U
4,6-Dinitro-2-Methylphenol	534-52-1	NS	NS	mg/kg	<0.49 UJ	<0.53 UJ	<0.184 UJ	<0.185 UJ	<0.48 UJ	<0.49 UJ	<0.5 UJ	<0.183 UJ	<0.52 UJ	<0.55 UJ	<0.51 UJ	<0.194 UJ	<0.193 UJ	<0.186 UJ	<0.52 UJ
4-Bromophenyl Phenyl Ether	101-55-3	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
4-Chloro-3-Methylphenol	59-50-7	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
4-Chloroaniline	106-47-8	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
4-Chlorophenyl Phenyl Ether	7005-72-3	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
4-Nitroaniline	100-01-6	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.184 U	<0.185 U	<0.19 U	<0.19 U	<0.19 U	<0.183 U	<0.2 U	<0.21 U	<0.2 U	<0.194 U	<0.193 U	<0.186 U	<0.2 U
4-Nitrophenol	100-02-7	NS	NS	mg/kg	<0.26 UJ	<0.29 UJ	<0.184 UJ	<0.185 UJ	<0.26 UJ	<0.26 UJ	<0.27 U	<0.183 UJ	<0.28 U	<0.3 U	<0.27 UJ	<0.194 U	<0.193 UJ	<0.186 UJ	<0.28 U
Acenaphthene	83-32-9	98	100	mg/kg	<0.15 U	<0.16 U	0.118	<0.0927 U	<0.15 U	<0.15 U	<0.15 U	<0.0918 U	<0.16 U	<0.17 UJ	0.49	<0.0974 U	<0.0966 U	<0.0933 U	<0.16 UJ
Acenaphthylene	208-96-8	107	100	mg/kg	<0.15 U	<0.16 U	0.93	<0.0927 U	<0.15 U	<0.15 U	<0.15 U	<0.0918 U	<0.16 U	<0.17 U	0.16	0.063 JD	<0.0966 U	<0.0933 U	<0.16 U
Acetophenone	98-86-2	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
Aniline (Phenylamine, Aminobenzene)	62-53-3	NS	NS	mg/kg	NA	NA	<0.368 U	<0.371 U	NA	NA	NA	<0.367 U	NA	NA	NA	<0.39 U	<0.387 U	<0.374 U	NA
Anthracene	120-12-7	1000	100	mg/kg	<0.11 U	<0.12 U	0.816	<0.0927 U	<0.11 U	<0.11 U	<0.11 U	0.0616 J	<0.12 U	<0.13 U	0.83	<0.0974 U	<0.0966 U	<0.0933 U	<0.12 U
Atrazine	1912-24-9	NS	NS	mg/kg	NA	NA	<0.092 U	<0.0927 U	NA	NA	NA	<0.0918 U	NA	NA	NA	<0.0974 U	<0.0966 U	<0.0933 U	NA
Benzaldehyde	100-52-7	NS	NS	mg/kg	NA	NA	<0.092 U	<0.0927 U	NA	NA	NA	<0.0918 U	NA	NA	NA	<0.0974 U	<0.0966 U	<0.0933 U	NA
Benzidine	92-87-5	NS	NS	mg/kg	NA	NA	<0.368 U	<0.371 U	NA	NA	NA	<0.367 UJ	NA	NA	NA	<0.39 UJ	<0.387 UJ	<0.374 UJ	NA
Benzo(a)anthracene	56-55-3	**1**	1	mg/kg	<0.11 U	0.054 J	**2.46**	<0.0927 U	<0.11 U	<0.11 U	<0.11 U	0.134 J	0.044 J	<0.13 U	0.93	<0.0974 U	<0.0966 U	<0.0933 U	<0.12 U
Benzo(a)pyrene	50-32-8	22	1	mg/kg	<0.15 U	<0.16 U	1.79	<0.0927 U	<0.15 U	<0.15 U	<0.15 U	0.132 J	0.051 J	<0.17 U	0.87	<0.0974 UJ	<0.0966 U	<0.0933 U	<0.16 U
Benzo(b)fluoranthene	205-99-2	1.7	1	mg/kg	<0.11 U	0.046 J	1.33	<0.0927 U	<0.11 U	<0.11 U	<0.11 U	0.132 J	0.057 J	<0.13 UJ	0.95	<0.0974 U	<0.0966 U	<0.0933 U	<0.12 UJ
Benzo(g,h,i)Perylene	191-24-2	1000	100	mg/kg	<0.15 U	<0.16 U	0.65	<0.0927 U	<0.15 U	<0.15 U	<0.15 U	0.0858 J	0.03 J	<0.17 UJ	0.4	<0.0974 U	<0.0966 U	<0.0933 U	<0.16 UJ
Benzo(k)fluoranthene	207-08-9	1.7	3.9	mg/kg	<0.11 U	<0.12 U	1.38	<0.0927 U	<0.11 U	<0.11 U	<0.11 U	0.0631 JD	<0.12 U	<0.13 U	0.35	<0.0974 U	<0.0966 U	<0.0933 U	<0.12 U
Benzoic Acid	65-85-0	NS	NS	mg/kg	<0.61 UJ	<0.66 UJ	<0.092 UJ	<0.0927 UJ	NA	NA	<0.62 U	NA	<0.65 U	NA	NA	<0.0974 UJ	<0.0966 U	<0.0933 U	NA
Benzyl Alcohol	100-51-6	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
Benzyl Butyl Phthalate	85-68-7	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 UJ	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 UJ	<0.0933 UJ	<0.2 U
Biphenyl (Diphenyl)	92-52-4	NS	NS	mg/kg	<0.43 U	<0.47 U	<0.092 U	<0.0927 U	<0.42 U	<0.43 U	<0.43 U	<0.0918 U	<0.46 U	<0.48 U	0.13 J	<0.0974 U	<0.0966 U	<0.0933 U	<0.46 U
Bis(2-chloroethoxy) methane	111-91-1	NS	NS	mg/kg	<0.2 U	<0.22 U	<0.092 U	<0.0927 U	<0.2 U	<0.2 U	<0.2 U	<0.0918 U	<0.22 U	<0.23 U	<0.21 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.22 U
Bis(2-chloroethyl) ether (2-chloroethyl ether)	111-44-4	NS	NS	mg/kg	<0.17 U	<0.18 U	<0.092 U	<0.0927 U	<0.17 U	<0.17 U	<0.17 U	<0.0918 U	<0.18 U	<0.19 U	<0.18 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.18 U
Bis(2-chloroisopropyl) ether	108-60-1	NS	NS	mg/kg	<0.22 U	<0.24 U	<0.092 UJ	<0.0927 UJ	<0.22 U	<0.23 U	<0.23 U	<0.0918 U	<0.24 U	<0.25 UJ	<0.24 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.24 UJ
Bis(2-ethylhexyl) phthalate	117-81-7	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 UJ	<0.2 U	<0.21 U	<0.2 U	<0.0974 UJ	<0.0966 UJ	<0.0933 UJ	<0.2 U
Caprolactam	105-60-2	NS	NS	mg/kg	NA	NA	<0.184 U	<0.185 U	NA	NA	NA	<0.183 U	NA	NA	NA	<0.194 U	<0.193 U	<0.186 U	NA
Carbazole	86-74-8	NS	NS	mg/kg	<0.19 UJ	<0.2 UJ	0.05 JD	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	0.51	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
Chrysene	218-01-9	**1**	3.9	mg/kg	<0.11 U	0.039 J	**1.69**	<0.0927 U	<0.11 U	<0.11 U	<0.11 U	0.131 J	0.046 J	<0.13 U	0.9	<0.0974 U	<0.0966 U	<0.0933 U	<0.12 U
Dibenz(a,h)anthracene	53-70-3	1000	0.33	mg/kg	<0.11 U	<0.12 U	0.343	<0.0927 U	<0.11 U	<0.11 U	<0.11 U	<0.0918 U	<0.12 U	<0.13 U	0.11 J	<0.0974 U	<0.0966 U	<0.0933 U	<0.12 U
Dibenzofuran	132-64-9	210	59	mg/kg	<0.19 U	<0.2 U	0.23	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	0.68	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
Dibutyl phthalate	84-74-2	NS	NS	mg/kg	<0.19 UJ	<0.2 UJ	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
Diethyl phthalate	84-66-2	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
Dimethyl phthalate	131-11-3	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
Dioctyl phthalate	117-84-0	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 UJ	<0.0927 UJ	<0.19 U	<0.19 U	<0.19 U	<0.0918 UJ	<0.2 U	<0.21 U	<0.2 U	<0.0974 UJ	<0.0966 UJ	<0.0933 UJ	<0.2 U
Diphenylamine	122-39-4	NS	NS	mg/kg	NA	NA	<0.184 U	<0.185 U	NA	NA	NA	<0.183 U	NA	NA	NA	<0.194 U	<0.193 U	<0.186 U	NA
Fluoranthene	206-44-0	1000	100	mg/kg	<0.11 U	0.078 J	4.06	0.0563 JD	<0.11 U	<0.11 U	<0.11 U	0.291 J	0.09 J	<0.13 U	2.5	<0.0974 U	<0.0966 U	<0.0933 U	<0.12 U
Fluorene	86-73-7	386	100	mg/kg	<0.19 U	<0.2 U	0.126	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	0.47	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
Hexachlorobenzene	118-74-1	3.2	1.2	mg/kg	<0.11 U	<0.12 U	<0.092 U	<0.0927 U	<0.11 U	<0.11 U	<0.11 U	<0.0918 U	<0.12 U	<0.13 U	<0.12 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.12 U
Hexachlorobutadiene	87-68-3	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
Hexachlorocyclopentadiene	77-47-4	NS	NS	mg/kg	<0.54 U	<0.59 U	<0.092 UJ	<0.0927 UJ	<0.53 U	<0.54 U	<0.54 UJ	NA	<0.57 UJ	<0.61 U	<0.56 UJ	<0.0974 UJ	<0.0966 UJ	<0.0933 UJ	<0.58 U
Hexachloroethane	67-72-1	NS	NS	mg/kg	<0.15 U	<0.16 U	<0.092 U	<0.0927 U	<0.15 U	<0.15 U	<0.15 U	<0.0918 U	<0.16 U	<0.17 U	<0.16 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.16 U
Indeno(1,2,3-cd)pyrene	193-39-5	8.2	0.5	mg/kg	<0.15 U	<0.16 U	0.932	<0.0927 U	<0.15 UJ	<0.15 UJ	<0.15 U	0.088 J	0.033 J	<0.17 U	0.45	<0.0974 U	<0.0966 UJ	<0.0933 UJ	<0.16 U
Isophorone	78-59-1	NS	NS	mg/kg	<0.17 U	<0.18 U	<0.092 U	<0.0927 U	<0.17 U	<0.17 U	<0.17 U	<0.0918 U	<0.18 U	<0.19 U	<0.18 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.18 U
Naphthalene	91-20-3	12	100	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	1.4	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
Nitrobenzene	98-95-3	NS	NS	mg/kg	<0.17 U	<0.18 U	<0.092 UJ	<0.0927 UJ	<0.17 U	<0.17 U	<0.17 U	<0.0918 U	<0.18 U	<0.19 U	<0.18 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.18 U
n-Nitrosodimethylamine	62-75-9	NS	NS	mg/kg	NA	NA	<0.092 UJ	<0.0927 UJ	NA	NA	NA	<0.0918 U	NA	NA	NA	<0.0974 U	<0.0966 U	<0.0933 U	NA
n-Nitrosodi-N-Propylamine	621-64-7	NS	NS	mg/kg	<0.19 U	<0.2 U	<0.092 UJ	<0.0927 UJ	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
n-Nitrosodiphenylamine	86-30-6	NS	NS	mg/kg	<0.15 U	<0.16 U	<0.092 U	<0.0927 U	<0.15 U	<0.15 U	<0.15 U	<0.0918 U	<0.16 U	<0.17 U	<0.16 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.16 U
Pentachlorophenol	87-86-5	0.8	6.7	mg/kg	<0.15 U	<0.16 U	<0.092 U	<0.0927 U	<0.15 U	<0.15 U	<0.15 UJ	<0.0918 UJ	<0.16 UJ	<0.17 U	<0.16 UJ	<0.0974 UJ	<0.0966 UJ	<0.0933 UJ	<0.16 U
Phenanthrene	85-01-8	1000	100	mg/kg	<0.11 U	<0.12 U	1.38	<0.0927 U	<0.11 U	<0.11 U	<0.11 U	0.231 J	0.052 J	<0.13 UJ	4.3	<0.0974 U	<0.0966 U	<0.0933 U	<0.12 UJ
Phenol	108-95-2	0.33	100	mg/kg	<0.19 U	<0.2 U	<0.092 U	<0.0927 U	<0.19 U	<0.19 U	<0.19 U	<0.0918 U	<0.2 U	<0.21 U	<0.2 U	<0.0974 U	<0.0966 U	<0.0933 U	<0.2 U
Pyrene	129-00-0	1000	100	mg/kg	<0.11 U	0.074 J	3.35	<0.0927 U	<0.11 U	<0.11 U	<0.11 U	0.26 J	0.081 J	<0.13 U	2	<0.0974 U	<0.0966 U	<0.0933 U	<0.12 U
Pyridine	110-86-1	NS	NS	mg/kg	NA	NA	<0.368 U	<0.371 U	NA	NA	NA	<0.367 UJ	NA	NA	NA	<0.39 U	<0.387 UJ	<0.374 UJ	NA

Table 2
Site Management Plan
Confirmation Endpoint Soil Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	EP01	EP02	EP03	EP04	EP05	EP06	EP07	EP08	EP09	EP10	EP11	EP12	EP13	EP13	EP14
				Sample Name	EP01_EL_0.7	EP02_EL_1	EP03_EL_-3.0	EP04_EL_-2.0	EP05_EL_-0.5	EP06_EL_-1.0	EP07_EL_-1.0	EP08_EL_-1.0	EP09_EL_0.0	EP10_EL_0.0	EP11_EL_-0.1	EP12_EL_-0.9	EP13_EL_-1.2	DUP02_112923	EP14_EL_0.0
				Sample Date	10/31/2023	10/31/2023	12/06/2023	12/06/2023	11/14/2023	11/14/2023	11/07/2023	11/29/2023	11/07/2023	11/06/2023	11/06/2023	11/30/2023	11/29/2023	11/29/2023	11/06/2023
				Sample Elevation	0.7	1	-3	-2	-0.5	-1	-1	-1	0	0	-0.1	-0.9	-1.2	-1.2	0
				Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Pesticides																			
4,4'-DDD	72-54-8	14	13	mg/kg	<0.00177 U	<0.00197 U	<0.00182 U	<0.00183 U	<0.00177 U	<0.00183 U	<0.00184 U	<0.00178 UJ	<0.00184 U	<0.00205 U	<0.00183 U	<0.00195 U	<0.00191 UJ	<0.00186 UJ	<0.00188 U
4,4'-DDE	72-55-9	17	8.9	mg/kg	0.00047 J	<0.00197 U	<0.00182 U	<0.00183 U	<0.00177 U	<0.00183 U	<0.00184 U	<0.00178 U	<0.00184 U	<0.00205 U	<0.00183 U	<0.00195 U	<0.00191 U	<0.00186 U	<0.00188 U
4,4'-DDT	50-29-3	136	7.9	mg/kg	<0.00177 U	<0.00197 U	<0.00182 U	<0.00183 U	<0.00177 U	<0.00183 U	<0.00184 U	<0.00178 UJ	<0.00184 U	<0.00205 U	<0.00183 U	<0.00195 U	<0.00191 UJ	<0.00186 UJ	<0.00188 U
Aldrin	309-00-2	0.19	0.097	mg/kg	<0.00177 U	<0.00197 U	<0.00182 U	<0.00183 U	<0.00177 U	<0.00183 U	<0.00184 U	<0.00178 U	<0.00184 U	<0.00205 U	<0.00183 U	<0.00195 U	<0.00191 U	<0.00186 U	<0.00188 U
Alpha BHC (Alpha Hexachlorocyclohexane)	319-84-6	0.02	0.48	mg/kg	<0.000739 U	<0.00082 U	<0.00182 UJ	<0.00183 UJ	<0.000739 UJ	<0.000764 UJ	<0.000767 U	<0.00178 U	<0.000768 U	<0.000853 U	<0.000762 U	<0.00195 U	<0.00191 U	<0.00186 U	<0.000782 U
Alpha Chlordane	5103-71-9	2.9	4.2	mg/kg	<0.00222 U	<0.00246 U	<0.00182 U	<0.00183 U	<0.00222 U	<0.00229 U	<0.0023 U	<0.00178 U	<0.0023 U	<0.00256 U	<0.00228 U	<0.00195 U	<0.00191 U	<0.00186 U	<0.00235 U
Alpha Endosulfan	959-98-8	102	24	mg/kg	<0.00177 U	<0.00197 U	<0.00182 U	<0.00183 U	<0.00177 U	<0.00183 U	<0.00184 U	<0.00178 U	<0.00184 U	<0.00205 U	<0.00183 U	<0.00195 U	<0.00191 U	<0.00186 U	<0.00188 U
Beta Bhc (Beta Hexachlorocyclohexane)	319-85-7	0.09	0.36	mg/kg	<0.00177 U	<0.00197 U	<0.00182 U	<0.00183 U	<0.00177 U	<0.00183 U	<0.00184 U	<0.00178 U	<0.00184 U	<0.00205 U	<0.00183 U	<0.00195 U	<0.00191 U	<0.00186 U	<0.00188 U
Beta Endosulfan	33213-65-9	102	24	mg/kg	<0.00177 U	<0.00197 U	<0.00182 U	<0.00183 U	<0.00177 U	<0.00183 U	<0.00184 U	<0.00178 U	<0.00184 U	<0.00205 U	<0.00183 U	<0.00195 U	<0.00191 UJ	<0.00186 UJ	<0.00188 U
Chlordane (alpha and gamma)	57-74-9	NS	NS	mg/kg	<0.0148 U	<0.0164 U	<0.0364 U	<0.0367 U	<0.0148 U	<0.0153 U	<0.0153 U	<0.0356 U	<0.0154 U	<0.0171 U	<0.0152 U	<0.039 U	<0.0382 U	<0.0372 U	<0.0156 U
Delta Bhc (Delta Hexachlorocyclohexane)	319-86-8	0.25	100	mg/kg	<0.00177 U	<0.00197 U	<0.00182 U	<0.00183 U	<0.00177 U	<0.00183 U	<0.00184 U	<0.00178 U	<0.00184 U	<0.00205 U	<0.00183 U	<0.00195 U	<0.00191 U	<0.00186 U	<0.00188 U
Dieldrin	60-57-1	0.1	0.2	mg/kg	<0.00111 U	<0.00123 U	<0.00182 U	<0.00183 U	<0.00111 U	<0.00114 U	<0.00115 U	<0.00178 U	<0.00115 U	<0.00128 U	<0.00114 U	<0.00195 U	<0.00191 U	<0.00186 U	<0.00117 U
Endosulfan Sulfate	1031-07-8	1000	24	mg/kg	<0.000739 U	<0.00082 U	<0.00182 U	<0.00183 U	<0.000739 U	<0.000764 U	<0.000767 U	<0.00178 U	<0.000768 U	<0.000853 U	<0.000762 U	<0.00195 U	<0.00191 U	<0.00186 U	<0.000782 U
Endrin	72-20-8	0.06	11	mg/kg	<0.000739 U	<0.00082 U	<0.00182 U	<0.00183 U	<0.000739 U	<0.000764 U	<0.000767 U	<0.00178 U	<0.000768 U	<0.000853 U	<0.000762 U	<0.00195 U	<0.00191 U	<0.00186 U	<0.000782 U
Endrin Aldehyde	7421-93-4	NS	NS	mg/kg	<0.00222 UJ	<0.00246 UJ	<0.00182 U	<0.00183 U	<0.00222 U	<0.00229 U	<0.0023 U	<0.00178 U	<0.0023 U	<0.00256 U	<0.00228 U	<0.00195 U	<0.00191 U	<0.00186 U	<0.00235 U
Endrin Ketone	53494-70-5	NS	NS	mg/kg	<0.00177 U	<0.00197 U	<0.00182 U	<0.00183 U	<0.00177 U	<0.00183 U	<0.00184 U	<0.00178 U	<0.00184 U	<0.00205 U	<0.00183 U	<0.00195 UJ	<0.00191 UJ	<0.00186 UJ	<0.00188 U
Gamma Bhc (Lindane)	58-89-9	0.1	1.3	mg/kg	<0.000739 U	<0.00082 U	<0.00182 U	<0.00183 U	<0.000739 U	<0.000764 U	<0.000767 U	<0.00178 U	<0.000768 U	<0.000853 U	<0.000762 U	<0.00195 U	<0.00191 U	<0.00186 U	<0.000782 U
Gamma Chlordane (Trans)	5103-74-2	NS	NS	mg/kg	<0.00222 U	<0.00246 U	NA	NA	<0.00222 U	<0.00229 U	<0.0023 U	NA	<0.0023 U	<0.00256 U	0.000606 J	NA	NA	NA	<0.00235 U
Gamma-Chlordane	5566-34-7	NS	NS	mg/kg	NA	NA	<0.00182 U	<0.00183 U	NA	NA	NA	<0.00178 U	NA	NA	NA	<0.00195 U	<0.00191 U	<0.00186 U	NA
Heptachlor	76-44-8	0.38	2.1	mg/kg	<0.000887 U	<0.000984 U	<0.00182 U	<0.00183 U	<0.000887 U	<0.000917 U	<0.000921 U	<0.00178 U	<0.000922 U	<0.00102 U	<0.000914 U	<0.00195 U	<0.00191 UJ	<0.00186 UJ	<0.000938 U
Heptachlor Epoxide	1024-57-3	NS	NS	mg/kg	<0.00333 U	<0.00369 U	<0.00182 U	<0.00183 U	<0.00333 U	<0.00344 U	<0.00345 U	<0.00178 U	<0.00346 U	<0.00384 U	<0.00343 U	<0.00195 U	<0.00191 U	<0.00186 U	<0.00352 U
Methoxychlor	72-43-5	NS	NS	mg/kg	<0.00333 U	<0.00369 U	<0.00182 UJ	<0.00183 UJ	<0.00333 U	<0.00344 U	<0.00345 U	<0.00178 U	<0.00346 U	<0.00384 UJ	<0.00343 UJ	<0.00195 U	<0.00191 UJ	<0.00186 UJ	<0.00352 UJ
Toxaphene	8001-35-2	NS	NS	mg/kg	<0.0333 U	<0.0369 U	<0.182 U	<0.183 U	<0.0333 U	<0.0344 U	<0.0345 U	<0.178 U	<0.0346 U	<0.0384 UJ	<0.0343 UJ	<0.195 U	<0.191 UJ	<0.186 UJ	<0.0352 UJ
Herbicides																			
2,4,5-T (Trichlorophenoxyacetic Acid)	93-76-5	NS	NS	mg/kg	<0.188 U	<0.204 U	<0.0221 UJ	<0.0219 UJ	<0.189 UJ	<0.19 UJ	<0.191 U	<0.0219 UJ	<0.2 U	<0.211 UJ	<0.193 UJ	<0.0233 U	<0.0227 UJ	<0.022 UJ	<0.195 UJ
2,4-D (Dichlorophenoxyacetic Acid)	94-75-7	NS	NS	mg/kg	<0.188 U	<0.204 U	<0.0221 UJ	<0.0219 UJ	<0.189 UJ	<0.19 UJ	<0.191 U	<0.0219 UJ	<0.2 U	<0.211 U	<0.193 U	<0.0233 U	<0.0227 UJ	<0.022 UJ	<0.195 U
Silvex (2,4,5-Tp)	93-72-1	3.8	100	mg/kg	<0.188 U	<0.204 U	<0.0221 UJ	<0.0219 UJ	<0.189 UJ	<0.19 UJ	<0.191 U	<0.0219 UJ	<0.2 U	<0.211 U	<0.193 U	<0.0233 UJ	<0.0227 UJ	<0.022 UJ	<0.195 U
Polychlorinated Biphenyl																			
PCB-1016 (Aroclor 1016)	12674-11-2	NS	NS	mg/kg	<0.0557 U	<0.0622 U	<0.0184 U	<0.0185 U	<0.053 U	<0.0551 U	<0.054 U	<0.018 U	<0.0597 U	<0.0595 U	<0.0564 U	<0.0197 U	<0.0193 U	<0.0188 U	<0.0573 U
PCB-1221 (Aroclor 1221)	11104-28-2	NS	NS	mg/kg	<0.0557 U	<0.0622 U	<0.0184 U	<0.0185 U	<0.053 U	<0.0551 U	<0.054 U	<0.018 U	<0.0597 U	<0.0595 U	<0.0564 U	<0.0197 U	<0.0193 U	<0.0188 U	<0.0573 U
PCB-1232 (Aroclor 1232)	11141-16-5	NS	NS	mg/kg	<0.0557 U	<0.0622 U	<0.0184 U	<0.0185 U	<0.053 U	<0.0551 U	<0.054 U	<0.018 U	<0.0597 U	<0.0595 U	<0.0564 U	<0.0197 U	<0.0193 U	<0.0188 U	<0.0573 U
PCB-1242 (Aroclor 1242)	53469-21-9	NS	NS	mg/kg	<0.0557 U	<0.0622 U	<0.0184 U	<0.0185 U	<0.053 U	<0.0551 U	<0.054 U	<0.018 U	<0.0597 U	<0.0595 U	<0.0564 U	<0.0197 U	<0.0193 U	<0.0188 U	<0.0573 U
PCB-1248 (Aroclor 1248)	12672-29-6	NS	NS	mg/kg	<0.0557 U	<0.0622 U	<0.0184 U	<0.0185 U	<0.053 U	<0.0551 U	<0.054 U	<0.018 U	<0.0597 U	<0.0595 U	<0.0564 U	<0.0197 U	<0.0193 U	<0.0188 U	<0.0573 U
PCB-1254 (Aroclor 1254)	11097-69-1	NS	NS	mg/kg	<0.0557 U	0.00918 J	<0.0184 U	<0.0185 U	<0.053 U	<0.0551 U	<0.054 U	<0.018 U	<0.0597 U	<0.0595 U	<0.0564 U	<0.0197 U	<0.0193 U	<0.0188 U	<0.0573 U
PCB-1260 (Aroclor 1260)	11096-82-5	NS	NS	mg/kg	<0.0557 UJ	<0.0622 UJ	<0.0184 U	<0.0185 U	<0.053 U	<0.0551 U	<0.054 UJ	<0.018 U	<0.0597 UJ	<0.0595 U	<0.0564 U	<0.0197 U	<0.0193 U	<0.0188 U	<0.0573 U
PCB-1262 (Aroclor 1262)	37324-23-5	NS	NS	mg/kg	<0.0557 U	<0.0622 U	NA	NA	<0.053 U	<0.0551 U	<0.054 U	NA	<0.0597 U	<0.0595 U	<0.0564 U	NA	NA	NA	<0.0573 U
PCB-1268 (Aroclor 1268)	11100-14-4	NS	NS	mg/kg	<0.0557 U	<0.0622 U	NA	NA	<0.053 U	<0.0551 U	<0.054 U	NA	<0.0597 U	<0.0595 U	<0.0564 U	NA	NA	NA	<0.0573 U
Total PCBs	1336-36-3	3.2	1	mg/kg	<0.0557 U	0.00918 J	<0.0184 U	<0.0185 U	<0.053 U	<0.0551 U	<0.054 U	<0.018 U	<0.0597 U	<0.0595 U	<0.0564 U	<0.0197 U	<0.0193 U	<0.0188 U	<0.0573 U
Metals																			
Aluminum	7429-90-5	NS	NS	mg/kg	1,390	4,540	6,660	7,850	3,080	1,360	2,500	6,760	2,250	1,910	3,860	3,860	5,280	4,150	2,070
Antimony	7440-36-0	NS	NS	mg/kg	<4.44 U	<4.99 U	<2.31 UJ	<2.32 UJ	<4.55 U	<4.35 U	<4.47 U	<2.3 UJ	<4.58 U	<5.12 U	<4.7 U	<2.47 U	<2.42 U	<2.35 U	<4.7 U
Arsenic	7440-38-2	16	16	mg/kg	0.464 J	1.28	2.26	<1.39 U	1.31	0.824 J	0.688 J	<1.38 U	1.33	1.04	1.63	<1.48 U	2.47	1.82	1.02
Barium	7440-39-3	820	400	mg/kg	8.4	19.4	38	37.1	34.6	13.9	19.9	57.7	34.5	48.2	40.9	29	34.5	38.5	14
Beryllium	7440-41-7	47	72	mg/kg	0.129 J	0.354 J	0.128	0.135	0.262 J	0.121 J	0.268 J	<0.046 UJ	0.266 J	0.176 J	0.366 J	<0.05 U	<0.049 UJ	<0.047 UJ	0.233 J
Cadmium	7440-43-9	7.5	4.3	mg/kg	<0.889 U	<0.999 U	<0.277 U	<0.279 U	<0.91 U	<0.87 U	<0.893 U	<0.276 U	<0.917 U	<1.02 U	<0.941 U	<0.297 U	<0.291 U	<0.282 U	<0.94 U
Calcium	7440-70-2	NS	NS	mg/kg	479	756	2,380	1,450	627	611	695	4,610	3,890	811	2,130	1,200	1,450	2,010	960
Chromium, Hexavalent	18540-29-9	19	110	mg/kg	<0.905 U	0.48 J	<0.553 U	0.669	<0.918 U	<0.926 U	0.531 J	<0.552 U	<0.974 U	<1.03 U	0.202 J	<0.593 U	0.791	0.859	0.29 J
Chromium, Total	7440-47-3	NS	NS	mg/kg	4.11	14.1	**21.3**	16.5	10.8	5.64	8.48	17.4	7.48	6.7	10.3	10	12.7	12.1	6.34
Chromium, Trivalent	16065-83-1	NS	180	mg/kg	4.11	13.6 J	21.3	15.8	10.8	5.64	7.95 J	17.4	7.48	6.7	10.1 J	10	11.9	11.2	6.05 J
Cobalt	7440-48-4	NS	NS	mg/kg	1.35 J	5.39	8.8	5.15	3.87	2.26	3.62	5.71	2.73	2.82	3.9	3.77	5	4.2	2.63
Copper	7440-50-8	1720	270	mg/kg	4.98	7.28	14.5	11.3	9.24	4.17	7.92	21.1	9.98	7.45	11.7	8.72	11	11.7	6.36
Cyanide	57-12-5	40	27	mg/kg	<1.1 U	<1.2 U	<0.553 U	<0.557 U	<1.1 UJ	<1.1 UJ	<1.1 U	<0.552 UJ	<1.1 U	<1.2 UJ	<1.1 UJ	<0.593 U	<0.581 U	<0.565 U	<1.1 UJ
Iron	7439-89-6	NS	NS	mg/kg	3,450	10,200	12,400	10,200	7,080	5,120	5,910	10,600	6,370	5,640	9,710	6,730	10,500	9,110	6,100
Lead	7439-92-1	450	400	mg/kg	2.6 J	5.35	18.2 J	12.7	3.7 J	4.24 J	3.45 J	63.1 J	47.7	2.66 J	12.8	4.29	7.03 J	8.65 B	2.27 J
Magnesium	7439-95-4	NS	NS	mg/kg	817	2,070	4,690 J	1,860	2,170	995	1,240	2,220	2,110	1,400	2,420	1,840	2,500	1,820	1,660
Manganese	7439-96-5	2000	2000	mg/kg	32.6	126	206	81.9	80.1	49.3	121	134	231	254	160	77	115	88.5	64.3
Mercury	7439-97-6	**0.73**	0.81	mg/kg	<0.078 U	<0.091 U	0.0654	0.0373	<0.074 U	<0.075 U	<0.088 U	0.179	0.664	<0.092 U	0.061 J	<0.0356 U	<0.0349 U	<0.0339 U	<0.088 U
Nickel	7440-02-0	130	310	mg/kg	6.22	56.4	97.2 J	27.5	11.7	9.75	14.9	32.2 J	11.8	10.6	13.6	12.8	25.3	24.3	11.2
Potassium	7440-09-7	NS	NS	mg/kg	297	889	1,330 J	1,000 J	899	261	580	1,220	768	580	1,200	1,280	1,260	1,100	475
Selenium	7782-49-2	4	180	mg/kg	<1.78 U	<2 U	<2.31 UJ	<2.32 UJ	<1.82 U	<1.74 U	<1.79 U	<2.3 U	<1.83 U	<2.05 U	<1.88 U	<2.47 U	<2.42 U	<2.35 U	<1.88 U
Silver	7440-22-4	8.3	180	mg/kg	<0.444 U	<0.499 U	<0.465 UJ	<0.468 U	<0.455 U	<0.435 U	<0.447 U	<0.464 UJ	<0.458 U	<0.512 U	<0.47 U	<0.499 UJ	<0.488 UJ	<0.475 UJ	<0.47 U
Sodium	7440-23-5	NS	NS	mg/kg	58.4 J	99.6 J	164	124	110 J	109 J	92.5 J	101	99.3 J	87.6 J	256	93.7 J	<48.4 U	199 J	131 J
Thallium	7440-28-0	NS	NS	mg/kg	<1.78 U	<2 U	<2.31 UJ	<2.32 UJ	<1.82 U	<1.74 U	<1.79 U	<2.3 UJ	<1.83 U	0.409 J	0.429 J	<2.47 U	<2.42 UJ	<2.35 UJ	<1.88 U
Vanadium	7440-62-2	NS	NS	mg/kg	3.94	12.2	18.3	20.5	9.6	9.16	7.7	21	7.95	8.19	12.3	10.6	12.1	14.5	7.77
Zinc	7440-66-6	2480	10000	mg/kg	26.4	13.8	24.7	19.5	15.1	28.5	21.8	42.8 J	19.9	10.1	20.7	24.7 J	31.2 J	29.6 J	11.3
General Chemistry																			
Solids, Percent	SOLID	NS	NS	Percent	88.4	79.2	90.4	89.7	87.1	86.4	84.8	90.6	82.1	77.6	84.1	84.3	86	88.5	82.6

Table 2
Site Management Plan
Confirmation Endpoint Soil Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	EP01	EP02	EP03	EP04	EP05	EP06	EP07	EP08	EP09	EP10	EP11	EP12	EP13	EP13	EP14
				Sample Name	EP01_EL_0.7	EP02_EL_1	EP03_EL_-3.0	EP04_EL_-2.0	EP05_EL_-0.5	EP06_EL_-1.0	EP07_EL_-1.0	EP08_EL_-1.0	EP09_EL_0.0	EP10_EL_0.0	EP11_EL_-0.1	EP12_EL_-0.9	EP13_EL_-1.2	DUP02_112923	EP14_EL_0.0
				Sample Date	10/31/2023	10/31/2023	12/06/2023	12/06/2023	11/14/2023	11/14/2023	11/07/2023	11/29/2023	11/07/2023	11/06/2023	11/06/2023	11/30/2023	11/29/2023	11/29/2023	11/06/2023
				Sample Elevation	0.7	1	-3	-2	-0.5	-1	-1	-1	0	0	-0.1	-0.9	-1.2	-1.2	0
				Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Perfluorooctanoic acids																			
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	763051-92-9	NS	NS	mg/kg	<0.000762 U	<0.000798 U	<0.00083 UJ	<0.000839 UJ	<0.000794 U	<0.0008 U	<0.000794 U	<0.000833 U	<0.000792 U	<0.000803 U	<0.000797 U	<0.000885 UJ	<0.000879 U	<0.000842 U	<0.000792 U
1h,1h,2h,2h-Perfluorohexanesulfonic Acid (4:2)	757124-72-4	NS	NS	mg/kg	NA	NA	<0.000823 UJ	<0.000833 UJ	NA	NA	NA	<0.000826 UJ	NA	NA	NA	<0.000878 UJ	<0.000872 UJ	<0.000836 UJ	NA
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	6HPFHXSA	NS	NS	mg/kg	<0.000762 U	<0.000798 U	NA	NA	<0.000794 U	<0.0008 U	<0.000794 U	NA	<0.000792 U	<0.000803 U	<0.000797 U	NA	NA	NA	<0.000792 U
3:3 FTCA	356-02-5	NS	NS	mg/kg	<0.000952 U	<0.000997 U	<0.0011 U	<0.00111 U	<0.000993 U	<0.000999 U	<0.000993 U	NA	<0.00099 U	<0.001 U	<0.000996 U	<0.00117 U	NA	NA	<0.000991 U
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	NS	NS	mg/kg	<0.000762 U	<0.000798 U	<0.00083 U	<0.000839 U	<0.000794 U	<0.0008 U	<0.000794 U	<0.000833 U	<0.000792 U	<0.000803 U	<0.000797 U	<0.000885 U	<0.000879 U	<0.000842 U	<0.000792 U
5:3 FTCA	914637-49-3	NS	NS	mg/kg	<0.00476 U	<0.00499 U	<0.00549 U	<0.00555 U	<0.00496 U	<0.005 U	<0.00496 U	<0.00551 U	<0.00495 U	<0.00502 U	<0.00498 U	<0.00585 U	<0.00581 U	<0.00557 U	<0.00495 U
7:3 FTCA	812-70-4	NS	NS	mg/kg	<0.00476 U	<0.00499 U	<0.00549 U	<0.00555 U	<0.00496 U	<0.005 U	<0.00496 U	<0.00551 U	<0.00495 U	<0.00502 U	<0.00498 U	<0.00585 U	<0.00581 U	<0.00557 U	<0.00495 U
9-Chlorohexadecafluoro-3-Oxanonane-1-Sulfonic Acid	756426-58-1	NS	NS	mg/kg	<0.000762 U	<0.000798 U	<0.000821 UJ	<0.00083 UJ	<0.000794 U	<0.0008 U	<0.000794 U	<0.000824 U	<0.000792 U	<0.000803 U	<0.000797 U	<0.000876 U	<0.00087 U	<0.000833 U	<0.000792 U
N-ethyl perfluorooctane- sulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.00022 U	<0.000222 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.00022 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000234 U	<0.000233 U	<0.000223 U	<0.000198 U
N-ethylperfluorooctane sulfonamide	4151-50-2	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.00022 UJ	<0.000222 UJ	<0.000199 U	<0.0002 U	<0.000198 U	<0.00022 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000234 U	<0.000233 U	<0.000223 U	<0.000198 U
N-ethylperfluorooctane sulfonamidoe	1691-99-2	NS	NS	mg/kg	<0.0019 U	<0.00199 U	<0.0022 U	<0.00222 U	<0.00199 U	<0.002 U	<0.00198 U	<0.0022 U	<0.00198 U	<0.00201 U	<0.00199 U	<0.00234 U	<0.00233 U	<0.00223 UJ	<0.00198 U
N-methyl perfluorooctane- sulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.00022 U	<0.000222 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.00022 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000234 U	<0.000233 U	<0.000223 U	<0.000198 U
N-methylperfluorooctane sulfonamide	31506-32-8	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.00022 U	<0.000222 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.00022 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000234 U	<0.000233 U	<0.000223 U	<0.000198 U
N-methylperfluorooctanesulfonamidol	24448-09-7	NS	NS	mg/kg	<0.0019 U	<0.00199 U	<0.0022 U	<0.00222 U	<0.00199 U	<0.002 U	<0.00198 U	<0.0022 U	<0.00198 U	<0.00201 U	<0.00199 U	<0.00234 U	<0.00233 U	<0.00223 U	<0.00198 U
Nonafluoro-3,6-dioxaheptanoic acid	151772-58-6	NS	NS	mg/kg	<0.000381 U	<0.000399 U	<0.000439 U	<0.000444 U	<0.000397 U	<0.0004 U	<0.000397 U	<0.000441 U	<0.000396 U	<0.000401 U	<0.000398 U	<0.000468 U	<0.000465 U	<0.000446 U	<0.000396 U
Perfluoro(2-ethoxyethane)sulfonic acid	113507-82-7	NS	NS	mg/kg	<0.000381 U	<0.000399 U	<0.000391 U	<0.000395 U	<0.000397 U	<0.0004 U	<0.000397 U	<0.000392 U	<0.000396 U	<0.000401 U	<0.000398 U	<0.000417 U	<0.000414 U	<0.000397 U	<0.000396 U
Perfluoro-3-methoxypropanoic acid	377-73-1	NS	NS	mg/kg	<0.000381 U	<0.000399 U	<0.000439 U	<0.000444 U	<0.000397 U	<0.0004 U	<0.000397 U	<0.000441 UJ	<0.000396 U	<0.000401 U	<0.000398 U	<0.000468 UJ	<0.000465 UJ	<0.000446 UJ	<0.000396 U
Perfluoro-4-methoxybutanoic acid	863090-89-5	NS	NS	mg/kg	<0.000381 U	<0.000399 U	<0.000439 U	<0.000444 U	<0.000397 U	<0.0004 U	<0.000397 U	<0.000441 U	<0.000396 U	<0.000401 U	<0.000398 U	<0.000468 U	<0.000465 U	<0.000446 U	<0.000396 U
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.000194 U	<0.000197 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.000195 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000207 U	<0.000206 U	<0.000197 U	<0.000198 U
Perfluorobutanoic acid (PFBA)	375-22-4	NS	NS	mg/kg	<0.000762 U	<0.000798 U	<0.000878 U	<0.000888 U	<0.000794 U	<0.0008 U	<0.000794 U	NA	<0.000792 U	<0.000803 U	<0.000797 U	<0.000936 U	NA	NA	<0.000792 U
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.000212 U	<0.000214 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.000213 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000226 U	<0.000224 U	<0.000215 U	<0.000198 U
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.00022 U	<0.000222 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.00022 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000234 U	<0.000233 U	<0.000223 U	<0.000198 U
Perfluorododecanesulfonic Acid (PFDOS)	79780-39-5	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.000213 U	<0.000215 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.000214 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000227 U	<0.000226 U	<0.000216 U	<0.000198 U
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.00022 U	<0.000222 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.00022 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000234 U	<0.000233 U	<0.000223 U	<0.000198 U
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.00022 U	<0.000222 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.00022 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000234 U	<0.000233 U	<0.000223 U	<0.000198 U
Perfluoroheptanoic acid (PFHpA)	375-85-9	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.00022 U	<0.000222 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.00022 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000234 U	<0.000233 U	<0.000223 U	<0.000198 U
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.000201 U	<0.000203 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.000202 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000214 U	<0.000213 U	<0.000204 U	<0.000198 U
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.00022 U	<0.000222 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.00022 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000234 U	<0.000233 U	<0.000223 U	<0.000198 U
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.000211 U	<0.000213 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.000212 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000225 U	<0.000223 U	<0.000214 U	<0.000198 U
Perfluorononanoic Acid (PFNA)	375-95-1	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.00022 U	<0.000222 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.00022 U	<0.000198 U	<0.000201 U	<0.000199 U	NA	<0.000233 U	<0.000223 U	<0.000198 U
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.00022 U	<0.000222 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.00022 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000234 U	<0.000233 U	<0.000223 U	<0.000198 U
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	0.001	0.044	mg/kg	0.000167 J	0.000561 J	<0.000204 U	<0.000207 U	<0.000199 U	0.000105 JF	0.000092 J	<0.000205 U	0.000124 J	<0.000201 U	<0.000199 U	<0.000218 U	<0.000216 U	<0.000207 U	<0.000198 U
Perfluorooctanoic Acid (PFOA)	335-67-1	0.0008	0.033	mg/kg	0.000107 J	0.000128 J	<0.00022 U	<0.000222 U	<0.000199 U	0.000066 J	<0.000198 U	<0.00022 U	0.000196 J	0.000229	<0.000199 U	<0.000234 U	<0.000233 U	<0.000223 U	<0.000198 U
Perfluoropentanesulfonic Acid	2706-91-4	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.000206 U	<0.000209 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.000207 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.00022 U	<0.000219 U	<0.000209 U	<0.000198 U
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	NS	mg/kg	<0.000381 U	<0.000399 U	<0.000439 U	<0.000444 U	<0.000397 U	<0.0004 U	<0.000397 U	NA	<0.000396 U	<0.000401 U	<0.000398 U	<0.000468 U	NA	NA	<0.000396 U
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.00022 U	<0.000222 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.00022 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000234 U	<0.000233 U	<0.000223 U	<0.000198 U
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.00022 U	<0.000222 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.00022 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000234 U	<0.000233 U	<0.000223 U	<0.000198 U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	NS	mg/kg	<0.00019 U	<0.000199 U	<0.00022 U	<0.000222 U	<0.000199 U	<0.0002 U	<0.000198 U	<0.00022 U	<0.000198 U	<0.000201 U	<0.000199 U	<0.000234 U	<0.000233 U	<0.000223 U	<0.000198 U
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2) (8:2FTS)	39108-34-4	NS	NS	mg/kg	<0.000762 U	<0.000798 U	<0.000843 UJ	<0.000853 UJ	<0.000794 U	<0.0008 U	<0.000794 U	<0.000846 UJ	<0.000792 U	<0.000803 U	<0.000797 U	<0.000899 UJ	<0.000893 UJ	<0.000856 UJ	<0.000792 U
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2) (6:2FTS)	27619-97-2	NS	NS	mg/kg	<0.000762 U	<0.000798 U	<0.000834 UJ	<0.000844 UJ	<0.000794 U	<0.0008 U	<0.000794 U	<0.000837 UJ	<0.000792 U	0.000296 J	<0.000797 U	<0.00089 UJ	<0.000884 UJ	<0.000847 UJ	<0.000792 U
Tetrafluoro-2- (heptafluoropropoxy) propanoic Acid	13252-13-6	NS	NS	mg/kg	<0.000762 U	<0.000798 U	<0.000878 U	<0.000888 U	<0.000794 U	<0.0008 U	<0.000794 U	<0.000881 U	<0.000792 U	<0.000803 U	<0.000797 U	<0.000936 U	<0.00093 U	<0.000891 U	<0.000792 U
Total PFOA and PFOS	TOTPFOAPFOS	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 2
Site Management Plan
Confirmation Endpoint Soil Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	EP15	EP16	EP17	EP18	EP19	EP19A	EP20	EP21	EP22	EP23	EP24	EP25	EP25	EP26	EP27
				Sample Name	EP15_EL_0.0	EP16_EL_-3.0	EP17_EL_-1.4	EP18_EL_0.0	EP19_EL_-0.5	EP19A_EL_-0.5	EP20_EL_-1.0	EP21_EL_-3.0	EP22_EL_-5.0	EP23_EL_3	EP24_EL_0.0	EP25_EL_-2	DUP01_101422	EP26_EL_-3.5	EP27_EL_-5.5
				Sample Date	11/07/2023	11/30/2023	11/29/2023	09/01/2022	10/13/2022	10/19/2023	12/05/2023	12/01/2023	11/30/2023	08/19/2022	09/01/2022	10/14/2022	10/14/2022	12/04/2023	12/04/2023
				Sample Elevation	0	-3	-1.4	0	-0.5	-0.5	-1	-3	-5	3	0	-2	-2	-3.5	-5.5
				Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Volatile Organic Compounds																			
1,1,1,2-Tetrachloroethane	630-20-6	NS	NS	mg/kg	<0.00052 U	<0.0055 U	<0.008 U	<0.00061 U	<0.00056 U	<0.00075 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.00055 U	<0.00076 U	<0.00033 U	<0.00068 U	<0.012 U	<0.0079 U
1,1,1-Trichloroethane	71-55-6	0.68	100	mg/kg	<0.00052 U	<0.0055 U	<0.008 U	<0.00061 U	<0.00056 U	<0.00075 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.00055 U	<0.00076 U	<0.00033 U	<0.00068 U	<0.012 U	<0.0079 U
1,1,2,2-Tetrachloroethane	79-34-5	NS	NS	mg/kg	<0.00052 U	<0.0055 U	<0.008 U	<0.00061 U	<0.00056 U	<0.00075 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.00055 U	<0.00076 U	<0.00033 U	<0.00068 U	<0.012 U	<0.0079 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	NS	NS	mg/kg	NA	<0.0055 U	<0.008 UJ	NA	NA	NA	<0.0065 U	<0.0047 U	<0.0087 U	NA	NA	NA	NA	<0.012 U	<0.0079 U
1,1,2-Trichloroethane	79-00-5	NS	NS	mg/kg	<0.001 U	<0.0055 U	<0.008 U	<0.0012 U	<0.0011 U	<0.0015 UJ	<0.0065 U	<0.0047 U	<0.0087 U	<0.0011 U	<0.0015 U	<0.00066 U	<0.0014 U	<0.012 U	<0.0079 U
1,1-Dichloroethane	75-34-3	0.27	26	mg/kg	<0.001 U	<0.0055 U	<0.008 U	<0.0012 U	<0.0011 U	<0.0015 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0011 U	<0.0015 U	<0.00066 U	<0.0014 U	<0.012 U	<0.0079 U
1,1-Dichloroethene	75-35-4	0.33	100	mg/kg	<0.001 U	<0.0055 UJ	<0.008 UJ	<0.0012 U	<0.0011 U	<0.0015 U	<0.0065 UJ	<0.0047 UJ	<0.0087 UJ	<0.0011 U	<0.0015 U	<0.00066 U	<0.0014 U	<0.012 U	<0.0079 U
1,1-Dichloropropene	563-58-6	NS	NS	mg/kg	<0.00052 U	NA	NA	<0.00061 U	<0.00056 U	<0.00075 U	NA	NA	NA	<0.00055 U	<0.00076 U	<0.00033 U	<0.00068 U	NA	NA
1,2,3-Trichlorobenzene	87-61-6	NS	NS	mg/kg	<0.0021 U	<0.0055 U	<0.008 U	<0.0024 U	<0.0022 U	<0.003 UJ	<0.0065 U	<0.0047 U	<0.0087 U	<0.0022 U	<0.003 U	<0.0013 UJ	<0.0027 UJ	<0.012 U	<0.0079 U
1,2,3-Trichloropropane	96-18-4	NS	NS	mg/kg	<0.0021 U	<0.0055 U	<0.008 U	<0.0024 U	<0.0022 U	<0.003 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0022 U	<0.003 U	<0.0013 U	<0.0027 U	<0.012 U	<0.0079 U
1,2,4,5-Tetramethylbenzene	95-93-2	NS	NS	mg/kg	<0.0021 U	NA	NA	<0.0024 U	<0.0022 U	<0.003 U	NA	NA	NA	<0.0022 U	<0.003 U	0.006 J	<0.0027 UJ	NA	NA
1,2,4-Trichlorobenzene	120-82-1	NS	NS	mg/kg	<0.0021 U	<0.0055 U	<0.008 U	<0.0024 U	<0.0022 U	<0.003 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0022 U	<0.003 U	<0.0013 UJ	<0.0027 UJ	<0.012 U	<0.0079 U
1,2,4-Trimethylbenzene	95-63-6	3.6	52	mg/kg	<0.0021 U	<0.0055 U	<0.008 U	<0.0024 U	<0.0022 U	<0.003 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0022 U	<0.003 U	<0.0013 UJ	<0.0027 UJ	<0.012 U	<0.0079 U
1,2-Dibromo-3-Chloropropane	96-12-8	NS	NS	mg/kg	<0.0031 UJ	<0.0055 U	<0.008 U	<0.0036 U	<0.0033 U	<0.0045 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0033 U	<0.0045 U	<0.002 U	<0.0041 U	<0.012 U	<0.0079 U
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	NS	NS	mg/kg	<0.001 U	<0.0055 U	<0.008 U	<0.0012 UJ	<0.0011 U	<0.0015 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0011 U	<0.0015 UJ	<0.00066 U	<0.0014 U	<0.012 U	<0.0079 U
1,2-Dichlorobenzene	95-50-1	1.1	100	mg/kg	<0.0021 U	<0.0055 U	<0.008 U	<0.0024 U	<0.0022 U	<0.003 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0022 U	<0.003 U	<0.0013 UJ	<0.0027 UJ	<0.012 U	<0.0079 U
1,2-Dichloroethane	107-06-2	0.02	3.1	mg/kg	<0.001 U	<0.0055 U	<0.008 U	<0.0012 U	<0.0011 U	<0.0015 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0011 U	<0.0015 U	<0.00066 U	<0.0014 U	<0.012 U	<0.0079 U
1,2-Dichloropropane	78-87-5	NS	NS	mg/kg	<0.001 U	<0.0055 U	<0.008 U	<0.0012 U	<0.0011 U	<0.0015 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0011 U	<0.0015 U	<0.00066 U	<0.0014 U	<0.012 U	<0.0079 U
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	8.4	52	mg/kg	<0.0021 U	<0.0055 U	<0.008 U	<0.0024 U	<0.0022 U	<0.003 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0022 U	<0.003 U	<0.0013 UJ	<0.0027 UJ	<0.012 U	<0.0079 U
1,3-Dichlorobenzene	541-73-1	2.4	49	mg/kg	<0.0021 U	<0.0055 U	<0.008 U	<0.0024 U	<0.0022 U	<0.003 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0022 U	<0.003 U	<0.0013 UJ	<0.0027 UJ	<0.012 U	<0.0079 U
1,3-Dichloropropane	142-28-9	NS	NS	mg/kg	<0.0021 U	NA	NA	<0.0024 U	<0.0022 U	<0.003 U	NA	NA	NA	<0.0022 U	<0.003 U	<0.0013 U	<0.0027 U	NA	NA
1,4-Dichlorobenzene	106-46-7	1.8	13	mg/kg	<0.0021 U	<0.0055 U	<0.008 U	<0.0024 U	<0.0022 U	<0.003 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0022 U	<0.003 U	<0.0013 UJ	<0.0027 UJ	<0.012 U	<0.0079 U
1,4-Diethyl Benzene	105-05-5	NS	NS	mg/kg	<0.0021 U	NA	NA	<0.0024 U	<0.0022 U	<0.003 U	NA	NA	NA	<0.0022 U	<0.003 U	0.0014 J	<0.0027 UJ	NA	NA
1,4-Dioxane (P-Dioxane)	123-91-1	0.1	13	mg/kg	<0.084 U	<0.11 UJ	<0.16 U	<0.097 UJ	<0.089 UJ	<0.12 UJ	<0.13 UJ	<0.094 UJ	<0.17 UJ	<0.089 UJ	<0.12 UJ	<0.052 UJ	<0.11 UJ	<0.24 UJ	<0.16 UJ
2,2-Dichloropropane	594-20-7	NS	NS	mg/kg	<0.0021 U	NA	NA	<0.0024 U	<0.0022 U	<0.003 U	NA	NA	NA	<0.0022 U	<0.003 U	<0.0013 U	<0.0027 U	NA	NA
2-Chlorotoluene	95-49-8	NS	NS	mg/kg	<0.0021 U	NA	NA	<0.0024 U	<0.0022 U	<0.003 U	NA	NA	NA	<0.0022 U	<0.003 U	<0.0013 U	<0.0027 U	NA	NA
2-Hexanone (MBK)	591-78-6	NS	NS	mg/kg	<0.01 U	<0.0055 UJ	<0.008 UJ	<0.012 U	<0.011 U	<0.015 U	<0.0065 UJ	<0.0047 UJ	<0.0087 UJ	<0.011 U	<0.015 U	<0.0066 U	<0.014 U	<0.012 UJ	<0.0079 UJ
4-Chlorotoluene	106-43-4	NS	NS	mg/kg	<0.0021 U	NA	NA	<0.0024 U	<0.0022 U	<0.003 U	NA	NA	NA	<0.0022 U	<0.003 U	<0.0013 UJ	<0.0027 UJ	NA	NA
4-Ethyltoluene	622-96-8	NS	NS	mg/kg	<0.0021 U	NA	NA	<0.0024 U	<0.0022 U	<0.003 U	NA	NA	NA	<0.0022 U	<0.003 U	<0.0013 UJ	<0.0027 UJ	NA	NA
Acetone	67-64-1	**0.05**	100	mg/kg	<0.01 U	0.011 J	0.025 J	<0.012 U	0.01 J	<0.015 U	0.041 J	0.021 J	0.022 J	<0.011 U	<0.015 U	0.0044 J	0.012 J	**0.064 J**	0.034 J
Acrolein	107-02-8	NS	NS	mg/kg	NA	<0.011 UJ	<0.016 UJ	NA	NA	NA	<0.013 UJ	<0.0094 UJ	<0.017 UJ	NA	NA	NA	NA	<0.024 UJ	<0.016 UJ
Acrylonitrile	107-13-1	NS	NS	mg/kg	<0.0042 U	<0.0055 U	<0.008 U	<0.0049 U	<0.0044 U	<0.006 U	<0.0065 UJ	<0.0047 U	<0.0087 U	<0.0044 U	<0.0061 U	<0.0026 U	<0.0054 U	<0.012 UJ	<0.0079 UJ
Benzene	71-43-2	0.06	4.8	mg/kg	<0.00052 U	<0.0055 U	<0.008 U	<0.00061 U	<0.00056 U	<0.00075 U	<0.0065 U	<0.0047 U	<0.0087 U	0.00021 J	<0.00076 U	<0.00033 U	<0.00068 U	<0.012 U	<0.0079 U
Bromobenzene	108-86-1	NS	NS	mg/kg	<0.0021 U	NA	NA	<0.0024 U	<0.0022 U	<0.003 U	NA	NA	NA	<0.0022 U	<0.003 U	<0.0013 UJ	<0.0027 UJ	NA	NA
Bromochloromethane	74-97-5	NS	NS	mg/kg	<0.0021 U	<0.0055 U	<0.008 UJ	<0.0024 U	<0.0022 U	<0.003 U	<0.0065 UJ	<0.0047 U	<0.0087 U	<0.0022 U	<0.003 U	<0.0013 U	<0.0027 U	<0.012 UJ	<0.0079 UJ
Bromodichloromethane	75-27-4	NS	NS	mg/kg	<0.00052 U	<0.0055 U	<0.008 U	<0.00061 U	<0.00056 U	<0.00075 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.00055 U	<0.00076 U	<0.00033 U	<0.00068 U	<0.012 U	<0.0079 U
Bromoform	75-25-2	NS	NS	mg/kg	<0.0042 U	<0.0055 U	<0.008 U	<0.0049 U	<0.0044 U	<0.006 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0044 U	<0.0061 U	<0.0026 U	<0.0054 U	<0.012 U	<0.0079 U
Bromomethane	74-83-9	NS	NS	mg/kg	<0.0021 U	<0.0055 U	<0.008 U	<0.0024 U	<0.0022 UJ	<0.003 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0022 U	<0.003 U	<0.0013 U	<0.0027 U	<0.012 U	<0.0079 U
Carbon Disulfide	75-15-0	NS	NS	mg/kg	<0.01 UJ	<0.0055 UJ	<0.008 UJ	<0.012 U	<0.011 U	<0.015 UJ	<0.0065 UJ	<0.0047 UJ	<0.0087 UJ	<0.011 U	<0.015 U	<0.0066 U	<0.014 U	<0.012 UJ	<0.0079 UJ
Carbon Tetrachloride	56-23-5	0.76	2.4	mg/kg	<0.001 U	<0.0055 U	<0.008 U	<0.0012 U	<0.0011 U	<0.0015 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0011 U	<0.0015 U	<0.00066 U	<0.0014 U	<0.012 U	<0.0079 U
Chlorobenzene	108-90-7	1.1	100	mg/kg	<0.00052 U	<0.0055 U	<0.008 U	<0.00061 U	<0.00056 U	<0.00075 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.00055 U	<0.00076 U	<0.00033 U	<0.00068 U	<0.012 U	<0.0079 U
Chloroethane	75-00-3	NS	NS	mg/kg	<0.0021 U	<0.0055 U	<0.008 U	<0.0024 U	<0.0022 UJ	<0.003 UJ	<0.0065 U	<0.0047 U	<0.0087 U	<0.0022 U	<0.003 U	<0.0013 U	<0.0027 U	<0.012 U	<0.0079 U
Chloroform	67-66-3	0.37	49	mg/kg	0.0017	<0.0055 U	<0.008 U	<0.0018 U	<0.0017 U	<0.0022 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0017 U	<0.0023 U	<0.00098 U	<0.002 U	<0.012 U	<0.0079 U
Chloromethane	74-87-3	NS	NS	mg/kg	<0.0042 U	<0.0055 UJ	<0.008 UJ	<0.0049 U	<0.0044 U	<0.006 UJ	<0.0065 U	<0.0047 UJ	<0.0087 UJ	<0.0044 U	<0.0061 U	<0.0026 U	<0.0054 U	<0.012 U	<0.0079 U
Cis-1,2-Dichloroethene	156-59-2	0.25	100	mg/kg	<0.001 U	<0.0055 U	<0.008 U	<0.0012 U	<0.0011 U	<0.0015 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0011 U	<0.0015 U	<0.00066 U	<0.0014 U	<0.012 U	<0.0079 U
Cis-1,3-Dichloropropene	10061-01-5	NS	NS	mg/kg	<0.00052 U	<0.0055 U	<0.008 U	<0.00061 U	<0.00056 U	<0.00075 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.00055 U	<0.00076 U	<0.00033 U	<0.00068 U	<0.012 U	<0.0079 U
Cyclohexane	110-82-7	NS	NS	mg/kg	NA	<0.0055 U	<0.008 U	NA	NA	NA	<0.0065 U	<0.0047 U	<0.0087 U	NA	NA	NA	NA	<0.012 U	<0.0079 U
Cymene	99-87-6	NS	NS	mg/kg	<0.001 U	NA	NA	<0.0012 U	<0.0011 U	<0.0015 UJ	NA	NA	NA	<0.0011 U	<0.0015 U	<0.00066 UJ	<0.0014 UJ	NA	NA
Dibromochloromethane	124-48-1	NS	NS	mg/kg	<0.001 U	<0.0055 U	<0.008 U	<0.0012 U	<0.0011 U	<0.0015 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0011 U	<0.0015 U	<0.00066 U	<0.0014 U	<0.012 U	<0.0079 U
Dibromomethane	74-95-3	NS	NS	mg/kg	<0.0021 U	<0.0055 U	<0.008 U	<0.0024 UJ	<0.0022 U	<0.003 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0022 U	<0.003 UJ	<0.0013 U	<0.0027 U	<0.012 U	<0.0079 U
Dichlorodifluoromethane	75-71-8	NS	NS	mg/kg	<0.01 U	<0.0055 UJ	<0.008 UJ	<0.012 UJ	<0.011 U	<0.015 UJ	<0.0065 UJ	<0.0047 UJ	<0.0087 UJ	<0.011 UJ	<0.015 UJ	<0.0066 UJ	<0.014 UJ	<0.012 UJ	<0.0079 UJ
Diethyl Ether (Ethyl Ether)	60-29-7	NS	NS	mg/kg	<0.0021 UJ	NA	NA	<0.0024 U	<0.0022 U	<0.003 U	NA	NA	NA	<0.0022 U	<0.003 U	<0.0013 U	<0.0027 U	NA	NA
Ethylbenzene	100-41-4	1	41	mg/kg	<0.001 U	<0.0055 U	<0.008 U	<0.0012 U	<0.0011 U	<0.0015 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0011 U	<0.0015 U	<0.00066 U	<0.0014 U	<0.012 U	<0.0079 U
Hexachlorobutadiene	87-68-3	NS	NS	mg/kg	<0.0042 U	<0.0055 UJ	<0.008 U	<0.0049 U	<0.0044 U	<0.006 U	<0.0065 UJ	<0.0047 UJ	<0.0087 UJ	<0.0044 UJ	<0.0061 U	<0.0026 UJ	<0.0054 UJ	<0.012 U	<0.0079 U
Isopropylbenzene (Cumene)	98-82-8	NS	NS	mg/kg	<0.001 U	<0.0055 U	<0.008 U	<0.0012 U	<0.0011 U	<0.0015 U	<0.0065 U	<0.0047 U	0.16 J	<0.0011 U	<0.0015 U	0.00043 J	<0.0014 UJ	<0.012 U	<0.0079 U
M,P-Xylene	179601-23-1	NS	NS	mg/kg	<0.0021 U	<0.011 U	<0.016 U	<0.0024 U	<0.0022 U	<0.003 U	<0.013 U	<0.0094 U	<0.017 U	<0.0022 U	<0.003 U	<0.0013 U	<0.0027 U	<0.024 U	<0.016 U
Methyl Acetate	79-20-9	NS	NS	mg/kg	NA	<0.0055 U	<0.008 U	NA	NA	NA	<0.0065 U	<0.0047 U	<0.0087 U	NA	NA	NA	NA	<0.012 U	<0.0079 U
Methyl Ethyl Ketone (2-Butanone)	78-93-3	0.12	100	mg/kg	<0.01 U	<0.0055 UJ	<0.008 UJ	<0.012 UJ	<0.011 U	<0.015 U	<0.0065 UJ	<0.0047 UJ	<0.0087 UJ	<0.011 U	<0.015 UJ	<0.0066 U	<0.014 U	<0.012 UJ	<0.0079 UJ
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	NS	NS	mg/kg	<0.01 U	<0.0055 UJ	<0.008 UJ	<0.012 UJ	<0.011 UJ	<0.015 U	<0.0065 UJ	<0.0047 UJ	<0.0087 UJ	<0.011 UJ	<0.015 UJ	<0.0066 U	<0.014 U	<0.012 UJ	<0.0079 UJ
Methylcyclohexane	108-87-2	NS	NS	mg/kg	NA	<0.0055 U	<0.008 U	NA	NA	NA	<0.0065 U	<0.0047 U	<0.0087 U	NA	NA	NA	NA	<0.012 U	<0.0079 U
Methylene Chloride	75-09-2	0.05	100	mg/kg	<0.0052 U	<0.011 U	<0.016 U	<0.0061 U	<0.0056 U	<0.0075 U	<0.013 UJ	<0.0094 U	<0.017 U	<0.0055 U	<0.0076 U	<0.0033 U	<0.0068 U	<0.024 UJ	<0.016 UJ
Naphthalene	91-20-3	12	100	mg/kg	<0.0042 U	NA	NA	<0.0049 U	<0.0044 U	<0.006 U	NA	NA	NA	<0.0044 U	<0.0061 U	0.0007 J	<0.0054 UJ	NA	NA
n-Butylbenzene	104-51-8	12	100	mg/kg	<0.001 U	<0.0055 U	<0.008 U	<0.0012 U	<0.0011 U	<0.0015 U	<0.0065 U	<0.0047 U	0.43 J	<0.0011 U	<0.0015 U	0.0017 J	<0.0014 UJ	<0.012 U	<0.0079 U
n-Propylbenzene	103-65-1	3.9	100	mg/kg	<0.001 U	<0.0055 U	<0.008 U	<0.0012 U	<0.0011 U	<0.0015 U	<0.0065 U	<0.0047 U	0.26 J	<0.0011 U	<0.0015 U	0.00093 J	<0.0014 UJ	<0.012 U	<0.0079 U
o-Xylene (1,2-Dimethylbenzene)	95-47-6	NS	NS	mg/kg	<0.001 U	<0.0055 U	<0.008 U	<0.0012 U	<0.0011 U	<0.0015 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0011 U	<0.0015 U	<0.00066 U	<0.0014 U	<0.012 U	<0.0079 U
p-Cymene (p-Isopropyltoluene)	CYMP	NS	NS	mg/kg	NA	<0.0055 U	<0.008 U	NA	NA	NA	<0.0065 U	<0.0047 U	<0.0087 U	NA	NA	NA	NA	<0.012 U	<0.0079 U
Sec-Butylbenzene	135-98-8	11	100	mg/kg	<0.001 U	<0.0055 U	<0.008 U	<0.0012 U	<0.0011 U	<0.0015 U	<0.0065 U	<0.0047 U	0.43 J	<0.0011 U	<0.0015 U	0.0011 J	<0.0014 UJ	<0.012 U	<0.0079 U
Styrene	100-42-5	NS	NS	mg/kg	<0.001 U	<0.0055 U	<0.008 U	<0.0012 U	<0.0011 U	<0.0015 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0011 U	<0.0015 U	<0.00066 UJ	<0.0014 UJ	<0.012 U	<0.0079 U
T-Butylbenzene	98-06-6	5.9	100	mg/kg	<0.0021 U	<0.0055 U	<0.008 U	<0.0024 U	<0.0022 U	<0.003 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0022 U	<0.003 U	0.00013 J	<0.0027 UJ	<0.012 U	<0.0079 U
Tert-Butyl Alcohol	75-65-0	NS	NS	mg/kg	NA	<0.0055 U	<0.008 UJ	NA	NA	NA	<0.0065 U	<0.0047 U	<0.0087 U	NA	NA	NA	NA	<0.012 U	<0.0079 U
Tert-Butyl Methyl Ether	1634-04-4	0.93	100	mg/kg	<0.0021 UJ	<0.0055 U	<0.008 U	<0.0024 U	<0.0022 U	<0.003 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0022 U	<0.003 U	<0.0013 U	<0.0027 U	<0.012 U	<0.0079 U
Tetrachloroethene (PCE)	127-18-4	1.3	19	mg/kg	<0.00052 U	<0.0055 UJ	<0.008 U	<0.00061 U	<0.00056 U	<0.00075 U	<0.0065 U	<0.0047 UJ	<0.0087 UJ	<0.00055 U	<0.00076 U	<0.00033 U	<0.00068 U	<0.012 U	<0.0079 U
Toluene	108-88-3	0.7	100	mg/kg	<0.001 U	<0.0055 U	<0.008 U	<0.0012 U	<0.0011 U	<0.0015 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0011 U	<0.0015 U	<0.00066 U	<0.0014 U	<0.012 U	<0.0079 U
Total 1,2-Dichloroethene (Cis and Trans)	540-59-0	NS	NS	mg/kg	<0.001 U	NA	NA	<0.0012 U	<0.0011 U	<0.0015 U	NA	NA	NA	<0.0011 U	<0.0015 U	<0.00066 U	<0.0014 U	NA	NA
Total Xylenes	1330-20-7	**1.6**	100	mg/kg	<0.001 U	<0.016 U	<0.024 U	<0.0012 U	<0.0011 U	<0.0015 U	<0.019 U	<0.014 U	<0.026 U	<0.0011 U	<0.0015 U	<0.00066 U	<0.0014 U	<0.036 U	<0.024 U
Total, 1,3-Dichloropropene (Cis And Trans)	542-75-6	NS	NS	mg/kg	<0.00052 U	NA	NA	<0.00061 U	<0.00056 U	<0.00075 U	NA	NA	NA	<0.00055 U	<0.00076 U	<0.00033 U	<0.00068 U	NA	NA
Trans-1,2-Dichloroethene	156-60-5	0.19	100	mg/kg	<0.0016 U	<0.0055 U	<0.008 U	<0.0018 U	<0.0017 U	<0.0022 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0017 U	<0.0023 U	<0.00098 U	<0.002 U	<0.012 U	<0.0079 U
Trans-1,3-Dichloropropene	10061-02-6	NS	NS	mg/kg	<0.001 U	<0.0055 U	<0.008 U	<0.0012 U	<0.0011 U	<0.0015 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.0011 U	<0.0015 U	<0.00066 U	<0.0014 U	<0.012 U	<0.0079 U
Trans-1,4-Dichloro-2-Butene	110-57-6	NS	NS	mg/kg	<0.0052 U	NA	NA	<0.0061 U	<0.0056 U	<0.0075 U	NA	NA	NA	<0.0055 U	<0.0076 U	<0.0033 U	<0.0068 U	NA	NA
Trichloroethene (TCE)	79-01-6	0.47	21	mg/kg	<0.00052 U	<0.0055 U	<0.008 U	<0.00061 U	<0.00056 U	<0.00075 U	<0.0065 U	<0.0047 U	<0.0087 U	<0.00055 U	<0.00076 U	<0.00033 U	<0.00068 U	<0.012 U	<0.0079 U
Trichlorofluoromethane	75-69-4	NS	NS	mg/kg	<0.0042 U	<0.0055 UJ	<0.008 UJ	<0.0049 U	<0.0044 U	<0.006 UJ	<0.0065 U	<0.0047 UJ	<0.0087 UJ	<0.0044 U	<0.0061 U	<0.0026 U	<0.0054 U	<0.012 U	<0.0079 U
Vinyl Acetate	108-05-4	NS	NS	mg/kg	<0.01 U	NA	NA	<0.012 U	<0.011 U	<0.015 U	NA	NA	NA	<0.011 U	<0.015 U	<0.0066 UJ	<0.014 UJ	NA	NA
Vinyl Chloride	75-01-4	0.02	0.9	mg/kg	<0.001 U	<0.0055 UJ	<0.008 UJ	<0.0012 U	<0.0011 U	<0.0015 UJ	<0.0065 UJ	<0.0047 UJ	<0.0087 UJ	<0.0011 U	<0.0015 U	<0.00066 U	<0.0014 U	<0.012 U	<0.0079 U

Table 2
Site Management Plan
Confirmation Endpoint Soil Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	EP15	EP16	EP17	EP18	EP19	EP19A	EP20	EP21	EP22	EP23	EP24	EP25	EP25	EP26	EP27
				Sample Name	EP15_EL_0.0	EP16_EL_-3.0	EP17_EL_-1.4	EP18_EL_0.0	EP19_EL_-0.5	EP19A_EL_-0.5	EP20_EL_-1.0	EP21_EL_-3.0	EP22_EL_-5.0	EP23_EL_3	EP24_EL_0.0	EP25_EL_-2	DUP01_101422	EP26_EL_-3.5	EP27_EL_-5.5
				Sample Date	11/07/2023	11/30/2023	11/29/2023	09/01/2022	10/13/2022	10/19/2023	12/05/2023	12/01/2023	11/30/2023	08/19/2022	09/01/2022	10/14/2022	10/14/2022	12/04/2023	12/04/2023
				Sample Elevation	0	-3	-1.4	0	-0.5	-0.5	-1	-3	-5	3	0	-2	-2	-3.5	-5.5
				Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Semi-Volatile Organic Compounds																			
1,2,4,5-Tetrachlorobenzene	95-94-3	NS	NS	mg/kg	<0.2 U	<0.194 U	<0.202 U	<0.18 U	<0.18 U	<0.2 U	<0.178 U	<0.206 U	<0.213 U	<0.17 U	<0.22 U	<0.2 UJ	<0.2 UJ	<0.205 U	<0.212 U
1,2,4-Trichlorobenzene	120-82-1	NS	NS	mg/kg	<0.2 U	NA	NA	<0.18 U	<0.18 U	<0.2 U	NA	NA	NA	<0.17 U	<0.22 U	<0.2 U	<0.2 U	NA	NA
1,2-Dichlorobenzene	95-50-1	1.1	100	mg/kg	<0.2 U	NA	NA	<0.18 U	<0.18 U	<0.2 U	NA	NA	NA	<0.17 U	<0.22 U	<0.2 U	<0.2 U	NA	NA
1,2-Diphenylhydrazine	122-66-7	NS	NS	mg/kg	NA	<0.0969 U	<0.101 U	NA	NA	NA	<0.0889 U	<0.103 U	<0.107 U	NA	NA	NA	NA	<0.103 U	<0.106 U
1,3-Dichlorobenzene	541-73-1	2.4	49	mg/kg	<0.2 U	NA	NA	<0.18 U	<0.18 U	<0.2 U	NA	NA	NA	<0.17 U	<0.22 U	<0.2 U	<0.2 U	NA	NA
1,4-Dichlorobenzene	106-46-7	1.8	13	mg/kg	<0.2 U	NA	NA	<0.18 U	<0.18 U	<0.2 U	NA	NA	NA	<0.17 U	<0.22 U	<0.2 U	<0.2 U	NA	NA
1,4-Dioxane (P-Dioxane)	123-91-1	0.1	13	mg/kg	<0.03 U	<0.0196 U	<0.0196 U	<0.026 U	<0.027 U	<0.029 U	<0.0198 U	<0.0192 U	<0.0198 U	<0.025 U	<0.034 U	<0.029 U	<0.031 U	<0.0198 U	<0.0198 U
2,3,4,6-Tetrachlorophenol	58-90-2	NS	NS	mg/kg	NA	<0.194 U	<0.202 U	NA	NA	NA	<0.178 UJ	<0.206 U	<0.213 U	NA	NA	NA	NA	<0.205 UJ	<0.212 UJ
2,4,5-Trichlorophenol	95-95-4	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 UJ	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
2,4,6-Trichlorophenol	88-06-2	NS	NS	mg/kg	<0.12 U	<0.0969 U	<0.101 U	<0.1 U	<0.11 U	<0.12 U	<0.0889 U	<0.103 U	<0.107 U	<0.1 U	<0.13 U	<0.12 U	<0.12 U	<0.103 U	<0.106 U
2,4-Dichlorophenol	120-83-2	NS	NS	mg/kg	<0.18 U	<0.0969 U	<0.101 U	<0.16 U	<0.16 U	<0.18 U	<0.0889 U	<0.103 U	<0.107 U	<0.15 U	<0.2 U	<0.18 U	<0.18 U	<0.103 U	<0.106 U
2,4-Dimethylphenol	105-67-9	NS	NS	mg/kg	<0.2 U	<0.0969 UJ	<0.101 UJ	<0.18 U	<0.18 U	<0.2 U	<0.0889 UJ	<0.103 UJ	<0.107 UJ	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
2,4-Dinitrophenol	51-28-5	NS	NS	mg/kg	<0.96 UJ	<0.194 UJ	<0.202 UJ	<0.85 UJ	<0.87 UJ	<0.94 U	<0.178 UJ	<0.206 UJ	<0.213 UJ	<0.81 UJ	<1.1 U	<0.94 U	<0.99 U	<0.205 UJ	<0.212 UJ
2,4-Dinitrotoluene	121-14-2	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 UJ	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 UJ	<0.106 UJ
2,6-Dinitrotoluene	606-20-2	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
2-Chloronaphthalene	91-58-7	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
2-Chlorophenol	95-57-8	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
2-Methylnaphthalene	91-57-6	NS	NS	mg/kg	<0.24 U	<0.0969 U	<0.101 U	<0.21 U	<0.22 U	<0.23 U	<0.0889 U	<0.103 U	<0.107 U	<0.2 U	<0.27 U	<0.23 U	<0.25 U	<0.103 U	<0.106 U
2-Methylphenol (o-Cresol)	95-48-7	0.33	100	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
2-Nitroaniline	88-74-4	NS	NS	mg/kg	<0.2 U	<0.194 U	<0.202 U	<0.18 UJ	<0.18 U	<0.2 U	<0.178 UJ	<0.206 U	<0.213 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.205 U	<0.212 U
2-Nitrophenol	88-75-5	NS	NS	mg/kg	<0.43 U	<0.0969 U	<0.101 UJ	<0.38 UJ	<0.39 U	<0.42 U	<0.0889 UJ	<0.103 U	<0.107 U	<0.36 U	<0.48 U	<0.42 U	<0.44 U	<0.103 UJ	<0.106 UJ
3 & 4 Methylphenol (m&p Cresol)	65794-96-9	0.33	100	mg/kg	<0.29 U	<0.0969 U	<0.101 U	<0.25 U	<0.26 U	<0.28 U	<0.0889 U	<0.103 U	<0.107 U	<0.24 U	<0.32 U	<0.28 U	<0.3 U	<0.103 U	<0.106 U
3,3'-Dichlorobenzidine	91-94-1	NS	NS	mg/kg	<0.2 U	<0.0969 UJ	<0.101 UJ	<0.18 U	<0.18 U	<0.2 U	<0.0889 UJ	<0.103 UJ	<0.107 UJ	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
3-Nitroaniline	99-09-2	NS	NS	mg/kg	<0.2 U	<0.194 U	<0.202 UJ	<0.18 UJ	<0.18 U	<0.2 U	<0.178 U	<0.206 U	<0.213 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.205 U	<0.212 U
4,6-Dinitro-2-Methylphenol	534-52-1	NS	NS	mg/kg	<0.52 UJ	<0.194 UJ	<0.202 UJ	<0.46 UJ	<0.47 UJ	<0.51 U	<0.178 UJ	<0.206 UJ	<0.213 UJ	<0.44 UJ	<0.58 U	<0.51 U	<0.54 U	<0.205 UJ	<0.212 UJ
4-Bromophenyl Phenyl Ether	101-55-3	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
4-Chloro-3-Methylphenol	59-50-7	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
4-Chloroaniline	106-47-8	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
4-Chlorophenyl Phenyl Ether	7005-72-3	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
4-Nitroaniline	100-01-6	NS	NS	mg/kg	<0.2 U	<0.194 U	<0.202 U	<0.18 U	<0.18 U	<0.2 U	<0.178 U	<0.206 U	<0.213 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.205 U	<0.212 U
4-Nitrophenol	100-02-7	NS	NS	mg/kg	<0.28 U	<0.194 U	<0.202 UJ	<0.25 UJ	<0.26 U	<0.27 UJ	<0.178 U	<0.206 U	<0.213 U	<0.24 U	<0.31 U	<0.27 U	<0.29 U	<0.205 UJ	<0.212 UJ
Acenaphthene	83-32-9	98	100	mg/kg	<0.16 U	<0.0969 U	<0.101 U	<0.14 U	<0.14 U	<0.16 U	<0.0889 U	<0.103 U	1.34	<0.14 U	<0.18 U	<0.16 U	<0.16 U	<0.103 U	<0.106 U
Acenaphthylene	208-96-8	107	100	mg/kg	<0.16 U	<0.0969 U	<0.101 U	<0.14 U	<0.14 U	<0.16 U	<0.0889 U	<0.103 U	<0.107 U	<0.14 U	<0.18 U	<0.16 U	<0.16 U	<0.103 U	<0.106 U
Acetophenone	98-86-2	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 UJ	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
Aniline (Phenylamine, Aminobenzene)	62-53-3	NS	NS	mg/kg	NA	<0.388 U	<0.406 U	NA	NA	NA	<0.356 U	<0.414 U	<0.427 U	NA	NA	NA	NA	<0.411 U	<0.426 U
Anthracene	120-12-7	1000	100	mg/kg	<0.12 U	<0.0969 U	0.0648 JD	<0.1 U	<0.11 U	<0.12 U	<0.0889 U	<0.103 U	0.606	<0.1 U	0.055 J	0.041 J	0.062 J	<0.103 U	<0.106 U
Atrazine	1912-24-9	NS	NS	mg/kg	NA	<0.0969 U	<0.101 U	NA	NA	NA	<0.0889 U	<0.103 U	<0.107 U	NA	NA	NA	NA	<0.103 U	<0.106 U
Benzaldehyde	100-52-7	NS	NS	mg/kg	NA	<0.0969 U	<0.101 U	NA	NA	NA	<0.0889 U	<0.103 U	<0.107 U	NA	NA	NA	NA	<0.103 U	<0.106 U
Benzidine	92-87-5	NS	NS	mg/kg	NA	<0.388 UJ	<0.406 UJ	NA	NA	NA	<0.356 UJ	<0.414 UJ	<0.427 UJ	NA	NA	NA	NA	<0.411 U	<0.426 U
Benzo(a)anthracene	56-55-3	**1**	1	mg/kg	<0.12 U	<0.0969 U	0.13 D	0.026 J	0.02 J	<0.12 U	<0.0889 U	<0.103 U	<0.107 U	<0.1 U	0.2	0.13	0.18	<0.103 U	<0.106 U
Benzo(a)pyrene	50-32-8	22	1	mg/kg	<0.16 U	<0.0969 UJ	0.114 D	<0.14 U	<0.14 U	<0.16 U	<0.0889 UJ	<0.103 UJ	<0.107 UJ	<0.14 U	0.22	0.12 J	0.16	<0.103 U	<0.106 U
Benzo(b)fluoranthene	205-99-2	1.7	1	mg/kg	<0.12 U	<0.0969 U	0.135 D	<0.1 U	<0.11 U	<0.12 U	<0.0889 U	<0.103 U	<0.107 U	<0.1 U	0.24	0.14	0.18	<0.103 U	<0.106 U
Benzo(g,h,i)Perylene	191-24-2	1000	100	mg/kg	<0.16 U	<0.0969 U	0.0728 JD	<0.14 U	<0.14 U	<0.16 U	<0.0889 U	<0.103 U	<0.107 U	<0.14 U	0.13 J	0.074 J	0.081 J	<0.103 U	<0.106 U
Benzo(k)fluoranthene	207-08-9	1.7	3.9	mg/kg	<0.12 U	<0.0969 U	0.0526 JD	<0.1 U	<0.11 U	<0.12 U	<0.0889 U	<0.103 U	<0.107 U	<0.1 U	0.11 J	0.057 J	0.075 J	<0.103 U	<0.106 U
Benzoic Acid	65-85-0	NS	NS	mg/kg	<0.65 U	<0.0969 UJ	<0.101 U	<0.57 U	NA	<0.63 U	<0.0889 UJ	<0.103 UJ	<0.107 UJ	NA	NA	NA	NA	<0.103 UJ	<0.106 UJ
Benzyl Alcohol	100-51-6	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
Benzyl Butyl Phthalate	85-68-7	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 UJ	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
Biphenyl (Diphenyl)	92-52-4	NS	NS	mg/kg	<0.46 U	<0.0969 U	<0.101 U	<0.4 U	<0.42 U	<0.44 U	<0.0889 U	<0.103 U	<0.107 U	<0.38 U	<0.51 U	<0.45 UJ	<0.47 UJ	<0.103 U	<0.106 U
Bis(2-chloroethoxy) methane	111-91-1	NS	NS	mg/kg	<0.22 U	<0.0969 U	<0.101 U	<0.19 U	<0.2 U	<0.21 U	<0.0889 U	<0.103 U	<0.107 U	<0.18 U	<0.24 U	<0.21 U	<0.22 U	<0.103 U	<0.106 U
Bis(2-chloroethyl) ether (2-chloroethyl ether)	111-44-4	NS	NS	mg/kg	<0.18 U	<0.0969 U	<0.101 U	<0.16 U	<0.16 U	<0.18 U	<0.0889 U	<0.103 U	<0.107 U	<0.15 UJ	<0.2 U	<0.18 U	<0.18 U	<0.103 U	<0.106 U
Bis(2-chloroisopropyl) ether	108-60-1	NS	NS	mg/kg	<0.24 U	<0.0969 U	<0.101 U	<0.21 U	<0.22 UJ	<0.23 UJ	<0.0889 U	<0.103 U	<0.107 U	<0.2 U	<0.27 UJ	<0.23 U	<0.25 U	<0.103 U	<0.106 U
Bis(2-ethylhexyl) phthalate	117-81-7	NS	NS	mg/kg	<0.2 U	<0.0969 UJ	<0.101 UJ	0.07 J	<0.18 U	<0.2 U	<0.0889 UJ	<0.103 UJ	<0.107 UJ	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
Caprolactam	105-60-2	NS	NS	mg/kg	NA	<0.194 U	<0.202 U	NA	NA	NA	<0.178 U	<0.206 U	<0.213 U	NA	NA	NA	NA	<0.205 U	<0.212 U
Carbazole	86-74-8	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
Chrysene	218-01-9	**1**	3.9	mg/kg	<0.12 U	<0.0969 U	0.0907 JD	0.024 J	<0.11 U	<0.12 U	<0.0889 U	<0.103 U	<0.107 U	<0.1 U	0.22	0.12	0.16	<0.103 U	<0.106 U
Dibenz(a,h)anthracene	53-70-3	1000	0.33	mg/kg	<0.12 U	<0.0969 U	<0.101 U	<0.1 U	<0.11 U	<0.12 U	<0.0889 U	<0.103 U	<0.107 U	<0.1 U	0.03 J	<0.12 U	<0.12 U	<0.103 U	<0.106 U
Dibenzofuran	132-64-9	210	59	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
Dibutyl phthalate	84-74-2	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
Diethyl phthalate	84-66-2	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
Dimethyl phthalate	131-11-3	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
Dioctyl phthalate	117-84-0	NS	NS	mg/kg	<0.2 U	<0.0969 UJ	<0.101 UJ	<0.18 UJ	<0.18 U	<0.2 U	<0.0889 UJ	<0.103 UJ	<0.107 UJ	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 UJ	<0.106 UJ
Diphenylamine	122-39-4	NS	NS	mg/kg	NA	<0.194 U	<0.202 U	NA	NA	NA	<0.178 U	<0.206 U	<0.213 U	NA	NA	NA	NA	<0.205 U	<0.212 U
Fluoranthene	206-44-0	1000	100	mg/kg	<0.12 U	<0.0969 U	0.248 D	0.041 J	0.021 J	<0.12 U	<0.0889 U	<0.103 U	0.0895 JD	<0.1 U	0.45	0.22	0.35	<0.103 U	<0.106 U
Fluorene	86-73-7	386	100	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	1.63	<0.17 U	<0.22 U	<0.2 U	0.02 J	<0.103 U	<0.106 U
Hexachlorobenzene	118-74-1	3.2	1.2	mg/kg	<0.12 U	<0.0969 U	<0.101 U	<0.1 U	<0.11 U	<0.12 U	<0.0889 U	<0.103 U	<0.107 U	<0.1 U	<0.13 U	<0.12 UJ	<0.12 UJ	<0.103 U	<0.106 U
Hexachlorobutadiene	87-68-3	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
Hexachlorocyclopentadiene	77-47-4	NS	NS	mg/kg	<0.57 UJ	<0.0969 UJ	<0.101 UJ	<0.5 U	<0.52 U	<0.56 U	<0.0889 UJ	<0.103 UJ	<0.107 UJ	<0.48 UJ	<0.64 UJ	<0.56 UJ	<0.59 UJ	<0.103 UJ	<0.106 UJ
Hexachloroethane	67-72-1	NS	NS	mg/kg	<0.16 U	<0.0969 U	<0.101 U	<0.14 U	<0.14 U	<0.16 U	<0.0889 U	<0.103 U	<0.107 U	<0.14 U	<0.18 U	<0.16 U	<0.16 U	<0.103 U	<0.106 U
Indeno(1,2,3-cd)pyrene	193-39-5	8.2	0.5	mg/kg	<0.16 U	<0.0969 U	0.0882 J	<0.14 U	<0.14 U	<0.16 U	<0.0889 U	<0.103 U	<0.107 U	<0.14 U	0.12 J	0.073 J	0.091 J	<0.103 UJ	<0.106 UJ
Isophorone	78-59-1	NS	NS	mg/kg	<0.18 U	<0.0969 U	<0.101 U	<0.16 U	<0.16 U	<0.18 U	<0.0889 U	<0.103 U	<0.107 U	<0.15 U	<0.2 U	<0.18 U	<0.18 U	<0.103 U	<0.106 U
Naphthalene	91-20-3	12	100	mg/kg	<0.2 U	0.108	0.0753 JD	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
Nitrobenzene	98-95-3	NS	NS	mg/kg	<0.18 U	<0.0969 U	<0.101 U	<0.16 U	<0.16 U	<0.18 U	<0.0889 U	<0.103 U	<0.107 U	<0.15 U	<0.2 U	<0.18 U	<0.18 U	<0.103 U	<0.106 U
n-Nitrosodimethylamine	62-75-9	NS	NS	mg/kg	NA	<0.0969 U	<0.101 U	NA	NA	NA	<0.0889 U	<0.103 U	<0.107 U	NA	NA	NA	NA	<0.103 U	<0.106 U
n-Nitrosodi-N-Propylamine	621-64-7	NS	NS	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 U	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
n-Nitrosodiphenylamine	86-30-6	NS	NS	mg/kg	<0.16 U	<0.0969 U	<0.101 U	<0.14 U	<0.14 U	<0.16 U	<0.0889 U	<0.103 U	<0.107 U	<0.14 U	<0.18 U	<0.16 U	<0.16 U	<0.103 U	<0.106 U
Pentachlorophenol	87-86-5	0.8	6.7	mg/kg	<0.16 UJ	<0.0969 UJ	<0.101 UJ	<0.14 U	<0.14 U	<0.16 U	<0.0889 UJ	<0.103 UJ	<0.107 UJ	<0.14 U	<0.18 U	<0.16 U	<0.16 U	<0.103 UJ	<0.106 UJ
Phenanthrene	85-01-8	1000	100	mg/kg	<0.12 U	<0.0969 U	0.237 D	0.025 J	<0.11 U	<0.12 U	<0.0889 U	<0.103 U	4.75	<0.1 U	0.23	0.12	0.2	<0.103 U	<0.106 U
Phenol	108-95-2	0.33	100	mg/kg	<0.2 U	<0.0969 U	<0.101 U	<0.18 U	<0.18 U	<0.2 UJ	<0.0889 U	<0.103 U	<0.107 U	<0.17 U	<0.22 U	<0.2 U	<0.2 U	<0.103 U	<0.106 U
Pyrene	129-00-0	1000	100	mg/kg	<0.12 U	<0.0969 U	0.212 D	0.04 J	0.022 J	<0.12 U	<0.0889 U	<0.103 U	0.257	<0.1 U	0.44	0.21	0.32	<0.103 U	<0.106 U
Pyridine	110-86-1	NS	NS	mg/kg	NA	<0.388 U	<0.406 UJ	NA	NA	NA	<0.356 U	<0.414 U	<0.427 U	NA	NA	NA	NA	<0.411 UJ	<0.426 UJ

Table 2
Site Management Plan
Confirmation Endpoint Soil Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	EP15	EP16	EP17	EP18	EP19	EP19A	EP20	EP21	EP22	EP23	EP24	EP25	EP25	EP26	EP27
				Sample Name	EP15_EL_0.0	EP16_EL_-3.0	EP17_EL_-1.4	EP18_EL_0.0	EP19_EL_-0.5	EP19A_EL_-0.5	EP20_EL_-1.0	EP21_EL_-3.0	EP22_EL_-5.0	EP23_EL_3	EP24_EL_0.0	EP25_EL_-2	DUP01_101422	EP26_EL_-3.5	EP27_EL_-5.5
				Sample Date	11/07/2023	11/30/2023	11/29/2023	09/01/2022	10/13/2022	10/19/2023	12/05/2023	12/01/2023	11/30/2023	08/19/2022	09/01/2022	10/14/2022	10/14/2022	12/04/2023	12/04/2023
				Sample Elevation	0	-3	-1.4	0	-0.5	-0.5	-1	-3	-5	3	0	-2	-2	-3.5	-5.5
				Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Pesticides																			
4,4'-DDD	72-54-8	14	13	mg/kg	<0.00185 U	<0.00192 U	<0.002 UJ	<0.00171 U	<0.00173 U	<0.00182 UJ	<0.00176 U	<0.00205 U	<0.00212 U	<0.00163 U	<0.00209 U	<0.00183 U	<0.00196 U	<0.00202 UJ	<0.00207 UJ
4,4'-DDE	72-55-9	17	8.9	mg/kg	<0.00185 U	<0.00192 U	<0.002 U	<0.00171 U	<0.00173 U	<0.00182 U	<0.00176 U	<0.00205 U	<0.00212 U	<0.00163 U	<0.00209 U	<0.00183 U	<0.00196 U	<0.00202 UJ	<0.00207 UJ
4,4'-DDT	50-29-3	136	7.9	mg/kg	<0.00185 U	<0.00192 U	<0.002 UJ	<0.00171 U	<0.00173 U	<0.00182 U	<0.00176 U	<0.00205 U	<0.00212 U	<0.00163 U	<0.00209 U	<0.00183 U	<0.00196 U	<0.00202 U	<0.00207 U
Aldrin	309-00-2	0.19	0.097	mg/kg	<0.00185 U	<0.00192 U	<0.002 U	<0.00171 U	<0.00173 U	<0.00182 U	<0.00176 U	<0.00205 U	<0.00212 U	<0.00163 U	<0.00209 U	<0.00183 U	<0.00196 U	<0.00202 UJ	<0.00207 UJ
Alpha BHC (Alpha Hexachlorocyclohexane)	319-84-6	0.02	0.48	mg/kg	<0.000771 U	<0.00192 U	<0.002 U	<0.000713 U	<0.000719 U	<0.000758 U	<0.00176 U	<0.00205 U	<0.00212 U	<0.000678 U	<0.000872 U	<0.000761 U	<0.000815 U	<0.00202 U	<0.00207 U
Alpha Chlordane	5103-71-9	2.9	4.2	mg/kg	<0.00231 U	<0.00192 U	<0.002 U	<0.00214 U	<0.00216 U	<0.00227 U	<0.00176 U	<0.00205 U	<0.00212 U	<0.00203 U	<0.00262 U	<0.00228 U	<0.00244 U	<0.00202 U	<0.00207 U
Alpha Endosulfan	959-98-8	102	24	mg/kg	<0.00185 U	<0.00192 U	<0.002 U	<0.00171 U	<0.00173 U	<0.00182 U	<0.00176 U	<0.00205 U	<0.00212 U	<0.00163 U	<0.00209 U	<0.00183 U	<0.00196 U	<0.00202 UJ	<0.00207 UJ
Beta Bhc (Beta Hexachlorocyclohexane)	319-85-7	0.09	0.36	mg/kg	<0.00185 U	<0.00192 U	<0.002 U	<0.00171 U	<0.00173 U	<0.00182 U	<0.00176 U	<0.00205 U	<0.00212 U	<0.00163 U	<0.00209 U	<0.00183 U	<0.00196 U	<0.00202 U	<0.00207 U
Beta Endosulfan	33213-65-9	102	24	mg/kg	<0.00185 U	<0.00192 U	<0.002 UJ	<0.00171 U	<0.00173 U	<0.00182 U	<0.00176 U	<0.00205 U	<0.00212 U	<0.00163 U	<0.00209 U	<0.00183 U	<0.00196 U	<0.00202 UJ	<0.00207 UJ
Chlordane (alpha and gamma)	57-74-9	NS	NS	mg/kg	<0.0154 U	<0.0385 U	<0.0401 U	<0.0142 U	<0.0144 U	<0.0152 U	<0.0352 U	<0.041 U	<0.0423 U	<0.0136 U	<0.0174 U	<0.0152 U	<0.0163 U	<0.0403 U	<0.0414 U
Delta Bhc (Delta Hexachlorocyclohexane)	319-86-8	0.25	100	mg/kg	<0.00185 U	<0.00192 U	<0.002 U	<0.00171 U	<0.00173 U	<0.00182 U	<0.00176 U	<0.00205 U	<0.00212 U	<0.00163 U	<0.00209 U	<0.00183 U	<0.00196 U	<0.00202 U	<0.00207 U
Dieldrin	60-57-1	0.1	0.2	mg/kg	<0.00116 U	<0.00192 U	<0.002 U	<0.00107 U	<0.00108 U	<0.00114 U	<0.00176 U	<0.00205 U	<0.00212 U	<0.00102 U	<0.00131 U	<0.00114 U	<0.00122 U	<0.00202 U	<0.00207 U
Endosulfan Sulfate	1031-07-8	1000	24	mg/kg	<0.000771 U	<0.00192 U	<0.002 U	<0.000713 U	<0.000719 U	<0.000758 U	<0.00176 U	<0.00205 U	<0.00212 U	<0.000678 U	<0.000872 U	<0.000761 U	<0.000815 U	<0.00202 UJ	<0.00207 UJ
Endrin	72-20-8	0.06	11	mg/kg	<0.000771 U	<0.00192 U	<0.002 U	<0.000713 U	<0.000719 U	<0.000758 U	<0.00176 U	<0.00205 U	<0.00212 U	<0.000678 U	<0.000872 U	<0.000761 U	<0.000815 U	<0.00202 U	<0.00207 U
Endrin Aldehyde	7421-93-4	NS	NS	mg/kg	<0.00231 U	<0.00192 U	<0.002 U	<0.00214 U	<0.00216 U	<0.00227 U	<0.00176 U	<0.00205 U	<0.00212 U	<0.00203 U	<0.00262 U	<0.00228 U	<0.00244 U	<0.00202 UJ	<0.00207 UJ
Endrin Ketone	53494-70-5	NS	NS	mg/kg	<0.00185 U	<0.00192 UJ	<0.002 UJ	<0.00171 U	<0.00173 U	<0.00182 U	<0.00176 U	<0.00205 UJ	<0.00212 UJ	<0.00163 U	<0.00209 U	<0.00183 U	<0.00196 U	<0.00202 U	<0.00207 U
Gamma Bhc (Lindane)	58-89-9	0.1	1.3	mg/kg	<0.000771 U	<0.00192 U	<0.002 U	<0.000713 U	<0.000719 U	<0.000758 U	<0.00176 U	<0.00205 U	<0.00212 U	<0.000678 U	<0.000872 U	<0.000761 U	<0.000815 U	<0.00202 U	<0.00207 U
Gamma Chlordane (Trans)	5103-74-2	NS	NS	mg/kg	<0.00231 U	NA	NA	<0.00214 U	<0.00216 U	<0.00227 U	NA	NA	NA	<0.00203 U	<0.00262 U	<0.00228 U	<0.00244 U	NA	NA
Gamma-Chlordane	5566-34-7	NS	NS	mg/kg	NA	<0.00192 U	<0.002 U	NA	NA	NA	<0.00176 U	<0.00205 U	<0.00212 U	NA	NA	NA	NA	<0.00202 U	<0.00207 U
Heptachlor	76-44-8	0.38	2.1	mg/kg	<0.000925 U	<0.00192 U	<0.002 UJ	<0.000856 U	<0.000863 U	<0.00091 U	<0.00176 U	<0.00205 U	<0.00212 U	<0.000813 U	<0.00105 U	<0.000914 U	<0.000978 U	<0.00202 U	<0.00207 U
Heptachlor Epoxide	1024-57-3	NS	NS	mg/kg	<0.00347 U	<0.00192 U	<0.002 U	<0.00321 U	<0.00324 U	<0.00341 U	<0.00176 U	<0.00205 U	<0.00212 U	<0.00305 U	<0.00392 U	<0.00342 U	<0.00367 U	<0.00202 U	<0.00207 U
Methoxychlor	72-43-5	NS	NS	mg/kg	<0.00347 U	<0.00192 U	<0.002 UJ	<0.00321 U	<0.00324 U	<0.00341 U	<0.00176 U	<0.00205 U	<0.00212 U	<0.00305 U	<0.00392 U	<0.00342 U	<0.00367 U	<0.00202 U	<0.00207 U
Toxaphene	8001-35-2	NS	NS	mg/kg	<0.0347 U	<0.192 U	<0.2 UJ	<0.0321 U	<0.0324 U	<0.0341 U	<0.176 UJ	<0.205 U	<0.212 U	<0.0305 U	<0.0392 U	<0.0342 U	<0.0367 U	<0.202 U	<0.207 U
Herbicides																			
2,4,5-T (Trichlorophenoxyacetic Acid)	93-76-5	NS	NS	mg/kg	<0.197 U	<0.0234 U	<0.0242 UJ	<0.175 U	<0.181 U	<0.197 UJ	<0.0212 UJ	<0.0242 U	<0.0256 U	<0.168 U	<0.222 U	<0.196 U	<0.206 U	<0.0244 UJ	<0.0256 UJ
2,4-D (Dichlorophenoxyacetic Acid)	94-75-7	NS	NS	mg/kg	<0.197 U	<0.0234 U	<0.0242 UJ	<0.175 U	<0.181 U	<0.197 UJ	<0.0212 UJ	<0.0242 U	<0.0256 U	<0.168 U	<0.222 U	<0.196 U	<0.206 U	<0.0244 UJ	<0.0256 UJ
Silvex (2,4,5-Tp)	93-72-1	3.8	100	mg/kg	<0.197 U	<0.0234 UJ	<0.0242 UJ	<0.175 U	<0.181 U	<0.197 U	<0.0212 UJ	<0.0242 UJ	<0.0256 UJ	<0.168 U	<0.222 U	<0.196 U	<0.206 U	<0.0244 UJ	<0.0256 UJ
Polychlorinated Biphenyl																			
PCB-1016 (Aroclor 1016)	12674-11-2	NS	NS	mg/kg	<0.0589 U	<0.0194 U	<0.0202 U	<0.0342 U	<0.0363 U	<0.0561 U	<0.0178 UJ	<0.0207 U	<0.0214 U	<0.0325 U	<0.0451 U	<0.0391 UJ	<0.0392 UJ	<0.0204 U	<0.0209 U
PCB-1221 (Aroclor 1221)	11104-28-2	NS	NS	mg/kg	<0.0589 U	<0.0194 U	<0.0202 U	<0.0342 U	<0.0363 U	<0.0561 U	<0.0178 UJ	<0.0207 U	<0.0214 U	<0.0325 U	<0.0451 U	<0.0391 U	<0.0392 UJ	<0.0204 U	<0.0209 U
PCB-1232 (Aroclor 1232)	11141-16-5	NS	NS	mg/kg	<0.0589 U	<0.0194 U	<0.0202 U	<0.0342 U	<0.0363 U	<0.0561 U	<0.0178 UJ	<0.0207 U	<0.0214 U	<0.0325 U	<0.0451 U	<0.0391 U	<0.0392 UJ	<0.0204 U	<0.0209 U
PCB-1242 (Aroclor 1242)	53469-21-9	NS	NS	mg/kg	<0.0589 U	<0.0194 U	<0.0202 U	<0.0342 U	<0.0363 U	<0.0561 U	<0.0178 UJ	<0.0207 U	<0.0214 U	<0.0325 U	<0.0451 U	<0.0391 U	<0.0392 UJ	<0.0204 U	<0.0209 U
PCB-1248 (Aroclor 1248)	12672-29-6	NS	NS	mg/kg	<0.0589 U	<0.0194 U	<0.0202 U	<0.0342 U	<0.0363 U	<0.0561 U	<0.0178 UJ	<0.0207 U	<0.0214 U	<0.0325 U	<0.0451 U	<0.0391 U	<0.0392 UJ	<0.0204 U	<0.0209 U
PCB-1254 (Aroclor 1254)	11097-69-1	NS	NS	mg/kg	<0.0589 U	<0.0194 U	<0.0202 U	<0.0342 U	<0.0363 U	<0.0561 U	<0.0178 UJ	<0.0207 U	<0.0214 U	<0.0325 U	<0.0451 U	0.0152 J	0.00515 J	<0.0204 U	<0.0209 U
PCB-1260 (Aroclor 1260)	11096-82-5	NS	NS	mg/kg	<0.0589 UJ	<0.0194 U	<0.0202 U	<0.0342 U	<0.0363 U	<0.0561 U	<0.0178 UJ	<0.0207 U	<0.0214 U	<0.0325 U	<0.0451 U	<0.0391 UJ	<0.0392 UJ	<0.0204 U	<0.0209 U
PCB-1262 (Aroclor 1262)	37324-23-5	NS	NS	mg/kg	<0.0589 U	NA	NA	<0.0342 U	<0.0363 U	<0.0561 U	NA	NA	NA	<0.0325 U	<0.0451 U	<0.0391 U	<0.0392 UJ	NA	NA
PCB-1268 (Aroclor 1268)	11100-14-4	NS	NS	mg/kg	<0.0589 U	NA	NA	<0.0342 U	<0.0363 U	<0.0561 U	NA	NA	NA	<0.0325 U	<0.0451 U	<0.0391 U	<0.0392 UJ	NA	NA
Total PCBs	1336-36-3	3.2	1	mg/kg	<0.0589 U	<0.0194 U	<0.0202 U	<0.0342 U	<0.0363 U	<0.0561 U	<0.0178 UJ	<0.0207 U	<0.0214 U	<0.0325 U	<0.0451 U	0.0152 J	0.00515 J	<0.0204 U	<0.0209 U
Metals																			
Aluminum	7429-90-5	NS	NS	mg/kg	2,990	5,280	9,070	2,090	2,100 J	4,800	2,760	7,510	4,280	1,840	2,520	1,890	2,450	4,300	4,210
Antimony	7440-36-0	NS	NS	mg/kg	<4.61 U	<2.44 U	<2.54 U	<4.1 U	<4.16 U	<4.7 U	<2.25 U	<2.6 UJ	<2.68 U	<4.02 U	<5.24 U	<4.72 U	0.855 J	<2.57 UJ	<2.67 UJ
Arsenic	7440-38-2	16	16	mg/kg	1.05	<1.47 U	2.73	5.93	0.858	2.62	<1.35 U	1.78	<1.61 U	0.676 J	1.1	0.717 J	1.67	<1.54 U	<1.6 U
Barium	7440-39-3	820	400	mg/kg	28.4	21.5	76.5	50.6	19 J	65.2	8.26 J	92.1 J	41.4	16.2	32.6	12.8 J	26.5 J	23.6 J	43.4 J
Beryllium	7440-41-7	47	72	mg/kg	0.323 J	<0.049 U	<0.051 UJ	0.156 J	0.158 J	0.308 J	<0.045 U	<0.052 U	<0.054 U	0.113 J	0.147 J	0.179 J	0.17 J	<0.052 U	<0.054 U
Cadmium	7440-43-9	7.5	4.3	mg/kg	<0.923 U	<0.293 U	<0.305 U	0.197 J	0.092 J	<0.94 U	<0.27 U	<0.312 U	<0.322 U	0.113 J	0.335 J	0.349 J	0.699 J	<0.308 U	0.372
Calcium	7440-70-2	NS	NS	mg/kg	1,000	1,370	8,340	11,800	810 J	3,370	1,240	2,470 J	1,690	5,800	6,210	2,800 J	6,470 J	2,110	7,370
Chromium, Hexavalent	18540-29-9	19	110	mg/kg	<0.968 U	<0.587 U	0.682	0.504 J	0.749 J	0.538 J	<0.54 U	<0.623 U	<0.644 U	<0.827 U	<1.09 U	<0.959 U	<0.994 U	<0.617 U	<0.642 U
Chromium, Total	7440-47-3	NS	NS	mg/kg	9.54	**20.3**	**23.5**	6.78	10.6 J	11.8	7.47	16.8	10.6	4.93	7.46	5.51	6.97	11.4	12.2
Chromium, Trivalent	16065-83-1	NS	180	mg/kg	9.54	20.3	22.8	6.28 J	9.85 J	11.3 J	7.47	16.8	10.6	4.9	7.46	5.51	6.97	11.4	12.2
Cobalt	7440-48-4	NS	NS	mg/kg	4.09	4.87	7.18	2.52	1.72	5.07	2.19	6.93	4.65	2.6	3.71	2.34	2.88	6.06	4.8
Copper	7440-50-8	1720	270	mg/kg	7.65	10.4	19.5	10.6	4.9 J	12	24.4	15	12.5	5.45	12.7	10.7 J	28 J	161	51.4 J
Cyanide	57-12-5	40	27	mg/kg	<1.2 U	<0.587 U	<0.609 U	<1 UJ	<1 U	<1.2 U	<0.54 U	<0.623 UJ	<0.644 U	<0.95 UJ	<1.3 UJ	<1.2 UJ	<1.2 UJ	<0.617 U	<0.642 U
Iron	7439-89-6	NS	NS	mg/kg	8,270	7,710	14,300	5,500 J	5,650 J	11,400	5,720	14,000	7,500	4,830	7,240 J	5,360	5,900	9,230	7,920
Lead	7439-92-1	450	400	mg/kg	2.91 J	12.4	31.6 B	27.3	1.64 J	7.99	4.26	6.47	3.85	2.07 J	32	16.3 J	88 J	9.31	75.5 J
Magnesium	7439-95-4	NS	NS	mg/kg	2,350	2,810	3,330	2,900	1,360 J	2,470	1,970	4,080	3,040	2,900	4,510	2,180 J	3,610 J	4,720	2,820
Manganese	7439-96-5	2000	2000	mg/kg	182	60.9	695	196	36 J	327	43.6	174 J	78.1	165	174	57.8 J	116 J	76.1	124
Mercury	7439-97-6	**0.73**	0.81	mg/kg	<0.09 U	0.0619	0.0872	**0.897**	0.125	<0.082 U	0.0726	<0.0374 U	<0.0386 U	<0.065 U	**1.6**	0.55 J	**2.63 J**	<0.037 U	0.323 J
Nickel	7440-02-0	130	310	mg/kg	17.5	24.5	37.7	10.5	7.43	16.3	11.1 J	24.1	26.4	13.1	21.7	13.4	20.5	63.4 J	33.4 J
Potassium	7440-09-7	NS	NS	mg/kg	970	598	1,570	742 J	459 J	1,480	615	2,330	950	454	568 J	370	538	1,000	895
Selenium	7782-49-2	4	180	mg/kg	<1.84 U	<2.44 U	2.77	<1.64 U	<1.67 U	<1.88 U	<2.25 U	<2.6 U	<2.68 U	<1.61 U	<2.09 U	<1.89 U	<1.9 U	<2.57 U	<2.67 U
Silver	7440-22-4	8.3	180	mg/kg	<0.461 U	<0.493 UJ	<0.512 UJ	<0.82 U	<0.833 U	<0.47 U	<0.454 U	<0.524 UJ	<0.541 UJ	<0.805 U	<1.05 U	<0.943 U	0.356 J	<0.518 U	<0.539 U
Sodium	7440-23-5	NS	NS	mg/kg	198	154 J	71.5	160 J	63.5 J	192	131	222 J	165 J	66.3 J	96.6 J	138 J	180 J	287	263
Thallium	7440-28-0	NS	NS	mg/kg	<1.84 U	<2.44 U	<2.54 UJ	<1.64 U	<1.67 U	0.569 J	<2.25 U	<2.6 U	<2.68 U	<1.61 U	<2.09 U	<1.89 U	<1.9 U	<2.57 U	<2.67 U
Vanadium	7440-62-2	NS	NS	mg/kg	11	14.1	21.6	8.24	6.03	14.9	10.5	19.4	11.6	5.47	9.5	9.84	7.95	11.7	11.2
Zinc	7440-66-6	2480	10000	mg/kg	15.3	50.6 J	57.5 J	43.2	7.6	25.8	77.2	41.9 J	26.5 J	9.82	61.2	150 J	450 J	48.5	78.3 J
General Chemistry																			
Solids, Percent	SOLID	NS	NS	Percent	82.6	85.2	82.1	93.2	90.8	83.6	92.5	80.2	77.7	96.7	73.5	83.4	80.5	81	77.9

Table 2
Site Management Plan
Confirmation Endpoint Soil Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	EP15	EP16	EP17	EP18	EP19	EP19A	EP20	EP21	EP22	EP23	EP24	EP25	EP25	EP26	EP27
				Sample Name	EP15_EL_0.0	EP16_EL_-3.0	EP17_EL_-1.4	EP18_EL_0.0	EP19_EL_-0.5	EP19A_EL_-0.5	EP20_EL_-1.0	EP21_EL_-3.0	EP22_EL_-5.0	EP23_EL_3	EP24_EL_0.0	EP25_EL_-2	DUP01_101422	EP26_EL_-3.5	EP27_EL_-5.5
				Sample Date	11/07/2023	11/30/2023	11/29/2023	09/01/2022	10/13/2022	10/19/2023	12/05/2023	12/01/2023	11/30/2023	08/19/2022	09/01/2022	10/14/2022	10/14/2022	12/04/2023	12/04/2023
				Sample Elevation	0	-3	-1.4	0	-0.5	-0.5	-1	-3	-5	3	0	-2	-2	-3.5	-5.5
				Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Perfluorooctanoic acids																			
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	763051-92-9	NS	NS	mg/kg	<0.000798 U	<0.000882 UJ	<0.000921 U	NA	NA	<0.000799 U	<0.000809 UJ	<0.000943 UJ	<0.000958 UJ	NA	NA	NA	NA	<0.00092 UJ	<0.000957 UJ
1h,1h,2h,2h-Perfluorohexanesulfonic Acid (4:2)	757124-72-4	NS	NS	mg/kg	NA	<0.000875 UJ	<0.000914 UJ	NA	NA	NA	<0.000803 UJ	<0.000935 UJ	<0.00095 UJ	NA	NA	NA	NA	<0.000913 UJ	<0.00095 UJ
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	6HPFHXSA	NS	NS	mg/kg	<0.000798 U	NA	NA	NA	NA	<0.000799 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
3:3 FTCA	356-02-5	NS	NS	mg/kg	<0.000997 U	<0.00117 U	NA	NA	NA	<0.000998 U	<0.00107 U	<0.00125 U	<0.00127 U	NA	NA	NA	NA	<0.00122 U	<0.00127 U
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	NS	NS	mg/kg	<0.000798 U	<0.000882 U	<0.000921 U	NA	NA	<0.000799 U	<0.000809 U	<0.000943 U	<0.000958 U	NA	NA	NA	NA	<0.00092 U	<0.000957 U
5:3 FTCA	914637-49-3	NS	NS	mg/kg	<0.00499 U	<0.00583 U	<0.00609 U	NA	NA	<0.00499 U	<0.00535 U	<0.00623 U	<0.00633 U	NA	NA	NA	NA	<0.00608 U	<0.00633 U
7:3 FTCA	812-70-4	NS	NS	mg/kg	<0.00499 U	<0.00583 U	<0.00609 U	NA	NA	<0.00499 U	<0.00535 U	<0.00623 U	<0.00633 U	NA	NA	NA	NA	<0.00608 UJ	<0.00633 UJ
9-Chlorohexadecafluoro-3-Oxanonane-1-Sulfonic Acid	756426-58-1	NS	NS	mg/kg	<0.000798 U	<0.000873 U	<0.000911 U	NA	NA	<0.000799 U	<0.0008 UJ	<0.000933 U	<0.000948 U	NA	NA	NA	NA	<0.00091 U	<0.000947 U
N-ethyl perfluorooctane- sulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	NS	mg/kg	<0.000199 U	<0.000233 U	<0.000244 U	<0.000479 UJ	<0.000521 UJ	<0.0002 U	<0.000214 U	<0.000249 U	<0.000253 U	NA	<0.000593 UJ	<0.000562 UJ	<0.000604 UJ	<0.000243 U	<0.000253 U
N-ethylperfluorooctane sulfonamide	4151-50-2	NS	NS	mg/kg	<0.000199 U	<0.000233 U	<0.000244 U	NA	NA	<0.0002 U	<0.000214 UJ	<0.000249 U	<0.000253 U	NA	NA	NA	NA	<0.000243 UJ	<0.000253 UJ
N-ethylperfluorooctane sulfonamidoe	1691-99-2	NS	NS	mg/kg	<0.00199 U	<0.00233 U	<0.00244 U	NA	NA	<0.002 U	<0.00214 U	<0.00249 U	<0.00253 U	NA	NA	NA	NA	<0.00243 U	<0.00253 U
N-methyl perfluorooctane- sulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	NS	mg/kg	<0.000199 U	<0.000233 U	<0.000244 U	<0.000479 UJ	<0.000521 UJ	<0.0002 U	<0.000214 U	<0.000249 U	<0.000253 U	NA	<0.000593 UJ	<0.000562 UJ	<0.000604 UJ	<0.000243 U	<0.000253 U
N-methylperfluorooctane sulfonamide	31506-32-8	NS	NS	mg/kg	<0.000199 U	<0.000233 U	<0.000244 U	NA	NA	<0.0002 U	<0.000214 U	<0.000249 U	<0.000253 U	NA	NA	NA	NA	<0.000243 U	<0.000253 U
N-methylperfluorooctanesulfonamidol	24448-09-7	NS	NS	mg/kg	<0.00199 U	<0.00233 U	<0.00244 U	NA	NA	<0.002 U	<0.00214 U	<0.00249 U	<0.00253 U	NA	NA	NA	NA	<0.00243 U	<0.00253 U
Nonafluoro-3,6-dioxaheptanoic acid	151772-58-6	NS	NS	mg/kg	<0.000399 U	<0.000467 U	<0.000487 U	NA	NA	<0.000399 UJ	<0.000428 U	<0.000499 U	<0.000507 U	NA	NA	NA	NA	<0.000487 U	<0.000506 U
Perfluoro(2-ethoxyethane)sulfonic acid	113507-82-7	NS	NS	mg/kg	<0.000399 U	<0.000415 U	<0.000434 U	NA	NA	<0.000399 U	<0.000381 U	<0.000444 U	<0.000451 U	NA	NA	NA	NA	<0.000433 U	<0.000451 U
Perfluoro-3-methoxypropanoic acid	377-73-1	NS	NS	mg/kg	<0.000399 U	<0.000467 UJ	<0.000487 UJ	NA	NA	<0.000399 U	<0.000428 U	<0.000499 UJ	<0.000507 UJ	NA	NA	NA	NA	<0.000487 UJ	<0.000506 UJ
Perfluoro-4-methoxybutanoic acid	863090-89-5	NS	NS	mg/kg	<0.000399 U	<0.000467 U	<0.000487 U	NA	NA	<0.000399 U	<0.000428 U	<0.000499 U	<0.000507 U	NA	NA	NA	NA	<0.000487 U	<0.000506 U
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	NS	mg/kg	<0.000199 U	<0.000207 U	<0.000216 U	<0.00024 U	<0.00026 U	<0.0002 U	<0.000189 U	<0.000221 U	<0.000224 U	NA	<0.000296 U	<0.000281 U	<0.000302 U	<0.000215 U	<0.000224 U
Perfluorobutanoic acid (PFBA)	375-22-4	NS	NS	mg/kg	<0.000798 U	<0.000933 U	NA	<0.000479 U	<0.000521 U	<0.000799 U	NA	<0.000998 U	<0.00101 UJ	NA	<0.000593 U	<0.000562 U	<0.000604 U	NA	NA
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	NS	mg/kg	<0.000199 U	<0.000225 U	<0.000235 U	0.00335 J	<0.000521 U	<0.0002 U	<0.000207 U	<0.000241 U	<0.000245 U	NA	<0.000593 UJ	<0.000562 U	<0.000604 U	<0.000235 U	<0.000244 U
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	NS	mg/kg	<0.000199 U	<0.000233 U	<0.000244 U	<0.00024 U	<0.00026 U	<0.0002 U	<0.000214 UJ	<0.000249 U	<0.000253 U	NA	<0.000296 U	<0.000281 U	<0.000302 U	<0.000243 UJ	<0.000253 UJ
Perfluorododecanesulfonic Acid (PFDOS)	79780-39-5	NS	NS	mg/kg	<0.000199 U	<0.000226 U	<0.000236 U	NA	NA	<0.0002 U	<0.000208 U	<0.000242 U	<0.000246 U	NA	NA	NA	NA	<0.000236 U	<0.000246 U
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	NS	mg/kg	<0.000199 U	<0.000233 U	<0.000244 U	<0.000479 U	<0.000521 U	<0.0002 U	<0.000214 U	<0.000249 U	<0.000253 U	NA	<0.000593 U	<0.000562 U	<0.000604 U	<0.000243 U	<0.000253 U
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	NS	mg/kg	<0.000199 U	<0.000233 U	<0.000244 U	<0.000479 U	<0.000521 U	<0.0002 U	<0.000214 U	<0.000249 U	<0.000253 U	NA	<0.000593 U	<0.000562 U	<0.000604 U	<0.000243 U	<0.000253 U
Perfluoroheptanoic acid (PFHpA)	375-85-9	NS	NS	mg/kg	<0.000199 U	<0.000233 U	<0.000244 U	<0.00024 U	<0.00026 U	<0.0002 U	<0.000214 U	<0.000249 U	<0.000253 U	NA	<0.000296 U	<0.000281 U	<0.000302 U	<0.000243 U	<0.000253 U
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	NS	mg/kg	<0.000199 U	<0.000214 U	<0.000223 U	<0.00024 U	<0.00026 U	<0.0002 U	<0.000196 U	<0.000228 U	<0.000232 U	NA	<0.000296 U	<0.000281 U	<0.000302 U	<0.000223 U	<0.000232 U
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	NS	mg/kg	<0.000199 U	<0.000233 U	<0.000244 U	<0.000479 U	<0.000521 U	<0.0002 U	<0.000214 U	<0.000249 U	<0.000253 U	NA	<0.000593 U	<0.000562 U	<0.000604 U	<0.000243 U	<0.000253 U
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	NS	NS	mg/kg	<0.000199 U	<0.000224 U	<0.000234 U	NA	NA	<0.0002 U	<0.000205 U	<0.000239 U	<0.000243 U	NA	NA	NA	NA	<0.000234 U	<0.000243 U
Perfluorononanoic Acid (PFNA)	375-95-1	NS	NS	mg/kg	<0.000199 U	NA	<0.000244 U	<0.00024 UJ	<0.00026 U	<0.0002 U	<0.000214 U	NA	NA	NA	<0.000296 UJ	<0.000281 U	<0.000302 U	<0.000243 U	<0.000253 UJ
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	NS	mg/kg	<0.000199 U	<0.000233 U	<0.000244 U	<0.000479 U	<0.000521 U	<0.0002 U	<0.000214 U	<0.000249 U	<0.000253 U	NA	<0.000593 U	<0.000562 U	<0.000604 U	<0.000243 U	<0.000253 U
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	0.001	0.044	mg/kg	<0.000199 U	<0.000217 U	<0.000227 U	<0.00024 U	<0.00026 U	<0.0002 U	<0.000199 UJ	<0.000232 U	<0.000236 U	NA	<0.000296 U	<0.000281 U	<0.000302 U	<0.000226 U	<0.000236 UJ
Perfluorooctanoic Acid (PFOA)	335-67-1	0.0008	0.033	mg/kg	<0.000199 U	<0.000233 U	<0.000244 U	0.000007 JF	<0.00026 U	<0.0002 U	<0.000214 U	<0.000249 U	<0.000253 U	NA	0.000063 JF	<0.000281 U	<0.000302 U	<0.000243 U	<0.000253 U
Perfluoropentanesulfonic Acid	2706-91-4	NS	NS	mg/kg	<0.000199 U	<0.000219 U	<0.000229 U	NA	NA	<0.0002 U	<0.000201 U	<0.000234 U	<0.000238 U	NA	NA	NA	NA	<0.000229 U	<0.000238 U
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	NS	mg/kg	<0.000399 U	<0.000467 U	NA	<0.000479 U	<0.000521 U	<0.000399 U	<0.000428 U	<0.000499 U	<0.000507 U	NA	<0.000593 U	<0.000562 U	<0.000604 U	<0.000487 U	<0.000506 UJ
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	NS	mg/kg	<0.000199 U	<0.000233 U	<0.000244 U	<0.000479 U	<0.000521 U	<0.0002 U	<0.000214 U	<0.000249 U	<0.000253 U	NA	<0.000593 U	<0.000562 U	<0.000604 U	<0.000243 U	<0.000253 U
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	NS	mg/kg	<0.000199 U	<0.000233 U	<0.000244 U	<0.000479 U	<0.000521 U	<0.0002 U	<0.000214 U	<0.000249 U	<0.000253 U	NA	<0.000593 U	<0.000562 U	<0.000604 U	<0.000243 U	<0.000253 U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	NS	mg/kg	<0.000199 U	<0.000233 U	<0.000244 U	<0.000479 U	<0.000521 U	<0.0002 U	<0.000214 U	<0.000249 U	<0.000253 U	NA	<0.000593 U	<0.000562 U	<0.000604 U	<0.000243 U	<0.000253 U
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2) (8:2FTS)	39108-34-4	NS	NS	mg/kg	<0.000798 U	<0.000896 UJ	<0.000936 UJ	<0.000479 U	<0.000521 UJ	<0.000799 U	<0.000822 UJ	<0.000958 UJ	<0.000973 UJ	NA	<0.000593 U	<0.000562 UJ	<0.000604 UJ	<0.000935 UJ	<0.000972 UJ
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2) (6:2FTS)	27619-97-2	NS	NS	mg/kg	<0.000798 U	<0.000887 UJ	<0.000926 UJ	<0.000479 U	<0.000521 U	<0.000799 U	<0.000813 UJ	<0.000948 UJ	<0.000963 UJ	NA	<0.000593 U	<0.000562 U	<0.000604 U	<0.000925 UJ	<0.000962 UJ
Tetrafluoro-2- (heptafluoropropoxy) propanoic Acid	13252-13-6	NS	NS	mg/kg	<0.000798 U	<0.000933 U	<0.000975 U	NA	NA	<0.000799 U	<0.000856 U	<0.000998 U	<0.00101 U	NA	NA	NA	NA	<0.000974 U	<0.00101 U
Total PFOA and PFOS	TOTPFOAPFOS	NS	NS	mg/kg	NA	NA	NA	0.000007 J	<0.00026 U	NA	NA	NA	NA	NA	0.000063 J	<0.000281 U	<0.000302 U	NA	NA

Table 2
Site Management Plan
Confirmation Endpoint Soil Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	EP27	EP28	EP29	EP30	EP31	EP32	EP33	EP34	EP35	EP36	EP37	EP38	EP39	EP40	EP41
				Sample Name	DUP03_120423	EP28_EL_1	EP29_EL_-1.0	EP30_EL_-0.5	EP31_EL_-3.5	EP32_EL_-5.5	EP33_EL_-0.5	EP34_EL_0	EP35_EL_-2.0	EP36_EL_-2.0	EP37_EL_-3.0	EP38_EL_-6.0	EP39_EL_-0.5	EP40_EL_0	EP41_EL_-1.5
				Sample Date	12/04/2023	08/19/2022	10/12/2022	09/02/2022	12/04/2023	12/04/2023	08/24/2022	08/24/2022	09/01/2022	10/13/2022	10/18/2022	12/05/2023	08/24/2022	08/24/2022	09/01/2022
				Sample Elevation	-5.5	1	-1	-0.5	-3.5	-5.5	-0.5	0	-2	-2	-3	-6	-0.5	0	-1.5
				Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Volatile Organic Compounds																			
1,1,1,2-Tetrachloroethane	630-20-6	NS	NS	mg/kg	<0.013 U	<0.00049 U	<0.00032 U	<0.00063 UJ	<0.0052 U	<0.0056 U	<0.00049 U	<0.00068 U	<0.017 U	<0.00049 U	<0.00084 U	<0.0046 U	<0.00056 U	<0.05 U	<0.039 U
1,1,1-Trichloroethane	71-55-6	0.68	100	mg/kg	<0.013 U	<0.00049 U	<0.00032 U	<0.00063 U	<0.0052 U	<0.0056 U	<0.00049 U	<0.00068 U	<0.017 U	<0.00049 U	<0.00084 U	<0.0046 U	<0.00056 U	<0.05 U	<0.039 U
1,1,2,2-Tetrachloroethane	79-34-5	NS	NS	mg/kg	<0.013 U	<0.00049 U	<0.00032 U	<0.00063 U	<0.0052 U	<0.0056 U	<0.00049 U	<0.00068 U	<0.017 U	<0.00049 U	<0.00084 U	<0.0046 U	<0.00056 U	<0.05 U	<0.039 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	NS	NS	mg/kg	<0.013 U	NA	NA	NA	<0.0052 U	<0.0056 U	NA	NA	NA	NA	NA	<0.0046 U	NA	NA	NA
1,1,2-Trichloroethane	79-00-5	NS	NS	mg/kg	<0.013 U	<0.00098 U	<0.00064 U	<0.0013 UJ	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	<0.0046 U	<0.0011 U	<0.1 U	<0.078 U
1,1-Dichloroethane	75-34-3	0.27	26	mg/kg	<0.013 U	<0.00098 U	<0.00064 U	<0.0013 U	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	<0.0046 U	<0.0011 U	<0.1 U	<0.078 U
1,1-Dichloroethene	75-35-4	0.33	100	mg/kg	<0.013 U	<0.00098 U	<0.00064 U	<0.0013 U	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	<0.0046 UJ	<0.0011 U	<0.1 U	<0.078 U
1,1-Dichloropropene	563-58-6	NS	NS	mg/kg	NA	<0.00049 U	<0.00032 U	<0.00063 U	NA	NA	<0.00049 U	<0.00068 U	<0.017 U	<0.00049 U	<0.00084 U	NA	<0.00056 U	<0.05 U	<0.039 U
1,2,3-Trichlorobenzene	87-61-6	NS	NS	mg/kg	<0.013 U	<0.002 U	<0.0013 U	<0.0025 UJ	<0.0052 U	<0.0056 U	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	<0.0046 U	<0.0022 U	<0.2 U	<0.16 U
1,2,3-Trichloropropane	96-18-4	NS	NS	mg/kg	<0.013 U	<0.002 U	<0.0013 U	<0.0025 U	<0.0052 U	<0.0056 U	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	<0.0046 U	<0.0022 U	<0.2 U	<0.16 U
1,2,4,5-Tetramethylbenzene	95-93-2	NS	NS	mg/kg	NA	<0.002 U	<0.0013 U	<0.0025 UJ	NA	NA	<0.002 U	<0.0027 U	0.038 J	<0.002 U	0.0011 J	NA	<0.0022 U	0.96 J	<0.16 U
1,2,4-Trichlorobenzene	120-82-1	NS	NS	mg/kg	<0.013 U	<0.002 U	<0.0013 U	<0.0025 UJ	<0.0052 U	<0.0056 U	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	<0.0046 U	<0.0022 U	<0.2 U	<0.16 U
1,2,4-Trimethylbenzene	95-63-6	3.6	52	mg/kg	<0.013 U	<0.002 U	<0.0013 U	<0.0025 UJ	<0.0052 U	<0.0056 U	<0.002 U	<0.0027 U	0.056 J	<0.002 U	<0.0034 U	<0.0046 U	<0.0022 U	0.05 J	<0.16 U
1,2-Dibromo-3-Chloropropane	96-12-8	NS	NS	mg/kg	<0.013 U	<0.003 U	<0.0019 U	<0.0038 UJ	<0.0052 U	<0.0056 U	<0.0029 UJ	<0.0041 UJ	<0.1 U	<0.003 U	<0.0051 U	<0.0046 U	<0.0034 UJ	<0.3 U	<0.23 U
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	NS	NS	mg/kg	<0.013 U	<0.00098 U	<0.00064 U	<0.0013 UJ	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	<0.0046 U	<0.0011 U	<0.1 U	<0.078 U
1,2-Dichlorobenzene	95-50-1	1.1	100	mg/kg	<0.013 U	<0.002 U	<0.0013 U	<0.0025 UJ	<0.0052 U	<0.0056 U	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	<0.0046 U	<0.0022 U	<0.2 U	<0.16 U
1,2-Dichloroethane	107-06-2	0.02	3.1	mg/kg	<0.013 U	<0.00098 U	<0.00064 U	<0.0013 UJ	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	<0.0046 U	<0.0011 U	<0.1 UJ	<0.078 U
1,2-Dichloropropane	78-87-5	NS	NS	mg/kg	<0.013 U	<0.00098 U	<0.00064 U	<0.0013 U	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	<0.0046 U	<0.0011 U	<0.1 U	<0.078 U
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	8.4	52	mg/kg	<0.013 U	<0.002 U	<0.0013 U	<0.0025 UJ	<0.0052 U	<0.0056 U	<0.002 U	<0.0027 U	0.032 J	<0.002 U	<0.0034 U	<0.0046 U	<0.0022 U	<0.2 U	<0.16 U
1,3-Dichlorobenzene	541-73-1	2.4	49	mg/kg	<0.013 U	<0.002 U	<0.0013 U	<0.0025 UJ	<0.0052 U	<0.0056 U	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	<0.0046 U	<0.0022 U	<0.2 U	<0.16 U
1,3-Dichloropropane	142-28-9	NS	NS	mg/kg	NA	<0.002 U	<0.0013 U	<0.0025 U	NA	NA	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	NA	<0.0022 U	<0.2 U	<0.16 U
1,4-Dichlorobenzene	106-46-7	1.8	13	mg/kg	<0.013 U	<0.002 U	<0.0013 U	<0.0025 UJ	<0.0052 U	<0.0056 U	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	<0.0046 U	<0.0022 U	<0.2 U	<0.16 U
1,4-Diethyl Benzene	105-05-5	NS	NS	mg/kg	NA	<0.002 U	<0.0013 U	<0.0025 UJ	NA	NA	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	NA	<0.0022 U	0.52 J	<0.16 U
1,4-Dioxane (P-Dioxane)	123-91-1	0.1	13	mg/kg	<0.25 UJ	<0.079 UJ	<0.051 UJ	<0.1 UJ	<0.1 UJ	<0.11 UJ	<0.078 UJ	<0.11 UJ	<2.8 UJ	<0.079 UJ	<0.13 UJ	<0.092 UJ	<0.09 UJ	<8 U	<6.2 UJ
2,2-Dichloropropane	594-20-7	NS	NS	mg/kg	NA	<0.002 U	<0.0013 U	<0.0025 UJ	NA	NA	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	NA	<0.0022 U	<0.2 U	<0.16 U
2-Chlorotoluene	95-49-8	NS	NS	mg/kg	NA	<0.002 U	<0.0013 U	<0.0025 UJ	NA	NA	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	NA	<0.0022 U	<0.2 U	<0.16 U
2-Hexanone (MBK)	591-78-6	NS	NS	mg/kg	<0.013 UJ	<0.0098 U	<0.0064 U	<0.013 U	<0.0052 UJ	<0.0056 UJ	<0.0098 UJ	<0.014 UJ	<0.35 U	<0.0098 U	<0.017 U	<0.0046 UJ	<0.011 UJ	<1 U	<0.78 U
4-Chlorotoluene	106-43-4	NS	NS	mg/kg	NA	<0.002 U	<0.0013 U	<0.0025 UJ	NA	NA	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	NA	<0.0022 U	<0.2 U	<0.16 U
4-Ethyltoluene	622-96-8	NS	NS	mg/kg	NA	<0.002 U	<0.0013 U	<0.0025 UJ	NA	NA	<0.002 U	<0.0027 U	0.026 J	<0.002 U	<0.0034 U	NA	<0.0022 U	0.071 J	<0.16 U
Acetone	67-64-1	**0.05**	100	mg/kg	**0.066 J**	<0.0098 U	0.011	<0.013 U	0.027 J	**0.092 J**	<0.0098 U	0.018	<0.35 U	<0.0098 U	0.017	0.0053 J	<0.011 U	<1 U	<0.78 U
Acrolein	107-02-8	NS	NS	mg/kg	<0.025 UJ	NA	NA	NA	<0.01 UJ	<0.011 UJ	NA	NA	NA	NA	NA	<0.0092 UJ	NA	NA	NA
Acrylonitrile	107-13-1	NS	NS	mg/kg	<0.013 UJ	<0.0039 U	<0.0025 U	<0.0051 U	<0.0052 UJ	<0.0056 UJ	<0.0039 U	<0.0054 U	<0.14 U	<0.0039 U	<0.0067 U	<0.0046 UJ	<0.0045 U	<0.4 U	<0.31 U
Benzene	71-43-2	0.06	4.8	mg/kg	<0.013 U	<0.00049 U	<0.00032 U	<0.00063 U	<0.0052 U	<0.0056 U	<0.00049 U	<0.00068 U	<0.017 U	<0.00049 U	<0.00084 U	<0.0046 U	<0.00056 U	<0.05 U	<0.039 U
Bromobenzene	108-86-1	NS	NS	mg/kg	NA	<0.002 U	<0.0013 U	<0.0025 UJ	NA	NA	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	NA	<0.0022 U	<0.2 U	<0.16 U
Bromochloromethane	74-97-5	NS	NS	mg/kg	<0.013 UJ	<0.002 U	<0.0013 U	<0.0025 UJ	<0.0052 UJ	<0.0056 UJ	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	<0.0046 UJ	<0.0022 U	<0.2 U	<0.16 U
Bromodichloromethane	75-27-4	NS	NS	mg/kg	<0.013 U	<0.00049 U	<0.00032 U	<0.00063 UJ	<0.0052 U	<0.0056 U	<0.00049 UJ	<0.00068 UJ	<0.017 U	<0.00049 U	<0.00084 U	<0.0046 U	<0.00056 UJ	<0.05 U	<0.039 U
Bromoform	75-25-2	NS	NS	mg/kg	<0.013 U	<0.0039 U	<0.0025 U	<0.0051 UJ	<0.0052 U	<0.0056 U	<0.0039 U	<0.0054 U	<0.14 U	<0.0039 U	<0.0067 U	<0.0046 U	<0.0045 U	<0.4 U	<0.31 U
Bromomethane	74-83-9	NS	NS	mg/kg	<0.013 U	<0.002 U	<0.0013 UJ	<0.0025 U	<0.0052 U	<0.0056 U	<0.002 U	<0.0027 U	<0.07 UJ	<0.002 UJ	<0.0034 UJ	<0.0046 U	<0.0022 U	<0.2 U	<0.16 UJ
Carbon Disulfide	75-15-0	NS	NS	mg/kg	<0.013 UJ	<0.0098 U	<0.0064 U	<0.013 U	<0.0052 UJ	<0.0056 UJ	<0.0098 U	<0.014 U	<0.35 U	<0.0098 U	<0.017 U	<0.0046 UJ	<0.011 U	<1 U	<0.78 U
Carbon Tetrachloride	56-23-5	0.76	2.4	mg/kg	<0.013 U	<0.00098 U	<0.00064 U	<0.0013 U	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	<0.0046 U	<0.0011 U	<0.1 UJ	<0.078 U
Chlorobenzene	108-90-7	1.1	100	mg/kg	<0.013 U	<0.00049 U	<0.00032 U	<0.00063 UJ	<0.0052 U	<0.0056 U	<0.00049 U	<0.00068 U	<0.017 U	<0.00049 U	<0.00084 U	<0.0046 U	<0.00056 U	<0.05 U	<0.039 U
Chloroethane	75-00-3	NS	NS	mg/kg	<0.013 U	<0.002 U	<0.0013 UJ	<0.0025 U	<0.0052 U	<0.0056 U	<0.002 U	<0.0027 U	<0.07 UJ	<0.002 UJ	<0.0034 UJ	<0.0046 U	<0.0022 U	<0.2 U	<0.16 UJ
Chloroform	67-66-3	0.37	49	mg/kg	<0.013 U	<0.0015 U	<0.00095 U	<0.0019 UJ	<0.0052 U	<0.0056 U	<0.0015 U	<0.002 U	<0.052 U	<0.0015 U	<0.0025 U	<0.0046 U	<0.0017 U	<0.15 U	<0.12 U
Chloromethane	74-87-3	NS	NS	mg/kg	<0.013 U	<0.0039 U	<0.0025 U	<0.0051 U	<0.0052 U	<0.0056 U	<0.0039 U	<0.0054 U	<0.14 UJ	<0.0039 U	<0.0067 U	<0.0046 U	<0.0045 U	<0.4 U	<0.31 UJ
Cis-1,2-Dichloroethene	156-59-2	0.25	100	mg/kg	<0.013 U	<0.00098 U	<0.00064 U	<0.0013 UJ	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	<0.0046 U	<0.0011 U	<0.1 U	<0.078 U
Cis-1,3-Dichloropropene	10061-01-5	NS	NS	mg/kg	<0.013 U	<0.00049 U	<0.00032 U	<0.00063 UJ	<0.0052 U	<0.0056 U	<0.00049 U	<0.00068 U	<0.017 U	<0.00049 U	<0.00084 U	<0.0046 U	<0.00056 U	<0.05 U	<0.039 U
Cyclohexane	110-82-7	NS	NS	mg/kg	<0.013 U	NA	NA	NA	<0.0052 U	<0.0056 U	NA	NA	NA	NA	NA	<0.0046 U	NA	NA	NA
Cymene	99-87-6	NS	NS	mg/kg	NA	<0.00098 U	<0.00064 U	<0.0013 UJ	NA	NA	<0.00098 U	<0.0014 U	0.0087 J	<0.00098 U	<0.0017 U	NA	<0.0011 U	0.032 J	<0.078 U
Dibromochloromethane	124-48-1	NS	NS	mg/kg	<0.013 U	<0.00098 U	<0.00064 U	<0.0013 UJ	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	<0.0046 U	<0.0011 U	<0.1 U	<0.078 U
Dibromomethane	74-95-3	NS	NS	mg/kg	<0.013 U	<0.002 U	<0.0013 U	<0.0025 UJ	<0.0052 U	<0.0056 U	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	<0.0046 U	<0.0022 U	<0.2 U	<0.16 U
Dichlorodifluoromethane	75-71-8	NS	NS	mg/kg	<0.013 UJ	<0.0098 UJ	<0.0064 UJ	<0.013 UJ	<0.0052 UJ	<0.0056 UJ	<0.0098 U	<0.014 U	<0.35 UJ	<0.0098 U	<0.017 UJ	<0.0046 UJ	<0.011 U	<1 UJ	<0.78 UJ
Diethyl Ether (Ethyl Ether)	60-29-7	NS	NS	mg/kg	NA	<0.002 U	<0.0013 U	<0.0025 U	NA	NA	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	NA	<0.0022 U	<0.2 U	<0.16 U
Ethylbenzene	100-41-4	1	41	mg/kg	<0.013 U	<0.00098 U	<0.00064 U	<0.0013 UJ	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	<0.0046 U	<0.0011 U	0.025 J	<0.078 U
Hexachlorobutadiene	87-68-3	NS	NS	mg/kg	<0.013 U	<0.0039 UJ	<0.0025 U	<0.0051 UJ	<0.0052 U	<0.0056 U	<0.0039 U	<0.0054 U	<0.14 U	<0.0039 U	<0.0067 U	<0.0046 UJ	<0.0045 U	<0.4 U	<0.31 U
Isopropylbenzene (Cumene)	98-82-8	NS	NS	mg/kg	0.022 J	<0.00098 U	<0.00064 U	<0.0013 UJ	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	<0.0046 U	<0.0011 U	0.16 J	<0.078 U
M,P-Xylene	179601-23-1	NS	NS	mg/kg	<0.025 U	<0.002 U	<0.0013 U	<0.0025 UJ	<0.01 U	<0.011 U	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	<0.0092 U	<0.0022 U	0.07 J	<0.16 U
Methyl Acetate	79-20-9	NS	NS	mg/kg	<0.013 U	NA	NA	NA	<0.0052 U	<0.0056 U	NA	NA	NA	NA	NA	<0.0046 U	NA	NA	NA
Methyl Ethyl Ketone (2-Butanone)	78-93-3	0.12	100	mg/kg	<0.013 UJ	<0.0098 U	<0.0064 U	<0.013 UJ	<0.0052 UJ	0.0058 J	<0.0098 UJ	<0.014 UJ	<0.35 U	<0.0098 U	<0.017 U	<0.0046 UJ	<0.011 UJ	<1 UJ	<0.78 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	NS	NS	mg/kg	<0.013 UJ	<0.0098 UJ	<0.0064 UJ	<0.013 UJ	<0.0052 UJ	<0.0056 UJ	<0.0098 UJ	<0.014 UJ	<0.35 U	<0.0098 UJ	<0.017 U	<0.0046 UJ	<0.011 UJ	<1 U	<0.78 U
Methylcyclohexane	108-87-2	NS	NS	mg/kg	0.0068 J	NA	NA	NA	<0.0052 U	<0.0056 U	NA	NA	NA	NA	NA	<0.0046 U	NA	NA	NA
Methylene Chloride	75-09-2	0.05	100	mg/kg	<0.025 UJ	<0.0049 U	<0.0032 U	<0.0063 U	<0.01 UJ	<0.011 UJ	<0.0049 U	<0.0068 U	<0.17 U	<0.0049 U	<0.0084 U	<0.0092 UJ	<0.0056 U	<0.5 U	<0.39 U
Naphthalene	91-20-3	12	100	mg/kg	NA	<0.0039 U	<0.0025 U	<0.0051 UJ	NA	NA	<0.0039 U	<0.0054 U	0.064 J	<0.0039 U	<0.0067 U	NA	<0.0045 U	0.21 J	<0.31 U
n-Butylbenzene	104-51-8	12	100	mg/kg	0.13 J	<0.00098 U	<0.00064 U	<0.0013 UJ	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	0.0078 J	<0.00098 U	<0.0017 U	<0.0046 U	<0.0011 U	0.29 J	<0.078 U
n-Propylbenzene	103-65-1	3.9	100	mg/kg	0.065 J	<0.00098 U	<0.00064 U	<0.0013 UJ	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	<0.0046 U	<0.0011 U	0.24 J	<0.078 U
o-Xylene (1,2-Dimethylbenzene)	95-47-6	NS	NS	mg/kg	<0.013 U	<0.00098 U	<0.00064 U	<0.0013 UJ	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	<0.0046 U	<0.0011 U	<0.1 U	<0.078 U
p-Cymene (p-Isopropyltoluene)	CYMP	NS	NS	mg/kg	<0.013 U	NA	NA	NA	<0.0052 U	<0.0056 U	NA	NA	NA	NA	NA	<0.0046 U	NA	NA	NA
Sec-Butylbenzene	135-98-8	11	100	mg/kg	0.087 J	<0.00098 U	<0.00064 U	<0.0013 UJ	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	0.0051 J	<0.00098 U	<0.0017 U	<0.0046 U	<0.0011 U	0.45 J	<0.078 U
Styrene	100-42-5	NS	NS	mg/kg	<0.013 U	<0.00098 U	<0.00064 U	<0.0013 UJ	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	<0.0046 U	<0.0011 U	0.09 J	<0.078 U
T-Butylbenzene	98-06-6	5.9	100	mg/kg	<0.013 U	<0.002 U	<0.0013 U	<0.0025 UJ	<0.0052 U	<0.0056 U	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	<0.0046 U	<0.0022 U	0.06 J	<0.16 U
Tert-Butyl Alcohol	75-65-0	NS	NS	mg/kg	<0.013 U	NA	NA	NA	<0.0052 U	<0.0056 U	NA	NA	NA	NA	NA	<0.0046 U	NA	NA	NA
Tert-Butyl Methyl Ether	1634-04-4	0.93	100	mg/kg	<0.013 U	<0.002 U	<0.0013 U	<0.0025 U	<0.0052 U	<0.0056 U	<0.002 U	<0.0027 U	<0.07 U	<0.002 U	<0.0034 U	<0.0046 U	<0.0022 U	<0.2 U	<0.16 U
Tetrachloroethene (PCE)	127-18-4	1.3	19	mg/kg	<0.013 U	<0.00049 U	<0.00032 U	<0.00063 UJ	<0.0052 U	<0.0056 U	<0.00049 U	<0.00068 U	<0.017 U	<0.00049 U	<0.00084 U	<0.0046 U	<0.00056 U	<0.05 U	<0.039 U
Toluene	108-88-3	0.7	100	mg/kg	<0.013 U	<0.00098 U	<0.00064 U	<0.0013 U	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	<0.0046 U	<0.0011 U	<0.1 U	<0.078 U
Total 1,2-Dichloroethene (Cis and Trans)	540-59-0	NS	NS	mg/kg	NA	<0.00098 U	<0.00064 U	<0.0013 U	NA	NA	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	NA	<0.0011 U	<0.1 U	<0.078 U
Total Xylenes	1330-20-7	**1.6**	100	mg/kg	<0.038 U	<0.00098 U	<0.00064 U	<0.0013 U	<0.016 U	<0.017 U	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	<0.014 U	<0.0011 U	0.07 J	<0.078 U
Total, 1,3-Dichloropropene (Cis And Trans)	542-75-6	NS	NS	mg/kg	NA	<0.00049 U	<0.00032 U	<0.00063 U	NA	NA	<0.00049 U	<0.00068 U	<0.017 U	<0.00049 U	<0.00084 U	NA	<0.00056 U	<0.05 U	<0.039 U
Trans-1,2-Dichloroethene	156-60-5	0.19	100	mg/kg	<0.013 U	<0.0015 U	<0.00095 U	<0.0019 UJ	<0.0052 U	<0.0056 U	<0.0015 U	<0.002 U	<0.052 U	<0.0015 U	<0.0025 U	<0.0046 U	<0.0017 U	<0.15 U	<0.12 U
Trans-1,3-Dichloropropene	10061-02-6	NS	NS	mg/kg	<0.013 U	<0.00098 U	<0.00064 U	<0.0013 UJ	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	<0.035 U	<0.00098 U	<0.0017 U	<0.0046 U	<0.0011 U	<0.1 U	<0.078 U
Trans-1,4-Dichloro-2-Butene	110-57-6	NS	NS	mg/kg	NA	<0.0049 U	<0.0032 U	<0.0063 U	NA	NA	<0.0049 U	<0.0068 U	<0.17 U	<0.0049 U	<0.0084 U	NA	<0.0056 U	<0.5 U	<0.39 U
Trichloroethene (TCE)	79-01-6	0.47	21	mg/kg	<0.013 U	<0.00049 U	<0.00032 U	<0.00063 U	<0.0052 U	<0.0056 U	<0.00049 U	<0.00068 U	<0.017 U	<0.00049 U	<0.00084 U	<0.0046 U	<0.00056 U	<0.05 U	<0.039 U
Trichlorofluoromethane	75-69-4	NS	NS	mg/kg	<0.013 U	<0.0039 U	<0.0025 U	<0.0051 UJ	<0.0052 U	<0.0056 U	<0.0039 U	<0.0054 U	<0.14 UJ	<0.0039 U	<0.0067 UJ	<0.0046 U	<0.0045 U	<0.4 UJ	<0.31 UJ
Vinyl Acetate	108-05-4	NS	NS	mg/kg	NA	<0.0098 U	<0.0064 U	<0.013 UJ	NA	NA	<0.0098 U	<0.014 U	<0.35 U	<0.0098 U	<0.017 U	NA	<0.011 U	<1 U	<0.78 U
Vinyl Chloride	75-01-4	0.02	0.9	mg/kg	<0.013 U	<0.00098 U	<0.00064 U	<0.0013 U	<0.0052 U	<0.0056 U	<0.00098 U	<0.0014 U	<0.035 UJ	<0.00098 U	<0.0017 UJ	<0.0046 UJ	<0.0011 U	<0.1 U	<0.078 UJ

Table 2
Site Management Plan
Confirmation Endpoint Soil Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	EP27	EP28	EP29	EP30	EP31	EP32	EP33	EP34	EP35	EP36	EP37	EP38	EP39	EP40	EP41
				Sample Name	DUP03_120423	EP28_EL_1	EP29_EL_-1.0	EP30_EL_-0.5	EP31_EL_-3.5	EP32_EL_-5.5	EP33_EL_-0.5	EP34_EL_0	EP35_EL_-2.0	EP36_EL_-2.0	EP37_EL_-3.0	EP38_EL_-6.0	EP39_EL_-0.5	EP40_EL_0	EP41_EL_-1.5
				Sample Date	12/04/2023	08/19/2022	10/12/2022	09/02/2022	12/04/2023	12/04/2023	08/24/2022	08/24/2022	09/01/2022	10/13/2022	10/18/2022	12/05/2023	08/24/2022	08/24/2022	09/01/2022
				Sample Elevation	-5.5	1	-1	-0.5	-3.5	-5.5	-0.5	0	-2	-2	-3	-6	-0.5	0	-1.5
				Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Semi-Volatile Organic Compounds																			
1,2,4,5-Tetrachlorobenzene	95-94-3	NS	NS	mg/kg	<0.202 U	<0.17 U	<0.19 U	<0.17 UJ	<0.186 U	<0.212 U	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.187 U	<0.19 U	<0.21 U	<0.21 U
1,2,4-Trichlorobenzene	120-82-1	NS	NS	mg/kg	NA	<0.17 U	<0.19 U	<0.17 U	NA	NA	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	NA	<0.19 U	<0.21 U	<0.21 U
1,2-Dichlorobenzene	95-50-1	1.1	100	mg/kg	NA	<0.17 U	<0.19 U	<0.17 U	NA	NA	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	NA	<0.19 U	<0.21 U	<0.21 U
1,2-Diphenylhydrazine	122-66-7	NS	NS	mg/kg	<0.101 U	NA	NA	NA	<0.093 U	<0.106 U	NA	NA	NA	NA	NA	<0.0936 U	NA	NA	NA
1,3-Dichlorobenzene	541-73-1	2.4	49	mg/kg	NA	<0.17 U	<0.19 U	<0.17 U	NA	NA	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	NA	<0.19 U	<0.21 U	<0.21 U
1,4-Dichlorobenzene	106-46-7	1.8	13	mg/kg	NA	<0.17 U	<0.19 U	<0.17 U	NA	NA	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	NA	<0.19 U	<0.21 U	<0.21 U
1,4-Dioxane (P-Dioxane)	123-91-1	0.1	13	mg/kg	<0.0187 U	<0.026 U	<0.028 U	<0.026 U	<0.0198 U	<0.0183 U	<0.028 U	<0.028 U	<0.031 U	<0.032 U	<0.031 U	<0.0198 U	<0.029 U	<0.032 U	<0.031 U
2,3,4,6-Tetrachlorophenol	58-90-2	NS	NS	mg/kg	<0.202 UJ	NA	NA	NA	<0.186 UJ	NA	NA	NA	NA	NA	NA	<0.187 UJ	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	NA	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 UJ	<0.19 U	<0.21 U	<0.21 U
2,4,6-Trichlorophenol	88-06-2	NS	NS	mg/kg	<0.101 U	<0.1 U	<0.11 U	<0.1 U	<0.093 U	NA	<0.11 U	<0.11 U	<0.12 U	<0.13 U	<0.12 U	<0.0936 U	<0.12 U	<0.13 U	<0.12 U
2,4-Dichlorophenol	120-83-2	NS	NS	mg/kg	<0.101 U	<0.15 U	<0.17 U	<0.15 U	<0.093 U	<0.106 U	<0.16 U	<0.16 U	<0.18 U	<0.19 U	<0.18 U	<0.0936 U	<0.17 U	<0.19 U	<0.19 U
2,4-Dimethylphenol	105-67-9	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	NA	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 UJ	<0.19 U	<0.21 U	<0.21 U
2,4-Dinitrophenol	51-28-5	NS	NS	mg/kg	<0.202 UJ	<0.82 UJ	<0.91 U	<0.82 UJ	<0.186 UJ	NA	<0.88 UJ	<0.88 UJ	<0.98 UJ	<1 UJ	<0.99 UJ	<0.187 UJ	<0.93 UJ	<1 UJ	<1 U
2,4-Dinitrotoluene	121-14-2	NS	NS	mg/kg	<0.101 UJ	<0.17 U	<0.19 U	<0.17 U	<0.093 UJ	<0.106 U	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 UJ	<0.0936 UJ	<0.19 U	<0.21 U	<0.21 U
2,6-Dinitrotoluene	606-20-2	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	<0.106 U	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	<0.21 U	<0.21 U
2-Chloronaphthalene	91-58-7	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	<0.106 U	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	<0.21 U	<0.21 U
2-Chlorophenol	95-57-8	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	NA	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	<0.21 U	<0.21 U
2-Methylnaphthalene	91-57-6	NS	NS	mg/kg	<0.101 U	<0.2 U	<0.23 U	<0.2 U	<0.093 U	<0.106 U	<0.22 U	<0.22 U	<0.24 U	<0.25 U	<0.25 U	<0.0936 U	0.032 J	0.037 J	<0.25 U
2-Methylphenol (o-Cresol)	95-48-7	0.33	100	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	NA	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	<0.21 U	<0.21 U
2-Nitroaniline	88-74-4	NS	NS	mg/kg	<0.202 U	<0.17 U	<0.19 U	<0.17 U	<0.186 U	<0.212 U	<0.18 UJ	<0.18 UJ	<0.2 UJ	<0.21 U	<0.2 U	<0.187 UJ	<0.19 UJ	<0.21 UJ	<0.21 U
2-Nitrophenol	88-75-5	NS	NS	mg/kg	<0.101 UJ	<0.37 U	<0.41 U	<0.37 U	<0.093 UJ	NA	<0.4 UJ	<0.4 UJ	<0.44 UJ	<0.46 UJ	<0.44 U	<0.0936 UJ	<0.42 UJ	<0.46 UJ	<0.45 U
3 & 4 Methylphenol (m&p Cresol)	65794-96-9	0.33	100	mg/kg	<0.101 U	<0.24 U	<0.27 U	<0.24 U	<0.093 U	NA	<0.26 U	<0.26 U	<0.29 U	<0.3 U	<0.3 U	<0.0936 U	<0.28 U	<0.31 U	<0.3 U
3,3'-Dichlorobenzidine	91-94-1	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	<0.106 U	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 UJ	<0.19 U	<0.21 U	<0.21 U
3-Nitroaniline	99-09-2	NS	NS	mg/kg	<0.202 U	<0.17 U	<0.19 U	<0.17 U	<0.186 U	<0.212 U	<0.18 UJ	<0.18 UJ	<0.2 UJ	<0.21 U	<0.2 UJ	<0.187 U	<0.19 UJ	<0.21 UJ	<0.21 U
4,6-Dinitro-2-Methylphenol	534-52-1	NS	NS	mg/kg	<0.202 UJ	<0.44 UJ	<0.49 U	<0.44 U	<0.186 UJ	NA	<0.48 UJ	<0.48 UJ	<0.53 UJ	<0.55 UJ	<0.53 UJ	<0.187 UJ	<0.5 UJ	<0.55 UJ	<0.54 U
4-Bromophenyl Phenyl Ether	101-55-3	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 UJ	<0.093 U	<0.106 U	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	<0.21 U	<0.21 U
4-Chloro-3-Methylphenol	59-50-7	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	NA	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	<0.21 U	<0.21 U
4-Chloroaniline	106-47-8	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	<0.106 U	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	<0.21 U	<0.21 U
4-Chlorophenyl Phenyl Ether	7005-72-3	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 UJ	<0.093 U	<0.106 U	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	<0.21 U	<0.21 U
4-Nitroaniline	100-01-6	NS	NS	mg/kg	<0.202 U	<0.17 U	<0.19 U	<0.17 U	<0.186 U	<0.212 U	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.187 U	<0.19 U	<0.21 U	<0.21 U
4-Nitrophenol	100-02-7	NS	NS	mg/kg	<0.202 UJ	<0.24 U	<0.26 U	<0.24 U	<0.186 UJ	NA	<0.26 UJ	<0.26 UJ	<0.29 UJ	<0.3 U	<0.29 U	<0.187 U	<0.27 UJ	<0.3 UJ	<0.29 U
Acenaphthene	83-32-9	98	100	mg/kg	0.235 J	<0.14 U	<0.15 U	<0.14 U	<0.093 U	<0.106 U	<0.15 U	0.027 J	<0.16 U	<0.17 U	<0.16 U	0.0965	<0.15 U	0.023 J	<0.17 U
Acenaphthylene	208-96-8	107	100	mg/kg	<0.101 U	<0.14 U	<0.15 U	<0.14 U	<0.093 U	<0.106 U	<0.15 U	0.11 J	<0.16 U	<0.17 U	<0.16 U	<0.0936 U	<0.15 U	<0.17 U	<0.17 U
Acetophenone	98-86-2	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	<0.106 U	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	<0.21 U	<0.21 U
Aniline (Phenylamine, Aminobenzene)	62-53-3	NS	NS	mg/kg	<0.406 U	NA	NA	NA	<0.373 U	<0.425 U	NA	NA	NA	NA	NA	<0.375 U	NA	NA	NA
Anthracene	120-12-7	1000	100	mg/kg	0.184	<0.1 U	<0.11 U	<0.1 U	<0.093 U	<0.106 U	0.1 J	0.16	<0.12 U	<0.13 U	<0.12 U	0.204	<0.12 U	0.047 J	<0.12 U
Atrazine	1912-24-9	NS	NS	mg/kg	<0.101 U	NA	NA	NA	<0.093 U	<0.106 U	NA	NA	NA	NA	NA	<0.0936 U	NA	NA	NA
Benzaldehyde	100-52-7	NS	NS	mg/kg	<0.101 U	NA	NA	NA	<0.093 U	<0.106 U	NA	NA	NA	NA	NA	<0.0936 U	NA	NA	NA
Benzidine	92-87-5	NS	NS	mg/kg	<0.406 U	NA	NA	NA	<0.373 U	<0.425 U	NA	NA	NA	NA	NA	<0.375 UJ	NA	NA	NA
Benzo(a)anthracene	56-55-3	**1**	1	mg/kg	0.151	0.021 J	0.12	0.073 J	0.0483 JD	0.0551 J	0.65	0.63	<0.12 U	<0.13 U	<0.12 U	0.376	<0.12 U	0.16 J	0.043 J
Benzo(a)pyrene	50-32-8	22	1	mg/kg	0.14	<0.14 U	0.12 J	0.063 J	<0.093 U	<0.106 U	0.63	0.55	<0.16 U	<0.17 U	<0.16 U	0.408 J	<0.15 U	0.14 J	<0.17 U
Benzo(b)fluoranthene	205-99-2	1.7	1	mg/kg	0.164	<0.1 U	0.13	0.081 J	0.0468 JD	0.0576 J	0.66	0.69	<0.12 U	<0.13 U	<0.12 U	0.484	<0.12 U	0.18 J	0.049 J
Benzo(g,h,i)Perylene	191-24-2	1000	100	mg/kg	0.0826 JD	<0.14 U	0.065 J	0.04 J	<0.093 U	<0.106 U	0.7	0.4	<0.16 U	<0.17 U	<0.16 U	0.26	<0.15 U	0.094 J	0.025 J
Benzo(k)fluoranthene	207-08-9	1.7	3.9	mg/kg	0.0631 JD	<0.1 U	0.048 J	0.029 J	<0.093 U	<0.106 U	0.23	0.24	<0.12 U	<0.13 U	<0.12 U	0.203	<0.12 U	0.055 J	<0.12 U
Benzoic Acid	65-85-0	NS	NS	mg/kg	<0.101 UJ	NA	<0.61 U	NA	<0.093 UJ	NA	<0.6 U	<0.59 U	<0.66 U	NA	<0.67 UJ	<0.0936 UJ	<0.62 U	<0.69 U	<0.68 U
Benzyl Alcohol	100-51-6	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	NA	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	<0.21 U	<0.21 U
Benzyl Butyl Phthalate	85-68-7	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	<0.106 U	<0.18 U	0.17 J	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	<0.21 U	<0.21 U
Biphenyl (Diphenyl)	92-52-4	NS	NS	mg/kg	<0.101 U	<0.39 U	<0.43 U	<0.39 U	<0.093 U	<0.106 U	<0.42 U	<0.42 U	<0.47 U	<0.48 U	<0.47 U	<0.0936 U	<0.44 U	<0.48 U	<0.48 U
Bis(2-chloroethoxy) methane	111-91-1	NS	NS	mg/kg	<0.101 U	<0.18 U	<0.2 U	<0.18 U	<0.093 U	<0.106 U	<0.2 U	<0.2 U	<0.22 U	<0.23 U	<0.22 U	<0.0936 U	<0.21 U	<0.23 U	<0.22 U
Bis(2-chloroethyl) ether (2-chloroethyl ether)	111-44-4	NS	NS	mg/kg	<0.101 U	<0.15 UJ	<0.17 U	<0.15 U	<0.093 U	<0.106 U	<0.16 U	<0.16 U	<0.18 U	<0.19 U	<0.18 UJ	<0.0936 U	<0.17 U	<0.19 U	<0.19 U
Bis(2-chloroisopropyl) ether	108-60-1	NS	NS	mg/kg	<0.101 U	<0.2 U	<0.23 U	<0.2 U	<0.093 U	<0.106 U	<0.22 U	<0.22 U	<0.24 U	<0.25 UJ	<0.25 U	<0.0936 U	<0.23 U	<0.26 U	<0.25 U
Bis(2-ethylhexyl) phthalate	117-81-7	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	<0.106 U	<0.18 U	0.47	<0.2 U	<0.21 U	<0.2 UJ	<0.0936 UJ	<0.19 U	0.41 J	<0.21 U
Caprolactam	105-60-2	NS	NS	mg/kg	<0.202 U	NA	NA	NA	<0.186 U	<0.212 U	NA	NA	NA	NA	NA	<0.187 U	NA	NA	NA
Carbazole	86-74-8	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	<0.106 U	<0.18 U	0.043 J	<0.2 U	<0.21 U	<0.2 U	0.0763 JD	<0.19 U	<0.21 U	<0.21 U
Chrysene	218-01-9	**1**	3.9	mg/kg	0.118	0.022 J	0.1 J	0.07 J	<0.093 U	<0.106 U	0.64	0.62	<0.12 U	<0.13 U	<0.12 U	0.338	<0.12 U	0.16 J	0.039 J
Dibenz(a,h)anthracene	53-70-3	1000	0.33	mg/kg	<0.101 U	<0.1 U	<0.11 U	<0.1 U	<0.093 U	<0.106 U	0.092 J	0.086 J	<0.12 U	<0.13 U	<0.12 U	0.0614 JD	<0.12 U	0.024 J	<0.12 U
Dibenzofuran	132-64-9	210	59	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	<0.106 U	<0.18 U	0.031 J	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	<0.21 U	<0.21 U
Dibutyl phthalate	84-74-2	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	<0.106 U	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	<0.21 U	<0.21 U
Diethyl phthalate	84-66-2	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	<0.106 U	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	0.026 J	<0.21 U
Dimethyl phthalate	131-11-3	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	<0.106 U	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	<0.21 U	<0.21 U
Dioctyl phthalate	117-84-0	NS	NS	mg/kg	<0.101 UJ	<0.17 U	<0.19 U	<0.17 U	<0.093 UJ	<0.106 U	<0.18 U	<0.18 U	<0.2 UJ	<0.21 U	<0.2 UJ	<0.0936 UJ	<0.19 U	<0.21 U	<0.21 U
Diphenylamine	122-39-4	NS	NS	mg/kg	<0.202 U	NA	NA	NA	<0.186 U	<0.212 U	NA	NA	NA	NA	NA	<0.187 U	NA	NA	NA
Fluoranthene	206-44-0	1000	100	mg/kg	0.332 J	0.031 J	0.22	0.13	0.0885 JD	0.0975 J	0.78	1.4	0.036 J	<0.13 U	<0.12 U	0.839	<0.12 U	0.32 J	0.078 J
Fluorene	86-73-7	386	100	mg/kg	0.311 J	<0.17 U	<0.19 U	<0.17 UJ	<0.093 U	<0.106 U	0.022 J	0.058 J	<0.2 U	<0.21 U	<0.2 U	0.0756 JD	<0.19 U	<0.21 U	<0.21 U
Hexachlorobenzene	118-74-1	3.2	1.2	mg/kg	<0.101 U	<0.1 U	<0.11 U	<0.1 UJ	<0.093 U	<0.106 U	<0.11 U	<0.11 U	<0.12 U	<0.13 U	<0.12 U	<0.0936 U	<0.12 U	<0.13 U	<0.12 U
Hexachlorobutadiene	87-68-3	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	<0.106 U	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	<0.21 U	<0.21 U
Hexachlorocyclopentadiene	77-47-4	NS	NS	mg/kg	<0.101 UJ	<0.49 UJ	<0.54 UJ	<0.49 UJ	<0.093 UJ	<0.106 UJ	<0.52 U	<0.52 U	<0.58 U	<0.6 U	<0.59 U	<0.0936 UJ	<0.55 U	<0.61 U	<0.6 UJ
Hexachloroethane	67-72-1	NS	NS	mg/kg	<0.101 U	<0.14 U	<0.15 U	<0.14 U	<0.093 U	<0.106 U	<0.15 U	<0.15 U	<0.16 U	<0.17 U	<0.16 U	<0.0936 U	<0.15 U	<0.17 U	<0.17 U
Indeno(1,2,3-cd)pyrene	193-39-5	8.2	0.5	mg/kg	0.0931 J	<0.14 U	0.076 J	0.043 J	<0.093 UJ	<0.106 UJ	0.44	0.44	<0.16 U	<0.17 U	<0.16 U	0.323	<0.15 U	0.1 J	<0.17 U
Isophorone	78-59-1	NS	NS	mg/kg	<0.101 U	<0.15 U	<0.17 U	<0.15 U	<0.093 U	<0.106 U	<0.16 U	<0.16 U	<0.18 U	<0.19 U	<0.18 U	<0.0936 U	<0.17 U	<0.19 U	<0.19 U
Naphthalene	91-20-3	12	100	mg/kg	0.0583 JD	<0.17 U	<0.19 U	<0.17 U	<0.093 U	<0.106 U	0.026 J	0.024 J	<0.2 U	<0.21 U	<0.2 U	0.102	0.041 J	0.054 J	<0.21 U
Nitrobenzene	98-95-3	NS	NS	mg/kg	<0.101 U	<0.15 U	<0.17 U	<0.15 U	<0.093 U	<0.106 U	<0.16 UJ	<0.16 UJ	<0.18 U	<0.19 U	<0.18 U	<0.0936 U	<0.17 UJ	<0.19 UJ	<0.19 U
n-Nitrosodimethylamine	62-75-9	NS	NS	mg/kg	<0.101 U	NA	NA	NA	<0.093 U	<0.106 UJ	NA	NA	NA	NA	NA	<0.0936 U	NA	NA	NA
n-Nitrosodi-N-Propylamine	621-64-7	NS	NS	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	<0.106 U	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	<0.21 U	<0.21 U
n-Nitrosodiphenylamine	86-30-6	NS	NS	mg/kg	<0.101 U	<0.14 U	<0.15 U	<0.14 U	<0.093 U	<0.106 U	<0.15 U	<0.15 U	<0.16 U	<0.17 U	<0.16 U	<0.0936 U	<0.15 U	<0.17 U	<0.17 U
Pentachlorophenol	87-86-5	0.8	6.7	mg/kg	<0.101 UJ	<0.14 U	<0.15 U	<0.14 UJ	<0.093 UJ	NA	<0.15 U	<0.15 U	<0.16 U	<0.17 UJ	<0.16 UJ	<0.0936 UJ	<0.15 U	<0.17 U	<0.17 U
Phenanthrene	85-01-8	1000	100	mg/kg	0.748 J	<0.1 U	0.15	0.083 J	0.0699 JD	0.0619 J	0.28	0.95	0.028 J	<0.13 U	<0.12 U	0.691	<0.12 U	0.13 J	0.052 J
Phenol	108-95-2	0.33	100	mg/kg	<0.101 U	<0.17 U	<0.19 U	<0.17 U	<0.093 U	NA	<0.18 U	<0.18 U	<0.2 U	<0.21 U	<0.2 U	<0.0936 U	<0.19 U	<0.21 U	<0.21 U
Pyrene	129-00-0	1000	100	mg/kg	0.3 J	0.03 J	0.2	0.12	0.0729 JD	0.0873 J	0.97	1.1	0.036 J	0.023 J	0.021 J	0.72	<0.12 U	0.3 J	0.075 J
Pyridine	110-86-1	NS	NS	mg/kg	<0.406 UJ	NA	NA	NA	<0.373 UJ	<0.425 UJ	NA	NA	NA	NA	NA	<0.375 U	NA	NA	NA

Table 2
Site Management Plan
Confirmation Endpoint Soil Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	EP27	EP28	EP29	EP30	EP31	EP32	EP33	EP34	EP35	EP36	EP37	EP38	EP39	EP40	EP41
				Sample Name	DUP03_120423	EP28_EL_1	EP29_EL_-1.0	EP30_EL_-0.5	EP31_EL_-3.5	EP32_EL_-5.5	EP33_EL_-0.5	EP34_EL_0	EP35_EL_-2.0	EP36_EL_-2.0	EP37_EL_-3.0	EP38_EL_-6.0	EP39_EL_-0.5	EP40_EL_0	EP41_EL_-1.5
				Sample Date	12/04/2023	08/19/2022	10/12/2022	09/02/2022	12/04/2023	12/04/2023	08/24/2022	08/24/2022	09/01/2022	10/13/2022	10/18/2022	12/05/2023	08/24/2022	08/24/2022	09/01/2022
				Sample Elevation	-5.5	1	-1	-0.5	-3.5	-5.5	-0.5	0	-2	-2	-3	-6	-0.5	0	-1.5
				Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Pesticides																			
4,4'-DDD	72-54-8	14	13	mg/kg	<0.00202 UJ	<0.00164 U	<0.00181 U	<0.00164 U	<0.00188 UJ	<0.00212 UJ	<0.00172 U	0.00192	<0.00199 U	<0.00196 U	<0.00195 U	<0.00182 U	<0.00182 U	<0.00192 UJ	<0.00194 U
4,4'-DDE	72-55-9	17	8.9	mg/kg	<0.00202 UJ	0.000513 J	<0.00181 U	<0.00164 U	<0.00188 UJ	<0.00212 UJ	<0.00172 U	0.00246 J	<0.00199 U	<0.00196 U	<0.00195 U	<0.00182 U	<0.00182 U	<0.00192 UJ	<0.00194 U
4,4'-DDT	50-29-3	136	7.9	mg/kg	<0.00202 U	<0.00164 U	<0.00181 U	<0.00164 U	<0.00188 U	<0.00212 U	<0.00172 U	<0.00171 U	<0.00199 U	0.00159 J	<0.00195 U	<0.00182 U	<0.00182 U	<0.00192 UJ	<0.00194 U
Aldrin	309-00-2	0.19	0.097	mg/kg	<0.00202 UJ	<0.00164 U	<0.00181 U	<0.00164 U	<0.00188 UJ	<0.00212 UJ	<0.00172 U	<0.00171 U	<0.00199 U	<0.00196 U	<0.00195 U	<0.00182 U	<0.00182 U	<0.00192 UJ	<0.00194 U
Alpha BHC (Alpha Hexachlorocyclohexane)	319-84-6	0.02	0.48	mg/kg	<0.00202 U	<0.000685 U	<0.000754 U	<0.000686 U	<0.00188 U	<0.00212 U	<0.000716 U	<0.000714 U	<0.000829 U	<0.000817 U	<0.000814 U	<0.00182 U	<0.000758 U	<0.000802 UJ	<0.000809 U
Alpha Chlordane	5103-71-9	2.9	4.2	mg/kg	<0.00202 U	<0.00206 U	<0.00226 U	<0.00206 U	<0.00188 U	<0.00212 U	0.00105 J	0.00418	<0.00249 U	<0.00245 U	<0.00244 U	0.00423	<0.00228 U	0.003 J	<0.00243 U
Alpha Endosulfan	959-98-8	102	24	mg/kg	<0.00202 UJ	<0.00164 U	<0.00181 U	<0.00164 U	<0.00188 UJ	<0.00212 UJ	<0.00172 U	<0.00171 U	<0.00199 U	<0.00196 U	<0.00195 U	<0.00182 U	<0.00182 U	<0.00192 UJ	<0.00194 U
Beta Bhc (Beta Hexachlorocyclohexane)	319-85-7	0.09	0.36	mg/kg	<0.00202 U	<0.00164 U	<0.00181 U	<0.00164 U	<0.00188 U	<0.00212 U	<0.00172 U	<0.00171 U	<0.00199 U	<0.00196 U	<0.00195 U	<0.00182 U	<0.00182 U	<0.00192 UJ	<0.00194 U
Beta Endosulfan	33213-65-9	102	24	mg/kg	<0.00202 UJ	<0.00164 U	<0.00181 U	<0.00164 U	<0.00188 UJ	<0.00212 UJ	<0.00172 U	<0.00171 U	<0.00199 U	<0.00196 U	<0.00195 U	<0.00182 U	<0.00182 U	<0.00192 UJ	<0.00194 U
Chlordane (alpha and gamma)	57-74-9	NS	NS	mg/kg	<0.0403 U	<0.0137 U	<0.0151 U	<0.0137 U	<0.0375 U	<0.0424 U	<0.0143 U	<0.0143 U	<0.0166 U	<0.0163 U	<0.0163 U	0.0409	<0.0152 U	<0.016 UJ	<0.0162 U
Delta Bhc (Delta Hexachlorocyclohexane)	319-86-8	0.25	100	mg/kg	<0.00202 U	<0.00164 U	<0.00181 U	<0.00164 U	<0.00188 U	<0.00212 U	<0.00172 U	<0.00171 U	<0.00199 U	<0.00196 U	<0.00195 U	<0.00182 U	<0.00182 U	<0.00192 UJ	<0.00194 U
Dieldrin	60-57-1	0.1	0.2	mg/kg	<0.00202 U	<0.00103 U	<0.00113 U	0.000631 J	<0.00188 U	<0.00212 U	<0.00107 U	<0.00107 U	<0.00124 U	<0.00122 U	<0.00122 U	<0.00182 U	<0.00114 U	<0.0012 UJ	<0.00121 U
Endosulfan Sulfate	1031-07-8	1000	24	mg/kg	<0.00202 UJ	<0.000685 U	<0.000754 U	<0.000686 U	<0.00188 UJ	<0.00212 UJ	<0.000716 U	<0.000714 U	<0.000829 U	<0.000817 U	<0.000814 U	<0.00182 U	<0.000758 U	<0.000802 UJ	<0.000809 U
Endrin	72-20-8	0.06	11	mg/kg	<0.00202 U	<0.000685 U	<0.000754 U	<0.000686 U	<0.00188 U	<0.00212 U	<0.000716 U	<0.000714 U	<0.000829 U	<0.000817 U	<0.000814 U	<0.00182 U	<0.000758 U	<0.000802 UJ	<0.000809 U
Endrin Aldehyde	7421-93-4	NS	NS	mg/kg	<0.00202 UJ	<0.00206 U	<0.00226 U	<0.00206 U	<0.00188 UJ	<0.00212 UJ	<0.00215 U	<0.00214 U	<0.00249 U	<0.00245 U	<0.00244 U	<0.00182 U	<0.00228 U	<0.00241 UJ	<0.00243 U
Endrin Ketone	53494-70-5	NS	NS	mg/kg	<0.00202 U	<0.00164 U	<0.00181 U	<0.00164 U	<0.00188 U	<0.00212 U	<0.00172 U	<0.00171 U	<0.00199 U	<0.00196 U	<0.00195 U	<0.00182 U	<0.00182 U	<0.00192 UJ	<0.00194 U
Gamma Bhc (Lindane)	58-89-9	0.1	1.3	mg/kg	<0.00202 U	<0.000685 U	<0.000754 U	<0.000686 U	<0.00188 U	<0.00212 U	<0.000716 U	<0.000714 U	<0.000829 U	<0.000817 U	<0.000814 U	<0.00182 U	<0.000758 U	<0.000802 UJ	<0.000809 U
Gamma Chlordane (Trans)	5103-74-2	NS	NS	mg/kg	NA	<0.00206 U	<0.00226 U	<0.00206 U	NA	NA	0.00156 J	0.00358 J	<0.00249 U	<0.00245 U	<0.00244 U	NA	<0.00228 U	<0.00241 UJ	<0.00243 U
Gamma-Chlordane	5566-34-7	NS	NS	mg/kg	<0.00202 U	NA	NA	NA	<0.00188 U	<0.00212 U	NA	NA	NA	NA	NA	0.00573	NA	NA	NA
Heptachlor	76-44-8	0.38	2.1	mg/kg	<0.00202 U	<0.000822 U	<0.000904 U	<0.000823 U	<0.00188 U	<0.00212 U	<0.00086 U	<0.000857 U	<0.000995 U	<0.00098 U	<0.000977 U	<0.00182 U	<0.00091 U	<0.000963 UJ	<0.000971 U
Heptachlor Epoxide	1024-57-3	NS	NS	mg/kg	<0.00202 U	<0.00308 U	<0.00339 U	<0.00308 U	<0.00188 U	<0.00212 U	<0.00322 U	<0.00321 U	<0.00373 U	<0.00368 U	<0.00366 U	<0.00182 U	<0.00341 U	<0.00361 UJ	<0.00364 U
Methoxychlor	72-43-5	NS	NS	mg/kg	<0.00202 U	<0.00308 U	<0.00339 U	<0.00308 U	<0.00188 U	<0.00212 U	<0.00322 U	<0.00321 U	<0.00373 U	<0.00368 U	<0.00366 U	<0.00182 U	<0.00341 U	<0.00361 UJ	<0.00364 U
Toxaphene	8001-35-2	NS	NS	mg/kg	<0.202 U	<0.0308 U	<0.0339 U	<0.0308 U	<0.188 U	<0.212 U	<0.0322 U	<0.0321 U	<0.0373 U	<0.0368 U	<0.0366 U	<0.182 UJ	<0.0341 U	<0.0361 UJ	<0.0364 U
Herbicides																			
2,4,5-T (Trichlorophenoxyacetic Acid)	93-76-5	NS	NS	mg/kg	<0.0246 UJ	<0.168 U	<0.189 U	<0.133 U	<0.0228 UJ	<0.0252 UJ	<0.184 U	<0.179 U	<0.208 U	<0.212 U	<0.202 U	<0.0224 UJ	<0.189 U	<0.21 U	<0.211 U
2,4-D (Dichlorophenoxyacetic Acid)	94-75-7	NS	NS	mg/kg	<0.0246 UJ	<0.168 U	<0.189 U	<0.133 U	<0.0228 UJ	<0.0252 UJ	<0.184 U	<0.179 U	<0.208 U	<0.212 U	<0.202 U	<0.0224 UJ	<0.189 U	<0.21 U	<0.211 U
Silvex (2,4,5-Tp)	93-72-1	3.8	100	mg/kg	<0.0246 UJ	<0.168 U	<0.189 U	<0.133 U	<0.0228 UJ	<0.0252 UJ	<0.184 U	<0.179 U	<0.208 U	<0.212 U	<0.202 U	<0.0224 UJ	<0.189 U	<0.21 U	<0.211 U
Polychlorinated Biphenyl																			
PCB-1016 (Aroclor 1016)	12674-11-2	NS	NS	mg/kg	<0.0204 U	<0.0325 U	<0.0367 U	<0.0341 U	<0.019 U	<0.0214 UJ	<0.0358 U	<0.0367 U	<0.0416 U	<0.0417 U	<0.0412 U	<0.0183 UJ	<0.0383 U	<0.0419 U	<0.0415 U
PCB-1221 (Aroclor 1221)	11104-28-2	NS	NS	mg/kg	<0.0204 U	<0.0325 U	<0.0367 U	<0.0341 U	<0.019 U	<0.0214 UJ	<0.0358 U	<0.0367 U	<0.0416 U	<0.0417 U	<0.0412 U	<0.0183 UJ	<0.0383 U	<0.0419 U	<0.0415 U
PCB-1232 (Aroclor 1232)	11141-16-5	NS	NS	mg/kg	<0.0204 U	<0.0325 U	<0.0367 U	<0.0341 U	<0.019 U	<0.0214 UJ	<0.0358 U	<0.0367 U	<0.0416 U	<0.0417 U	<0.0412 U	<0.0183 UJ	<0.0383 U	<0.0419 U	<0.0415 U
PCB-1242 (Aroclor 1242)	53469-21-9	NS	NS	mg/kg	<0.0204 U	<0.0325 U	<0.0367 U	<0.0341 U	<0.019 U	<0.0214 UJ	<0.0358 U	0.067	<0.0416 U	<0.0417 U	<0.0412 U	<0.0183 UJ	<0.0383 U	0.0327 J	0.0515
PCB-1248 (Aroclor 1248)	12672-29-6	NS	NS	mg/kg	<0.0204 U	<0.0325 U	<0.0367 U	<0.0341 U	<0.019 U	<0.0214 UJ	<0.0358 U	<0.0367 U	<0.0416 U	<0.0417 U	<0.0412 U	<0.0183 UJ	<0.0383 U	<0.0419 U	<0.0415 U
PCB-1254 (Aroclor 1254)	11097-69-1	NS	NS	mg/kg	<0.0204 U	<0.0325 U	<0.0367 U	<0.0341 U	<0.019 U	<0.0214 UJ	0.0228 J	0.151	0.0117 J	<0.0417 U	0.00736 J	<0.0183 UJ	0.00822 J	0.0522	0.0571
PCB-1260 (Aroclor 1260)	11096-82-5	NS	NS	mg/kg	<0.0204 U	<0.0325 U	<0.0367 U	<0.0341 U	<0.019 U	<0.0214 UJ	0.0172 J	0.037	<0.0416 U	<0.0417 U	<0.0412 U	<0.0183 UJ	<0.0383 U	<0.0419 U	<0.0415 U
PCB-1262 (Aroclor 1262)	37324-23-5	NS	NS	mg/kg	NA	<0.0325 U	<0.0367 U	<0.0341 U	NA	NA	<0.0358 U	<0.0367 U	<0.0416 U	<0.0417 U	<0.0412 U	NA	<0.0383 U	<0.0419 U	<0.0415 U
PCB-1268 (Aroclor 1268)	11100-14-4	NS	NS	mg/kg	NA	<0.0325 U	<0.0367 U	<0.0341 U	NA	NA	<0.0358 U	<0.0367 U	<0.0416 U	<0.0417 U	<0.0412 U	NA	<0.0383 U	<0.0419 U	<0.0415 U
Total PCBs	1336-36-3	3.2	1	mg/kg	<0.0204 U	<0.0325 U	<0.0367 U	<0.0341 U	<0.019 U	<0.0214 UJ	0.04 J	0.255	0.0117 J	<0.0417 U	0.00736 J	<0.0183 UJ	0.00822 J	0.0849 J	0.109
Metals																			
Aluminum	7429-90-5	NS	NS	mg/kg	5,840	1,760	2,790	1,800 J	3,270	6,790	1,960	2,700	2,160	2,930	3,000	10,700	2,450	2,660	2,160
Antimony	7440-36-0	NS	NS	mg/kg	3.04 J	<3.99 U	0.745 J	<4.09 U	<2.38 UJ	3.44 J	<4.29 U	<4.18 U	<4.93 U	<4.96 U	<4.96 U	3.85 J	<4.48 U	<4.88 U	<4.95 U
Arsenic	7440-38-2	16	16	mg/kg	<1.54 U	0.919	0.958	0.687 J	<1.43 U	4.76	0.927	2.58	1.31	10.5	1	<1.41 U	1.72	1.64	1.71 J
Barium	7440-39-3	820	400	mg/kg	37.6 J	23.7	19.6	7.12 J	21.1	87	25.9	41.7	17.1	11.8	15.5	82 J	12	38.1	17.9
Beryllium	7440-41-7	47	72	mg/kg	<0.052 U	0.104 J	0.162 J	0.327 J	0.057	<0.054 U	0.146 J	0.176 J	0.148 J	0.215 J	0.226 J	<0.047 U	0.179 J	0.185 J	0.148 J
Cadmium	7440-43-9	7.5	4.3	mg/kg	<0.309 U	0.136 J	<0.877 U	0.229 J	<0.285 U	0.5	0.309 J	0.485 J	0.325 J	0.145 J	<0.992 U	<0.282 U	0.278 J	0.332 J	0.228 J
Calcium	7440-70-2	NS	NS	mg/kg	4,800	4,970	2,080	664 J	3,550	21,800	1,750	13,000	4,010	773	947	4,740	2,030	5,530	1,870 J
Chromium, Hexavalent	18540-29-9	19	110	mg/kg	<0.617 U	<0.831 U	<0.92 U	0.169 J	<0.571 U	2.47	<0.896 U	<0.883 U	<1.01 U	<1.02 U	1.61	<0.563 U	<0.936 U	<1.02 U	<1.02 U
Chromium, Total	7440-47-3	NS	NS	mg/kg	18	5.23	6.33	5.8 J	13.3	**28.8**	5.88	8.75	6.2	7.26	**84**	**19.4**	7.67	8.44	6.18
Chromium, Trivalent	16065-83-1	NS	180	mg/kg	18	5.2	6.33	5.63 J	13.3	26.3	5.9	8.8	6.2	7.26	82.4	19.4	7.7	8.4	6.2
Cobalt	7440-48-4	NS	NS	mg/kg	6.73	2.56	2.24	1.68 J	7.16	6.61	2.54	3.65	2.76	2.9	4.16	10.3	3.46	3.62	3.19
Copper	7440-50-8	1720	270	mg/kg	116 J	14.6	14.6	29.3 J	14.8	456	17	40.8	11.4	132	11.4	39.2	16.5	20.4	9.84
Cyanide	57-12-5	40	27	mg/kg	<0.617 U	<0.99 UJ	<1.1 U	<1 UJ	<0.571 U	<0.644 U	<1.1 UJ	<1 UJ	<1.2 UJ	<1.2 U	<1.2 UJ	<0.563 U	<1.1 UJ	<1.3 UJ	<1.2 UJ
Iron	7439-89-6	NS	NS	mg/kg	11,100	4,920	6,350	4,590 J	7,930	14,700	4,840	8,180	5,430 J	7,070	7,870	18,300	6,900	7,270	6,200
Lead	7439-92-1	450	400	mg/kg	25 J	10.3	11.5	13.3 J	7.54	95.1 J	75.8	57.8	11.6	3.05 J	3.53 J	28.5	40.3	42.1	14.7
Magnesium	7439-95-4	NS	NS	mg/kg	4,070	2,720	2,320	1,110 J	6,440 J	4,130 J	1,280	2,810	1,760	1,990	2,710	4,520	2,280	2,520	1,990
Manganese	7439-96-5	2000	2000	mg/kg	182	188	63.1	30.9 J	138	190 J	57.6	185	60.7	59.4	53.7	285	127	240	119 J
Mercury	7439-97-6	**0.73**	0.81	mg/kg	0.192 J	**1.85**	0.268	**0.767 J**	0.0712	0.097	0.704	**1.84**	0.72	0.065 J	<0.079 U	0.0632	0.364	0.628	0.072 J
Nickel	7440-02-0	130	310	mg/kg	53.9 J	14.4	12.7	16.3 J	61.1	44.6	12.4	14.6	15.1	40	29.1	17.9 J	21.4	16	13.4
Potassium	7440-09-7	NS	NS	mg/kg	1,210	487	681	384 J	754	1,430	485	723	509 J	774	710	2,550	627	650	596
Selenium	7782-49-2	4	180	mg/kg	<2.57 U	<1.6 U	<1.75 U	<1.64 UJ	2.46 J	<2.68 UJ	1.32 J	<1.67 U	<1.97 U	<1.98 U	<1.98 U	<2.35 U	<1.79 U	<1.95 U	<1.98 U
Silver	7440-22-4	8.3	180	mg/kg	<0.519 U	<0.799 U	<0.877 U	0.687 J	<0.479 U	<0.541 UJ	<0.859 U	0.368 J	<0.986 U	<0.992 U	<0.992 U	<0.473 U	<0.896 U	<0.976 U	<0.989 U
Sodium	7440-23-5	NS	NS	mg/kg	254	66.4 J	89 J	119 J	234 J	395 J	107 J	300	130 J	115 J	272	369	81 J	172 J	133 J
Thallium	7440-28-0	NS	NS	mg/kg	<2.57 U	<1.6 U	<1.75 U	<1.64 UJ	<2.38 U	<2.68 U	<1.72 U	<1.67 U	<1.97 U	<1.98 U	<1.98 U	<2.35 U	<1.79 U	<1.95 U	<1.98 U
Vanadium	7440-62-2	NS	NS	mg/kg	17.1	5.7	7.61	5.9 J	11.7	21.5	7.07	11.7	7.27	5.97	9.98	53.1	9.35	11.3	8 J
Zinc	7440-66-6	2480	10000	mg/kg	43.5 J	20.7	23.1	68.5 J	17 J	99.1 J	37.3	91.3	164	459	15.8	33.2	27.6	37.2	24 J
General Chemistry																			
Solids, Percent	SOLID	NS	NS	Percent	81	96.3	86.9	94.7	87.6	77.6	89.3	90.6	79.2	78.3	80.1	88.8	85.5	78.1	78.1

Table 2
Site Management Plan
Confirmation Endpoint Soil Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	EP27	EP28	EP29	EP30	EP31	EP32	EP33	EP34	EP35	EP36	EP37	EP38	EP39	EP40	EP41
				Sample Name	DUP03_120423	EP28_EL_1	EP29_EL_-1.0	EP30_EL_-0.5	EP31_EL_-3.5	EP32_EL_-5.5	EP33_EL_-0.5	EP34_EL_0	EP35_EL_-2.0	EP36_EL_-2.0	EP37_EL_-3.0	EP38_EL_-6.0	EP39_EL_-0.5	EP40_EL_0	EP41_EL_-1.5
				Sample Date	12/04/2023	08/19/2022	10/12/2022	09/02/2022	12/04/2023	12/04/2023	08/24/2022	08/24/2022	09/01/2022	10/13/2022	10/18/2022	12/05/2023	08/24/2022	08/24/2022	09/01/2022
				Sample Elevation	-5.5	1	-1	-0.5	-3.5	-5.5	-0.5	0	-2	-2	-3	-6	-0.5	0	-1.5
				Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Perfluorooctanoic acids																			
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	763051-92-9	NS	NS	mg/kg	<0.000922 UJ	NA	NA	NA	<0.000856 UJ	<0.000957 UJ	NA	NA	NA	NA	NA	<0.000841 UJ	NA	NA	NA
1h,1h,2h,2h-Perfluorohexanesulfonic Acid (4:2)	757124-72-4	NS	NS	mg/kg	<0.000915 UJ	NA	NA	NA	<0.000849 UJ	<0.000949 UJ	NA	NA	NA	NA	NA	<0.000834 UJ	NA	NA	NA
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	6HPFHXSA	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3:3 FTCA	356-02-5	NS	NS	mg/kg	<0.00122 U	NA	NA	NA	<0.00113 U	<0.00127 U	NA	NA	NA	NA	NA	<0.00111 U	NA	NA	NA
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	NS	NS	mg/kg	<0.000922 U	NA	NA	NA	<0.000856 U	<0.000957 U	NA	NA	NA	NA	NA	<0.000841 U	NA	NA	NA
5:3 FTCA	914637-49-3	NS	NS	mg/kg	<0.0061 U	NA	NA	NA	<0.00566 U	<0.00633 U	NA	NA	NA	NA	NA	<0.00556 U	NA	NA	NA
7:3 FTCA	812-70-4	NS	NS	mg/kg	<0.0061 UJ	NA	NA	NA	<0.00566 UJ	<0.00633 UJ	NA	NA	NA	NA	NA	<0.00556 U	NA	NA	NA
9-Chlorohexadecafluoro-3-Oxanonane-1-Sulfonic Acid	756426-58-1	NS	NS	mg/kg	<0.000913 U	NA	NA	NA	<0.000847 U	<0.000947 U	NA	NA	NA	NA	NA	<0.000832 UJ	NA	NA	NA
N-ethyl perfluorooctane- sulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	NS	mg/kg	<0.000244 U	NA	<0.000554 UJ	<0.000511 UJ	<0.000226 UJ	<0.000253 U	<0.000518 U	<0.000531 U	<0.000611 UJ	<0.000579 UJ	<0.000579 UJ	<0.000223 U	<0.000554 U	<0.000573 U	<0.000587 UJ
N-ethylperfluorooctane sulfonamide	4151-50-2	NS	NS	mg/kg	<0.000244 UJ	NA	NA	NA	<0.000226 UJ	<0.000253 UJ	NA	NA	NA	NA	NA	<0.000223 UJ	NA	NA	NA
N-ethylperfluorooctane sulfonamidoe	1691-99-2	NS	NS	mg/kg	<0.00244 U	NA	NA	NA	<0.00226 U	<0.00253 U	NA	NA	NA	NA	NA	<0.00223 U	NA	NA	NA
N-methyl perfluorooctane- sulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	NS	mg/kg	<0.000244 U	NA	<0.000554 UJ	<0.000511 U	<0.000226 UJ	<0.000253 U	<0.000518 U	<0.000531 U	<0.000611 UJ	<0.000579 UJ	<0.000579 UJ	<0.000223 U	<0.000554 U	<0.000573 U	<0.000587 UJ
N-methylperfluorooctane sulfonamide	31506-32-8	NS	NS	mg/kg	<0.000244 U	NA	NA	NA	<0.000226 UJ	<0.000253 U	NA	NA	NA	NA	NA	<0.000223 U	NA	NA	NA
N-methylperfluorooctanesulfonamidol	24448-09-7	NS	NS	mg/kg	<0.00244 U	NA	NA	NA	<0.00226 U	<0.00253 U	NA	NA	NA	NA	NA	<0.00223 U	NA	NA	NA
Nonafluoro-3,6-dioxaheptanoic acid	151772-58-6	NS	NS	mg/kg	<0.000488 U	NA	NA	NA	<0.000453 U	<0.000506 U	NA	NA	NA	NA	NA	<0.000445 U	NA	NA	NA
Perfluoro(2-ethoxyethane)sulfonic acid	113507-82-7	NS	NS	mg/kg	<0.000434 U	NA	NA	NA	<0.000403 U	<0.000451 U	NA	NA	NA	NA	NA	<0.000396 U	NA	NA	NA
Perfluoro-3-methoxypropanoic acid	377-73-1	NS	NS	mg/kg	<0.000488 UJ	NA	NA	NA	<0.000453 UJ	<0.000506 UJ	NA	NA	NA	NA	NA	<0.000445 U	NA	NA	NA
Perfluoro-4-methoxybutanoic acid	863090-89-5	NS	NS	mg/kg	<0.000488 U	NA	NA	NA	<0.000453 U	<0.000506 U	NA	NA	NA	NA	NA	<0.000445 U	NA	NA	NA
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	NS	mg/kg	<0.000216 U	NA	<0.000277 U	<0.000256 U	<0.0002 U	<0.000224 U	<0.000259 U	<0.000265 U	<0.000306 U	<0.00029 U	<0.00029 U	<0.000197 U	<0.000277 U	<0.000286 U	<0.000294 U
Perfluorobutanoic acid (PFBA)	375-22-4	NS	NS	mg/kg	NA	NA	<0.000554 U	<0.000511 U	NA	NA	<0.000518 U	<0.000531 U	<0.000611 U	<0.000579 U	<0.000579 U	NA	<0.000554 U	<0.000573 U	<0.000587 U
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	NS	mg/kg	<0.000235 U	NA	<0.000554 U	<0.000511 UJ	<0.000219 U	<0.000244 U	<0.000518 U	<0.000531 UJ	<0.000611 UJ	<0.000579 U	<0.000579 U	<0.000215 U	<0.000554 U	<0.000573 U	<0.000587 UJ
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	NS	mg/kg	<0.000244 UJ	NA	<0.000277 U	<0.000256 U	<0.000226 UJ	<0.000253 UJ	<0.000259 U	<0.000265 U	<0.000306 U	<0.00029 U	<0.00029 U	<0.000223 UJ	<0.000277 U	<0.000286 U	<0.000294 U
Perfluorododecanesulfonic Acid (PFDOS)	79780-39-5	NS	NS	mg/kg	<0.000237 U	NA	NA	NA	<0.00022 U	<0.000246 U	NA	NA	NA	NA	NA	<0.000216 U	NA	NA	NA
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	NS	mg/kg	<0.000244 U	NA	<0.000554 U	<0.000511 U	<0.000226 U	<0.000253 U	<0.000518 U	<0.000531 U	<0.000611 U	<0.000579 U	<0.000579 U	<0.000223 U	<0.000554 U	<0.000573 U	<0.000587 U
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	NS	mg/kg	<0.000244 U	NA	<0.000554 U	<0.000511 U	<0.000226 U	<0.000253 U	<0.000518 U	<0.000531 U	<0.000611 U	<0.000579 U	<0.000579 U	<0.000223 U	<0.000554 U	<0.000573 U	<0.000587 U
Perfluoroheptanoic acid (PFHpA)	375-85-9	NS	NS	mg/kg	<0.000244 U	NA	<0.000277 U	<0.000256 U	<0.000226 U	<0.000253 U	<0.000259 U	0.000053 J	<0.000306 U	<0.00029 U	<0.00029 U	<0.000223 U	<0.000277 U	<0.000286 U	<0.000294 U
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	NS	mg/kg	<0.000223 U	NA	<0.000277 U	<0.000256 U	<0.000207 U	<0.000232 U	<0.000259 U	0.000072 J	<0.000306 U	<0.00029 U	<0.00029 U	<0.000204 U	<0.000277 U	<0.000286 U	<0.000294 U
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	NS	mg/kg	<0.000244 U	NA	<0.000554 U	<0.000511 U	<0.000226 U	<0.000253 U	<0.000518 U	<0.000531 U	<0.000611 U	<0.000579 U	<0.000579 U	<0.000223 U	<0.000554 U	<0.000573 U	<0.000587 U
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	NS	NS	mg/kg	<0.000234 U	NA	NA	NA	<0.000217 U	<0.000243 U	NA	NA	NA	NA	NA	<0.000214 U	NA	NA	NA
Perfluorononanoic Acid (PFNA)	375-95-1	NS	NS	mg/kg	<0.000244 U	NA	<0.000277 U	<0.000256 U	<0.000226 U	<0.000253 UJ	<0.000259 U	<0.000265 U	<0.000306 UJ	<0.00029 U	<0.00029 U	<0.000223 U	<0.000277 U	<0.000286 U	<0.000294 UJ
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	NS	mg/kg	<0.000244 U	NA	<0.000554 U	<0.000511 U	<0.000226 U	<0.000253 U	<0.000518 U	<0.000531 U	<0.000611 U	<0.000579 U	<0.000579 U	<0.000223 U	<0.000554 U	<0.000573 U	<0.000587 U
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	0.001	0.044	mg/kg	<0.000227 U	NA	<0.000277 U	<0.000256 U	<0.000211 UJ	<0.000235 UJ	0.000198 J	0.000687	<0.000306 U	<0.00029 U	<0.00029 U	<0.000207 U	0.00029	<0.000286 U	<0.000294 U
Perfluorooctanoic Acid (PFOA)	335-67-1	0.0008	0.033	mg/kg	<0.000244 U	NA	<0.000277 U	<0.000256 U	<0.000226 U	<0.000253 U	0.000054 J	0.000248 J	<0.000306 U	<0.00029 U	<0.00029 U	<0.000223 U	0.000112 J	<0.000286 U	<0.000294 U
Perfluoropentanesulfonic Acid	2706-91-4	NS	NS	mg/kg	<0.000229 U	NA	NA	NA	<0.000213 U	<0.000238 U	NA	NA	NA	NA	NA	<0.000209 U	NA	NA	NA
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	NS	mg/kg	<0.000488 U	NA	<0.000554 U	<0.000511 U	<0.000453 UJ	<0.000506 UJ	<0.000518 U	<0.000531 U	<0.000611 U	<0.000579 U	<0.000579 U	<0.000445 U	<0.000554 U	<0.000573 U	<0.000587 U
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	NS	mg/kg	<0.000244 U	NA	<0.000554 U	<0.000511 U	<0.000226 U	<0.000253 U	<0.000518 U	<0.000531 U	<0.000611 U	<0.000579 U	<0.000579 U	<0.000223 U	<0.000554 U	<0.000573 U	<0.000587 U
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	NS	mg/kg	<0.000244 U	NA	<0.000554 U	<0.000511 U	<0.000226 U	<0.000253 U	<0.000518 U	<0.000531 U	<0.000611 U	<0.000579 U	<0.000579 U	<0.000223 U	<0.000554 U	<0.000573 U	<0.000587 U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	NS	mg/kg	<0.000244 U	NA	<0.000554 U	<0.000511 U	<0.000226 U	<0.000253 U	<0.000518 UJ	<0.000531 UJ	<0.000611 U	<0.000579 U	<0.000579 U	<0.000223 U	<0.000554 UJ	<0.000573 UJ	<0.000587 U
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2) (8:2FTS)	39108-34-4	NS	NS	mg/kg	<0.000937 UJ	NA	<0.000554 U	<0.000511 U	<0.00087 UJ	<0.000972 UJ	<0.000518 U	<0.000531 U	<0.000611 U	<0.000579 UJ	<0.000579 UJ	<0.000855 UJ	<0.000554 U	<0.000573 U	<0.000587 U
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2) (6:2FTS)	27619-97-2	NS	NS	mg/kg	<0.000927 UJ	NA	<0.000554 U	<0.000511 U	<0.000861 UJ	<0.000962 UJ	<0.000518 U	<0.000531 U	<0.000611 U	<0.000579 U	<0.000579 U	<0.000846 UJ	<0.000554 U	<0.000573 U	<0.000587 U
Tetrafluoro-2- (heptafluoropropoxy) propanoic Acid	13252-13-6	NS	NS	mg/kg	<0.000976 U	NA	NA	NA	<0.000906 U	<0.00101 U	NA	NA	NA	NA	NA	<0.00089 U	NA	NA	NA
Total PFOA and PFOS	TOTPFOAPFOS	NS	NS	mg/kg	NA	NA	<0.000277 U	<0.000256 U	NA	NA	0.000252 J	0.000935 J	<0.000306 U	<0.00029 U	<0.00029 U	NA	0.000402 J	<0.000286 U	<0.000294 U

Table 2
Site Management Plan
Confirmation Endpoint Soil Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	EP42	EP43	EP44	EP45	EP46	EP47	EP48	EP49	EP50	EP51	EP52	EP53	EP54
				Sample Name	EP42_EL_-8.0	EP43_EL_-8.0	EP44_EL_-8.0	EP45_EL_-0.5	EP46_EL_-1	EP47_EL_0	EP48_EL_-8.0	EP49_EL_-8.0	EP50_EL_-8.0	EP51_EL_0.0	EP52_EL_-8.0	EP53_EL_-8.0	EP54_EL_-8.0
				Sample Date	09/26/2022	09/26/2022	09/26/2022	08/24/2022	08/24/2022	08/24/2022	09/26/2022	09/26/2022	09/26/2022	10/12/2022	09/23/2022	09/23/2022	09/23/2022
				Sample Elevation	-8	-8	-8	-0.5	-1	0	-8	-8	-8	0	-8	-8	-8
				Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Volatile Organic Compounds																	
1,1,1,2-Tetrachloroethane	630-20-6	NS	NS	mg/kg	<0.00054 U	<0.00056 U	<0.00054 U	<0.00058 U	<0.03 U	<0.00069 U	<0.00063 U	<0.00051 U	<0.00054 U	<0.022 U	<0.00028 U	<0.00055 U	<0.00042 U
1,1,1-Trichloroethane	71-55-6	0.68	100	mg/kg	<0.00054 U	<0.00056 U	<0.00054 U	<0.00058 U	<0.03 U	<0.00069 U	<0.00063 U	<0.00051 U	<0.00054 U	<0.022 U	<0.00028 U	<0.00055 U	<0.00042 U
1,1,2,2-Tetrachloroethane	79-34-5	NS	NS	mg/kg	<0.00054 U	<0.00056 U	<0.00054 U	<0.00058 U	<0.03 U	<0.00069 U	<0.00063 U	<0.00051 U	<0.00054 U	<0.022 U	<0.00028 U	<0.00055 U	<0.00042 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	79-00-5	NS	NS	mg/kg	<0.0011 U	<0.0011 U	<0.0011 U	<0.0012 U	<0.061 U	<0.0014 U	<0.0012 U	<0.001 U	<0.0011 U	<0.045 U	<0.00055 U	<0.0011 U	<0.00085 U
1,1-Dichloroethane	75-34-3	0.27	26	mg/kg	<0.0011 U	<0.0011 U	<0.0011 U	<0.0012 U	<0.061 U	<0.0014 U	<0.0012 U	<0.001 U	<0.0011 U	<0.045 U	<0.00055 U	<0.0011 U	<0.00085 U
1,1-Dichloroethene	75-35-4	0.33	100	mg/kg	<0.0011 U	<0.0011 U	<0.0011 U	<0.0012 U	<0.061 U	<0.0014 U	<0.0012 U	<0.001 U	<0.0011 U	<0.045 U	<0.00055 U	<0.0011 U	<0.00085 U
1,1-Dichloropropene	563-58-6	NS	NS	mg/kg	<0.00054 U	<0.00056 U	<0.00054 U	<0.00058 U	<0.03 U	<0.00069 U	<0.00063 U	<0.00051 U	<0.00054 U	<0.022 U	<0.00028 U	<0.00055 U	<0.00042 U
1,2,3-Trichlorobenzene	87-61-6	NS	NS	mg/kg	<0.0022 U	<0.0022 U	<0.0022 U	<0.0023 U	<0.12 U	<0.0028 U	<0.0025 U	<0.002 U	<0.0022 U	<0.089 U	<0.0011 U	<0.0022 U	<0.0017 U
1,2,3-Trichloropropane	96-18-4	NS	NS	mg/kg	<0.0022 U	<0.0022 U	<0.0022 U	<0.0023 U	<0.12 U	<0.0028 U	<0.0025 U	<0.002 U	<0.0022 U	<0.089 U	<0.0011 U	<0.0022 U	<0.0017 U
1,2,4,5-Tetramethylbenzene	95-93-2	NS	NS	mg/kg	0.042 J	0.00064 J	0.00094 J	<0.0023 U	3.7 J	0.032	0.041 J	0.13	0.027	0.55	0.0024	0.0013 J	0.00019 J
1,2,4-Trichlorobenzene	120-82-1	NS	NS	mg/kg	<0.0022 U	<0.0022 U	<0.0022 U	<0.0023 U	<0.12 U	<0.0028 U	<0.0025 U	<0.002 U	<0.0022 U	<0.089 U	<0.0011 U	<0.0022 U	<0.0017 U
1,2,4-Trimethylbenzene	95-63-6	3.6	52	mg/kg	0.028 J	<0.0022 U	0.0016 J	<0.0023 U	1.5 J	0.0047	0.021 J	0.13	0.018	2.4	0.0015	0.0014 J	<0.0017 U
1,2-Dibromo-3-Chloropropane	96-12-8	NS	NS	mg/kg	<0.0032 U	<0.0033 U	<0.0032 U	<0.0035 UJ	<0.18 U	<0.0041 UJ	<0.0038 U	<0.003 U	<0.0032 U	<0.13 U	<0.0016 U	<0.0033 U	<0.0025 U
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	NS	NS	mg/kg	<0.0011 U	<0.0011 U	<0.0011 U	<0.0012 U	<0.061 U	<0.0014 U	<0.0012 U	<0.001 U	<0.0011 U	<0.045 U	<0.00055 U	<0.0011 U	<0.00085 U
1,2-Dichlorobenzene	95-50-1	1.1	100	mg/kg	<0.0022 U	<0.0022 U	<0.0022 U	<0.0023 U	0.02 J	0.00023 J	<0.0025 U	<0.002 U	<0.0022 U	<0.089 U	<0.0011 U	<0.0022 U	<0.0017 U
1,2-Dichloroethane	107-06-2	0.02	3.1	mg/kg	<0.0011 U	<0.0011 U	<0.0011 U	<0.0012 U	<0.061 UJ	<0.0014 U	<0.0012 U	<0.001 U	<0.0011 U	<0.045 U	<0.00055 U	<0.0011 U	<0.00085 U
1,2-Dichloropropane	78-87-5	NS	NS	mg/kg	<0.0011 U	<0.0011 U	<0.0011 U	<0.0012 U	<0.061 U	<0.0014 U	<0.0012 U	<0.001 U	<0.0011 U	<0.045 U	<0.00055 U	<0.0011 U	<0.00085 U
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	8.4	52	mg/kg	0.019 J	0.00026 J	0.00086 J	<0.0023 U	0.63 J	0.014	0.012 J	0.25 J	0.011	1.4	0.00063 J	0.0013 J	<0.0017 U
1,3-Dichlorobenzene	541-73-1	2.4	49	mg/kg	<0.0022 U	<0.0022 U	<0.0022 U	<0.0023 U	<0.12 U	<0.0028 U	<0.0025 U	<0.002 U	<0.0022 U	<0.089 U	<0.0011 U	<0.0022 U	<0.0017 U
1,3-Dichloropropane	142-28-9	NS	NS	mg/kg	<0.0022 U	<0.0022 U	<0.0022 U	<0.0023 U	<0.12 U	<0.0028 U	<0.0025 U	<0.002 U	<0.0022 U	<0.089 U	<0.0011 U	<0.0022 U	<0.0017 U
1,4-Dichlorobenzene	106-46-7	1.8	13	mg/kg	<0.0022 U	<0.0022 U	<0.0022 U	<0.0023 U	0.014 J	<0.0028 U	<0.0025 U	<0.002 U	<0.0022 U	<0.089 U	<0.0011 U	<0.0022 U	<0.0017 U
1,4-Diethyl Benzene	105-05-5	NS	NS	mg/kg	0.0062 J	0.0005 J	0.0012 J	<0.0023 U	1.5 J	0.047	0.01 J	0.076 J	0.0041	<0.089 U	0.00079 J	<0.0022 U	<0.0017 U
1,4-Dioxane (P-Dioxane)	123-91-1	0.1	13	mg/kg	<0.087 UJ	<0.089 UJ	<0.087 UJ	<0.092 UJ	<4.8 U	<0.11 UJ	<0.1 UJ	<0.081 UJ	<0.086 UJ	<3.6 UJ	<0.044 UJ	<0.087 UJ	<0.068 UJ
2,2-Dichloropropane	594-20-7	NS	NS	mg/kg	<0.0022 U	<0.0022 U	<0.0022 U	<0.0023 U	<0.12 U	<0.0028 U	<0.0025 U	<0.002 U	<0.0022 U	<0.089 U	<0.0011 U	<0.0022 U	<0.0017 U
2-Chlorotoluene	95-49-8	NS	NS	mg/kg	<0.0022 U	<0.0022 U	<0.0022 U	<0.0023 U	<0.12 U	<0.0028 U	<0.0025 U	<0.002 U	<0.0022 U	<0.089 U	<0.0011 U	<0.0022 U	<0.0017 U
2-Hexanone (MBK)	591-78-6	NS	NS	mg/kg	<0.011 U	<0.011 U	<0.011 U	<0.012 UJ	<0.61 U	<0.014 UJ	<0.012 U	<0.01 U	<0.011 U	<0.45 U	<0.0055 U	<0.011 U	<0.0085 U
4-Chlorotoluene	106-43-4	NS	NS	mg/kg	<0.0022 U	<0.0022 U	<0.0022 U	<0.0023 U	<0.12 U	<0.0028 U	<0.0025 U	<0.002 U	<0.0022 U	<0.089 U	<0.0011 U	<0.0022 U	<0.0017 U
4-Ethyltoluene	622-96-8	NS	NS	mg/kg	0.019 J	<0.0022 U	0.0013 J	<0.0023 U	1.3 J	0.011	0.013 J	0.066 J	0.0096	<0.089 U	0.00093 J	0.0012 J	<0.0017 U
Acetone	67-64-1	**0.05**	100	mg/kg	**0.15 J**	0.023 J	0.0079 J	0.01 J	<0.61 U	0.019	**0.18 J**	**0.071 J**	**0.17 J**	<0.45 U	0.013	0.017	0.012
Acrolein	107-02-8	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	107-13-1	NS	NS	mg/kg	<0.0043 U	<0.0044 U	<0.0043 U	<0.0046 U	<0.24 U	<0.0055 U	<0.005 U	<0.0041 U	<0.0043 U	<0.18 U	<0.0022 U	<0.0044 U	<0.0034 U
Benzene	71-43-2	0.06	4.8	mg/kg	<0.00054 U	<0.00056 U	<0.00054 U	<0.00058 U	0.029 J	0.00028 J	<0.00063 U	0.00022 J	0.0004 J	0.02 J	0.00012 J	<0.00055 U	0.00016 J
Bromobenzene	108-86-1	NS	NS	mg/kg	<0.0022 U	<0.0022 U	<0.0022 U	<0.0023 U	<0.12 U	<0.0028 U	<0.0025 U	<0.002 U	<0.0022 U	<0.089 U	<0.0011 U	<0.0022 U	<0.0017 U
Bromochloromethane	74-97-5	NS	NS	mg/kg	<0.0022 U	<0.0022 U	<0.0022 U	<0.0023 U	<0.12 U	<0.0028 U	<0.0025 U	<0.002 U	<0.0022 U	<0.089 U	<0.0011 U	<0.0022 U	<0.0017 U
Bromodichloromethane	75-27-4	NS	NS	mg/kg	<0.00054 U	<0.00056 U	<0.00054 U	<0.00058 UJ	<0.03 U	<0.00069 UJ	<0.00063 U	<0.00051 U	<0.00054 U	<0.022 U	<0.00028 U	<0.00055 U	<0.00042 U
Bromoform	75-25-2	NS	NS	mg/kg	<0.0043 U	<0.0044 U	<0.0043 U	<0.0046 U	<0.24 U	<0.0055 U	<0.005 U	<0.0041 U	<0.0043 U	<0.18 U	<0.0022 U	<0.0044 U	<0.0034 U
Bromomethane	74-83-9	NS	NS	mg/kg	<0.0022 U	<0.0022 U	<0.0022 U	<0.0023 U	<0.12 U	<0.0028 U	<0.0025 U	<0.002 U	<0.0022 U	<0.089 UJ	<0.0011 UJ	<0.0022 UJ	<0.0017 UJ
Carbon Disulfide	75-15-0	NS	NS	mg/kg	<0.011 U	<0.011 U	<0.011 U	<0.012 U	<0.61 U	<0.014 U	<0.012 U	0.0058 J	<0.011 U	<0.45 U	<0.0055 U	<0.011 U	<0.0085 U
Carbon Tetrachloride	56-23-5	0.76	2.4	mg/kg	<0.0011 U	<0.0011 U	<0.0011 U	<0.0012 U	<0.061 UJ	<0.0014 U	<0.0012 U	<0.001 U	<0.0011 U	<0.045 U	<0.00055 U	<0.0011 U	<0.00085 U
Chlorobenzene	108-90-7	1.1	100	mg/kg	<0.00054 U	<0.00056 U	<0.00054 U	<0.00058 U	<0.03 U	0.00028 J	<0.00063 U	<0.00051 U	<0.00054 U	<0.022 U	<0.00028 U	<0.00055 U	<0.00042 U
Chloroethane	75-00-3	NS	NS	mg/kg	<0.0022 U	<0.0022 U	<0.0022 U	<0.0023 U	<0.12 U	<0.0028 U	<0.0025 U	<0.002 U	<0.0022 U	<0.089 U	<0.0011 U	<0.0022 U	<0.0017 U
Chloroform	67-66-3	0.37	49	mg/kg	<0.0016 U	<0.0017 U	<0.0016 U	<0.0017 U	<0.091 U	<0.0021 U	<0.0019 U	<0.0015 U	<0.0016 U	<0.067 U	<0.00083 U	<0.0016 U	<0.0013 U
Chloromethane	74-87-3	NS	NS	mg/kg	<0.0043 U	<0.0044 U	<0.0043 U	<0.0046 U	<0.24 U	<0.0055 U	<0.005 U	<0.0041 U	<0.0043 U	<0.18 U	<0.0022 U	<0.0044 U	<0.0034 U
Cis-1,2-Dichloroethene	156-59-2	0.25	100	mg/kg	<0.0011 U	<0.0011 U	<0.0011 U	<0.0012 U	<0.061 U	<0.0014 U	<0.0012 U	<0.001 U	<0.0011 U	<0.045 U	<0.00055 U	<0.0011 U	<0.00085 U
Cis-1,3-Dichloropropene	10061-01-5	NS	NS	mg/kg	<0.00054 U	<0.00056 U	<0.00054 U	<0.00058 U	<0.03 U	<0.00069 U	<0.00063 U	<0.00051 U	<0.00054 U	<0.022 U	<0.00028 U	<0.00055 U	<0.00042 U
Cyclohexane	110-82-7	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cymene	99-87-6	NS	NS	mg/kg	0.0028 J	<0.0011 U	<0.0011 U	<0.0012 U	0.76 J	0.0048	0.0034 J	0.034 J	0.0013	0.27	<0.00055 U	<0.0011 U	<0.00085 U
Dibromochloromethane	124-48-1	NS	NS	mg/kg	<0.0011 U	<0.0011 U	<0.0011 U	<0.0012 U	<0.061 U	<0.0014 U	<0.0012 U	<0.001 U	<0.0011 U	<0.045 U	<0.00055 U	<0.0011 U	<0.00085 U
Dibromomethane	74-95-3	NS	NS	mg/kg	<0.0022 U	<0.0022 U	<0.0022 U	<0.0023 U	<0.12 U	<0.0028 U	<0.0025 U	<0.002 U	<0.0022 U	<0.089 U	<0.0011 U	<0.0022 U	<0.0017 U
Dichlorodifluoromethane	75-71-8	NS	NS	mg/kg	<0.011 UJ	<0.011 UJ	<0.011 UJ	<0.012 U	<0.61 UJ	<0.014 U	<0.012 UJ	<0.01 UJ	<0.011 UJ	<0.45 UJ	<0.0055 UJ	<0.011 UJ	<0.0085 UJ
Diethyl Ether (Ethyl Ether)	60-29-7	NS	NS	mg/kg	<0.0022 U	<0.0022 U	<0.0022 U	<0.0023 U	<0.12 U	<0.0028 U	<0.0025 U	<0.002 U	<0.0022 U	<0.089 U	<0.0011 U	<0.0022 U	<0.0017 U
Ethylbenzene	100-41-4	1	41	mg/kg	0.00033 J	<0.0011 U	0.00022 J	<0.0012 U	0.27 J	<0.0014 U	0.00091 J	0.01 J	0.00091 J	0.18	0.00041 J	0.00029 J	<0.00085 U
Hexachlorobutadiene	87-68-3	NS	NS	mg/kg	<0.0043 U	<0.0044 U	<0.0043 U	<0.0046 U	<0.24 U	<0.0055 U	<0.005 U	<0.0041 U	<0.0043 U	<0.18 U	<0.0022 U	<0.0044 U	<0.0034 U
Isopropylbenzene (Cumene)	98-82-8	NS	NS	mg/kg	0.0025 J	<0.0011 U	<0.0011 U	<0.0012 U	1.1 J	0.003	0.01 J	0.033 J	0.0022	0.079	0.0029	0.00059 J	<0.00085 U
M,P-Xylene	179601-23-1	NS	NS	mg/kg	0.0034 J	<0.0022 U	0.0015 J	<0.0023 U	0.75 J	0.0013 J	0.0076 J	0.13 J	0.0073	2.4	0.002	0.0016 J	<0.0017 U
Methyl Acetate	79-20-9	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Ethyl Ketone (2-Butanone)	78-93-3	0.12	100	mg/kg	<0.011 U	<0.011 U	<0.011 U	<0.012 UJ	<0.61 UJ	<0.014 UJ	<0.012 U	<0.01 U	0.0024 J	<0.45 UJ	<0.0055 U	<0.011 U	<0.0085 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	NS	NS	mg/kg	<0.011 U	<0.011 U	<0.011 U	<0.012 UJ	<0.61 U	<0.014 UJ	<0.012 U	<0.01 U	<0.011 U	<0.45 UJ	<0.0055 UJ	<0.011 UJ	<0.0085 UJ
Methylcyclohexane	108-87-2	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	75-09-2	0.05	100	mg/kg	<0.0054 U	<0.0056 U	<0.0054 U	<0.0058 U	<0.3 U	<0.0069 U	<0.0063 U	<0.0051 U	<0.0054 U	<0.22 U	<0.0028 U	<0.0055 U	<0.0042 U
Naphthalene	91-20-3	12	100	mg/kg	0.019 J	<0.0044 U	<0.0043 U	<0.0046 U	1.5 J	0.0075	0.022 J	0.28 J	0.012	0.56	0.0029	0.0012 J	<0.0034 U
n-Butylbenzene	104-51-8	12	100	mg/kg	0.0066 J	<0.0011 U	<0.0011 U	<0.0012 U	1.1 J	0.0034	0.0071 J	0.066 J	0.0032	0.085	0.00048 J	<0.0011 U	<0.00085 U
n-Propylbenzene	103-65-1	3.9	100	mg/kg	0.0053 J	<0.0011 U	<0.0011 U	<0.0012 U	1.6 J	0.0034	0.011 J	0.086 J	0.004	0.12	0.005	0.00084 J	<0.00085 U
o-Xylene (1,2-Dimethylbenzene)	95-47-6	NS	NS	mg/kg	0.0022 J	0.00054 J	0.001 J	<0.0012 U	0.31 J	0.0036	0.0048 J	0.076 J	0.0047	1.4	0.0013	0.001 J	<0.00085 U
p-Cymene (p-Isopropyltoluene)	CYMP	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sec-Butylbenzene	135-98-8	11	100	mg/kg	0.005 J	<0.0011 U	<0.0011 U	<0.0012 U	0.79 J	0.0044	0.0086 J	0.032 J	0.0019	0.083	0.00055	<0.0011 U	<0.00085 U
Styrene	100-42-5	NS	NS	mg/kg	<0.0011 U	<0.0011 U	<0.0011 U	<0.0012 U	0.059 J	<0.0014 U	<0.0012 U	0.00023 J	<0.0011 U	<0.045 U	<0.00055 U	<0.0011 U	<0.00085 U
T-Butylbenzene	98-06-6	5.9	100	mg/kg	0.00034 J	<0.0022 U	<0.0022 U	<0.0023 U	0.18 J	0.001 J	0.0012 J	0.0016 J	0.00013 J	0.033 J	0.00008 J	<0.0022 U	<0.0017 U
Tert-Butyl Alcohol	75-65-0	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tert-Butyl Methyl Ether	1634-04-4	0.93	100	mg/kg	<0.0022 U	<0.0022 U	<0.0022 U	<0.0023 U	<0.12 U	<0.0028 U	<0.0025 U	<0.002 U	<0.0022 U	<0.089 U	<0.0011 U	<0.0022 U	<0.0017 U
Tetrachloroethene (PCE)	127-18-4	1.3	19	mg/kg	<0.00054 U	<0.00056 U	<0.00054 U	<0.00058 U	<0.03 U	<0.00069 U	<0.00063 U	<0.00051 U	<0.00054 U	<0.022 U	<0.00028 U	<0.00055 U	<0.00042 U
Toluene	108-88-3	0.7	100	mg/kg	0.001 J	<0.0011 U	0.00094 J	<0.0012 U	0.16 J	<0.0014 U	0.0015 J	0.0014 J	0.00061 J	0.23	0.00063	0.00062 J	0.00061 J
Total 1,2-Dichloroethene (Cis and Trans)	540-59-0	NS	NS	mg/kg	<0.0011 U	<0.0011 U	<0.0011 U	<0.0012 U	<0.061 U	<0.0014 U	<0.0012 U	<0.001 U	<0.0011 U	<0.045 U	<0.00055 U	<0.0011 U	<0.00085 U
Total Xylenes	1330-20-7	**1.6**	100	mg/kg	0.0056 J	0.00054 J	0.0025 J	<0.0012 U	1.1 J	0.0049 J	0.012 J	0.21 J	0.012	**3.8**	0.0033	0.0026 J	<0.00085 U
Total, 1,3-Dichloropropene (Cis And Trans)	542-75-6	NS	NS	mg/kg	<0.00054 U	<0.00056 U	<0.00054 U	<0.00058 U	<0.03 U	<0.00069 U	<0.00063 U	<0.00051 U	<0.00054 U	<0.022 U	<0.00028 U	<0.00055 U	<0.00042 U
Trans-1,2-Dichloroethene	156-60-5	0.19	100	mg/kg	<0.0016 U	<0.0017 U	<0.0016 U	<0.0017 U	<0.091 U	<0.0021 U	<0.0019 U	<0.0015 U	<0.0016 U	<0.067 U	<0.00083 U	<0.0016 U	<0.0013 U
Trans-1,3-Dichloropropene	10061-02-6	NS	NS	mg/kg	<0.0011 U	<0.0011 U	<0.0011 U	<0.0012 U	<0.061 U	<0.0014 U	<0.0012 U	<0.001 U	<0.0011 U	<0.045 U	<0.00055 U	<0.0011 U	<0.00085 U
Trans-1,4-Dichloro-2-Butene	110-57-6	NS	NS	mg/kg	<0.0054 U	<0.0056 U	<0.0054 U	<0.0058 U	<0.3 U	<0.0069 U	<0.0063 U	<0.0051 U	<0.0054 U	<0.22 U	<0.0028 U	<0.0055 U	<0.0042 U
Trichloroethene (TCE)	79-01-6	0.47	21	mg/kg	<0.00054 U	<0.00056 U	<0.00054 U	<0.00058 U	<0.03 U	<0.00069 U	<0.00063 U	<0.00051 U	<0.00054 U	<0.022 U	<0.00028 U	<0.00055 U	<0.00042 U
Trichlorofluoromethane	75-69-4	NS	NS	mg/kg	<0.0043 U	<0.0044 U	<0.0043 U	<0.0046 U	<0.24 UJ	<0.0055 U	<0.005 U	<0.0041 U	<0.0043 U	<0.18 U	<0.0022 U	<0.0044 U	<0.0034 U
Vinyl Acetate	108-05-4	NS	NS	mg/kg	<0.011 U	<0.011 U	<0.011 U	<0.012 U	<0.61 U	<0.014 U	<0.012 U	<0.01 U	<0.011 U	<0.45 UJ	<0.0055 U	<0.011 U	<0.0085 U
Vinyl Chloride	75-01-4	0.02	0.9	mg/kg	<0.0011 U	<0.0011 U	<0.0011 U	<0.0012 U	<0.061 U	<0.0014 U	<0.0012 U	<0.001 U	<0.0011 U	<0.045 U	<0.00055 U	<0.0011 U	<0.00085 U

Table 2
Site Management Plan
Confirmation Endpoint Soil Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	EP42	EP43	EP44	EP45	EP46	EP47	EP48	EP49	EP50	EP51	EP52	EP53	EP54
				Sample Name	EP42_EL_-8.0	EP43_EL_-8.0	EP44_EL_-8.0	EP45_EL_-0.5	EP46_EL_-1	EP47_EL_0	EP48_EL_-8.0	EP49_EL_-8.0	EP50_EL_-8.0	EP51_EL_0.0	EP52_EL_-8.0	EP53_EL_-8.0	EP54_EL_-8.0
				Sample Date	09/26/2022	09/26/2022	09/26/2022	08/24/2022	08/24/2022	08/24/2022	09/26/2022	09/26/2022	09/26/2022	10/12/2022	09/23/2022	09/23/2022	09/23/2022
				Sample Elevation	-8	-8	-8	-0.5	-1	0	-8	-8	-8	0	-8	-8	-8
				Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Semi-Volatile Organic Compounds																	
1,2,4,5-Tetrachlorobenzene	95-94-3	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
1,2,4-Trichlorobenzene	120-82-1	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
1,2-Dichlorobenzene	95-50-1	1.1	100	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
1,2-Diphenylhydrazine	122-66-7	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	541-73-1	2.4	49	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
1,4-Dichlorobenzene	106-46-7	1.8	13	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
1,4-Dioxane (P-Dioxane)	123-91-1	0.1	13	mg/kg	<0.027 U	<0.026 U	<0.026 U	<0.028 U	<0.027 U	<0.031 U	<0.03 U	<0.029 U	<0.032 U	<0.029 U	<0.032 U	<0.027 U	<0.032 U
2,3,4,6-Tetrachlorophenol	58-90-2	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
2,4,6-Trichlorophenol	88-06-2	NS	NS	mg/kg	<0.11 U	<0.1 U	<0.1 U	<0.11 U	<0.11 U	<0.12 U	<0.12 U	<0.12 U	<0.13 U	<0.12 U	<0.13 U	<0.11 U	<0.13 U
2,4-Dichlorophenol	120-83-2	NS	NS	mg/kg	<0.16 U	<0.16 U	<0.16 U	<0.16 U	<0.16 U	<0.19 U	<0.18 U	<0.17 U	<0.19 U	<0.17 U	<0.19 U	<0.16 U	<0.19 U
2,4-Dimethylphenol	105-67-9	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
2,4-Dinitrophenol	51-28-5	NS	NS	mg/kg	<0.86 UJ	<0.84 UJ	<0.85 UJ	<0.88 UJ	<0.86 UJ	<1 UJ	<0.97 UJ	<0.92 U	<1 U	<0.92 U	<1 U	<0.87 U	<1 U
2,4-Dinitrotoluene	121-14-2	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
2,6-Dinitrotoluene	606-20-2	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
2-Chloronaphthalene	91-58-7	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
2-Chlorophenol	95-57-8	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
2-Methylnaphthalene	91-57-6	NS	NS	mg/kg	<0.22 U	<0.21 U	<0.21 U	<0.22 U	0.91 J	0.44	<0.24 U	0.059 J	<0.25 U	0.076 J	<0.26 U	<0.22 U	<0.25 U
2-Methylphenol (o-Cresol)	95-48-7	0.33	100	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
2-Nitroaniline	88-74-4	NS	NS	mg/kg	<0.18 UJ	<0.18 UJ	<0.18 UJ	<0.18 UJ	<0.18 UJ	<0.21 UJ	<0.2 UJ	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
2-Nitrophenol	88-75-5	NS	NS	mg/kg	<0.39 UJ	<0.38 UJ	<0.38 UJ	<0.4 UJ	<0.39 UJ	<0.45 UJ	<0.44 UJ	<0.41 U	<0.45 U	<0.41 U	<0.46 U	<0.39 U	<0.46 U
3 & 4 Methylphenol (m&p Cresol)	65794-96-9	0.33	100	mg/kg	<0.26 U	<0.25 U	<0.25 U	<0.26 U	<0.26 U	<0.3 U	<0.29 U	<0.28 U	<0.3 U	<0.28 U	<0.31 U	<0.26 U	<0.3 U
3,3'-Dichlorobenzidine	91-94-1	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
3-Nitroaniline	99-09-2	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 UJ	<0.18 UJ	<0.21 UJ	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
4,6-Dinitro-2-Methylphenol	534-52-1	NS	NS	mg/kg	<0.47 UJ	<0.46 UJ	<0.46 UJ	<0.48 UJ	<0.47 UJ	<0.54 UJ	<0.53 UJ	<0.5 UJ	<0.55 UJ	<0.5 U	<0.56 U	<0.47 U	<0.55 U
4-Bromophenyl Phenyl Ether	101-55-3	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
4-Chloro-3-Methylphenol	59-50-7	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
4-Chloroaniline	106-47-8	NS	NS	mg/kg	<0.18 UJ	<0.18 UJ	<0.18 UJ	<0.18 U	<0.18 U	<0.21 U	<0.2 UJ	<0.19 UJ	<0.21 UJ	<0.19 U	<0.21 U	<0.18 U	<0.21 U
4-Chlorophenyl Phenyl Ether	7005-72-3	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
4-Nitroaniline	100-01-6	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
4-Nitrophenol	100-02-7	NS	NS	mg/kg	<0.25 U	<0.25 U	<0.25 U	<0.26 UJ	<0.25 UJ	<0.29 UJ	<0.28 U	<0.27 U	<0.29 U	<0.27 U	<0.3 U	<0.25 U	<0.29 U
Acenaphthene	83-32-9	98	100	mg/kg	<0.14 U	<0.14 U	<0.14 U	<0.15 U	0.023 J	0.084 J	<0.16 U	0.026 J	<0.17 U	0.021 J	<0.17 U	<0.14 U	<0.17 U
Acenaphthylene	208-96-8	107	100	mg/kg	<0.14 U	<0.14 U	<0.14 U	<0.15 U	<0.14 U	0.032 J	<0.16 U	<0.15 U	<0.17 U	0.033 J	<0.17 U	<0.14 U	<0.17 U
Acetophenone	98-86-2	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
Aniline (Phenylamine, Aminobenzene)	62-53-3	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	1000	100	mg/kg	<0.11 U	<0.1 U	<0.1 U	<0.11 U	<0.11 U	0.072 J	<0.12 U	<0.12 U	<0.13 U	0.054 J	<0.13 U	<0.11 U	<0.13 U
Atrazine	1912-24-9	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	100-52-7	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzidine	92-87-5	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	56-55-3	**1**	1	mg/kg	<0.11 U	<0.1 U	<0.1 U	0.033 J	0.032 J	0.15	<0.12 U	<0.12 U	<0.13 U	0.21	<0.13 U	<0.11 U	<0.13 U
Benzo(a)pyrene	50-32-8	22	1	mg/kg	<0.14 U	<0.14 U	<0.14 U	<0.15 U	<0.14 U	0.15 J	<0.16 U	<0.15 U	<0.17 U	0.26	<0.17 U	<0.14 U	<0.17 U
Benzo(b)fluoranthene	205-99-2	1.7	1	mg/kg	<0.11 U	<0.1 U	<0.1 U	0.036 J	<0.11 U	0.18	<0.12 U	<0.12 U	<0.13 U	0.31	<0.13 U	<0.11 U	<0.13 U
Benzo(g,h,i)Perylene	191-24-2	1000	100	mg/kg	<0.14 U	<0.14 U	<0.14 U	0.024 J	<0.14 U	0.13 J	<0.16 U	<0.15 U	<0.17 U	0.16	<0.17 U	<0.14 U	<0.17 U
Benzo(k)fluoranthene	207-08-9	1.7	3.9	mg/kg	<0.11 U	<0.1 U	<0.1 U	<0.11 U	<0.11 U	0.071 J	<0.12 U	<0.12 U	<0.13 U	0.095 J	<0.13 U	<0.11 U	<0.13 U
Benzoic Acid	65-85-0	NS	NS	mg/kg	NA	NA	NA	<0.59 U	<0.58 U	<0.68 U	NA	NA	NA	<0.62 U	NA	NA	NA
Benzyl Alcohol	100-51-6	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
Benzyl Butyl Phthalate	85-68-7	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	0.083 J	<0.2 U	0.093 J	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
Biphenyl (Diphenyl)	92-52-4	NS	NS	mg/kg	<0.41 U	<0.4 U	<0.4 U	<0.42 U	<0.41 U	0.028 J	<0.46 U	<0.44 U	<0.48 U	<0.44 U	<0.49 U	<0.41 U	<0.48 U
Bis(2-chloroethoxy) methane	111-91-1	NS	NS	mg/kg	<0.19 U	<0.19 U	<0.19 U	<0.2 U	<0.19 U	<0.23 U	<0.22 U	<0.21 U	<0.23 U	<0.21 U	<0.23 U	<0.2 U	<0.23 U
Bis(2-chloroethyl) ether (2-chloroethyl ether)	111-44-4	NS	NS	mg/kg	<0.16 U	<0.16 U	<0.16 U	<0.16 U	<0.16 U	<0.19 U	<0.18 U	<0.17 U	<0.19 U	<0.17 U	<0.19 U	<0.16 U	<0.19 U
Bis(2-chloroisopropyl) ether	108-60-1	NS	NS	mg/kg	<0.22 U	<0.21 U	<0.21 U	<0.22 U	<0.22 U	<0.25 U	<0.24 U	<0.23 U	<0.25 U	<0.23 U	<0.26 UJ	<0.22 UJ	<0.25 UJ
Bis(2-ethylhexyl) phthalate	117-81-7	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	0.38 J	0.34	<0.2 U	<0.19 UJ	<0.21 UJ	0.31	<0.21 U	<0.18 U	<0.21 U
Caprolactam	105-60-2	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	86-74-8	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	0.023 J	0.021 J	<0.2 U	<0.19 U	<0.21 U	0.019 J	<0.21 U	<0.18 U	<0.21 U
Chrysene	218-01-9	**1**	3.9	mg/kg	<0.11 U	<0.1 U	<0.1 U	0.027 J	0.032 J	0.14	<0.12 U	<0.12 U	<0.13 U	0.22	<0.13 U	<0.11 U	<0.13 U
Dibenz(a,h)anthracene	53-70-3	1000	0.33	mg/kg	<0.11 U	<0.1 U	<0.1 U	<0.11 U	<0.11 U	0.027 J	<0.12 U	<0.12 U	<0.13 U	0.038 J	<0.13 U	<0.11 U	<0.13 U
Dibenzofuran	132-64-9	210	59	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	0.018 J	0.064 J	<0.2 U	0.033 J	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
Dibutyl phthalate	84-74-2	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
Diethyl phthalate	84-66-2	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
Dimethyl phthalate	131-11-3	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
Dioctyl phthalate	117-84-0	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
Diphenylamine	122-39-4	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	206-44-0	1000	100	mg/kg	<0.11 U	<0.1 U	<0.1 U	0.036 J	0.059 J	0.28	<0.12 U	0.035 J	<0.13 U	0.41	<0.13 U	<0.11 U	<0.13 U
Fluorene	86-73-7	386	100	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	0.036 J	0.13 J	<0.2 U	0.036 J	<0.21 U	0.02 J	<0.21 U	<0.18 U	<0.21 U
Hexachlorobenzene	118-74-1	3.2	1.2	mg/kg	<0.11 UJ	<0.1 UJ	<0.1 UJ	<0.11 U	<0.11 U	<0.12 U	<0.12 UJ	<0.12 U	<0.13 U	<0.12 U	<0.13 U	<0.11 U	<0.13 U
Hexachlorobutadiene	87-68-3	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
Hexachlorocyclopentadiene	77-47-4	NS	NS	mg/kg	<0.51 U	<0.5 U	<0.5 U	<0.52 U	<0.51 U	<0.6 U	<0.58 U	<0.55 U	<0.6 U	<0.55 UJ	<0.61 U	<0.52 U	<0.6 U
Hexachloroethane	67-72-1	NS	NS	mg/kg	<0.14 U	<0.14 U	<0.14 U	<0.15 U	<0.14 U	<0.17 U	<0.16 U	<0.15 U	<0.17 U	<0.15 U	<0.17 U	<0.14 U	<0.17 U
Indeno(1,2,3-cd)pyrene	193-39-5	8.2	0.5	mg/kg	<0.14 U	<0.14 U	<0.14 U	0.026 J	<0.14 U	0.13 J	<0.16 U	<0.15 U	<0.17 U	0.18	<0.17 U	<0.14 U	<0.17 U
Isophorone	78-59-1	NS	NS	mg/kg	<0.16 U	<0.16 U	<0.16 U	<0.16 U	<0.16 U	<0.19 U	<0.18 U	<0.17 U	<0.19 U	<0.17 U	<0.19 U	<0.16 U	<0.19 U
Naphthalene	91-20-3	12	100	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	0.64 J	0.1 J	<0.2 U	<0.19 U	<0.21 U	0.099 J	<0.21 U	<0.18 U	<0.21 U
Nitrobenzene	98-95-3	NS	NS	mg/kg	<0.16 U	<0.16 U	<0.16 U	<0.16 UJ	<0.16 UJ	<0.19 UJ	<0.18 U	<0.17 U	<0.19 U	<0.17 U	<0.19 U	<0.16 U	<0.19 U
n-Nitrosodimethylamine	62-75-9	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodi-N-Propylamine	621-64-7	NS	NS	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
n-Nitrosodiphenylamine	86-30-6	NS	NS	mg/kg	<0.14 U	<0.14 U	<0.14 U	<0.15 U	<0.14 U	<0.17 U	<0.16 U	<0.15 U	<0.17 U	<0.15 U	<0.17 U	<0.14 U	<0.17 U
Pentachlorophenol	87-86-5	0.8	6.7	mg/kg	<0.14 UJ	<0.14 UJ	<0.14 UJ	<0.15 U	<0.14 U	<0.17 U	<0.16 UJ	<0.15 U	<0.17 U	<0.15 U	<0.17 U	<0.14 U	<0.17 U
Phenanthrene	85-01-8	1000	100	mg/kg	<0.11 U	<0.1 U	<0.1 U	<0.11 U	0.076 J	0.35	<0.12 U	0.044 J	<0.13 U	0.17	<0.13 U	<0.11 U	<0.13 U
Phenol	108-95-2	0.33	100	mg/kg	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.18 U	<0.21 U	<0.2 U	<0.19 U	<0.21 U	<0.19 U	<0.21 U	<0.18 U	<0.21 U
Pyrene	129-00-0	1000	100	mg/kg	<0.11 U	<0.1 U	<0.1 U	0.036 J	0.053 J	0.27	<0.12 U	0.024 J	<0.13 U	0.43	<0.13 U	<0.11 U	<0.13 U
Pyridine	110-86-1	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 2
Site Management Plan
Confirmation Endpoint Soil Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	EP42	EP43	EP44	EP45	EP46	EP47	EP48	EP49	EP50	EP51	EP52	EP53	EP54
				Sample Name	EP42_EL_-8.0	EP43_EL_-8.0	EP44_EL_-8.0	EP45_EL_-0.5	EP46_EL_-1	EP47_EL_0	EP48_EL_-8.0	EP49_EL_-8.0	EP50_EL_-8.0	EP51_EL_0.0	EP52_EL_-8.0	EP53_EL_-8.0	EP54_EL_-8.0
				Sample Date	09/26/2022	09/26/2022	09/26/2022	08/24/2022	08/24/2022	08/24/2022	09/26/2022	09/26/2022	09/26/2022	10/12/2022	09/23/2022	09/23/2022	09/23/2022
				Sample Elevation	-8	-8	-8	-0.5	-1	0	-8	-8	-8	0	-8	-8	-8
				Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Pesticides																	
4,4'-DDD	72-54-8	14	13	mg/kg	<0.00169 U	<0.0017 U	<0.00163 U	<0.00169 U	<0.00172 U	<0.00192 UJ	<0.00186 U	<0.00178 U	<0.002 U	<0.00176 U	<0.00205 U	<0.00171 U	<0.00204 U
4,4'-DDE	72-55-9	17	8.9	mg/kg	<0.00169 U	<0.0017 U	<0.00163 U	<0.00169 U	<0.00172 U	<0.00192 UJ	<0.00186 U	<0.00178 U	<0.002 U	<0.00176 U	<0.00205 U	<0.00171 U	<0.00204 U
4,4'-DDT	50-29-3	136	7.9	mg/kg	<0.00169 U	<0.0017 U	<0.00163 U	<0.00169 U	<0.00172 U	<0.00192 UJ	<0.00186 U	<0.00178 U	<0.002 U	<0.00176 U	<0.00205 U	<0.00171 U	<0.00204 U
Aldrin	309-00-2	0.19	0.097	mg/kg	<0.00169 U	<0.0017 U	<0.00163 U	<0.00169 U	<0.00172 U	<0.00192 UJ	<0.00186 U	<0.00178 U	<0.002 U	<0.00176 U	<0.00205 U	<0.00171 U	<0.00204 U
Alpha BHC (Alpha Hexachlorocyclohexane)	319-84-6	0.02	0.48	mg/kg	<0.000706 U	<0.000707 U	<0.000679 U	<0.000705 U	<0.000719 U	<0.000799 UJ	<0.000775 U	<0.00074 U	<0.000832 U	<0.000735 U	<0.000855 U	<0.000712 U	<0.000852 U
Alpha Chlordane	5103-71-9	2.9	4.2	mg/kg	<0.00212 U	<0.00212 U	<0.00204 U	<0.00211 U	<0.00216 U	0.00186 J	<0.00232 U	<0.00222 U	<0.0025 U	0.00218 JIP	<0.00256 U	<0.00214 U	<0.00256 U
Alpha Endosulfan	959-98-8	102	24	mg/kg	<0.00169 U	<0.0017 U	<0.00163 U	<0.00169 U	<0.00172 U	<0.00192 UJ	<0.00186 U	<0.00178 U	<0.002 U	<0.00176 U	<0.00205 U	<0.00171 U	<0.00204 U
Beta Bhc (Beta Hexachlorocyclohexane)	319-85-7	0.09	0.36	mg/kg	<0.00169 U	<0.0017 U	<0.00163 U	<0.00169 U	<0.00172 U	<0.00192 UJ	<0.00186 U	<0.00178 U	<0.002 U	<0.00176 U	<0.00205 U	<0.00171 U	<0.00204 U
Beta Endosulfan	33213-65-9	102	24	mg/kg	<0.00169 U	<0.0017 U	<0.00163 U	<0.00169 U	<0.00172 U	<0.00192 UJ	<0.00186 U	<0.00178 U	<0.002 U	<0.00176 U	<0.00205 U	<0.00171 U	<0.00204 U
Chlordane (alpha and gamma)	57-74-9	NS	NS	mg/kg	<0.0141 U	<0.0141 U	<0.0136 U	<0.0141 U	<0.0144 U	<0.016 UJ	<0.0155 U	<0.0148 U	<0.0166 U	0.0373	<0.0171 U	<0.0142 U	<0.017 U
Delta Bhc (Delta Hexachlorocyclohexane)	319-86-8	0.25	100	mg/kg	<0.00169 U	<0.0017 U	<0.00163 U	<0.00169 U	<0.00172 U	<0.00192 UJ	<0.00186 U	<0.00178 U	<0.002 U	<0.00176 U	<0.00205 U	<0.00171 U	<0.00204 U
Dieldrin	60-57-1	0.1	0.2	mg/kg	<0.00106 U	<0.00106 U	<0.00102 U	<0.00106 U	<0.00108 U	<0.0012 UJ	<0.00116 U	<0.00111 U	<0.00125 U	<0.0011 U	<0.00128 U	<0.00107 U	<0.00128 U
Endosulfan Sulfate	1031-07-8	1000	24	mg/kg	<0.000706 U	<0.000707 U	<0.000679 U	<0.000705 U	<0.000719 U	<0.000799 UJ	<0.000775 U	<0.00074 U	<0.000832 U	0.000668 JIP	<0.000855 U	<0.000712 U	<0.000852 U
Endrin	72-20-8	0.06	11	mg/kg	<0.000706 U	<0.000707 U	<0.000679 U	<0.000705 U	<0.000719 U	<0.000799 UJ	<0.000775 U	<0.00074 U	<0.000832 U	<0.000735 U	<0.000855 U	<0.000712 U	<0.000852 U
Endrin Aldehyde	7421-93-4	NS	NS	mg/kg	<0.00212 U	<0.00212 U	<0.00204 U	<0.00211 U	<0.00216 U	<0.0024 UJ	<0.00232 U	<0.00222 U	<0.0025 U	<0.0022 U	<0.00256 U	<0.00214 U	<0.00256 U
Endrin Ketone	53494-70-5	NS	NS	mg/kg	<0.00169 U	<0.0017 U	<0.00163 U	<0.00169 U	<0.00172 U	<0.00192 UJ	<0.00186 U	<0.00178 U	<0.002 U	<0.00176 U	<0.00205 U	<0.00171 U	<0.00204 U
Gamma Bhc (Lindane)	58-89-9	0.1	1.3	mg/kg	<0.000706 U	<0.000707 U	<0.000679 U	<0.000705 U	<0.000719 U	<0.000799 UJ	<0.000775 U	<0.00074 U	<0.000832 U	<0.000735 U	<0.000855 U	<0.000712 U	<0.000852 U
Gamma Chlordane (Trans)	5103-74-2	NS	NS	mg/kg	<0.00212 U	<0.00212 U	<0.00204 U	0.00057 J	<0.00216 U	<0.0024 UJ	<0.00232 U	<0.00222 U	<0.0025 U	0.0053	<0.00256 U	<0.00214 U	<0.00256 U
Gamma-Chlordane	5566-34-7	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	76-44-8	0.38	2.1	mg/kg	<0.000847 U	<0.000848 U	<0.000814 U	<0.000846 U	<0.000863 U	<0.000959 UJ	<0.00093 U	<0.000888 U	<0.000998 U	<0.000882 U	<0.00103 U	<0.000854 U	<0.00102 U
Heptachlor Epoxide	1024-57-3	NS	NS	mg/kg	<0.00318 U	<0.00318 U	<0.00305 U	<0.00317 U	<0.00324 U	<0.0036 UJ	<0.00348 U	<0.00333 U	<0.00374 U	<0.0033 U	<0.00385 U	<0.0032 U	<0.00383 U
Methoxychlor	72-43-5	NS	NS	mg/kg	<0.00318 U	<0.00318 U	<0.00305 U	<0.00317 U	<0.00324 U	<0.0036 UJ	<0.00348 U	<0.00333 U	<0.00374 U	<0.0033 U	<0.00385 U	<0.0032 U	<0.00383 U
Toxaphene	8001-35-2	NS	NS	mg/kg	<0.0318 U	<0.0318 U	<0.0305 U	<0.0317 U	<0.0324 U	<0.036 UJ	<0.0348 U	<0.0333 U	<0.0374 U	<0.033 U	<0.0385 UJ	<0.032 UJ	<0.0383 UJ
Herbicides																	
2,4,5-T (Trichlorophenoxyacetic Acid)	93-76-5	NS	NS	mg/kg	<0.175 U	<0.176 U	<0.177 U	<0.182 U	<0.177 U	<0.209 U	<0.198 U	<0.194 U	<0.211 U	<0.189 U	<0.217 U	<0.185 U	<0.21 U
2,4-D (Dichlorophenoxyacetic Acid)	94-75-7	NS	NS	mg/kg	<0.175 U	<0.176 U	<0.177 U	<0.182 U	<0.177 U	<0.209 U	<0.198 U	<0.194 U	<0.211 U	<0.189 U	<0.217 U	<0.185 U	<0.21 U
Silvex (2,4,5-Tp)	93-72-1	3.8	100	mg/kg	<0.175 U	<0.176 U	<0.177 U	<0.182 U	<0.177 U	<0.209 U	<0.198 U	<0.194 U	<0.211 U	<0.189 U	<0.217 U	<0.185 U	<0.21 U
Polychlorinated Biphenyl																	
PCB-1016 (Aroclor 1016)	12674-11-2	NS	NS	mg/kg	<0.0339 U	<0.0355 U	<0.0351 U	<0.037 U	<0.0359 U	<0.0418 U	<0.0385 U	<0.0377 U	<0.0415 U	<0.0369 U	<0.0429 U	<0.0358 U	<0.0415 U
PCB-1221 (Aroclor 1221)	11104-28-2	NS	NS	mg/kg	<0.0339 U	<0.0355 U	<0.0351 U	<0.037 U	<0.0359 U	<0.0418 U	<0.0385 U	<0.0377 U	<0.0415 U	<0.0369 U	<0.0429 U	<0.0358 U	<0.0415 U
PCB-1232 (Aroclor 1232)	11141-16-5	NS	NS	mg/kg	<0.0339 U	<0.0355 U	<0.0351 U	<0.037 U	<0.0359 U	<0.0418 U	<0.0385 U	<0.0377 U	<0.0415 U	<0.0369 U	<0.0429 U	<0.0358 U	<0.0415 U
PCB-1242 (Aroclor 1242)	53469-21-9	NS	NS	mg/kg	<0.0339 U	<0.0355 U	<0.0351 U	<0.037 U	0.0148 J	0.0642	<0.0385 U	<0.0377 U	<0.0415 U	<0.0369 U	<0.0429 U	<0.0358 U	<0.0415 U
PCB-1248 (Aroclor 1248)	12672-29-6	NS	NS	mg/kg	<0.0339 U	<0.0355 U	<0.0351 U	<0.037 U	<0.0359 U	<0.0418 U	<0.0385 U	<0.0377 U	<0.0415 U	<0.0369 U	<0.0429 U	<0.0358 U	<0.0415 U
PCB-1254 (Aroclor 1254)	11097-69-1	NS	NS	mg/kg	<0.0339 U	<0.0355 U	<0.0351 U	0.00845 J	0.0124 J	0.0721	<0.0385 U	<0.0377 U	<0.0415 U	0.0499	<0.0429 U	<0.0358 U	<0.0415 U
PCB-1260 (Aroclor 1260)	11096-82-5	NS	NS	mg/kg	<0.0339 U	<0.0355 U	<0.0351 U	<0.037 U	<0.0359 U	0.0251 J	<0.0385 U	<0.0377 U	<0.0415 U	<0.0369 U	<0.0429 U	<0.0358 U	<0.0415 U
PCB-1262 (Aroclor 1262)	37324-23-5	NS	NS	mg/kg	<0.0339 U	<0.0355 U	<0.0351 U	<0.037 U	<0.0359 U	<0.0418 U	<0.0385 U	<0.0377 U	<0.0415 U	<0.0369 U	<0.0429 U	<0.0358 U	<0.0415 U
PCB-1268 (Aroclor 1268)	11100-14-4	NS	NS	mg/kg	<0.0339 U	<0.0355 U	<0.0351 U	<0.037 U	<0.0359 U	<0.0418 U	<0.0385 U	<0.0377 U	<0.0415 U	<0.0369 U	<0.0429 U	<0.0358 U	<0.0415 U
Total PCBs	1336-36-3	3.2	1	mg/kg	<0.0339 U	<0.0355 U	<0.0351 U	0.00845 J	0.0272 J	0.161 J	<0.0385 U	<0.0377 U	<0.0415 U	0.0499	<0.0429 U	<0.0358 U	<0.0415 U
Metals																	
Aluminum	7429-90-5	NS	NS	mg/kg	2,470	1,750	2,560	2,290	2,910	3,310	2,620	2,690	2,820	4,380	2,100	2,080	2,790
Antimony	7440-36-0	NS	NS	mg/kg	0.957 J	0.706 J	0.734 J	<4.29 U	1.36 J	1.56 J	0.75 J	0.941 J	0.996 J	0.726 J	<5.21 U	<4.27 U	<4.91 U
Arsenic	7440-38-2	16	16	mg/kg	1.15	0.257 J	0.614 J	1.82	4.24	3.04	0.658 J	0.779 J	1.01	3.7	0.687 J	0.974	1.02
Barium	7440-39-3	820	400	mg/kg	24.2	10.2	13	22.1	58	51	23	13.7	14.8	54	14.5	8.52	10.8
Beryllium	7440-41-7	47	72	mg/kg	0.172 J	0.112 J	0.171 J	0.146 J	0.192 J	0.212 J	0.173 J	0.178 J	0.18 J	0.268 J	0.177 J	0.154 J	0.196 J
Cadmium	7440-43-9	7.5	4.3	mg/kg	0.242 J	0.121 J	0.144 J	0.292 J	0.584 J	0.635 J	0.195 J	0.171 J	0.187 J	0.51 J	0.135 J	0.12 J	0.157 J
Calcium	7440-70-2	NS	NS	mg/kg	956	846	610	2,090	14,800	13,000	1,280	1,750	3,220	8,030	774	674	961
Chromium, Hexavalent	18540-29-9	19	110	mg/kg	<0.864 U	0.228 J	<0.857 U	<0.9 U	<0.876 U	<1.02 U	<0.98 U	<0.938 U	<1.03 U	<0.937 U	<1.06 U	<0.894 U	<1.03 U
Chromium, Total	7440-47-3	NS	NS	mg/kg	8.37	6.82	6.34	7.02	9.49	10	7.48	7.64	8.48	10.7	5.8	5.99	7.2
Chromium, Trivalent	16065-83-1	NS	180	mg/kg	8.37	6.59 J	6.34	7	9.5	10	7.48	7.64	8.48	10.7	5.8	5.99	7.2
Cobalt	7440-48-4	NS	NS	mg/kg	3.18	2.3	3.41	3.49	3.74	4.17	3.86	3.69	4.02	3.98	2.98	2.62	3.57
Copper	7440-50-8	1720	270	mg/kg	82.4	8.45	9.58	13	61.4	30.4	25.3	11.6	12	30.3	6.24	6.86	8.65
Cyanide	57-12-5	40	27	mg/kg	<1 U	<1 U	<1 U	<1 UJ	<1 UJ	<1.3 UJ	<1.2 U	<1.2 U	<1.2 U	<1.1 UJ	<1.2 UJ	<1 UJ	<1.2 UJ
Iron	7439-89-6	NS	NS	mg/kg	6,330	4,520	6,260	6,710	7,350	9,860	6,950	6,570	7,210	8,960	6,280	5,980	7,320
Lead	7439-92-1	450	400	mg/kg	7.91	3.23 J	3.42 J	19.6	152	84.4	6.8	9.52	15.9	74	2.36 J	2.12 J	3.03 J
Magnesium	7439-95-4	NS	NS	mg/kg	1,960	1,390	2,320	2,120	2,220	2,540	2,140	1,960	2,120	2,730	1,550	1,510	1,980
Manganese	7439-96-5	2000	2000	mg/kg	87.3	41.3	63.4	170	150	190	114	91.2	95.8	147	46.5	85.2	77.5
Mercury	7439-97-6	**0.73**	0.81	mg/kg	<0.07 U	<0.068 U	<0.069 U	0.231	0.305	0.576	<0.078 U	<0.074 U	<0.081 U	**0.797**	<0.083 U	<0.07 U	<0.082 U
Nickel	7440-02-0	130	310	mg/kg	16.1	11.9	19.9	23.1	15.7	15.7	15	17	17.2	28.4	9.47	9.8	14.1
Potassium	7440-09-7	NS	NS	mg/kg	587	407	594	573	827	849	684	611	647	1,430	588	486	693
Selenium	7782-49-2	4	180	mg/kg	<1.63 U	<1.69 U	<1.62 U	<1.72 U	<1.67 U	<1.92 U	<1.91 U	<1.78 U	<1.97 U	0.256 J	<2.08 U	<1.71 U	<1.96 U
Silver	7440-22-4	8.3	180	mg/kg	<0.817 U	<0.844 U	<0.811 U	<0.859 U	<0.835 U	<0.963 U	<0.957 U	<0.888 U	<0.985 U	0.94	<1.04 U	<0.855 U	<0.982 U
Sodium	7440-23-5	NS	NS	mg/kg	78.3 J	79.5 J	94.8 J	102 J	353	385	136 J	130 J	199	149 J	130 J	108 J	242
Thallium	7440-28-0	NS	NS	mg/kg	<1.63 U	<1.69 U	<1.62 U	<1.72 U	<1.67 U	<1.92 U	<1.91 U	<1.78 U	<1.97 U	<1.81 U	<2.08 U	<1.71 U	<1.96 U
Vanadium	7440-62-2	NS	NS	mg/kg	8.65	5.43	8.73	10.2	16.2	14.1	10.2	10.3	11.9	15.1	7.55	8.37	11.2
Zinc	7440-66-6	2480	10000	mg/kg	83.1	35.2	14.8	23.2	121	88.7	27.7	19.6	19.7	179	12.1	10.6	14.5
General Chemistry																	
Solids, Percent	SOLID	NS	NS	Percent	92.6	92.3	93.3	88.9	91.3	78.4	81.6	85.3	77.7	85.4	75.6	89.5	77.5

Table 2
Site Management Plan
Confirmation Endpoint Soil Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	EP42	EP43	EP44	EP45	EP46	EP47	EP48	EP49	EP50	EP51	EP52	EP53	EP54
				Sample Name	EP42_EL_-8.0	EP43_EL_-8.0	EP44_EL_-8.0	EP45_EL_-0.5	EP46_EL_-1	EP47_EL_0	EP48_EL_-8.0	EP49_EL_-8.0	EP50_EL_-8.0	EP51_EL_0.0	EP52_EL_-8.0	EP53_EL_-8.0	EP54_EL_-8.0
				Sample Date	09/26/2022	09/26/2022	09/26/2022	08/24/2022	08/24/2022	08/24/2022	09/26/2022	09/26/2022	09/26/2022	10/12/2022	09/23/2022	09/23/2022	09/23/2022
				Sample Elevation	-8	-8	-8	-0.5	-1	0	-8	-8	-8	0	-8	-8	-8
				Unit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Perfluorooctanoic acids																	
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	763051-92-9	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1h,1h,2h,2h-Perfluorohexanesulfonic Acid (4:2)	757124-72-4	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	6HPFHXSA	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3:3 FTCA	356-02-5	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5:3 FTCA	914637-49-3	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7:3 FTCA	812-70-4	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9-Chlorohexadecafluoro-3-Oxanonane-1-Sulfonic Acid	756426-58-1	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-ethyl perfluorooctane- sulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	NS	NS	mg/kg	<0.000488 UJ	<0.000517 UJ	<0.000501 UJ	<0.000517 U	0.000277 J	<0.00059 U	<0.00053 UJ	<0.000534 UJ	<0.000588 UJ	<0.000542 UJ	<0.000639 UJ	<0.000506 UJ	<0.000612 UJ
N-ethylperfluorooctane sulfonamide	4151-50-2	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-ethylperfluorooctane sulfonamidoe	1691-99-2	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-methyl perfluorooctane- sulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	NS	NS	mg/kg	<0.000488 UJ	<0.000517 UJ	<0.000501 UJ	<0.000517 U	<0.000514 U	<0.00059 U	<0.00053 UJ	<0.000534 UJ	<0.000588 UJ	<0.000542 UJ	<0.000639 UJ	<0.000506 UJ	<0.000612 UJ
N-methylperfluorooctane sulfonamide	31506-32-8	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-methylperfluorooctanesulfonamidol	24448-09-7	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nonafluoro-3,6-dioxaheptanoic acid	151772-58-6	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoro(2-ethoxyethane)sulfonic acid	113507-82-7	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoro-3-methoxypropanoic acid	377-73-1	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoro-4-methoxybutanoic acid	863090-89-5	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	NS	NS	mg/kg	<0.000244 U	<0.000258 U	<0.00025 U	<0.000258 U	<0.000257 U	<0.000295 U	<0.000265 U	<0.000267 U	<0.000294 U	<0.000271 U	<0.00032 U	<0.000253 U	<0.000306 U
Perfluorobutanoic acid (PFBA)	375-22-4	NS	NS	mg/kg	<0.000488 U	<0.000517 U	<0.000501 U	<0.000517 U	<0.000514 U	<0.00059 U	<0.00053 U	<0.000534 U	<0.000588 U	<0.000542 U	<0.000639 U	<0.000506 U	<0.000612 U
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	NS	NS	mg/kg	<0.000488 U	<0.000517 U	<0.000501 U	<0.000517 U	<0.000514 U	<0.00059 U	<0.00053 U	<0.000534 U	<0.000588 U	<0.000542 U	<0.000639 U	<0.000506 U	<0.000612 U
Perfluorodecanoic Acid (PFDA)	335-76-2	NS	NS	mg/kg	<0.000244 U	<0.000258 U	<0.00025 U	<0.000258 U	<0.000257 U	<0.000295 U	<0.000265 U	<0.000267 U	<0.000294 U	<0.000271 U	<0.00032 U	<0.000253 U	<0.000306 U
Perfluorododecanesulfonic Acid (PFDOS)	79780-39-5	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorododecanoic Acid (PFDoA)	307-55-1	NS	NS	mg/kg	<0.000488 U	<0.000517 U	<0.000501 U	<0.000517 U	<0.000514 U	<0.00059 U	<0.00053 U	<0.000534 U	<0.000588 U	<0.000542 U	<0.000639 U	<0.000506 U	<0.000612 U
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	NS	NS	mg/kg	<0.000488 U	<0.000517 U	<0.000501 U	<0.000517 U	<0.000514 U	<0.00059 U	<0.00053 U	<0.000534 U	<0.000588 U	<0.000542 U	<0.000639 U	<0.000506 U	<0.000612 U
Perfluoroheptanoic acid (PFHpA)	375-85-9	NS	NS	mg/kg	<0.000244 U	<0.000258 U	<0.00025 U	<0.000258 U	<0.000257 U	<0.000295 U	<0.000265 U	<0.000267 U	<0.000294 U	<0.000271 U	<0.00032 U	<0.000253 U	<0.000306 U
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	NS	NS	mg/kg	<0.000244 U	<0.000258 U	<0.00025 U	<0.000258 U	<0.000257 U	<0.000295 U	<0.000265 U	<0.000267 U	<0.000294 U	<0.000271 U	<0.00032 U	<0.000253 U	<0.000306 U
Perfluorohexanoic Acid (PFHxA)	307-24-4	NS	NS	mg/kg	<0.000488 U	<0.000517 U	<0.000501 U	<0.000517 U	<0.000514 U	<0.00059 U	<0.00053 U	<0.000534 U	<0.000588 U	<0.000542 U	<0.000639 U	<0.000506 U	<0.000612 U
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorononanoic Acid (PFNA)	375-95-1	NS	NS	mg/kg	<0.000244 U	<0.000258 U	<0.00025 U	<0.000258 U	<0.000257 U	<0.000295 U	<0.000265 U	<0.000267 U	<0.000294 U	<0.000271 U	<0.00032 U	<0.000253 U	<0.000306 U
Perfluorooctanesulfonamide (FOSA)	754-91-6	NS	NS	mg/kg	<0.000488 U	<0.000517 U	<0.000501 U	<0.000517 U	<0.000514 U	<0.00059 U	<0.00053 U	<0.000534 U	<0.000588 U	<0.000542 U	<0.000639 U	<0.000506 U	<0.000612 U
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	0.001	0.044	mg/kg	<0.000244 U	<0.000258 U	<0.00025 U	0.000208 J	0.00052 J	<0.000295 U	<0.000265 U	<0.000267 U	<0.000294 U	0.000351 F	<0.00032 U	<0.000253 U	<0.000306 U
Perfluorooctanoic Acid (PFOA)	335-67-1	0.0008	0.033	mg/kg	<0.000244 U	<0.000258 U	<0.00025 U	0.000077 J	0.000223 J	0.000064 J	<0.000265 U	<0.000267 U	<0.000294 U	<0.000271 U	<0.00032 U	<0.000253 U	<0.000306 U
Perfluoropentanesulfonic Acid	2706-91-4	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoropentanoic Acid (PFPeA)	2706-90-3	NS	NS	mg/kg	<0.000488 U	<0.000517 U	<0.000501 U	<0.000517 U	<0.000514 U	<0.00059 U	<0.00053 U	<0.000534 U	<0.000588 U	<0.000542 U	<0.000639 U	<0.000506 U	<0.000612 U
Perfluorotetradecanoic Acid (PFTA)	376-06-7	NS	NS	mg/kg	<0.000488 UJ	<0.000517 UJ	<0.000501 UJ	<0.000517 U	<0.000514 U	<0.00059 U	<0.00053 UJ	<0.000534 UJ	<0.000588 UJ	<0.000542 U	<0.000639 UJ	<0.000506 UJ	<0.000612 UJ
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	NS	NS	mg/kg	<0.000488 U	<0.000517 U	<0.000501 U	<0.000517 U	<0.000514 U	<0.00059 U	<0.00053 U	<0.000534 U	<0.000588 U	<0.000542 U	<0.000639 U	<0.000506 U	<0.000612 U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	NS	NS	mg/kg	<0.000488 U	<0.000517 U	<0.000501 U	<0.000517 UJ	<0.000514 UJ	<0.00059 UJ	<0.00053 U	<0.000534 U	<0.000588 U	<0.000542 U	<0.000639 U	<0.000506 U	<0.000612 U
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2) (8:2FTS)	39108-34-4	NS	NS	mg/kg	<0.000488 U	<0.000517 U	<0.000501 U	<0.000517 U	<0.000514 U	<0.00059 U	<0.00053 U	<0.000534 U	<0.000588 U	<0.000542 U	<0.000639 U	<0.000506 U	<0.000612 U
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2) (6:2FTS)	27619-97-2	NS	NS	mg/kg	<0.000488 U	<0.000517 U	<0.000501 U	<0.000517 U	<0.000514 U	<0.00059 U	<0.00053 U	0.000216 J	<0.000588 U	<0.000542 U	<0.000639 U	0.000496 J	<0.000612 U
Tetrafluoro-2- (heptafluoropropoxy) propanoic Acid	13252-13-6	NS	NS	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PFOA and PFOS	TOTPFOAPFOS	NS	NS	mg/kg	<0.000244 U	<0.000258 U	<0.00025 U	0.000285 J	0.000743 J	0.000064 J	<0.000265 U	<0.000267 U	<0.000294 U	0.000351	<0.00032 U	<0.000253 U	<0.000306 U

Table 2
Site Management Plan
Confirmation Endpoint Soil Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Notes:
CAS - Chemical Abstract Service
NS - No standard
mg/kg - milligram per kilogram
NA - Not analyzed
RL - Reporting limit
<RL - Not detected

Soil sample analytical results are compared to the New York State Department of Environmental Conservation (NYSDEC) Title 6 of the Official Compilation of New York Codes, Rules, and Regulations (NYCRR) Part 375 Protection of Groundwater and Restricted Use Restricted-Residential Soil Cleanup Objectives (SCO).

Soil sample analytical results are compared to the New York State Department of Environmental Conservation (NYSDEC) Part 375 Remedial Programs Guidelines for Sampling and Analysis of Per- and Polyfluoroalkyl Substances (PFAS) Restricted Use Restricted-Residential and Protection of Groundwater Guidance Values (April 2023).

Criterion comparisons for 3- & 4-methylphenol (m&p cresol) are provided for reference. Promulgated SCOs are for 3-methylphenol (m-cresol) and 4-methylphenol (p-cresol).

Qualifiers:
D - The concentration reported is a result of a diluted sample.

E - The result is estimated and cannot be accurately reported due to levels encountered or interferences.

I - The lower value for the two columns has been reported due to obvious interference.

P - The relative percent difference (RPD) between the results for the two columns exceeds the method-specified criteria.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

B - The analyte was found in the associated analysis batch blank.

J - The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

UJ - The analyte was not detected at a level greater than or equal to the RL; however, the reported RL is approximate and may be inaccurate or imprecise.

U - The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

Exceedance Summary:
10 - Result exceeds Protection of Groundwater SCOs
10 - Result exceeds Restricted Use Restricted-Residential SCOs

Table 3
Site Management Plan
Confirmation Soil Sample Analytical Results – Mercury Hotspot

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	SB4_EP
				Sample Name	SB4_EP_EL_-1.5
				Sample Date	08/26/2022
				Sample Elevation	-1.5
				Unit	Result
Metals					
Mercury	7439-97-6	**0.73**	0.81	mg/kg	**2.92 J**
General Chemistry					
Solids, Percent	SOLID	NS	NS	Percent	75.1

Notes:
CAS - Chemical Abstract Service
NS - No standard
mg/kg - milligram per kilogram
NA - Not analyzed
RL - Reporting limit
<RL - Not detected
Soil sample analytical results are compared to the New York State Department of Environmental Conservation (NYSDEC) Title 6 of the Official Compilation of New York Codes, Rules, and Regulations (NYCRR) Part 375 Protection of Groundwater and Restricted Use Restricted-Residential Soil Cleanup Objectives (SCO).

Qualifiers:
J - The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

Exceedance Summary:
10 - Result exceeds Protection of Groundwater SCOs
10 - Result exceeds Restricted Use Restricted-Residential SCOs

Table 4
Site Management Plan
Confirmation Soil Sample Analytical Results – UST Removal

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	BEP01
				Sample Name	BEP01_10122022
				Sample Date	10/12/2022
				Unit	Result
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	630-20-6	NS	NS	mg/kg	<0.03 U
1,1,1-Trichloroethane	71-55-6	0.68	100	mg/kg	<0.03 U
1,1,2,2-Tetrachloroethane	79-34-5	NS	NS	mg/kg	<0.03 U
1,1,2-Trichloroethane	79-00-5	NS	NS	mg/kg	<0.06 U
1,1-Dichloroethane	75-34-3	0.27	26	mg/kg	<0.06 U
1,1-Dichloroethene	75-35-4	0.33	100	mg/kg	<0.06 U
1,1-Dichloropropene	563-58-6	NS	NS	mg/kg	<0.03 U
1,2,3-Trichlorobenzene	87-61-6	NS	NS	mg/kg	<0.12 U
1,2,3-Trichloropropane	96-18-4	NS	NS	mg/kg	<0.12 U
1,2,4,5-Tetramethylbenzene	95-93-2	NS	NS	mg/kg	0.1 J
1,2,4-Trichlorobenzene	120-82-1	NS	NS	mg/kg	<0.12 U
1,2,4-Trimethylbenzene	95-63-6	3.6	52	mg/kg	0.16 J
1,2-Dibromo-3-Chloropropane	96-12-8	NS	NS	mg/kg	<0.18 U
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	NS	NS	mg/kg	<0.06 U
1,2-Dichlorobenzene	95-50-1	1.1	100	mg/kg	<0.12 U
1,2-Dichloroethane	107-06-2	0.02	3.1	mg/kg	<0.06 U
1,2-Dichloropropane	78-87-5	NS	NS	mg/kg	<0.06 U
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	8.4	52	mg/kg	0.061 J
1,3-Dichlorobenzene	541-73-1	2.4	49	mg/kg	<0.12 U
1,3-Dichloropropane	142-28-9	NS	NS	mg/kg	<0.12 U
1,4-Dichlorobenzene	106-46-7	1.8	13	mg/kg	<0.12 U
1,4-Diethyl Benzene	105-05-5	NS	NS	mg/kg	<0.12 U
1,4-Dioxane (P-Dioxane)	123-91-1	0.1	13	mg/kg	<4.8 UJ
2,2-Dichloropropane	594-20-7	NS	NS	mg/kg	<0.12 U
2-Chlorotoluene	95-49-8	NS	NS	mg/kg	<0.12 U
2-Hexanone (MBK)	591-78-6	NS	NS	mg/kg	<0.6 U
4-Chlorotoluene	106-43-4	NS	NS	mg/kg	<0.12 U
4-Ethyltoluene	622-96-8	NS	NS	mg/kg	0.13 J
Acetone	67-64-1	0.05	100	mg/kg	<0.6 U
Acrylonitrile	107-13-1	NS	NS	mg/kg	<0.24 U
Benzene	71-43-2	0.06	4.8	mg/kg	0.015 J
Bromobenzene	108-86-1	NS	NS	mg/kg	<0.12 U
Bromochloromethane	74-97-5	NS	NS	mg/kg	<0.12 U
Bromodichloromethane	75-27-4	NS	NS	mg/kg	<0.03 U
Bromoform	75-25-2	NS	NS	mg/kg	<0.24 U
Bromomethane	74-83-9	NS	NS	mg/kg	<0.12 U
Carbon Disulfide	75-15-0	NS	NS	mg/kg	<0.6 U
Carbon Tetrachloride	56-23-5	0.76	2.4	mg/kg	<0.06 U
Chlorobenzene	108-90-7	1.1	100	mg/kg	<0.03 U
Chloroethane	75-00-3	NS	NS	mg/kg	<0.12 U
Chloroform	67-66-3	0.37	49	mg/kg	<0.09 U
Chloromethane	74-87-3	NS	NS	mg/kg	<0.24 U
Cis-1,2-Dichloroethene	156-59-2	0.25	100	mg/kg	<0.06 U
Cis-1,3-Dichloropropene	10061-01-5	NS	NS	mg/kg	<0.03 U
Cymene	99-87-6	NS	NS	mg/kg	0.04 J
Dibromochloromethane	124-48-1	NS	NS	mg/kg	<0.06 U
Dibromomethane	74-95-3	NS	NS	mg/kg	<0.12 U
Dichlorodifluoromethane	75-71-8	NS	NS	mg/kg	<0.6 UJ
Diethyl Ether (Ethyl Ether)	60-29-7	NS	NS	mg/kg	<0.12 U
Ethylbenzene	100-41-4	1	41	mg/kg	0.062 J
Hexachlorobutadiene	87-68-3	NS	NS	mg/kg	<0.24 U
Isopropylbenzene (Cumene)	98-82-8	NS	NS	mg/kg	0.061 J
M,P-Xylene	179601-23-1	NS	NS	mg/kg	0.23 J
Methyl Ethyl Ketone (2-Butanone)	78-93-3	0.12	100	mg/kg	<0.6 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	NS	NS	mg/kg	<0.6 UJ
Methylene Chloride	75-09-2	0.05	100	mg/kg	<0.3 U
Naphthalene	91-20-3	12	100	mg/kg	0.098 J
n-Butylbenzene	104-51-8	12	100	mg/kg	0.064 J
n-Propylbenzene	103-65-1	3.9	100	mg/kg	0.087 J
o-Xylene (1,2-Dimethylbenzene)	95-47-6	NS	NS	mg/kg	0.088 J
Sec-Butylbenzene	135-98-8	11	100	mg/kg	0.12 J
Styrene	100-42-5	NS	NS	mg/kg	0.013 J
T-Butylbenzene	98-06-6	5.9	100	mg/kg	0.032 J
Tert-Butyl Methyl Ether	1634-04-4	0.93	100	mg/kg	<0.12 U
Tetrachloroethene (PCE)	127-18-4	1.3	19	mg/kg	<0.03 U
Toluene	108-88-3	0.7	100	mg/kg	0.12 J
Total 1,2-Dichloroethene (Cis and Trans)	540-59-0	NS	NS	mg/kg	<0.06 U
Total Xylenes	1330-20-7	1.6	100	mg/kg	0.32 J
Total, 1,3-Dichloropropene (Cis And Trans)	542-75-6	NS	NS	mg/kg	<0.03 U
Trans-1,2-Dichloroethene	156-60-5	0.19	100	mg/kg	<0.09 U
Trans-1,3-Dichloropropene	10061-02-6	NS	NS	mg/kg	<0.06 U
Trans-1,4-Dichloro-2-Butene	110-57-6	NS	NS	mg/kg	<0.3 U
Trichloroethene (TCE)	79-01-6	0.47	21	mg/kg	<0.03 U
Trichlorofluoromethane	75-69-4	NS	NS	mg/kg	<0.24 U
Vinyl Acetate	108-05-4	NS	NS	mg/kg	<0.6 U
Vinyl Chloride	75-01-4	0.02	0.9	mg/kg	<0.06 U

Table 4
Site Management Plan
Confirmation Soil Sample Analytical Results – UST Removal

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Location	BEP01
				Sample Name	BEP01_10122022
				Sample Date	10/12/2022
				Unit	Result
Semi-Volatile Organic Compounds					
1,2,4,5-Tetrachlorobenzene	95-94-3	NS	NS	mg/kg	<0.2 U
1,2,4-Trichlorobenzene	120-82-1	NS	NS	mg/kg	<0.2 U
1,2-Dichlorobenzene	95-50-1	1.1	100	mg/kg	<0.2 U
1,3-Dichlorobenzene	541-73-1	2.4	49	mg/kg	<0.2 U
1,4-Dichlorobenzene	106-46-7	1.8	13	mg/kg	<0.2 U
1,4-Dioxane (P-Dioxane)	123-91-1	0.1	13	mg/kg	<0.03 U
2,4,5-Trichlorophenol	95-95-4	NS	NS	mg/kg	<0.2 U
2,4,6-Trichlorophenol	88-06-2	NS	NS	mg/kg	<0.12 U
2,4-Dichlorophenol	120-83-2	NS	NS	mg/kg	<0.18 U
2,4-Dimethylphenol	105-67-9	NS	NS	mg/kg	<0.2 U
2,4-Dinitrophenol	51-28-5	NS	NS	mg/kg	<0.97 UJ
2,4-Dinitrotoluene	121-14-2	NS	NS	mg/kg	<0.2 U
2,6-Dinitrotoluene	606-20-2	NS	NS	mg/kg	<0.2 U
2-Chloronaphthalene	91-58-7	NS	NS	mg/kg	<0.2 U
2-Chlorophenol	95-57-8	NS	NS	mg/kg	<0.2 U
2-Methylnaphthalene	91-57-6	NS	NS	mg/kg	0.027 J
2-Methylphenol (o-Cresol)	95-48-7	0.33	100	mg/kg	<0.2 U
2-Nitroaniline	88-74-4	NS	NS	mg/kg	<0.2 U
2-Nitrophenol	88-75-5	NS	NS	mg/kg	<0.44 UJ
3 & 4 Methylphenol (m&p Cresol)	65794-96-9	0.33	100	mg/kg	<0.29 U
3,3'-Dichlorobenzidine	91-94-1	NS	NS	mg/kg	<0.2 U
3-Nitroaniline	99-09-2	NS	NS	mg/kg	<0.2 U
4,6-Dinitro-2-Methylphenol	534-52-1	NS	NS	mg/kg	<0.53 UJ
4-Bromophenyl Phenyl Ether	101-55-3	NS	NS	mg/kg	<0.2 U
4-Chloro-3-Methylphenol	59-50-7	NS	NS	mg/kg	<0.2 U
4-Chloroaniline	106-47-8	NS	NS	mg/kg	<0.2 U
4-Chlorophenyl Phenyl Ether	7005-72-3	NS	NS	mg/kg	<0.2 U
4-Nitroaniline	100-01-6	NS	NS	mg/kg	<0.2 U
4-Nitrophenol	100-02-7	NS	NS	mg/kg	<0.28 UJ
Acenaphthene	83-32-9	98	100	mg/kg	<0.16 U
Acenaphthylene	208-96-8	107	100	mg/kg	<0.16 U
Acetophenone	98-86-2	NS	NS	mg/kg	<0.2 U
Anthracene	120-12-7	1000	100	mg/kg	<0.12 U
Benzo(a)anthracene	56-55-3	1	1	mg/kg	0.23
Benzo(a)pyrene	50-32-8	22	1	mg/kg	0.2
Benzo(b)fluoranthene	205-99-2	1.7	1	mg/kg	0.24
Benzo(g,h,i)Perylene	191-24-2	1000	100	mg/kg	0.088 J
Benzo(k)fluoranthene	207-08-9	1.7	3.9	mg/kg	0.069 J
Benzoic Acid	65-85-0	NS	NS	mg/kg	<0.66 U
Benzyl Alcohol	100-51-6	NS	NS	mg/kg	0.14 J
Benzyl Butyl Phthalate	85-68-7	NS	NS	mg/kg	<0.2 U
Biphenyl (Diphenyl)	92-52-4	NS	NS	mg/kg	<0.46 U
Bis(2-chloroethoxy) methane	111-91-1	NS	NS	mg/kg	<0.22 U
Bis(2-chloroethyl) ether (2-chloroethyl ether)	111-44-4	NS	NS	mg/kg	<0.18 U
Bis(2-chloroisopropyl) ether	108-60-1	NS	NS	mg/kg	<0.24 U
Bis(2-ethylhexyl) phthalate	117-81-7	NS	NS	mg/kg	<0.2 U
Carbazole	86-74-8	NS	NS	mg/kg	<0.2 U
Chrysene	218-01-9	1	3.9	mg/kg	0.2
Dibenz(a,h)anthracene	53-70-3	1000	0.33	mg/kg	<0.12 U
Dibenzofuran	132-64-9	210	59	mg/kg	<0.2 U
Dibutyl phthalate	84-74-2	NS	NS	mg/kg	<0.2 U
Diethyl phthalate	84-66-2	NS	NS	mg/kg	<0.2 U
Dimethyl phthalate	131-11-3	NS	NS	mg/kg	<0.2 U
Dioctyl phthalate	117-84-0	NS	NS	mg/kg	<0.2 U
Fluoranthene	206-44-0	1000	100	mg/kg	0.54
Fluorene	86-73-7	386	100	mg/kg	<0.2 U
Hexachlorobenzene	118-74-1	3.2	1.2	mg/kg	<0.12 U
Hexachlorobutadiene	87-68-3	NS	NS	mg/kg	<0.2 U
Hexachlorocyclopentadiene	77-47-4	NS	NS	mg/kg	<0.58 UJ
Hexachloroethane	67-72-1	NS	NS	mg/kg	<0.16 U
Indeno(1,2,3-cd)pyrene	193-39-5	8.2	0.5	mg/kg	0.099 J
Isophorone	78-59-1	NS	NS	mg/kg	<0.18 U
Naphthalene	91-20-3	12	100	mg/kg	0.036 J
Nitrobenzene	98-95-3	NS	NS	mg/kg	<0.18 U
n-Nitrosodi-N-Propylamine	621-64-7	NS	NS	mg/kg	<0.2 U
n-Nitrosodiphenylamine	86-30-6	NS	NS	mg/kg	<0.16 U
Pentachlorophenol	87-86-5	0.8	6.7	mg/kg	<0.16 U
Phenanthrene	85-01-8	1000	100	mg/kg	0.1 J
Phenol	108-95-2	0.33	100	mg/kg	<0.2 U
Pyrene	129-00-0	1000	100	mg/kg	0.52
General Chemistry					
Solids, Percent	SOLID	NS	NS	Percent	81.7

Table 4
Site Management Plan
Confirmation Soil Sample Analytical Results – UST Removal

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Notes:

CAS - Chemical Abstract Service
NS - No standard
mg/kg - milligram per kilogram
NA - Not analyzed
RL - Reporting limit
<RL - Not detected

Soil sample analytical results are compared to the New York State Department of Environmental Conservation (NYSDEC) Title 6 of the Official Compilation of New York Codes, Rules, and Regulations (NYCRR) Part 375 Protection of Groundwater and Restricted Use Restricted-Residential Soil Cleanup Objectives (SCO).

Criterion comparisons for 3- & 4-methylphenol (m&p cresol) are provided for reference. Promulgated SCOs are for 3-methylphenol (m-cresol) and 4-methylphenol (p-cresol).

Qualifiers:

J - The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
UJ - The analyte was not detected at a level greater than or equal to the RL; however, the reported RL is approximate and may be inaccurate or imprecise.
U - The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

Exceedance Summary:

10 - Result exceeds Protection of Groundwater SCOs
10 - Result exceeds Restricted Use Restricted-Residential SCOs

Table 5
Site Management Plan
Confirmation Groundwater Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC SGVs	Location	GW01	GW02	TMW35	TMW35	TMW36	TMW36	TMW36
			Sample Name	GW01_20220921	GW02_20221003	TMW35_101723	TMW35_120723	TMW36_101723	DUP_101723	TMW36_120723
			Sample Date	09/21/2022	10/03/2022	10/17/2023	12/07/2023	10/17/2023	10/17/2023	12/07/2023
			Unit	Result	Result	Result	Result	Result	Result	Result
Volatile Organic Compounds										
1,1,1,2-Tetrachloroethane	630-20-6	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
1,1,1-Trichloroethane	71-55-6	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
1,1,2,2-Tetrachloroethane	79-34-5	5	ug/l	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,1,2-Trichloroethane	79-00-5	1	ug/l	<1.5 U	<1.5 U	<1.5 UJ	<1.5 UJ	<1.5 UJ	<1.5 UJ	<1.5 UJ
1,1-Dichloroethane	75-34-3	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
1,1-Dichloroethene	75-35-4	5	ug/l	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,1-Dichloropropene	563-58-6	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
1,2,3-Trichlorobenzene	87-61-6	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
1,2,3-Trichloropropane	96-18-4	0.04	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
1,2,4,5-Tetramethylbenzene	95-93-2	**5**	ug/l	**5.4**	**10**	**20**	0.58 J	<2 U	<2 U	<2 U
1,2,4-Trichlorobenzene	120-82-1	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
1,2,4-Trimethylbenzene	95-63-6	**5**	ug/l	<2.5 U	<2.5 U	**18**	<2.5 U	<2.5 U	<2.5 U	<2.5 U
1,2-Dibromo-3-Chloropropane	96-12-8	0.04	ug/l	<2.5 U	<2.5 UJ	<2.5 UJ	<2.5 U	<2.5 UJ	<2.5 UJ	<2.5 U
1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	0.0006	ug/l	<2 U	<2 U	<2 UJ	<2 U	<2 UJ	<2 UJ	<2 U
1,2-Dichlorobenzene	95-50-1	3	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
1,2-Dichloroethane	107-06-2	0.6	ug/l	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
1,2-Dichloropropane	78-87-5	1	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	**5**	ug/l	<2.5 U	<2.5 U	**15**	<2.5 U	<2.5 U	<2.5 U	<2.5 U
1,3-Dichlorobenzene	541-73-1	3	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
1,3-Dichloropropane	142-28-9	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
1,4-Dichlorobenzene	106-46-7	3	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
1,4-Diethyl Benzene	105-05-5	NS	ug/l	1.3 J	2.3	3	<2 U	<2 U	<2 U	<2 U
1,4-Dioxane (P-Dioxane)	123-91-1	0.35	ug/l	<250 UJ	<250 UJ	<250 UJ	<250 UJ	<250 UJ	<250 UJ	<250 UJ
2,2-Dichloropropane	594-20-7	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
2-Chlorotoluene	95-49-8	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
2-Hexanone (MBK)	591-78-6	50	ug/l	<5 UJ	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
4-Chlorotoluene	106-43-4	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
4-Ethyltoluene	622-96-8	NS	ug/l	0.79 J	1.6 J	10	<2 U	<2 U	<2 U	<2 U
Acetone	67-64-1	50	ug/l	4.2 J	3.6 J	8.8 J	<5 U	5.4 J	5.5 J	<5 U
Acrylonitrile	107-13-1	5	ug/l	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
Benzene	71-43-2	**1**	ug/l	0.89	0.53	**2.6**	**2.6**	0.27 J	0.27 J	0.23 J
Bromobenzene	108-86-1	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Bromochloromethane	74-97-5	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Bromodichloromethane	75-27-4	50	ug/l	<0.5 U	<0.5 U	<0.5 UJ	<0.5 UJ	<0.5 UJ	<0.5 UJ	<0.5 UJ
Bromoform	75-25-2	50	ug/l	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U
Bromomethane	74-83-9	5	ug/l	<2.5 U	<2.5 UJ	<2.5 UJ	<2.5 U	<2.5 UJ	<2.5 UJ	<2.5 U
Carbon Disulfide	75-15-0	60	ug/l	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
Carbon Tetrachloride	56-23-5	5	ug/l	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Chlorobenzene	108-90-7	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Chloroethane	75-00-3	5	ug/l	<2.5 UJ	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Chloroform	67-66-3	7	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Chloromethane	74-87-3	5	ug/l	<2.5 U	<2.5 UJ	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Cis-1,2-Dichloroethene	156-59-2	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Cis-1,3-Dichloropropene	10061-01-5	0.4	ug/l	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Cymene	99-87-6	5	ug/l	<2.5 U	<2.5 U	1.1 J	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Dibromochloromethane	124-48-1	50	ug/l	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Dibromomethane	74-95-3	5	ug/l	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
Dichlorodifluoromethane	75-71-8	5	ug/l	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
Diethyl Ether (Ethyl Ether)	60-29-7	NS	ug/l	<2.5 UJ	<2.5 U	<2.5 UJ	<2.5 UJ	<2.5 UJ	<2.5 UJ	<2.5 UJ
Ethylbenzene	100-41-4	5	ug/l	<2.5 U	<2.5 U	2.1 J	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Hexachlorobutadiene	87-68-3	0.5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Isopropylbenzene (Cumene)	98-82-8	**5**	ug/l	**7.6**	**10**	3.5	1.2 J	<2.5 U	<2.5 U	<2.5 U
M,P-Xylene	179601-23-1	**5**	ug/l	<2.5 U	1.7 J	**6.9**	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Methyl Ethyl Ketone (2-Butanone)	78-93-3	50	ug/l	<5 UJ	<5 UJ	5.6	<5 U	<5 U	<5 U	<5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	NS	ug/l	<5 UJ	<5 UJ	<5 U	<5 U	<5 U	1.1 J	<5 U
Methylene Chloride	75-09-2	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Naphthalene	91-20-3	**10**	ug/l	<2.5 U	3.6	**12**	1.4 J	2.6	2.7	<2.5 U
n-Butylbenzene	104-51-8	5	ug/l	<2.5 U	1.4 J	1.6 J	<2.5 U	<2.5 U	<2.5 U	<2.5 U
n-Propylbenzene	103-65-1	**5**	ug/l	**11**	**19**	**7.5**	<2.5 U	<2.5 U	<2.5 U	<2.5 U
o-Xylene (1,2-Dimethylbenzene)	95-47-6	5	ug/l	<2.5 U	<2.5 U	3.7	<2.5 UJ	<2.5 U	<2.5 U	<2.5 UJ
Sec-Butylbenzene	135-98-8	5	ug/l	0.94 J	1.4 J	1.5 J	0.92 J	<2.5 U	<2.5 U	<2.5 U
Styrene	100-42-5	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 UJ	<2.5 U	<2.5 U	<2.5 UJ
T-Butylbenzene	98-06-6	5	ug/l	<2.5 U	<2.5 U	<2.5 U	1.4 J	<2.5 U	<2.5 U	<2.5 U
Tert-Butyl Methyl Ether	1634-04-4	10	ug/l	<2.5 U	<2.5 U	<2.5 UJ	<2.5 U	<2.5 UJ	<2.5 UJ	<2.5 U
Tetrachloroethene (PCE)	127-18-4	5	ug/l	0.24 J	0.23 J	<0.5 U	<0.5 U	0.41 J	0.4 J	<0.5 U
Toluene	108-88-3	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Total 1,2-Dichloroethene (Cis and Trans)	540-59-0	NS	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Total Xylenes	1330-20-7	**5**	ug/l	<2.5 U	1.7 J	**11**	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Total, 1,3-Dichloropropene (Cis And Trans)	542-75-6	0.4	ug/l	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trans-1,2-Dichloroethene	156-60-5	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Trans-1,3-Dichloropropene	10061-02-6	0.4	ug/l	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Trans-1,4-Dichloro-2-Butene	110-57-6	5	ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 UJ	<2.5 U	<2.5 U	<2.5 UJ
Trichloroethene (TCE)	79-01-6	5	ug/l	1.2 J	0.56	0.31 J	<0.5 U	0.21 J	<0.5 U	<0.5 U
Trichlorofluoromethane	75-69-4	**5**	ug/l	**20 J**	**10**	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Vinyl Acetate	108-05-4	NS	ug/l	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
Vinyl Chloride	75-01-4	2	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U

Table 5
Site Management Plan
Confirmation Groundwater Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Analyte	CAS Number	NYSDEC SGVs	Location	GW01	GW02	TMW35	TMW35	TMW36	TMW36	TMW36
			Sample Name	GW01_20220921	GW02_20221003	TMW35_101723	TMW35_120723	TMW36_101723	DUP_101723	TMW36_120723
			Sample Date	09/21/2022	10/03/2022	10/17/2023	12/07/2023	10/17/2023	10/17/2023	12/07/2023
			Unit	Result	Result	Result	Result	Result	Result	Result
Semi-Volatile Organic Compounds										
1,2,4,5-Tetrachlorobenzene	95-94-3	5	ug/l	<10 UJ	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U
1,2,4-Trichlorobenzene	120-82-1	5	ug/l	<5 UJ	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
1,2-Dichlorobenzene	95-50-1	3	ug/l	<2 UJ	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U
1,3-Dichlorobenzene	541-73-1	3	ug/l	<2 UJ	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U
1,4-Dichlorobenzene	106-46-7	3	ug/l	<2 UJ	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U
1,4-Dioxane (P-Dioxane)	123-91-1	**0.35**	ug/l	NA	NA	**0.838**	0.222	**2.96 J**	**3.13 J**	**0.941**
2,4,5-Trichlorophenol	95-95-4	NS	ug/l	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
2,4,6-Trichlorophenol	88-06-2	NS	ug/l	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
2,4-Dichlorophenol	120-83-2	1	ug/l	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
2,4-Dimethylphenol	105-67-9	1	ug/l	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
2,4-Dinitrophenol	51-28-5	1	ug/l	<20 UJ	<20 U	<20 U	<20 U	<20 U	<20 U	<20 U
2,4-Dinitrotoluene	121-14-2	5	ug/l	<5 UJ	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
2,6-Dinitrotoluene	606-20-2	5	ug/l	<5 UJ	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
2-Chloronaphthalene	91-58-7	10	ug/l	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<0.2 U
2-Chlorophenol	95-57-8	NS	ug/l	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U
2-Methylnaphthalene	91-57-6	NS	ug/l	0.19	0.33	6	0.17	0.38	0.35	0.12
2-Methylphenol (o-Cresol)	95-48-7	NS	ug/l	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
2-Nitroaniline	88-74-4	5	ug/l	<5 UJ	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
2-Nitrophenol	88-75-5	NS	ug/l	<10 UJ	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U
3 & 4 Methylphenol (m&p Cresol)	65794-96-9	NS	ug/l	<5 U	<5 U	1.4 J	<5 U	<5 U	<5 U	<5 U
3,3'-Dichlorobenzidine	91-94-1	5	ug/l	<5 UJ	<5 U	<5 U	<5 U	NA	NA	<5 U
3-Nitroaniline	99-09-2	5	ug/l	<5 UJ	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
4,6-Dinitro-2-Methylphenol	534-52-1	NS	ug/l	<10 UJ	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U
4-Bromophenyl Phenyl Ether	101-55-3	NS	ug/l	<2 UJ	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U
4-Chloro-3-Methylphenol	59-50-7	NS	ug/l	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U
4-Chloroaniline	106-47-8	5	ug/l	<5 UJ	<5 U	<5 U	<5 UJ	<5 U	<5 U	<5 UJ
4-Chlorophenyl Phenyl Ether	7005-72-3	NS	ug/l	<2 UJ	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U
4-Nitroaniline	100-01-6	5	ug/l	<5 UJ	<5 U	<5 U	<5 U	<5 UJ	<5 UJ	<5 U
4-Nitrophenol	100-02-7	NS	ug/l	<10 U	<10 UJ	<10 U	<10 U	<10 U	<10 U	<10 U
Acenaphthene	83-32-9	20	ug/l	0.11	0.12	1.8	0.26	0.41	0.37	0.36
Acenaphthylene	208-96-8	NS	ug/l	<0.1 U	0.07 J	0.09 J	0.03 J	0.05 J	0.05 J	0.06 J
Acetophenone	98-86-2	NS	ug/l	<5 UJ	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
Anthracene	120-12-7	50	ug/l	0.01 J	0.06 J	0.27	0.13	0.18	0.16	0.22
Benzo(a)anthracene	56-55-3	**0.002**	ug/l	<0.1 U	**1.2**	**0.12**	<0.1 U	<0.1 U	<0.1 U	**0.34**
Benzo(a)pyrene	50-32-8	**0**	ug/l	<0.1 U	**0.98**	**0.08 J**	**0.03 J**	**0.04 J**	<0.1 U	**0.34**
Benzo(b)fluoranthene	205-99-2	**0.002**	ug/l	<0.1 U	**2.2**	**0.1 J**	<0.1 U	**0.07 J**	<0.1 U	**0.44**
Benzo(g,h,i)Perylene	191-24-2	NS	ug/l	<0.1 U	0.84	0.05 J	0.02 J	0.06 J	<0.1 U	0.22
Benzo(k)fluoranthene	207-08-9	**0.002**	ug/l	<0.1 U	**0.64**	**0.04 J**	<0.1 U	**0.06 J**	<0.1 U	**0.11**
Benzoic Acid	65-85-0	NS	ug/l	<50 UJ	<50 U	16 J	<50 U	14 J	14 J	7.3 J
Benzyl Alcohol	100-51-6	NS	ug/l	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U
Benzyl Butyl Phthalate	85-68-7	50	ug/l	<5 UJ	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
Biphenyl (Diphenyl)	92-52-4	5	ug/l	<2 UJ	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U
Bis(2-chloroethoxy) methane	111-91-1	5	ug/l	<5 UJ	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
Bis(2-chloroethyl) ether (2-chloroethyl ether)	111-44-4	1	ug/l	<2 UJ	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U
Bis(2-chloroisopropyl) ether	108-60-1	5	ug/l	<2 UJ	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U
Bis(2-ethylhexyl) phthalate	117-81-7	5	ug/l	<3 UJ	<3 U	<3 U	<3 U	<3 U	<3 U	<3 U
Carbazole	86-74-8	NS	ug/l	<2 UJ	<2 U	<2 U	<2 UJ	<2 U	<2 U	<2 UJ
Chrysene	218-01-9	**0.002**	ug/l	<0.1 U	**1.6**	**0.09 J**	<0.1 U	**0.08 J**	**0.02 J**	**0.3**
Dibenz(a,h)anthracene	53-70-3	NS	ug/l	<0.1 UJ	0.29	0.02 J	<0.1 U	0.05 J	<0.1 U	0.06 J
Dibenzofuran	132-64-9	NS	ug/l	<2 UJ	<2 U	0.82 J	<2 U	<2 U	<2 U	<2 U
Dibutyl phthalate	84-74-2	50	ug/l	<5 UJ	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
Diethyl phthalate	84-66-2	50	ug/l	<5 UJ	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
Dimethyl phthalate	131-11-3	50	ug/l	<5 UJ	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
Dioctyl phthalate	117-84-0	50	ug/l	<5 UJ	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
Fluoranthene	206-44-0	50	ug/l	<0.1 U	0.55	0.42	0.17	0.21	0.16	0.71
Fluorene	86-73-7	50	ug/l	0.03 J	0.04 J	1	0.16	<0.1 U	<0.1 U	0.24
Hexachlorobenzene	118-74-1	0.04	ug/l	<0.8 U	<0.8 U	<0.8 U	<0.8 U	<0.8 U	<0.8 U	<0.8 U
Hexachlorobutadiene	87-68-3	0.5	ug/l	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
Hexachlorocyclopentadiene	77-47-4	5	ug/l	<20 UJ	<20 U	<20 U	<20 UJ	<20 U	<20 U	<20 UJ
Hexachloroethane	67-72-1	5	ug/l	<0.8 U	<0.8 U	<0.8 U	<0.8 U	<0.8 U	<0.8 U	<0.8 U
Indeno(1,2,3-cd)pyrene	193-39-5	**0.002**	ug/l	<0.1 UJ	**1**	**0.05 J**	**0.02 J**	**0.05 J**	<0.1 U	**0.22**
Isophorone	78-59-1	50	ug/l	<5 UJ	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
Naphthalene	91-20-3	10	ug/l	0.38	2.7	6.6	0.62	1.6	1.5	0.33
Nitrobenzene	98-95-3	0.4	ug/l	<2 UJ	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U
n-Nitrosodi-N-Propylamine	621-64-7	NS	ug/l	<5 UJ	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U
n-Nitrosodiphenylamine	86-30-6	50	ug/l	<2 UJ	<2 U	<2 U	<2 U	<2 U	<2 U	<2 U
Pentachlorophenol	87-86-5	1	ug/l	<0.8 U	<0.8 UJ	0.18 J	0.12 J	0.33 J	0.31 J	0.11 J
Phenanthrene	85-01-8	50	ug/l	0.03 J	0.11	1.4	0.55	1	0.86	0.84
Phenol	108-95-2	**1**	ug/l	<5 U	<5 U	<5 U	<5 U	**2.2 J**	**2.2 J**	<5 U
Pyrene	129-00-0	50	ug/l	0.02 J	0.47	<0.1 U	0.14	<0.1 U	<0.1 U	0.66

Table 5
Site Management Plan
Confirmation Groundwater Sample Analytical Results

250 Water Street
New York, New York
NYSDEC BCP Site No.: C231127
Langan Project No.: 170381202

Notes:

CAS - Chemical Abstract Service
NS - No standard
ug/l - microgram per liter
NA - Not analyzed
RL - Reporting limit
<RL - Not detected

Groundwater sample analytical results are compared to the New York State Department of Environmental Conservation (NYSDEC) Title 6 Codes, Rules, and Regulations (NYCRR) Part 703.5 and the NYSDEC Technical and Operation Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values for Class GA Water and published addenda (herein collectively referenced as "NYSDEC SGVs").

Qualifiers:

J - The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

UJ - The analyte was not detected at a level greater than or equal to the RL; however, the reported RL is approximate and may be inaccurate or imprecise.

U - The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

Exceedance Summary:

10 - Result exceeds NYSDEC SGVs

APPENDIX A

Environmental Easement

NYC DEPARTMENT OF FINANCE
OFFICE OF THE CITY REGISTER

This page is part of the instrument. The City Register will rely on the information provided by you on this page for purposes of indexing this instrument. The information on this page will control for indexing purposes in the event of any conflict with the rest of the document.

2023103000567001004EFEAC

RECORDING AND ENDORSEMENT COVER PAGE **PAGE 1 OF 11**

Document ID: 2023103000567001 Document Date: 10-20-2023 Preparation Date: 11-06-2023
Document Type: EASEMENT
Document Page Count: 10

PRESENTER:	**RETURN TO:**
SIVE PAGET & RIESEL, P.C. 560 LEXINGTON AVENUE, 15TH FLOOR NEW YORK, NY 10022 212-421-2150 NDUNCAN@SPRLAW.COM	SIVE PAGET & RIESEL, P.C. 560 LEXINGTON AVENUE, 15TH FLOOR NEW YORK, NY 10022 212-421-2150 NDUNCAN@SPRLAW.COM

PROPERTY DATA

Borough	Block	Lot	Unit	Address
MANHATTAN	98	1	Entire Lot	250 WATER STREET

Property Type: COMMERCIAL REAL ESTATE

CROSS REFERENCE DATA

CRFN_____ *or* DocumentID_____ *or* _____ Year_____ Reel____ Page_____ *or* File Number_____

PARTIES

GRANTOR/SELLER:	**GRANTEE/BUYER:**
250 SEAPORT DISTRICT, LLC C/O: THE HOWARD HUGHES CORPORATION, 199 WATER STREET, 28TH FLOOR NEW YORK, NY 10038	THE PEOPLE OF NEW YORK COM. OF THE DEPT OF ENVIRONMENTAL CONSERVATION, 625 BROADWAY ALBANY, NY 12233

FEES AND TAXES

Mortgage :		
Mortgage Amount:	$	0.00
Taxable Mortgage Amount:	$	0.00
Exemption:		
TAXES: County (Basic):	$	0.00
City (Additional):	$	0.00
Spec (Additional):	$	0.00
TASF:	$	0.00
MTA:	$	0.00
NYCTA:	$	0.00
Additional MRT:	$	0.00
TOTAL:	$	0.00
Recording Fee:	$	87.00
Affidavit Fee:	$	0.00

Filing Fee:	$	100.00
NYC Real Property Transfer Tax:	$	0.00
NYS Real Estate Transfer Tax:	$	0.00

RECORDED OR FILED IN THE OFFICE OF THE CITY REGISTER OF THE CITY OF NEW YORK
Recorded/Filed 11-08-2023 13:41
City Register File No.(CRFN): **2023000290323**

City Register Official Signature

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 20th day of October, 2023 between Owner, 250 Seaport District, LLC, having an office at 199 Water Street, 28th Floor, County of New York, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee"), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 250 Water Street a/k/a 304 Pearl Street in the City of New York, County of New York and State of New York, known and designated on the tax map of the New York City Department of Finance as tax map parcel number: Block 98 Lot 1, being the same as that property conveyed to Grantor by deed dated as of June 8, 2018 and recorded in the City Register of the City of New York in City Register File No.: 2018000208373. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 1.103 +/- acres and is hereinafter more fully described in the Land Title Survey dated June 8, 2023, revised September 18, 2023, prepared by Andrew Ives, License 050784-1, which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Brownfield Cleanup Agreement Index Number: C231127-04-19, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Restricted Residential as described in 6 NYCRR Part 375-1.8(g)(2)(ii), Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York City Department of Health and Mental Hygiene to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining

contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation

Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against

the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:	Site Number: C231127 Office of General Counsel NYSDEC 625 Broadway Albany New York 12233-5500
With a copy to:	Site Control Section Division of Environmental Remediation NYSDEC 625 Broadway Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the

recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

11. Consistency with the SMP. To the extent there is any conflict or inconsistency between the terms of this Environmental Easement and the SMP, regarding matters specifically addressed by the SMP, the terms of the SMP will control.

Remainder of Page Intentionally Left Blank

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

250 Seaport District, LLC:

By: Zach Winick

Print Name: Zach Winick

Title: VP Date: 10/17/2023

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF New York)

On the 17th day of October, in the year 2023, before me, the undersigned, personally appeared Zach Winick personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Lisette Gonzalez
Notary Public - State of New York

LISETTE GONZALEZ
NOTARY PUBLIC, STATE OF NEW YORK
Registration No. 01GO6207103
Qualified in New York County
Commission Expires June 8, 2025

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting by and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: _____
Andrew O. Guglielmi, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 20 day of October, in the year 2023, before me, the undersigned, personally appeared Andrew O. Guglielmi, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

Cheryl A. Salem
Notary Public State of New York
Registration No. 01SA0002177
Qualified in Albany County
My Commission Expires March 3, 2027

SCHEDULE "A" PROPERTY DESCRIPTION

250 Water Street (C231127) a/k/a 304 Pearl Street
BOROUGH OF MANHATTAN, BLOCK: 98, LOT: 1

Survey Description (Block 98, Lot 1 and Proposed Environmental Easement):

ALL that certain plot, piece or parcel of land, situate, lying and being in the Borough of Manhattan, City, County and State of New York, bounded and described as follows:

BEGINNING at the intersection of the northerly side of Beekman Street (irregular width) with the westerly side of Water Street (irregular width), said point being the point or place of beginning and RUNNING THENCE;

1. Westerly, along said northerly side of Beekman Street, a distance of 108.24 feet (Survey) to the point formed by the intersection of said northerly side of Beekman Street with the easterly side of Pearl Street (±90 feet wide); THENCE

2. Northerly, along said easterly side of Pearl Street, forming an interior angle of 108°37'17" with the previous course, a distance of 323.84 feet (Survey) to the point formed by the intersection of said easterly side of Pearl Street with the southerly side of Peck Slip (irregular width); THENCE

3. Easterly, along said southerly side of Peck Slip, forming an interior angle of 79°02'38" with the previous course, a distance of 189.69 feet (Survey) to the point formed by the intersection of said southerly side of Peck Slip with said westerly side of Water Street; THENCE

4. Southerly, along said westerly side of Water Street, forming an interior angle of 86°14'28" with the previous course, a distance of 157.58 feet (Survey) to a point therein; THENCE

5. Southerly, continuing along said westerly side of Water Street, forming an interior angle of 180°18'47" with the previous course, a distance of 175.45 feet (Survey) to the point or place of BEGINNING.

Encompassing an area of 48,057 square feet or 1.103 acres, more or less.

Deed Description (Block 98, Lot 1):

ALL that certain plot, piece or parcel of land, situate, lying and being in the Borough of Manhattan, City, County and State of New York, bounded and described as follows:

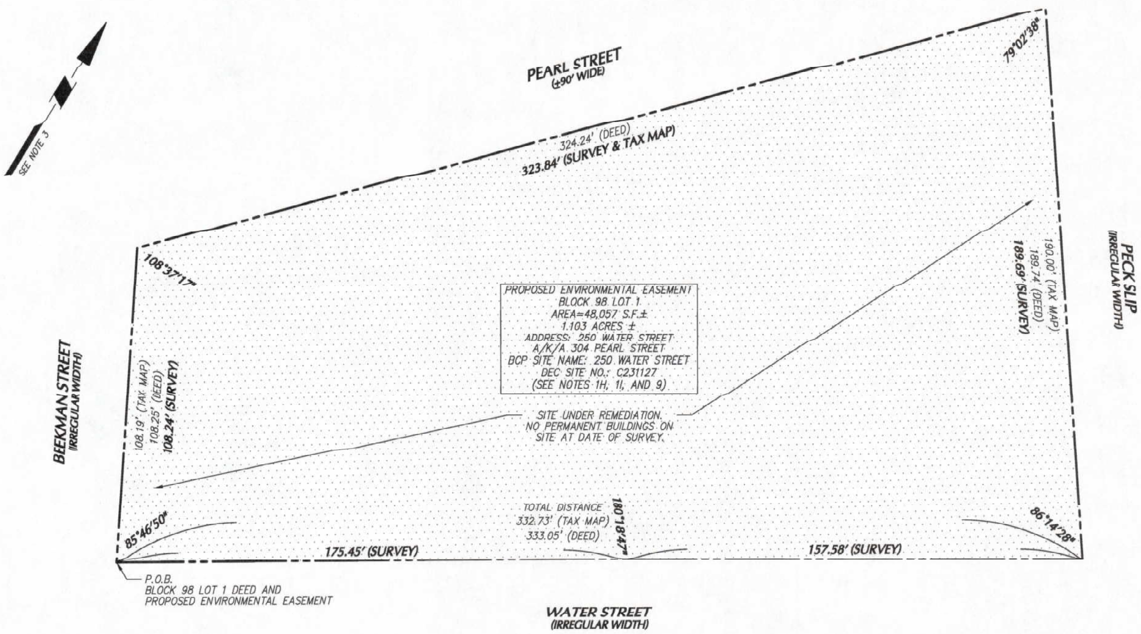
BEGINNING at the corner formed by the intersection of the northerly side of Beekman Street with the westerly side of Water Street;

RUNNING THENCE northerly along the westerly side of Water Street 333 feet 5/8 of an inch to the corner formed by the intersection of the westerly side of Water Street and the southerly side of Peck Slip;

THENCE westerly along the southerly side of Peck Slip, 189 feet 8-7/8 inches to the corner formed by the intersection of the southerly side of Peck Slip and the easterly side of Pearl Street as widened and as shown on map prepared by the Borough President's Office, dated March 21, 1957 and adopted by the Board of Estimate on June 13, 1957;

THENCE southerly along the easterly side of Pearl Street as widened as aforesaid 324 feet 2-7/8 inches to the corner formed by the intersection of the easterly side of Pearl Street and the northerly side of Beekman Street; and

THENCE easterly along the northerly side of Beekman Street 108 feet 3 inches to the corner formed by the intersection of the northerly side of Beekman Street and the westerly side of Water Street, the point or place of BEGINNING.



PROJECT LOCATION MAP

SCALE: NOT TO SCALE

SOURCE:
HTTPS://WWW.NGS.NOAA.GOV/NGSDATAEXPLORER/

NOTES

1. THIS SURVEY IS BASED UPON EXISTING PHYSICAL CONDITIONS FOUND AT THE SUBJECT SITE, AND THE FOLLOWING REFERENCES:
   A. BOROUGH OF MANHATTAN BOROUGH SURVEY SHEET NO. 3.
   B. BOROUGH OF MANHATTAN SECTIONAL MAP NO. 4.
   C. BOROUGH OF MANHATTAN ALTERATION MAP ACC. NO. 29485.
   D. CURRENT NYC DEPARTMENT OF FINANCE TAX MAP FOR BLOCK 98 IN MANHATTAN, EFFECTIVE DATE 12/09/2008 10:57:49.
   E. "ALTA/NSPS LAND TITLE SURVEY, 250 WATER STREET", BY LANGAN, PROJECT NO. 170381202, DRAWING NO. VL-101, DATED 06/07/2018, LAST REVISED 05/28/2019.
   F. "ALTA/NSPS LAND TITLE SURVEY, 250 WATER STREET", BY LANGAN, PROJECT NO. 170381203, DRAWING NO. VL101, DATED 09/25/2019.
   G. CRFN: 2018000208373, RECORDED/FILED 06/22/2018 16:53 [DEED].
   H. "NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION BROWNFIELD CLEANUP PROGRAM, BROWNFIELD SITE CLEANUP AGREEMENT INDEX NO. C231127-04-19", 250 WATER STREET, DEC SITE NO.: C231127, SIGNED AND DATED 08/01/2019 BY MICHAEL J. RYAN, P.E., DIRECTOR, DIVISION OF ENVIRONMENTAL REMEDIATION.
   I. EMAIL FROM BRIAN RASHKOW TO KEVIN ROGERS, DATED 09/13/23 2:56PM.
2. THE SURVEYED PROPERTY IS SUBJECT BUT NOT LIMITED TO THE FOLLOWING FACTS AS REVEALED BY THE HEREON REFERENCED INFORMATION. THE INFORMATION SHOWN HEREON DOES NOT CONSTITUTE A TITLE SEARCH BY THE SURVEYOR. ALL INFORMATION THAT MAY AFFECT THE QUALITY OF TITLE TO BOTH THE SUBJECT AND ADJOINING PARCELS SHOULD BE VERIFIED BY AN ACCURATE AND CURRENT TITLE REPORT.
3. THE MERIDIAN OF THIS SURVEY IS REFERENCED TO APPROXIMATE NORTH (SEE NOTE 1A).
4. STREET NAMES, R.O.W. WIDTHS, BLOCK, AND LOT NUMBERS AS PER MAPS REFERENCED IN NOTES 1A THROUGH 1F.
5. OFFSETS (IF SHOWN) ARE FOR SURVEY REFERENCES ONLY AND ARE NOT TO BE USED IN CONSTRUCTION OF ANY TYPE.
6. WETLANDS, ENVIRONMENTAL, AND/OR HAZARDOUS MATERIALS LOCATION, IF ANY, NOT COVERED UNDER THIS CONTRACT.
7. UNLESS SPECIFICALLY NOTED HEREON, STORM AND SANITARY SEWER INFORMATION (INCLUDING PIPE INVERT, PIPE MATERIAL, AND PIPE SIZE) WAS OBSERVED AND MEASURED AT FIELD LOCATED STRUCTURES (MANHOLES/CATCH BASINS, ETC.). CONDITIONS CAN VARY FROM THOSE ENCOUNTERED AT THE TIMES WHEN AND THE LOCATIONS WHERE DATA WAS OBTAINED. DESPITE MEETING THE REQUIRED STANDARD OF CARE THE SURVEYOR CANNOT AND DOES NOT WARRANT THAT PIPE MATERIAL AND/OR PIPE SIZE THROUGHOUT THE PIPE RUN ARE THE SAME AS THOSE OBSERVED AT EACH STRUCTURE, OR THAT THE PIPE RUN IS STRAIGHT BETWEEN THE LOCATED STRUCTURES.

   ADDITIONAL UTILITY (WATER, GAS, ELECTRIC, ETC.) DATA MAY BE SHOWN FROM FIELD LOCATED SURFACE MARKINGS (BY OTHERS), EXISTING STRUCTURES, AND/OR FROM EXISTING DRAWINGS.

   UNLESS SPECIFICALLY NOTED HEREON THE SURVEYOR HAS NOT EXCAVATED TO PHYSICALLY LOCATE THE UNDERGROUND UTILITIES. THE SURVEYOR MAKES NO GUARANTEES THAT THE SHOWN UNDERGROUND UTILITIES ARE EITHER IN SERVICE, ABANDONED OR SUITABLE FOR USE, NOR ARE IN THE EXACT LOCATION OR CONFIGURATION INDICATED HEREON.

   PRIOR TO ANY DESIGN OR CONSTRUCTION THE PROPER UTILITY AGENCIES MUST BE CONTACTED FOR VERIFICATION OF UTILITY TYPE AND FOR FIELD LOCATIONS.

   UNLESS NOTED BELOW SUPPLEMENTAL DOCUMENTS WERE NOT USED TO COMPILE THE SUBSURFACE UTILITY INFORMATION SHOWN HEREON.
8. EASEMENTS, LIMITING PLANES, AND/OR OTHER ENCUMBRANCES, IF ANY, NOT SHOWN.
9. BCP SITE NAME AND DEC SITE NUMBER PER DOCUMENT CITED IN NOTE 1H. ADDRESSES PER DOCUMENTS CITED IN NOTES 1H, 1I, AND THE DOB NOW PUBLIC PORTAL (https://a810-dobnow.nyc.gov/publish/index.html#!/).
10. UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUB-DIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.
11. THIS PLAN NOT VALID UNLESS EMBOSSED OR BLUE INK STAMPED WITH THE SEAL OF THE PROFESSIONAL.

DEED DESCRIPTION BLOCK 98 LOT 1 (SEE NOTE 1G)

ALL THAT CERTAIN PLOT PIECE OR PARCEL OF LAND, SITUATE, LYING AND BEING IN THE BOROUGH OF MANHATTAN, CITY, COUNTY AND STATE OF NEW YORK, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE CORNER FORMED BY THE INTERSECTION OF THE NORTHERLY SIDE OF BEEKMAN STREET WITH THE WESTERLY SIDE OF WATER STREET;

RUNNING THENCE NORTHERLY ALONG THE WESTERLY SIDE OF WATER STREET 333 FEET 5/8 OF AN INCH TO THE CORNER FORMED BY THE INTERSECTION OF THE WESTERLY SIDE OF WATER STREET AND THE SOUTHERLY SIDE OF PECK SLIP;

THENCE WESTERLY ALONG THE SOUTHERLY SIDE OF PECK SLIP, 189 FEET 8-7/8 INCHES TO THE CORNER FORMED BY THE INTERSECTION OF THE SOUTHERLY SIDE OF PECK SLIP AND THE EASTERLY SIDE OF PEARL STREET AS WIDENED AND AS SHOWN ON MAP PREPARED BY THE BOROUGH PRESIDENT'S OFFICE, DATED MARCH 21, 1957 AND ADOPTED BY THE BOARD OF ESTIMATE ON JUNE 13, 1957;

THENCE SOUTHERLY ALONG THE EASTERLY SIDE OF PEARL STREET AS WIDENED AS AFORESAID 324 FEET 2-7/8 INCHES TO THE CORNER FORMED BY THE INTERSECTION OF THE EASTERLY SIDE OF PEARL STREET AND THE NORTHERLY SIDE OF BEEKMAN STREET; AND

THENCE EASTERLY ALONG THE NORTHERLY SIDE OF BEEKMAN STREET 108 FEET 3 INCHES TO THE CORNER FORMED BY THE INTERSECTION OF THE NORTHERLY SIDE OF BEEKMAN STREET AND THE WESTERLY SIDE OF WATER STREET, THE POINT OR PLACE OF BEGINNING.

SURVEY DESCRIPTION BLOCK 98 LOT 1 AND PROPOSED ENVIRONMENTAL EASEMENT

ALL THAT CERTAIN PLOT, PIECE, OR PARCEL OF LAND, SITUATE, LYING, AND BEING IN THE BOROUGH OF MANHATTAN, NEW YORK COUNTY, CITY AND STATE OF NEW YORK, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE NORTHERLY SIDE OF BEEKMAN STREET (IRREGULAR WIDTH) WITH THE WESTERLY SIDE OF WATER STREET (IRREGULAR WIDTH), SAID POINT BEING THE POINT OR PLACE OF BEGINNING AND RUNNING THENCE;

1. WESTERLY, ALONG SAID NORTHERLY SIDE OF BEEKMAN STREET, A DISTANCE OF 108.24 FEET (SURVEY) TO THE POINT FORMED BY THE INTERSECTION OF SAID NORTHERLY SIDE OF BEEKMAN STREET WITH THE EASTERLY SIDE OF PEARL STREET (±90 FEET WIDE); THENCE
2. NORTHERLY, ALONG SAID EASTERLY SIDE OF PEARL STREET, FORMING AN INTERIOR ANGLE OF 108°37'17" WITH THE PREVIOUS COURSE, A DISTANCE OF 323.84 FEET (SURVEY) TO THE POINT FORMED BY THE INTERSECTION OF SAID EASTERLY SIDE OF PEARL STREET WITH THE SOUTHERLY SIDE OF PECK SLIP (IRREGULAR WIDTH); THENCE
3. EASTERLY, ALONG SAID SOUTHERLY SIDE OF PECK SLIP, FORMING AN INTERIOR ANGLE OF 79°02'38" WITH THE PREVIOUS COURSE, A DISTANCE OF 189.69 FEET (SURVEY) TO THE POINT FORMED BY THE INTERSECTION OF SAID SOUTHERLY SIDE OF PECK SLIP WITH SAID WESTERLY SIDE OF WATER STREET; THENCE
4. SOUTHERLY, ALONG SAID WESTERLY SIDE OF WATER STREET, FORMING AN INTERIOR ANGLE OF 86°14'28" WITH THE PREVIOUS COURSE, A DISTANCE OF 157.58 FEET (SURVEY) TO A POINT THEREIN; THENCE
5. SOUTHERLY, CONTINUING ALONG SAID WESTERLY SIDE OF WATER STREET, FORMING AN INTERIOR ANGLE OF 180°18'47" WITH THE PREVIOUS COURSE, A DISTANCE OF 175.45 FEET (SURVEY) TO THE POINT OR PLACE OF BEGINNING.

ENCOMPASSING AN AREA OF 48,057 SQUARE FEET OR 1.103 ACRES, MORE OR LESS.

LEGEND (NOT SHOWN TO SCALE)

S.F.	SQUARE FEET
BCP	BROWNFIELD CLEANUP PROGRAM
DEC	DEPARTMENT OF ENVIRONMENTAL CONSERVATION
P.O.B.	POINT OF BEGINNING
A/K/A	ALSO KNOWN AS
(line)	PROPERTY LINE/ RIGHT-OF-WAY LINE
(dotted area)	PROPOSED ENVIRONMENTAL EASEMENT

SCALE: 1 INCH = 6.096 METERS (6.096 0 1.524 3.048 6.096)

SCALE IN FEET (20 0 5 10 20)

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED LAND SURVEYOR TO ALTER THIS ITEM IN ANY WAY.

THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL EASEMENT HELD BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PURSUANT TO TITLE 36 OF ARTICLE 71 OF THE NEW YORK ENVIRONMENTAL CONSERVATION LAW. THE ENGINEERING AND INSTITUTIONAL CONTROLS FOR THIS EASEMENT ARE SET FORTH IN MORE DETAIL IN THE SITE MANAGEMENT PLAN (SMP). A COPY OF THE SMP MUST BE OBTAINED BY ANY PARTY WITH AN INTEREST IN THE PROPERTY. THE SMP CAN BE OBTAINED FROM NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION, DIVISION OF ENVIRONMENTAL REMEDIATION, SITE CONTROL SECTION, 625 BROADWAY, ALBANY, NY 12233 OR AT derweb@dec.ny.gov.

REVISIONS

Date	Description	No.
09/18/23	Added 304 Pearl Street to Address and Change to Surveyor of Record Only	1

"I hereby state that this plan is based on a field survey made by me or under my immediate supervision in accordance with NYSPLS Code of Practice for Land Surveys, and to the best of my professional knowledge, information and belief, and in my professional opinion, correctly represents the conditions found on the date of the field survey of the subject property".

SIGNATURE — DATE SIGNED 9-22-2023

PROFESSIONAL LAND SURVEYOR NY Lic. No. 050784-1

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001
T: 212.479.5400 F: 212.479.5444 www.langan.com

Project
ADDRESS: 250 WATER STREET
A/K/A 304 PEARL STREET
BCP SITE NAME: 250 WATER STREET
DEC SITE NO.: C231127
BLOCK NO. 98, LOT NO. 1
BOROUGH OF MANHATTAN
CITY OF NEW YORK
NEW YORK COUNTY — NEW YORK

Drawing Title
ENVIRONMENTAL EASEMENT SURVEY

Project No. 170381202
Date 06/08/2023
Drawn By LB
Checked By AI
Drawing No. DEC101
Sheet 001 of 001

Filename: \\langan.com\data\NYC\data2\170381202\Project Data_Discipline\Survey\CAD\Existing\170381202-DEC0101.dwg Date: 9/19/2023 Time: 12:44 User: lberliner Style Table: Langan.stb Layout: ARCHD-BL For DEC0101

PROJECT NO. 170381202

FINANCE
NEW • YORK
MARTHA E. STARK
COMMISSIONER

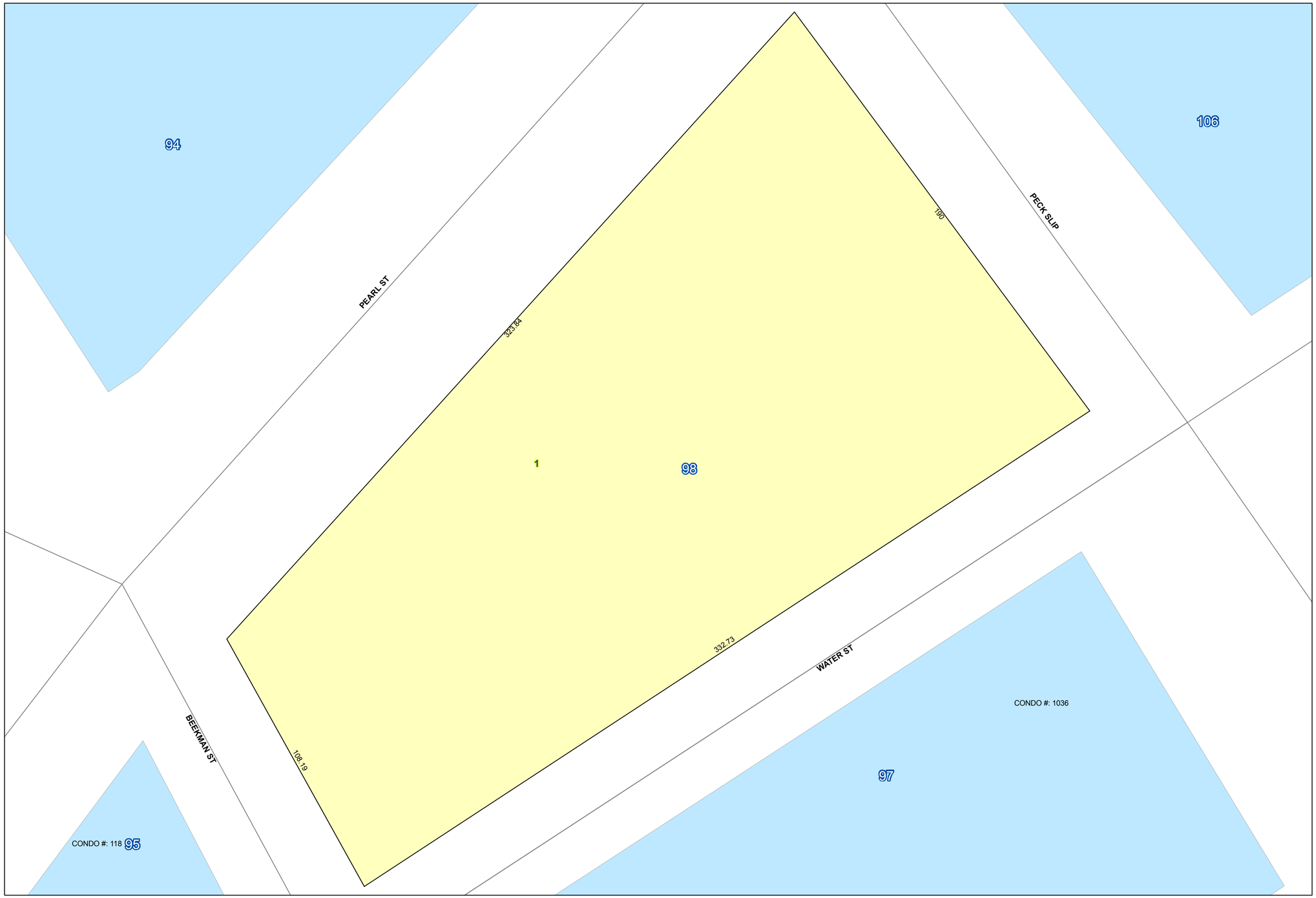
NYC Digital Tax Map

Effective Date : 12-09-2008 10:57:49
End Date : Current

Manhattan Block: 98

Legend

- Streets
- Miscellaneous Text
- Possession Hooks
- Boundary Lines
- Lot Face Possession Hooks
- Regular
- Underwater
- Tax Lot Polygon
- Condo Number
- Tax Block Polygon



Feet
0 3 6 9 12

APPENDIX B

List of Site Contacts

APPENDIX B – LIST OF SITE CONTACTS

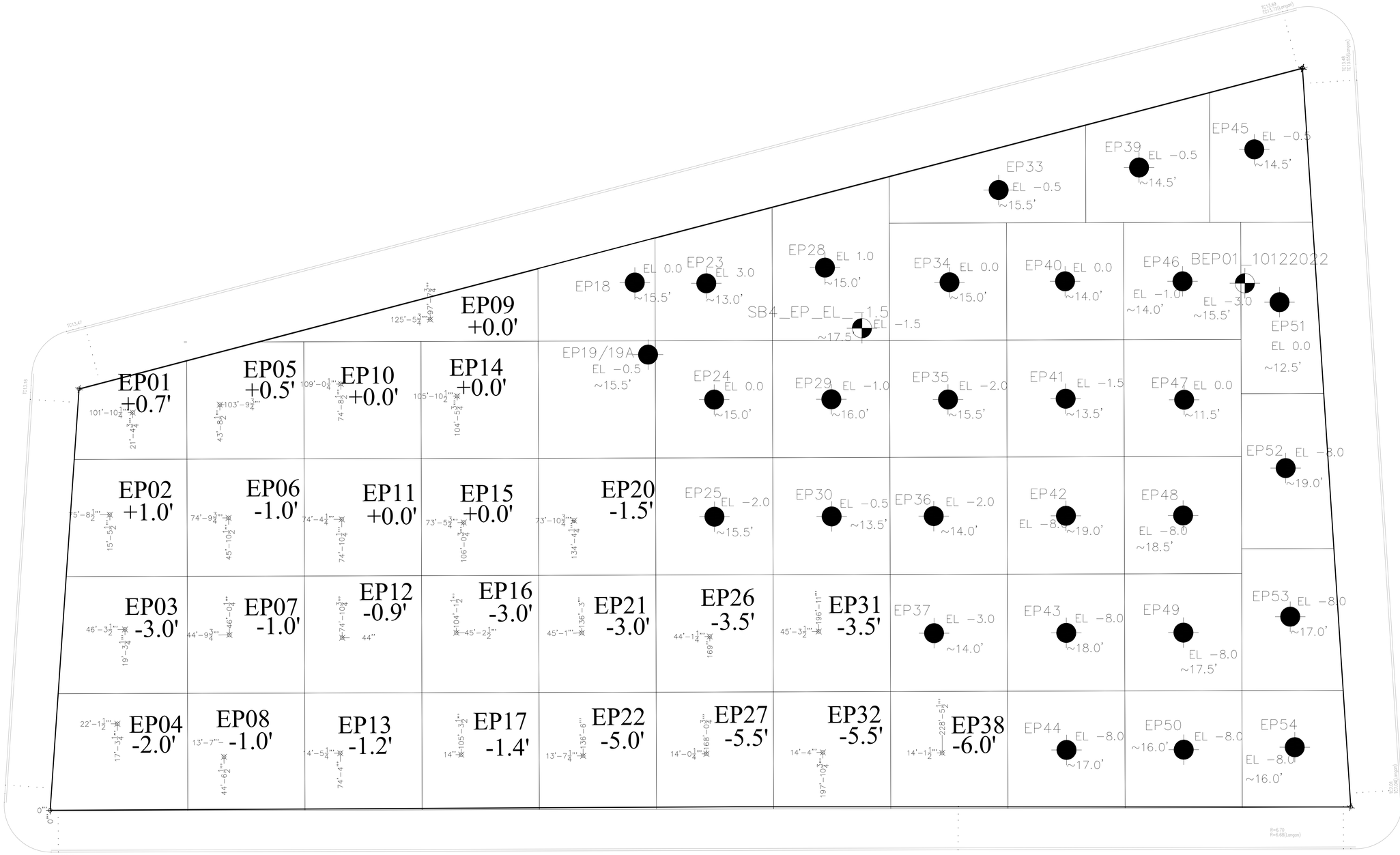
250 WATER STREET

BROWNFIELD CLEANUP PROGRAM SITE NO. C231127

Name	**Contact/Phone/Email Address**
250 Seaport Distcict, LLC, c/o The Howard Hughes Corporation (the Volunteer)	Adam Meister Telephone: (646) 822-6970 adam.meister@howardhughes.com
Remedial Engineer (RE)	Jason Hayes Telephone: (212) 479-5427 jhayes@langan.com
Qualified Environmental Professional (QEP)	Mimi S. Raygorodetsky Telephone: (212) 479-5441 mraygorodetsky@langan.com
Langan Project Manager	Paul McMahon, PE Telephone: (212) 479-5451 pmcmahon@langan.com
Langan Quality Assurance Officer	Michael Burke Telephone: (212) 479-5413 mburke@langan.com
NYSDEC Project Manager	Rafi Alam Telephone: (518) 402-8606 rafi.Alam@dec.ny.gov
NYSDEC Section Chief	Heidi Dudek Telephone: (518) 402-0193 heidi.dudek@dec.ny.gov
NYSDEC Senior Project Attorney	Jennifer Andaloro Telephone: (518) 402-9507 jennifer.andaloro@dec.ny.gov
NYSDOH Project Manager	Sarita Wagh Telephone: (518) 402-7860 sarita.wagh@health.ny.gov

APPENDIX C

As-Built Excavation Survey



EPxx

PHASE 1 ENDPOINT SAMPLES + ELEVATIONS

ELEVATIONS ARE NAVD88

OVERALL PLAN

ECD
ECDNY.COM

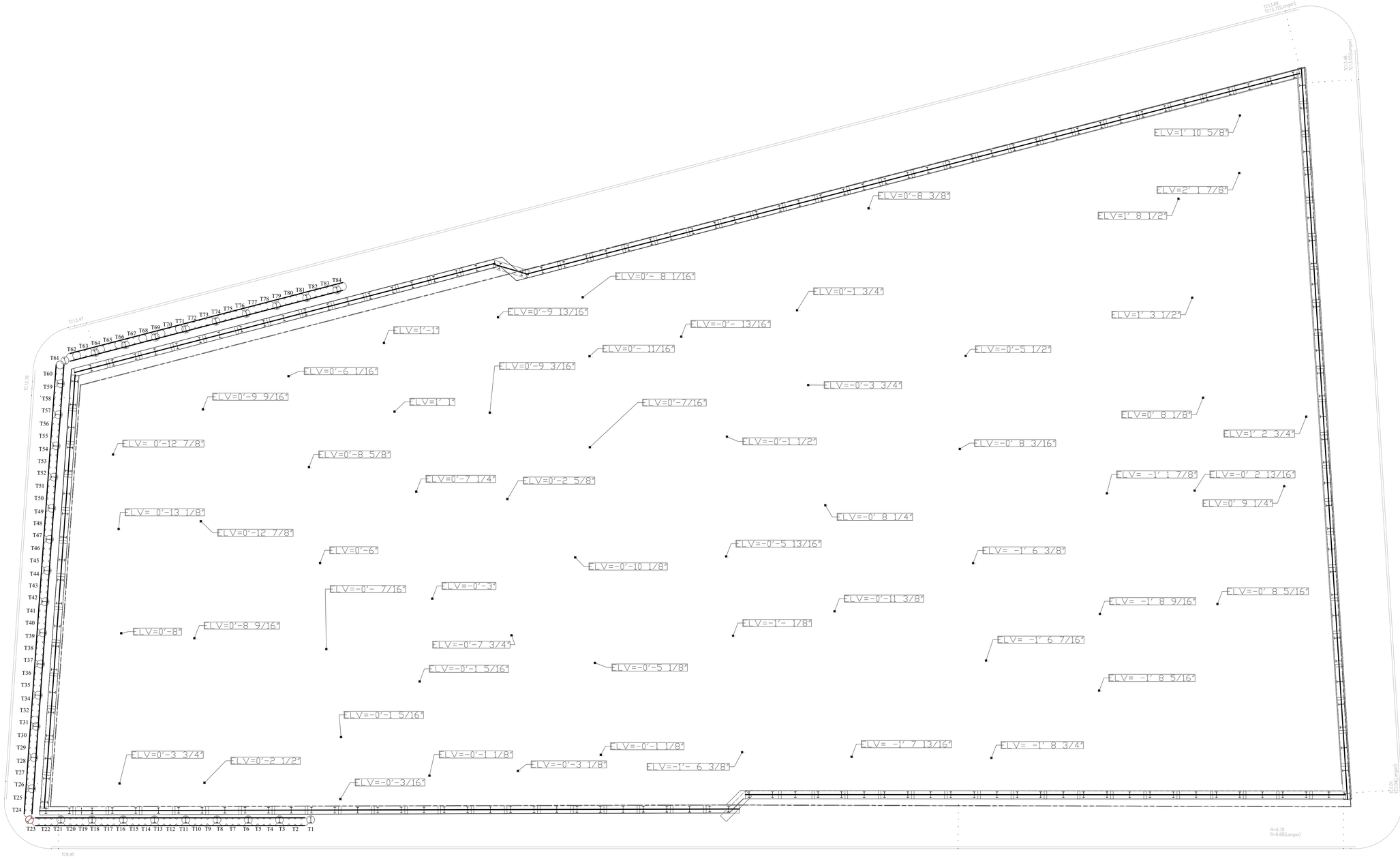
STATE OF NEW YORK
RUI GUO
099458
LICENSED PROFESSIONAL ENGINEER

REVISION SUBMISSION		
REV.	DATE	DETAILS

PROJECT:
250 Water Street
New York, NY

TITLE:
BOTTOM OF EXCAVATION SURVEY

DATE: 12.06.2023	PROJ. NO.: N/A
DRAWN BY: EP	SCALE: N/A



OVERALL PLAN

ECD
ECDNY.COM

STATE OF NEW YORK
RUI GUO
099458
LICENSED PROFESSIONAL ENGINEER

REVISION SUBMISSION

REV.	DATE	DETAILS

PROJECT:
250 Water Street
New York, NY

TITLE:
Top of Backfill
Survey

DATE: 12.19.2023	PROJ. NO.: N/A
DRAWN BY: EP	SCALE: N/A

APPENDIX D

Excavation Work Plan

APPENDIX D – EXCAVATION WORK PLAN (EWP)

D-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the site owner or their representative will notify the New York State Department of Environmental Conservation (NYSDEC) contacts listed in the table below. Table 1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information.

Table 1: Notifications*

Name	Contact Information
NYSDEC Project Manager	Rafi Alam (518) 402-8606 rafi.alam@dec.ny.gov
NYSDEC Section Chief	Heidi Dudek (518) 402-0193 heidi.dudek@dec.ny.gov
NYSDEC Senior Attorney:	Jennifer Andaloro (518) 402-9507 jennifer.andaloro@dec.ny.gov
NYSDOH Project Manager:	Sarita Wagh (518) 402-7860 sarita.wagh@health.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed, estimated volumes of contaminated soil to be excavated, and any modification of truck routes;

- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;

- A schedule for the work, detailing the start and completion of all intrusive work;

- A summary of the applicable components of this EWP;

- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120 and 29 CFR 1926 Subpart P;

- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix F of this SMP;

- Identification of disposal facilities for potential waste streams; and

- Identification of sources of any anticipated backfill, along with all required request to import forms and all supporting documentation including, but not limited to, chemical testing results.

The NYSDEC project manager will review the notification and may impose additional requirements for the excavation that are not listed in this EWP.

D-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed during all excavations into known or potentially contaminated material (remaining contamination). A qualified environmental professional (QEP) as defined in Title 6 of the New York Codes, Rules, and Regulations (NYCRR) Part 375, a professional engineer (PE) who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State will perform the screening. Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the certificate of completion (COC). All potentially contaminated soil/fill material will be field screened using a photoionization detector (PID) or similar equipment.

Soils will be segregated based on previous environmental data and field screening results into material that requires off-site disposal and material that requires testing to determine if the material can be reused on-site. Further discussion of off-site disposal of materials and on-site reuse is provided in Section D-6 and D-7 of this Appendix.

D-3 SOIL STAGING METHODS

Soil stockpile areas, if needed for the different soil materials, will be constructed for staging of site soil, pending loading or waste characterization testing. Separate stockpile areas will be constructed to avoid comingling materials of differing waste types. All stockpile areas will meet the following minimum requirements

- The excavated soil will be placed onto a minimum thickness of 10 mil low-permeability plastic sheeting or tarps of sufficient strength to prevent puncture during use; separate stockpiles will be created where material types are different (e.g., petroleum-impacted material stockpiled in a contaminated soil area). The use of multiple layers of thinner liners is permissible.
- Equipment and procedures will be used to place and remove the soil that will minimize the potential to jeopardize the integrity of the liner.
- Stockpiles will be covered at the designated times (see below) with minimum 6-mil plastic sheeting or tarps, which will be securely anchored

to the ground. Stockpiles will be routinely inspected and broken sheeting covers will be promptly replaced.

- Stockpile capacity is approximately 1,000 cubic yards. Stockpiles at capacity will be covered until ready for loading.
- Active stockpiles (e.g. stockpiles that have not reached their capacity) will be covered at the end of each workday.
- Each stockpile area will be encircled with silt fences and hay bales, as needed, to contain and filter particulates from rainwater that has drained off the soil, and to mitigate the potential for surface water run-off off-site.
- Stockpiles will be inspected at a minimum once each day and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC.

D-4 MATERIALS EXCAVATION AND LOAD-OUT

A QEP as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State will oversee all invasive work and the excavation and load-out of all excavated material. The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive and other work performed under this EWP.

The presence of utilities and easements on the site will be investigated by the QEP. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the site. A site utility stakeout will be completed for all utilities prior to any ground-intrusive activities at the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and New York State Department of Transportation (NYSDOT) requirements (and all other applicable transportation requirements). A truck wash will be operated on-site, as appropriate. The QEP will be responsible for ensuring that all outbound trucks will be

washed at the truck wash before leaving the site until the activities performed under this section are complete. Truck wash waters will be collected and disposed of off-site in an appropriate manner. Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The QEP will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials. Material accumulated from the street cleaning and egress cleaning activities will be disposed off-site at a permitted landfill facility in accordance with all applicable local, State, and Federal regulations.

D-5 MATERIALS TRANSPORT OFF-SITE

Transport of materials will be performed by licensed haulers in accordance with appropriate local, state and federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and permitted and trucks properly placarded. Trucks will enter and exit the site using dedicated ingress/egress points. Trucks loaded with site materials will exit the vicinity of the site using only approved truck routes. Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Trucks will be prohibited from stopping and idling in the neighborhood outside the site. To the extent possible, queuing of trucks will be performed on site in order to minimize off-site disturbance. Off-site queuing will be minimized.

Truck routes will take into account:

- Limiting transport through residential areas and past sensitive sites
- Use of city mapped truck routes
- Prohibiting off-site queuing of trucks entering the facility

- Limiting total distance to major highways
- Promoting safety in access to highways
- Overall safety in transport
- Community input (where necessary)

The QEP will be responsible for documenting that egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during remediation and development. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

D-6 MATERIALS DISPOSAL OFF-SITE

All material excavated and removed from the site will be treated as contaminated and regulated material and will be transported and disposed off-site in a permitted facility in accordance with all local, State and Federal regulations. If disposal of material from this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC project manager. Unregulated off-site management of materials from this site will not occur without formal NYSDEC project manager approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, (e.g. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, construction and demolition [C&D] debris recovery facility) Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report (PRR). This documentation will include, but will not be limited to: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled consistent with 6 NYCRR Parts 360, 361, 362, 363, 364 and 365. Material that does not meet Unrestricted SCOs is prohibited from being taken to a New York State C&D debris recovery facility (6 NYCRR Subpart 360-15 registered or permitted facility).

D-7 MATERIALS REUSE ON-SITE

The QEP as defined in 6 NYCRR Part 375 will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material (i.e. contaminated) does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for reuse on-site will be placed below a demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Proposed materials for reuse on-site must be sampled for full suite analytical parameters including per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane. The sampling frequency will be in accordance with Division of Environmental Remediation (DER)-10 Table 5.4(e)10 unless prior approval is obtained from the NYSDEC project manager for modification of the sampling frequency. The analytical results of soil/fill material testing must meet the site use criteria presented in NYSDEC DER-10 Appendix 5 – Allowable Constituent Levels for Imported Fill or Soil for all constituents listed, and the NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (April 2023) guidance values. Approvals for modifications to the analytical parameters must be obtained from the NYSDEC project manager prior to the sampling event.

Soil/fill material for reuse on-site will be segregated and staged as described in Sections D-3 of this EWP. The anticipated size and location of stockpiles will be provided in the 15-day notification to the NYSDEC project manager. Stockpile locations will be based on the location of site excavation activities and proximity to nearby site features. Material reuse on-site will comply with requirements of NYSDEC DER-10 Section 5.4(e)4. Any modifications to the requirements of DER-10 Section 5.4(e)4 will be subject to review and approval by the NYSDEC project manager.

Any demolition material proposed for reuse on-site will be sampled for asbestos-containing materials and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

D-8 FLUIDS MANAGEMENT

Liquids to be removed from the site, including dewatering fluids, decontamination waters, and groundwater monitoring well purge and development waters, will be handled, transported, and disposed of in accordance with applicable local, state, and federal regulations. Liquids discharged into the New York City sewer system must be approved by the New York City Department of Environmental Protection (NYCDEP). A dewatering and treatment system will be designed by the contractor's New York State-licensed Professional Engineer, as necessary.

Dewatered fluids will not be recharged back to the land surface or subsurface and will be managed off-site. Discharge of water generated during redevelopment to surface waters (i.e. a local pond, stream or river) is prohibited without a State Pollution Discharge Elimination System (SPDES) permit.

D-9 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the QEP, as defined in 6 NYCRR Part 375, and will be in compliance with this SMP prior to receipt at the site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review.

Material from industrial sites, spill sites, other environmental remediation sites, or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d) and DER-10 Appendix 5 for restricted-residential use. Soils that meet 'general' fill requirements under 6 NYCRR Part 360.13, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC project manager. Soil material will be sampled for the full suite of analytical parameters, including PFAS and 1, 4-dioxane. Solid waste will not be imported onto the site.

Trucks entering the site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

D-10 STORMWATER POLLUTION PREVENTION

Silt fencing or hay bales will be installed around the perimeter of the construction area subject to this EWP, as required. Erosion and sediment control measures identified in the SMP shall be observed to verify they are operating correctly. Barriers and hay bale checks will be installed and inspected once a week and after every storm event; necessary repairs will be made immediately. Results of inspections will be recorded in a logbook maintained at the site and available for inspection by the NYSDEC. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. Undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing that has been damaged due to weathering. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

D-11 EXCAVATION CONTINGENCY PLAN

If underground storage tanks (USTs) or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development-related construction, sampling will be performed on free product, if encountered, and surrounding subsurface materials (e.g., sediment, soil, stone, etc.). Chemical analytical work will be for full scan parameters (Part 375 volatile organic compounds [VOC], semivolatile organic compounds [SVOC] [including 1,4-dioxane], polychlorinated biphenyls [PCB], pesticides, metals, and PFAS). Analyses will not be otherwise limited without NYSDEC approval.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated to NYSDEC’s Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also detailed in the subsequent PRR.

D-12 COMMUNITY AIR MONITORING PLAN

Community air monitoring will be conducted in compliance with the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Program (CAMP) outlined below.

The CAMP includes real-time monitoring for VOCs and particulates at the downwind perimeter of each designated work area when certain activities are in progress. Continuous monitoring is required for all ground-intrusive activities and during demolition of contaminated or potentially contaminated structures. Ground-intrusive activities include, but are not limited to, soil/waste excavation and handling, advancement of trenches and test pits, and the installation of soil borings or monitoring wells. Periodic monitoring for VOCs is required during non-intrusive activities such as the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of collecting a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well bailing/purging, and collecting a reading before leaving a sample location.

The CAMP will include two to four CAMP stations based on the scope of work outlined in the 15-day notification to the NYSDEC (as required by the SMP) for any proposed ground-intrusive activities. CAMP during future investigation activities at the site (i.e. advancement of borings for waste characterization or geotechnical investigation) without active excavation will consist of two CAMP stations at upwind and downwind locations in relation to the work zone. CAMP during active excavation at the site (i.e. for future building foundation construction) will include four perimeter CAMP stations (one station for each boundary of the site).

CAMP monitoring for VOC levels will be conducted with photoionization detectors (PIDs) and monitoring for dust/particulates will be conducted with particulate sensors equipped with filters to detect particulates less than 10 microns in diameter (PM10). Monitoring for particulates and odors will be conducted during all ground intrusive activities by the RE's field inspector. The work zone is defined as the general area in which machinery is operating in support of remediation activities. A portable PID will be used to monitor the

work zone and for periodic monitoring of VOCs during activities such as soil and groundwater sampling. The site perimeter will be visually monitored for fugitive dust emissions.

The following actions will be taken based on VOC levels measured:

- If total VOC levels exceed 5 parts per million (ppm) above background for the 15-minute average at the perimeter, work activities will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 5 ppm above background, work activities will resume with continued monitoring.
- If total VOC levels at the downwind perimeter of the work zone persist at levels in excess of 5 ppm above background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions and monitoring continued. After these steps work activities will resume provided that the total organic vapor level 200 feet downwind of the work 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 above background for the 15-minute average.
- If the total VOC level is above 25 ppm at the perimeter of the work zone, activities will be shut down.

The following actions will be taken based on visual dust observations:

- If the downwind particulate level is 100 micrograms per cubic meter ($\mu g/m^3$) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work zone, then dust suppression must be employed. Work may continue with dust suppression techniques provided that downwind PM10 levels do not exceed 150 $\mu g/m^3$ above the background level and provided that no visible dust is migrating from the work zone.

- If, after implementation of dust suppression techniques, downwind PM10 levels are greater than 150 µg/m³ above the background 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 PM10 concentration to within 150 µg/m³ of the upwind level and in preventing visible dust migration.

Exceedances observed in the CAMP will be reported to the NYSDEC and NYSDOH Project Managers and included in the daily report. In addition, a map showing the location of the downwind and upwind CAMP stations will be included in the daily report.

Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures

When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekend or evening hours in non-residential settings.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure(s). Depending upon the nature of contamination, chemical-specific colorimetric tubes of sufficient sensitivity may be necessary for comparing the exposure point concentrations with appropriate pre-determined response levels (response actions should also be pre-determined). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.

- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 µg/m3, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 µg/m3 or less at the monitoring point.
- Depending upon the nature of contamination and remedial activities, other parameters (explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be monitored. Response levels and actions should be pre-determined, as necessary.

D-13 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors on-site and off-site. Specific odor control methods to be used on a routine basis will include application of foam suppressants or tarps over the odorous or VOC source areas. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the remedial party's Remediation Engineer, and any measures that are implemented will be discussed in the PRR.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include:

- Limiting the area of open excavations and size of soil stockpiles
- Shrouding open excavations with tarps and other covers
- Using foams to cover exposed odorous soils.

If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include:

- Direct load-out of soils to trucks for off-site disposal

- Use of chemical odorants in spray or misting systems
- Use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

D-14 DUST CONTROL PLAN

Particulate monitoring must be conducted according to the Community Air Monitoring Plan (CAMP). If particulate levels at the site exceed the thresholds listed in the CAMP or if airborne dust is observed on the site or leaving the site, the dust suppression techniques listed below will be employed. The remedial party will also take measures listed below to prevent dust production on the site.

A dust suppression plan that addresses dust management during invasive on-site work, will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The water source will be equipped with a water cannon, as required, capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soil vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water spraying.

D-15 OTHER NUISANCES

A plan for rodent control will be developed and employed by the contractor prior to and during site clearing and site grubbing, and during all remedial work. A plan will be developed and employed by the contractor for all remedial work and will conform, at a minimum, to NYCDEP noise control standards.

D-16 REPORTING

A report is to be submitted to the NYSDEC within 90 days of completion of the activities performed under this EWP. This report shall contain a summary of the activities performed; a summary of all data gathered and results; information about any media that was removed from the site: volume, contamination levels, area from which removed; and any other information that may be indicate a change to the “remaining contamination” that is at the site. Such changes may require revision of the SMP.

APPENDIX E

Health and Safety Plan

SITE MANAGEMENT PLAN
HEALTH AND SAFETY PLAN

FOR

250 WATER STREET
NEW YORK, NEW YORK
NYC Tax Block 98, Lot 1
NYSDEC BCP Site No. C231127

Prepared For

The Howard Hughes Corporation
199 Water Street, 28th Floor
New York, New York

Prepared By:

Langan Engineering, Environmental, Surveying
Landscape Architecture and Geology, D.P.C.
21 Penn Plaza
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LANGAN

July 2023
Langan Project No. 170381202

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1.0 INTRODUCTION

1.1 General

This Site Management Plan (SMP) Health and Safety Plan (HASP) was developed to address disturbance of known and reasonably anticipated subsurface contaminants and comply with Occupational Safety and Health Administration (OSHA) Standard 29 Code of Federal Regulation (CFR) 1910.120(b)(4), Hazardous Waste Operations and Emergency Response for the property 250 Water Street adjacent to the South Street Seaport Historic District in New York, New York (the "Site"). The Site is identified on the Manhattan Borough Tax Map as Block 98, Lot 1.

This HASP provides the minimum requirements for implementing site operations during future remedial measure activities. All contractors performing work on this site must implement their own HASP that, at a minimum, adheres to this HASP. The contractor is responsible for their own health and safety and that of their subcontractors. Langan personnel will implement this HASP while onsite.

The content of this HASP may change or undergo revision based upon additional information made available to health and safety personnel, monitoring results, or changes in the work plan.

1.2 Site Location and Background

The 47,900-square-foot (±1.09-acre) site is located at 250 Water Street adjacent to the South Street Seaport Historic District in New York, New York, and is identified as Block 98, Lot 1 on the New York City tax map. The site is occupying the entire city block bordered by Pearl Street to the north, Peck Slip to the east, Water Street to the south, and Beekman Street to the west. The site is currently vacant but was most recently used as an open-air commercial parking lot with a parking attendant kiosk and temporary storage shed near the center of the lot. The parking lot had a 400-vehicle capacity. The perimeter of the site is fenced with one automated barrier gates on Pearl Street. A site location map is provided as Figure 1.

Historical site uses include a factory, an oil company, a printer, a metal works, a chemicals and glue company, a chemical company, a trucking company, a thermometer company, a garage with two 550-gallon underground storage tanks (USTs), a machine shop, and a gasoline service station.

1.3 Summary of Work Tasks

1.3.1 Groundwater Sampling

Langan will sample groundwater from selected monitoring wells to evaluate groundwater quality. Groundwater samples will be collected from one or more of the existing monitoring well; however, if necessary, Langan may advance and complete new monitoring wells to replace or augment the existing monitoring wells.

Langan will sample monitoring wells in accordance with the Langan Low Flow Groundwater Sampling Standard Operating Procedure (SOP). Groundwater samples will be submitted to a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified laboratory and analyzed in accordance with work plan specifications.

If required by the work plan to install new monitoring wells, Langan will retain a drilling contractor to compete the wells in borings the contractor will advance to depth below grade surface (bgs) specified in the work plan. Borings will be installed at the approximate locations indicated in Langan's work plan but may be moved in the field based on utility clearance and accessibility. The drilling contractor will contact the appropriate utility mark-out authority and make available to their drilling staff the verification number and effective dates. Langan will record the verification number and effective dates from the drillers. Langan will also note the location of marked out utilities on the site plan and scan the data into the project folder.

While the contractor is advancing the soil borings, Langan personnel will screen soil for visual, olfactory, and instrumental indicators suggestive of a potential petroleum release. Instrument screening for the presence of volatile organic compounds (VOCs) may be performed with a duly field-calibrated photoionization detector (PID) (or equivalent). Langan personnel will collect soil samples from the proposed soil boring locations following the sampling plan outlined in the work plan.

Soil samples may be submitted to a NYSDOH ELAP-certified laboratory and analyzed in accordance with work plan specifications.

1.3.2 Groundwater/Product Gauging

Langan may gauge one or more of the observation/monitoring wells to collect synoptic head data or determine the presence of product. When gauging, Langan may also survey head space VOCs within the well using a duly calibrated PID. When collected, gauging data will be based on the northernmost point at top of casing (TOC) using an interface probe (IP) capable of

determining the presence of free product in the monitoring well as light non-aqueous phase liquid (LNAPL) at the top of the water column. If gauging for dense non-aqueous phase liquid (DNAPL) at the base of the monitoring well, the IP may not be appropriate. The field engineer will coordinate with the project team to devise an alternative method to gauge the thickness of DNAPL at base of the well. Langan will decontaminate gauging equipment between wells as required by the work plan.

1.3.3 Product Bailing

Langan may remove free product from on-site monitoring wells as part of this HASP or subsequent SMP activities. Langan will may use a bailer, peristaltic pump or submersible as determined by the work plan. Langan will record the volume of product and groundwater recovered. Recovered product and groundwater will be drummed in accordance with procedures outlined in the work plan.

1.3.4 Excavation and Soil Screening

As part of a potential future excavation activity, Langan personnel may be on-site to document excavation and related activities. Pursuant to these activities, Langan will screen excavated soil material for visual, olfactory, and instrumental indicators suggestive of a potential chemical or petroleum release. Instrument screening for the presence of volatile organic compounds (VOCs) may be performed with a duly calibrated photoionization detector (PID). Contractors will excavate for utilities, foundation components and potential grading using heavy equipment and hand tools. Contractors will notify Langan personnel if they identify indications suggestive of a potential chemical or petroleum release. Contaminated material shall be handled, and property disposed in accordance with federal, state and city regulations, criteria and guidelines.

Soil samples from excavation (endpoint or delineation sampling (along with QA/QC samples) may be collected and subsequently submitted to a NYSDOH ELAP-certified laboratory and analyzed in accordance with work plan specifications.

1.3.5 Soil Sampling

As part of the excavation activities, soil samples (waste characterization, excavation endpoint, delineation, or quality assurance/quality control [QA/QC]) may be collected during construction, as required. Langan personnel will coordinate with the contractor in sampling soil (in accordance with the work plan, where applicable).

Soil samples excavation endpoint or delineation sampling (along with QA/QC samples) may be collected and subsequently submitted to a NYSDOH ELAP-certified laboratory and analyzed in

accordance with work plan specifications.

1.3.6 Stockpiling

Potentially impacted soil may be stockpiled pending laboratory analysis and determining proper off-site disposal. Visibly contaminated soil, if encountered, shall be segregated and stockpiled on at least 10 millimeters of plastic sheeting; reusable soil and fill shall be segregated and stockpiled separately from unusable fill, concrete and other debris; the stockpiles shall be kept covered with 6 millimeters thick plastic sheeting; the plastic sheeting covering the stockpiles shall be anchored firmly in place by weights, stakes, or both; the Contractor shall maintain the plastic sheeting.

1.3.7 Characterization of Excavated Material

When required by the work plan, Langan personnel will characterize excavated soil or clean backfill in accordance with Langan standards.

1.3.8 Observation/Monitoring Well Plugging and Abandonment

At an unspecified future date, the observation/monitoring wells will be abandoned. Plugging and abandonment will be in accordance with federal and state requirements. Langan may retain a drilling contractor to complete the plugging and abandonment activities. The contractor will contact the appropriate utility mark-out authority and make available to their field staff the verification number and effective dates. Langan may observe the plugging and abandonment of one or more observation/monitoring wells to document that the plugging and abandonment activities were completed in accordance with the work plan and regulations.

1.3.9 QA/QC Sampling

Samples for quality assurance/quality control [QA/QC] samples may also be collected and submitted to an approved laboratory and analyzed in accordance with work plan specifications. Information regarding the QA/QC samples including required method of analysis may be included in the same COC as the soil samples unless otherwise instructed by the work plan.

1.3.10 Equipment Decontamination

Before the start of the day's sampling and after sampling each run, sampling equipment will be decontaminated by the decontamination process outlined Attachment B - Decontamination Procedures. Decontamination wastes and purge water will be temporarily stored on site pending analytical results.

1.3.11 Management of Investigative-Derived Waste

The investigative-derived waste (IDW) generated during this investigation will be contained in DOT-approved 55-gallon drums. The drums will be temporarily stored on the site or as directed by the client representative. All drums will be filled between to two-thirds full to allow easy maneuvering during drum pickup and disposal. Drum labels are to be provided by Langan (Environmental Closet). All drums will be labeled as "IDW Pending Analysis" until sample data are reported from the laboratory. Drum labels will include date filled and locations where waste was generated along with the standard information required by the labels in accordance with the Langan SOP09, Drum Labeling.

Closed top drums are to be used to store liquids. Debris, including plastic sheeting, polyethylene tubing, personal protection equipment (PPE), decontamination debris, etc. will be segregated from and disposed in large heavy duty garbage bags and disposed of at the site. Excess unused glassware should be returned to the lab along with the last day of collection samples.

1.3.12 Drum Sampling

Langan personnel may collect drum samples, as required, prior to off-site drum disposal. Samples will be placed into laboratory-supplied batch-certified clean glassware and submitted to an approved laboratory and analyzed in accordance with work plan specifications, if required.

1.3.13 Surveying

Surveying activities may be completed by Langan. Surveying will be conducted by licensed surveyors.

2.0 IDENTIFICATION OF KEY PERSONNEL/HEALTH AND SAFETY PERSONNEL

The following briefly describes the health and safety (H&S) designations and general responsibilities that may be employed for this site. The titles have been established to accommodate the project needs and requirements and ensure the safe conduct of site activities. The H&S personnel requirements for a given work location are based on the proposed site activities.

2.1 Langan Project Manager

The Langan Environmental Project Manager (PM) is Michael Au, his responsibilities include:

- Ensuring that this HASP is developed, current, and approved prior to on-site activities.

- Ensuring that the tasks in the project are performed in a manner consistent with Langan's comprehensive *Health and Safety Program for Hazardous Waste Operations* and this HASP.

2.2 Langan Corporate Health and Safety Manager

The Langan Corporate Health and Safety Manager is Tony Moffa. His responsibilities include:

- Updating the *Construction Health and Safety Program for Hazardous Waste Operations*.
- Assisting the site Health and Safety Officer (HSO) with the development of the HASP, updating HASP as dictated by changing conditions, job site inspection results, etc., and approving changes to this HASP.
- Assisting the HSO in the implementation of this HASP and conducting Jobsite Safety Inspections and assisting with communication of results and correction of shortcomings found.
- Maintaining records on personnel (medical evaluation results, training and certifications, accident investigation results, etc.).

2.3 Langan Site Health & Safety Officer

The Langan site HSO is William Bohrer. His responsibilities include:

- Participating in the development and implementation of this HASP.
- When on-site, assisting the Langan Field Team Leader in conducting Tailgate Safety Meetings and Jobsite Safety Inspections and correcting any shortcomings in a timely manner.
- Ensuring that proper PPE is available, worn by employees, and properly stored and maintained.
- Controlling entry into and exit from the site contaminated areas or zones.
- Monitoring employees for signs of stress, such as heat stress, fatigue, and cold exposure.
- Monitoring site hazards and conditions.
- Knowing (and ensuring that all site personnel also know) emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control center, fire department, and police department.
- Resolving conflicts that may arise concerning safety requirements and working conditions.
- Reporting all incidents, injuries, and near misses to the Langan Incident/Injury Hotline immediately and the client representative.

2.4 Langan Field Team Leader Responsibilities

The Langan Field Team Leader (FTL) is to be determined prior to the start of field activities. The Field Team Leader's responsibilities include:

- The management of the day-to-day site activities and implementation of this HASP in the field.
- Participating in and/or conducting Tailgate Safety Meetings and Jobsite Safety Inspections and correcting any shortcomings in a timely manner.
- When a Community Air Monitoring Operating Program (CAMP) is part of the scope, the FTL will set up and maintain community air monitoring activities and instruct the responsible contractor to implement organic vapor or dust mitigation when necessary.
- Overseeing the implementation of activities specified in the RAP.

2.5 Contractor Responsibilities

The contractor must develop and implement their own HASP for their employees, their subcontractors, and consultants. The contractor is responsible for their own health and safety and that of their subcontractors. Contractors operating on the site must designate their own FTL, HSO, and Health and Safety Manager (HSM). The contractor's HASP will be at least as stringent as this HASP. The contractor must be familiar with and abide by the requirements outlined in their own HASP. A contractor may elect to adopt Langan's HASP as its own if it has given written notification to Langan, but where Langan's HASP excludes provisions pertinent to the contractor's work (i.e., confined space entry); the contractor must provide written addendums to this HASP. Additionally, the contractor must:

- Ensure their employees are trained in the use of all appropriate PPE for the tasks involved.
- Notify Langan of any hazardous material brought onto the job site or site-related area, the hazards associated with the material, and must provide a material safety data sheet (MSDS) or safety data sheet (SDS) for the material.
- Have knowledge of, understand, and abide by all current federal, state, and local health and safety regulations pertaining to the work.
- Ensure their employees handling hazardous materials, if identified at the Site, have received current training in the appropriate levels of 29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response* (HAZWOPER) if hazardous waste is identified at the Site.
- Ensure their employees handling hazardous materials, if identified at the Site, have been fit-tested within the year on the type of respirator they will wear; and
- Ensure all air monitoring is in place pertaining to the health and safety of their employees as required by OSHA 1910.120; and

- All contractors must adhere to all federal, state, and local regulatory requirements.

3.0 TASK/OPERATION SAFETY AND HEALTH RISK ANALYSES

A Task-Hazard Analysis (Table 1) was completed for general construction hazards that may be encountered at the Site. The potential contaminants that might be encountered during the field activities and the exposure limits are listed in Table 2 complete inventory of MSDS/SDS for chemical products used on site is included in Attachment E.

3.1 Specific Task Safety Analysis

3.1.1 Groundwater Sampling

Sampling groundwater requires the donning of chemical resistant gloves in addition to the standard PPE and cut resistant gloves when cutting sampling-tubing to length.

3.1.2 Monitoring Well Gauging

Langan will don work gloves when opening the well box pulling the well plug and nitrile gloves when handling the interface probe in addition to standard PPE. Langan may record the head space VOCs with a PID and record the survey data. If product is observed in the well, Langan personnel may use product absorbing socks and pads.

3.1.3 Plugging and Abandonment of Observation/Monitoring Wells

Langan personnel are not to operate equipment nor assist in the plugging and abandonment of the observation/monitoring wells. These tasks are to be completed by the contractor.

3.1.4 Indoor Drilling and Excavation

The work scope may require indoor excavation where there may not be adequate ventilation sufficient to safely operate any rig or excavation equipment powered by an internal combustion engine. Where possible, all such work should be done by equipment powered by electricity. If such equipment is used and must be directly wired to the buildings electrical system or to an independent system, this work must be completed by a licensed electrician in accordance with all electrical codes applicable to the work.

Indoor work which is to be completed with equipment powered by an internal combustion engine must incorporate air monitoring of carbon monoxide (CO) using calibrated air monitoring equipment (MultiRAE or equivalent). In addition, the work plan should incorporate mitigation for

venting engine exhaust fumes directly to the outdoors and for circulating fresh air into the work area.

The OSHA Time Weighted Average (TWA) Permissible Exposure Limit (PEL) for CO from 50 to 35 parts per million (ppm). Langan will monitor CO with a suitable monitoring device. If CO levels exceed 5 ppm, Langan will instruct contractors to begin mitigation measures. These measures are at a minimum:

- Increase air circulation using industrial size fans to bring additional fresh air into the building or vent exhaust to the outside.
- Modify the passive exhaust method being used to increase venting circulation by using wider diameter tubing or sealing tubing connections; or
- Modify the work schedule where the rig is turned off to allow time for CO levels to fall back to background.

All work must cease if CO levels reach 35 ppm. The Langan engineer is to report to the PM and H&S officer when an action level is reached.

3.1.5 Soil Screening and Sampling

Sampling the soil requires the donning of chemical resistant gloves in addition to the standard PPE. Langan personnel are not to operate drilling or excavation equipment nor open sampling devices (acetate liners, sonic sample bags, etc.). These tasks are to be completed by the driller or excavation contractor.

3.1.6 Stockpile Sampling

Langan personnel are not to scale or otherwise climb stockpiles. If the soil sampling plan requires sampling from the stockpile above ground level, samples are to be obtained using suitable excavation equipment operated by the contractor (i.e., front end loader).

3.1.7 Drum Sampling

Drilling fluid, rinse water, grossly contaminated soil samples and cuttings will be containerized in 55-gallon drums for disposed off-site. Each drum must be labeled in accordance with the Langan Drum Labeling Standard Operating Procedure (SOP-#9). Sampling drums requires the donning of work gloves when opening the drums and chemical resistant gloves when sampling in addition to standard PPE.

Langan personnel and contractors are not to move or opened any orphaned (unlabeled) drum found on the site without approval of the project manager.

3.2 Radiation Hazards

No radiation hazards are known or expected at the site.

3.3 Physical Hazards

Physical hazards, which may be encountered during site operations for this project, are detailed in Table 1.

3.3.1 Explosion

No explosion hazards are expected for the scope of work at this site.

3.3.2 Heat Stress

The use of Level C protective equipment, or greater, may create heat stress. Monitoring of personnel wearing personal protective clothing should commence when the ambient temperature is 72^{O}F or above. Table 6 presents the suggested frequency for such monitoring. Monitoring frequency should increase as ambient temperature increases or as slow recovery rates are observed. Refer to Table 7 to assist in assessing when the risk for heat-related illness is likely. To use this table, the ambient temperature and relative humidity must be obtained (a regional weather report should suffice). Heat stress monitoring should be performed by the HSO or the FTL, who must be able to recognize symptoms related to heat stress.

To monitor the workers, be familiar with the following heat-related disorders and their symptoms:

- **Heat Cramps:** Painful spasms of arm, leg, or abdominal muscles, during or after work
- **Heat Exhaustion:** Headache, nausea, dizziness; cool, clammy, moist skin; heavy sweating; weak, fast pulse; shallow respiration, normal temperature
- **Heat Stroke**: Headache, nausea, weakness, hot dry skin, fever, rapid strong pulse, rapid deep respirations, loss of consciousness, convulsions, coma. *This is a life-threatening condition***.**

Do not permit a worker to wear a semi-permeable or impermeable garment when they are showing signs or symptoms of heat-related illness.

To monitor the worker, measure:

- **Heart rate:** Count the radial pulse during a 30-second period as early as possible in the rest period. If the heart rate exceeds 100-beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same. If

the heart rate still exceeds 100-beats per minute at the next rest period, shorten the following work cycle by one-third. A worker cannot return to work after a rest period until their heart rate is below 100-beats per minute.

- **Oral temperature:** Use a clinical thermometer (3 minutes under the tongue) or a similar device to measure the oral temperature at the end of the work period (before drinking). If oral temperature exceeds 99.6^{O}F (37.6^{O}C), shorten the next work cycle by one-third without changing the rest period. A worker cannot return to work after a rest period until their oral temperature is below 99.6^{O}F. If oral temperature still exceeds 99.6^{O}F (37.6^{O}C) at the beginning of the next rest period, shorten the following cycle by one-third. Do <u>not</u> permit a worker to wear a semi-permeable or impermeable garment when oral temperature exceeds 100.6^{O}F (38.1^{O}C).

<u>Prevention</u> <u>of</u> <u>Heat</u> <u>Stress</u> - Proper training and preventative measures will aid in averting loss of worker productivity and serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat-related illnesses. To avoid heat, stress the following steps should be taken:

- Adjust work schedules.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must equal the amount of water lost in sweat, id., eight fluid ounces (0.23 liters) of water must be ingested for every eight ounces (0.23 kilograms [kg]) of weight lost. The normal thirst mechanism is not sensitive enough to ensure that enough water will be drunk to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more. The following strategies may be useful:
    - Maintain water temperature 50^{O} to 60^{O}F (10^{O} to 16.6^{O}C).
    - Provide small disposal cups that hold about four ounces (0.1-liters).
    - Have workers drink 16-ounces (0.5 liters) of fluid (preferably water or dilute drinks) before beginning work.
    - Urge workers to drink a cup or two every 15- to 20-minutes, or at each monitoring break. A total of 1- to 1.6-gallons (4- to 6-liters) of fluid per day are recommended, but more may be necessary to maintain body weight.
    - Train workers to recognize the symptoms of heat-related illness.

3.3.3 Cold-Related Illness

If work on this project begins in the winter months, thermal injury due to cold exposure can become a problem for field personnel. Systemic cold exposure is referred to as hypothermia. Local cold exposure is called frostbite.

- **Hypothermia -** Hypothermia is defined as a decrease in the patient core temperature below 96^{O}F. The body temperature is normally maintained by a combination of central (brain and spinal cord) and peripheral (skin and muscle) activity. Interference with any of these mechanisms can result in hypothermia, even in the absence of what normally is considered a "cold" ambient temperature. Symptoms of hypothermia include shivering, apathy, listlessness, sleepiness, and unconsciousness.
- **Frostbite -** Frostbite is both a general and medical term given to areas of local cold injury. Unlike systemic hypothermia, frostbite rarely occurs unless the ambient temperatures are less than freezing and usually less than 20^{O}F. Symptoms of frostbite are a sudden blanching or whitening of the skin; the skin has a waxy or white appearance and is firm to the touch; tissues are cold, pale, and solid.

Prevention of Cold-Related Illness - To prevent cold-related illness:

- Educate workers to recognize the symptoms of frostbite and hypothermia.
- Identify and limit known risk factors:
- Assure the availability of an enclosed, heated environment on or adjacent to the site.
- Assure the availability of dry changes of clothing.
- Assure the availability of warm drinks.
- Start (oral) temperature recording at the job site:
- At the FSO or Field Team Leader's discretion when suspicion is based on changes in a worker's performance or mental status.
- At a worker's request.
- As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind-chill less than 20^{O}F, or wind-chill less than 30^{O}F with precipitation).
- As a screening measure whenever anyone worker on the site develops hypothermia.

Any person developing moderate hypothermia (a core temperature of 92^{O}F) cannot return to work for 48 hours.

3.3.4 Noise

Work activities during the proposed activities may be conducted at locations with high noise levels from the operation of equipment. Hearing protection will be used as necessary.

3.3.5 Hand and Power Tools

The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. All hand and power tools should be inspected for health and safety hazards prior to use. If deemed unserviceable/un-operable, notify the supervisor and tag equipment out of service. Ground Fault Circuit Interrupters (GFCIs) are required for all power tools requiring direct electrical service.

3.3.6 Slips, Trips, and Fall Hazards

Care should be exercised when walking at the site, especially when carrying equipment. The presence of surface debris, uneven surfaces, pits, facility equipment, and soil piles contribute to tripping hazards and fall hazards. To the extent possible, all hazards should be identified and marked on the site, with hazards communicated to all workers in the area.

3.3.7 Utilities (Electrocution and Fire Hazards)

3.3.7.1 Utility Clearance

The possibility of encountering underground utilities poses fire, explosion, and electrocution hazards. All excavation work will be preceded by a review of available utility drawings and by notification of the subsurface work to N.Y. One –Call–Center.

3.3.7.2 Lockout-Tagout

The potential adverse effects of electrical hazards include burns, arc flashes, and electrocution, which could result in severe injury including death. Therefore, there is a procedure that establishes the requirements for the lockout/tag out (LOTO) of energy isolating devices in accordance with the OSHA electrical lockout and tagging requirements as specified in 29CFR1910.147 and 29 CFR 1926.417. This procedure will be used to ensure that all machines and equipment are isolated from potentially hazardous energy. If possible, equipment that could cause injury due to unexpected energizing, start-up, or release of stored energy will be locked/tagged, before field personnel performs work activities.

The facility owner/operator/representative is to be the authorized person that will initiate and perform the LOTO in accordance with applicable rules and practices. Inerting of electrical power sources is to be completed by an authorized and licensed electrician. Langan personnel will

follow LOTO protocols and practices including adding a separate lock/signature to the LOTO chain in accordance with said protocols and practices.

SPECIAL NOTE: Project personnel will assume that all electrical equipment at the surface, subsurface, and overhead locations are energized until equipment has been designated and confirmed as de-energized by a utility company representative. Langan will notify the designated utility representative prior to working adjacent to this equipment and will verify that the equipment is energized or de-energized in the vicinity of the work location. No project work shall be performed by Langan personnel or subcontractors near energized electrical lines or equipment.

The FTL shall accompany the designated facility owner/operator/representative or authorized/licensed electrician in surveying to locate and identify all energy-isolating devices. Langan will note which switches, valves or other isolating devices are used for inerting the equipment and how they are set assuring LOTO. The lockout/tagout procedure involves, but is not limited to, electricity, motors, steam, natural gas, compressed air, hydraulic systems, digesters, sewers, etc.

3.3.8 Adequate Lighting

Indoor or night activities must be done under adequate lighting conditions. The Langan field engineer must be able to clearly see the equipment, all controls and have sufficient lighting to detail color labels. Battery operated lights are sufficient provide they cast a wide enough field to provide the required lighting and there are back-up batteries and emergency flashlights available. Electrically powered lights are suitable provided the electrical source is equipped with a ground fault interrupt circuit (GFIC) and the extensions cords are visually inspected and not used if they show cracked or missing insulation. If a generator is supplying the electricity, it must be outdoors and properly vented.

3.3.9 Physical Hazard Considerations for Material Handling

There are moderate to severe risks associated with moving heavy objects at the Site. The following physical hazards should be considered when handling materials at the Site:

- Heavy objects will be lifted and moved by mechanical devices rather than manual effort whenever possible.
- The mechanical devices will be appropriate for the lifting of moving tasks and will be operated only by trained and authorized personnel.
- Objects that require special handling or rigging will only be moved under the guidance of a person who has been specifically trained to move such objects.

- Lifting devices will be inspected, certified, and labeled to confirm their weight capacities. Defective equipment will be taken out of service immediately and repaired or destroyed.
- The wheels of any trucks being loaded or unloaded will be choked to prevent movement. Outriggers will be fully extended on a flat, firm surface during operation.
- Personnel will not pass under a raised load, nor will a suspended load be left unattended.
- Personnel will not be carried on lifting equipment unless it is specifically designed to carry passengers.
- All reciprocating, rotating, or other moving parts will be always guarded.
- Accessible fire extinguishers, currently (monthly) inspected, will be available in all mechanical lifting devices.
- Verify all loads/materials are secure before transportation.

Material handling tasks that are unusual or require specific guidance will need a written addendum to this HASP. The addendum must identify the lifting protocols before the tasks are performed. Upon approval, the plan must be reviewed with all affected employees and documented. Any deviation from a written plan will require approval by the Langan HSM.

3.3.10 Hearing Conservation

Under the construction industry standard, the maximum permissible occupational noise exposure is 90 A-weighted decibels (dbA) (8-hour TWA), and noise levels more than 90-dbA must be reduced through feasible administrative and engineering controls. (20 CFR 1926.52). Hearing protection is required when working within 15-feet of vacuum extraction equipment and drill rigs.

3.3.11 Open Water

Employees working over or near water, where the danger of drowning exists, must be provided with U.S. Coast Guard-approved life jackets or buoyant work vests. Prior to and after each use, the buoyant work vests or life preservers must be inspected for defects that would alter their strength or buoyancy. Defective units must not be used.

And should a worker fall into the water, OSHA requires (29 CFR 1926.106(c)) that ring buoys with at least 90-feet of the line must be provided and readily available for emergency rescue operations. The distance between ring buoys must not exceed 200-feet. Another remedial action required by OSHA (29 CFR 1926.106(d)) is the use of lifesaving skiffs.

OSHA requires that at least one lifesaving skiff must be immediately available at locations where employees are working over or adjacent to water and must include the following provisions.

- The skiff must be in the water or capable of being quickly launched by one person.
- At least one person must be present and specifically designated to respond to water emergencies and operate the skiff at all times when there are employees above water.
- When the operator is on break another operator must be designated to provide requisite coverage when there are employees above water.
- The designated operator must either have the skiff always staffed or have someone remain in the immediate area such that the operator can quickly reach the skiff and perform rescue services.
- The skiff operator may be assigned other tasks provided the tasks do not interfere with the operator's ability to quickly reach the skiff.
- A communication system, such as a walkie-talkie, must be used to inform the skiff operator of an emergency and to inform the skiff operator where the skiff is needed.
- The skiff must be equipped with both a motor and oars.

Regarding the number of skiffs required and the appropriate maximum response time, the following factors must be evaluated:

- The number of work locations where there is a danger of falling into water.
- The distance to each of those locations.
- Water temperature and currents.
- Other hazards such as, but not limited to, rapids, dams, and water intakes.

Other regulations that present H&S practices and PPE for work on or near water include: 29 CFR 1910, Subpart T (401 – 440)

3.4 Biological Hazards

3.4.1 Animals

There is a possibility of encountering wildlife including reptiles, rodents, and other small and medium-size mammals. The Langan personnel is to avoid interacting with any wildlife.

3.4.2 Insects

Ticks and other biting or stinging insects may be encountered during site operations. Langan personnel should take necessary precautions including donning long sleeve shirts and insecticide to prevent bites and stings. After fieldwork, Langan personnel should perform a complete visual inspection of their clothing to insure they are not inadvertently harboring ticks. If they do observe a tick bite, they are to contact the HSM or HSO and report the event.

3.4.3 Plants

Poisonous plants may be encountered during site operations. Langan personnel should take necessary precautions including donning long sleeve shirts and applying preventative poison Ivy/Sumac lotion to prevent or limit the effects of exposure. If after fieldwork, Langan employees do observe a reaction to poisonous plant exposure, they are to contact the HSM or HSO and report the event.

3.4.4 Mold

This section is restricted to subsurface investigations where sampling soil, groundwater, soil or sub-slab vapor or ambient air in an indoor environment with slight to moderate mold impact. Mold exposure symptoms include nasal stuffiness, eye irritation, or wheezing.

The Langan field engineer is required to don a ½ face respirator with a minimum p-100 particulate filter and Tyvek™ type overclothing before entering mold impacted indoor work area. The Langan field engineer must be medically cleared and have been properly fitted for a respirator before donning one.

3.5 Additional Safety Analysis

3.5.1 Presence of Non-Aqueous Phase Liquids (NAPL)

PPE should be considered when NAPL is observed as NAPL is a typically flammable fluid and releases VOCs known to be toxic and/or carcinogenic. If NAPL is present in a monitoring well, vapors from the well casing may contaminate the work area breathing zone with concentrations of VOCs potentially exceeding health and safety action levels. In addition, all equipment used to monitor or sample NAPL (or ground water from wells containing NAPL) must be intrinsically safe. Equipment that directly contacts NAPL must also be resistant to organic solvents.

At a minimum, a PID should be used to monitor for VOCs when NAPL is observed. If NAPL is expected to be observed in an excavation or enclosed area, air monitoring must be started using calibrated air monitoring equipment designed to sound an audio alarm when atmospheric concentrations of VOC are within 10% of the LEL. In normal atmospheric oxygen concentrations, the LEL monitoring may be done with a Wheatstone bridge/catalytic bead type sensor (i.e., MultiRAE). However, in oxygen-depleted atmospheres (confined space), only an LEL designed to work in low-oxygen environments may be used. Best practices require that the LEL monitoring unit be equipped with a long sniffer tube to allow the LEL unit to remain outside the UST excavation.

When NAPL is present, Langan personnel are required to always use disposable nitrile gloves to prevent skin contact with contaminated materials. They should also consider having available a respirator and protective clothing (Tyvek® overalls), especially if NAPL is in abundance and there are high concentrations of VOCs.

All contaminated disposables including PPE and sampling equipment must be properly disposed of in labeled 55-gallon drums.

3.6 Job Safety Analysis

A Job Safety Analysis (JSA) is a process to identify existing and potential hazards associated with each job or task so these hazards can be eliminated, controlled, or minimized. A JSA will be performed at the beginning of each workday, and additionally whenever an employee begins a new task or moves to a new location. All JSAs must be developed and reviewed by all parties involved. A blank JSA form and documentation of completed JSAs are in Attachment G.

4.0 PERSONNEL TRAINING

4.1 Basic Training

Completion of an initial 40-hour HAZWOPER training program as detailed in OSHA's 29 CFR 1910.120(e) is required for all employees working on a site engaged in hazardous substance removal or other activities which expose or potentially expose workers to hazardous substances, health hazards, or safety hazards as defined by 29 CFR 1910.120(a). Annual 8-hour refresher training is also required to maintain competencies to ensure a safe work environment. In addition to these training requirements, all employees must complete the OSHA 10-hour Construction Safety and Health training and supervisory personnel must also receive eight additional hours of specialized management training. Training records are maintained by the HSM.

4.2 Initial Site-Specific Training

Training will be provided to specifically address the activities, procedures, monitoring, and equipment for site operations at the beginning of each field mobilization and the beginning of each discrete phase of work. The training will include the site and facility layout, hazards, and emergency services at the site, and will detail all the provisions contained within this HASP. For a HAZWOPER operation, training on the site must be for a minimum of 3 days. Specific issues that will be addressed include the hazards described in Section 3.0.

4.3 Tailgate Safety Briefings

Before starting work each day or as needed, the Langan HSO will conduct a brief tailgate safety meeting to assist site personnel in conducting their activities safely. Tailgate meetings will be documented in Attachment H. Briefings will include the following:

- Work plan for the day.
- Review of safety information relevant to planned tasks and environmental conditions.
- New activities/tasks being conducted.
- Results of Jobsite Safety Inspection Checklist.
- Changes in work practices.
- Safe work practices; and
- Discussion and remedies for noted or observed deficiencies.

5.0 MEDICAL SURVEILLANCE

All personnel who will be performing fieldwork involving potential exposure to toxic and hazardous substances (defined by 29 CFR 1910.120(a)) will be required to have passed an initial baseline medical examination, with follow-up medical exams thereafter, consistent with 29 CFR 1910.120(f). Medical evaluations will be performed by, or under the direction of, a physician board-certified in occupational medicine.

Additionally, personnel who may be required to perform work while wearing a respirator must receive medical clearance as required under CFR 1910.134(e), *Respiratory Protection*. Medical evaluations will be performed by, or under the direction of, a physician board-certified in occupational medicine. Results of medical evaluations are maintained by the HSM.

5.1 Mercury Monitoring

Langan includes medical monitoring for mercury during the initial baseline and annual physical.

5.2 Coronavirus

General Preventative Measures

Field personnel must follow general proper hygiene measures while in the field including:

- Avoid touching eyes, nose, and mouth.
- Cover coughs or sneezes with tissue and throw in the trash.
- Wash hands often with soap and water for 20 seconds after going to the bathroom, before eating, after blowing nose, coughing, or sneezing.

- Use hand sanitizer with at least 60% alcohol if soap and water are not available.
- Avoid physical contact with other people (e.g., no handshakes).
- Maintain a safe distance of at least six feet from other people (social distancing).
- Wear face coverings when around other workers to minimize the spread of COVID-19. (May be required in certain states or locations.)

Construction Trailers

Employees should avoid the use of shared construction trailers or where employees cannot maintain a safe distance (minimum 6-feet) from other workers. If trailer use is needed, areas such as desks, phones, chairs, and other public areas, should be cleaned and disinfected before and after use. Protocols should be developed to minimize trailer use to essential personnel, restrict use from any workers who are ill or showing symptoms of being ill, use face coverings and ensure a safe distance of six feet can be established between workers.

Communication

Include Coronavirus topics and prevention topics in daily tailgate meetings to ensure Coronavirus awareness is communicated daily. Discussions can focus on general topics including social distancing, prevention measures for field personnel, signs and symptoms, and latest news on the Coronavirus. Site-specific topics should include minimizing face-to-face contact, disinfecting/sterilizing field equipment, use of PPE to reduce exposure, site security, use of face coverings, and other potential exposure issues/concerns.

Sick/Ill Workers

No Langan employee is permitted to be onsite when ill and/or showing potential symptoms of the Coronavirus. Symptoms of the Coronavirus may appear 2-14 days after exposure and can range from mild to severe. The most common symptoms include fever, fatigue, dry cough, shortness of breath chills, repeated shaking with chills, muscle pain, headache, sore throat, or new loss of taste or smell. If an employee or subcontractor is observed being ill or exhibiting symptoms of Coronavirus, employees must immediately utilize their Stop Work Authority and contact their project manager to address the situation. If an employee observes another worker onsite exhibiting symptoms of Coronavirus, immediately utilize Stop Work Authority, notify their project manager, and site construction manager or safety officer. Work should resume when the safety and health of Langan and subcontractors is adequately addressed.

6.0 PERSONAL PROTECTIVE EQUIPMENT

6.1 Levels of Protection

Langan will provide PPE to Langan employees to protect them from the specific hazards they are likely to encounter on-site. Directly hired contractors will provide their employees with equivalent PPE to protect them from the specific hazards likely to be encountered on-site. Selection of the appropriate PPE must take into consideration: (1) identification of the hazards or suspected hazards; (2) potential exposure routes; and (3) the performance of the PPE construction (materials and seams) in providing a barrier to these hazards.

Human exposure to contaminants found in the subsurface can occur through three primary routes:

- Inhalation of gases, vapors, dust, or mists is a common route of exposure. Chemicals can enter and irritate the airways and the lungs. They can become deposited in the airways or can be absorbed through the lungs into the bloodstream.
- Direct contact of contaminants with the skin or eyes is a common route of exposure. Some substances are absorbed through the skin and can enter the bloodstream. Broken, cut, or cracked skin will allow substances to enter the body more easily.
- Ingestion or swallowing of food, drink, or other substances is the third route of exposure. Chemicals that get in or on food, utensils, or hands can be ingested. Substances can be absorbed into the blood.

Based on anticipated site conditions and the proposed work activities to be performed at the site, Level D protection will be used. The upgrading/downgrading of the level of protection will be based on continuous air monitoring results as described in Section 6.0 (when applicable). The decision to modify standard PPE will be made by the site HSO or FTL after conferring with the PM. The levels of protection are described below.

Level D Protection (as needed)

- Safety glasses with side shields or chemical splash goggles
- Safety boots/shoes
- Coveralls (Tyvek® or equivalent)
- Hard hat
- Long sleeve work shirt and work pants
- Nitrile gloves
- Hearing protection

- Reflective safety vest

Level D Protection (Modified, as needed)

- Safety glasses with side shields or chemical splash goggles
- Safety boots/shoes (toe-protected)
- Disposable chemical-resistant boot covers.
- Coveralls (poly-coated Tyvek or equivalent to be worn when contact with wet contaminated soil, groundwater, or non-aqueous phase liquids is anticipated)
- Hard hat
- Long sleeve work shirt and work pants
- Nitrile gloves
- Hearing protection (as needed)
- Personal floatation device (for work within 5 ft of the water)
- Reflective traffic vest

Level C Protection (as needed)

- Full or Half face, air-purifying respirator, with NIOSH approved High-Efficiency Particulate Air (HEPA) filter.
- Inner (latex) and outer (nitrile) chemical-resistant gloves
- Safety glasses with side shields or chemical splash goggles
- Chemical-resistant safety boots/shoes
- Hard hat
- Long sleeve work shirt and work pants
- Coveralls (Tyvek® or equivalent)
- Hearing protection (as needed)
- Reflective safety vest

The action levels used in determining the necessary levels of respiratory protection and upgrading to Level C are summarized in Table 4. The written Respiratory Protection Program is maintained by the HSM and is available if needed. The monitoring procedures and equipment are outlined in Section 6.0 (when applicable).

6.2 Respirator Fit-Test

All Langan employees who may be exposed to hazardous substances at the work site must be in possession of a full or half face piece air-purifying respirator and have been successfully fit-tested within the past year. Fit-test records are maintained by the HSM.

6.3 Respirator Cartridge Change-Out Schedule

Respiratory protection is required to be worn when certain action levels (Table 2) are reached. A respirator cartridge change-out schedule has been developed to comply with 29 CFR 1910.134. The respirator cartridge change-out schedule for this project is as follows:

- Cartridges must be removed and disposed of at the end of each shift when cartridges become wet or the wearer experiences a breakthrough, whichever occurs first.
- If the humidity exceeds 85%, then cartridges must be removed and disposed of after 4 hours of use.

Respirators must not be stored at the end of the shift with contaminated cartridges left on. Cartridges must not be worn on the second day, no matter how short the time was the previous day they were used.

7.0 AIR QUALITY MONITORING AND ACTIONS LEVELS

7.1 Monitoring During Site Operations

Atmospheric air monitoring results may be collected and used to provide data to determine when exclusion zones need to be established and when certain levels of personal protective equipment are required. For all instruments, there are Site-specific action-level criteria that are used in making field health and safety determinations. Other data, such as the visible presence of contamination or the steady state nature of air contaminant concentration, are also used in making field health and safety decisions. Therefore, the HSO may establish an exclusion zone or require a person to wear a respirator even though atmospheric air contaminant concentrations are below established HASP action levels.

During site work involving disturbance of petroleum-impacted or fill material, real-time air monitoring may be conducted for methane and VOCs. A MultiRAE LEL/Oxygen (O2) meter and FID will be used to monitor the LEL of methane, and a PID and/or FID will be used to monitor concentrations of VOCs at personnel breathing-zone height. Air monitoring will be the responsibility of the HSO or designee. Air monitoring may be conducted during intrusive activities associated with the completion of excavation, debris removal, and soil grading. All manufacturers' instructions for instrumentation and calibration will be available onsite.

Subcontractors' air monitoring plans must be equal to or more stringent than the Langan plan.

An air monitoring calibration log is provided in Attachment D of this HASP.

7.1.1 Volatile Organic Compounds

Monitoring with a PID, such as a MiniRAE 2000 (10.6v) or equivalent may occur during intrusive work in the Areas of Concern (AOCs). Colorimetric Indicator Tubes for benzene may be used as a backup for the PID if measurements remain above background monitor every 2 hours. The HSO will monitor the employee's breathing zone at least every 30 minutes, or whenever there is any indication that concentrations may have changed (odors, visible gases, etc.) since the last measurement. If VOC levels are observed above 5 ppm for longer than 5 minutes or if the site PPE is upgraded to Level C, the HSO will begin monitoring the site perimeter at a location downwind of the AOC every 30 minutes in addition to the employee breathing zone. Instrument action levels for monitored gases are provided in Table 4.

7.1.2 Metals

Based upon the site historical fill, there is a potential for the soils to contain Polycyclic Aromatic Hydrocarbons (PAHs) and metals. During invasive procedures which have the potential for creating airborne dust, such as excavation of dry soils, a real-time airborne dust monitor such as a Mini-Ram may be used to monitor for air particulates. The HSO will monitor the employee's breathing zone at least every 30 minutes, or whenever there is any indication that concentrations may have changed (appearance of visible dust) since the last measurement. If dust levels are observed to be greater than 0.100 milligrams per cubic meter (mg/m^3) or visible dust is observed for longer than 15 minutes or if the site PPE is upgraded to Level C, the HSO will begin monitoring the site perimeter at a location downwind of the AOC every 30 minutes in addition to the employee breathing zone. Instrument action levels for dust monitoring are provided in Table 4.

7.1.3 Methane

During soil excavation or other intrusive activities, direct reading air monitoring will be performed in the excavation area to determine exposure to workers. Monitoring with an LEL/O2 meter and FID may occur during intrusive work in the AOCs. The HSO will monitor the employee's breathing zone at least hourly during intrusive activities. If LEL levels are observed above 20% the professional engineer (PE) or their designee will stop work and evacuate the area; warn others; and determine source of readings and take corrective actions. The Contractor will be responsible for mitigating explosive gas levels.

7.2 Monitoring Equipment Calibration and Maintenance

Instrument calibration must be documented and included in a dedicated safety and health logbook or on separate calibration pages of the field book. All instruments must be calibrated

before and after each shift. Calibration checks may be used during the day to confirm instrument accuracy. Duplicate readings may be taken to confirm individual instrument responses.

All instruments must be operated in accordance with the manufacturers' specifications. Manufacturers' literature, including an operation manual for each piece of monitoring equipment, will be maintained on-site by the HSO for reference.

7.3 Determination of Background Levels

Background (BKD) levels for VOCs, dust, and methane will be established prior to intrusive activities within the AOC at an upwind location. A notation of BKD levels will be referenced in the daily monitoring log. BKD levels are a function of prevailing conditions. BKD levels will be taken in an appropriate upwind location as determined by the HSO.

Table 4 lists the instrument action levels.

8.0 COMMUNITY AIR MONITORING PROGRAM

In accordance with the Excavation Work Plan (Appendix D of the SMP), community air monitoring will be conducted whenever ground-intrusive activities are performed within remaining contaminated soil/fill.

Community air monitoring will include continuous monitoring at the perimeter of the work zone for odor, VOCs, and dust . The work zone is defined as the general area in which machinery is operating in support of remediation activities. A portable PID will be used to monitor the work zone and for periodic monitoring for VOCs during activities such as soil and groundwater sampling and soil excavation. The site perimeter will be monitored for fugitive dust emissions by visual observations as well as instrumentation measurements.

The CAMP will include two to four CAMP stations based on the scope of work outlined in the 15-day notification to the NYSDEC (as required by the SMP) for any proposed ground-intrusive activities. CAMP during future investigation activities at the site (i.e. advancement of borings for waste characterization or geotechnical investigation) without active excavation will consist of two CAMP stations at upwind and downwind locations in relation to the work zone. CAMP during active excavation at the site (i.e. for future building foundation construction) will include four perimeter CAMP stations (one station for each boundary of the site). Each CAMP station will monitor for VOCs with a PID (or equivalent instrument) and dust emissions with equipment capable of measuring particulate matter less than 10 microns in diameter (PM-10).

When required, particulate or dust will be monitored continuously with real-time field instrumentation that will meet, at a minimum, the local standards or, default to the performance

standards below:

If VOC monitoring is required, the following actions will be taken based on VOC levels measured:

- If total VOC levels exceed 5 ppm above background for the 15-minute average at the perimeter, work activities will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 5 ppm above background, work activities will resume with continued monitoring.
- If total VOC levels at the downwind perimeter of the hot zone persist at levels more than 5 ppm above background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps work activities will resume provided that the total organic vapor level is 200-feet downwind of the hot 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 above background for the 15-minute average.
- If the total VOC level is above 25 ppm at the perimeter of the hot zone, activities will be shut down.

If dust monitoring with field instrumentation is required, the following actions will be taken based on instrumentation measurements:

- If the downwind particulate level is 100-micrograms per cubic meter (µg/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 must be employed. Work may continue with dust suppression techniques provided that downwind particulate matter less than 10 microns (PM10) levels do not exceed 150 µg/m^3 above the background level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM10 levels are greater than 150 µg/m^3 above the background level, work must be stopped, and a re-evaluation of activities initiated. Work can resume if dust suppression measures and other controls are successful in reducing the downwind PM10 concentration to within 150 µg/m^3 of the upwind level and in preventing visible dust migration.

8.1 Dust, Odor, and Vapor Suppression Techniques

As documented in the SMP, subsurface contamination remains at the site following completion of the remedy. Remaining contamination includes areas of the site with previously identified nuisance odors and remaining soil/fill exceeding the NYSDEC Part 375 Restricted Use Restricted-Residential (RURR) and/or Protection of Groundwater (PGW) soil cleanup objectives (SCOs). As

such, mitigation measures (i.e. odor/vapor suppressing foam and dust suppression) will be available for use during future ground-intrusive activities in areas of the site with remaining contamination.

Preventative measures for dust generation may include wetting site fill and soil, construction of an engineered construction entrance with a gravel pad, a truck wash area, covering soils with tarps, and limiting vehicle speeds to five miles per hour.

Work practices to minimize odors and vapors include limiting the time that the excavations remain open, minimizing stockpiling of contaminated-source soil, and minimizing the handling of contaminated material. Offending odor and organic vapor controls may include the application of foam suppressants or tarps over the odor or VOC source areas. Foam suppressants may include biodegradable foams applied over the source material for short-term control of the odor and VOCs.

If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include direct load-out of soils to trucks for off-site disposal; use of chemical odorants in spray or misting systems; and use of staff to monitor odors in surrounding neighborhoods.

Where odor nuisances have developed during remedial work and cannot be corrected, or where the release of nuisance odors cannot otherwise be avoided due to on-site conditions or proximity to sensitive receptors, odor control will be achieved by sheltering excavation and handling areas under tented containment structures equipped with appropriate air venting/filtering systems.

9.0 WORK ZONES AND DECONTAMINATION

9.1 Site Control

Work zones are intended to control the potential spread of contamination throughout the site and to assure that only authorized individuals are permitted into potentially hazardous areas.

Any person working in an area where the potential for exposure to site contaminants exists will only be allowed access after providing the HSO with proper training and medical documentation.

Exclusion Zone (EZ) - All activities which may involve exposure to site contaminants, hazardous materials, and/or conditions should be considered an EZ. Decontamination of field equipment will also be conducted in the Contaminant Reduction Zone (CRZ) which will be located on the perimeter of the EZ. The EZ and the CRZ will be delineated by cones, tapes, or other means. The HSO may establish more than one EZ where various levels of protection may be employed,

or different hazards exist. The size of the EZ must be determined by the HSO allowing adequate space for the activity to be completed, field members, and emergency equipment.

9.2 Contamination Zone

9.2.1 Personnel Decontamination Station

Personal hygiene, coupled with diligent decontamination, will significantly reduce the potential for exposure.

9.2.2 Minimization of Contact with Contaminants

During the completion of all site activities, personnel should attempt to minimize the chance of contact with contaminated materials. This involves a conscientious effort to keep "clean" during site activities. All personnel should minimize kneeling, splash generation, and another physical contact with contamination as PPE is intended to minimize accidental contact. This may minimize the degree of decontamination required and the generation of waste materials from site operations.

Field procedures will be developed to control spray and runoff and to ensure that unprotected personnel working nearby are not affected.

9.2.3 Personnel Decontamination Sequence

Decontamination may be performed by removing all PPE used in EZ and placing it in drums/trash cans at the CRZ. Baby wipes should be available for wiping hands and face. Drums/trash cans will be labeled by the field crews in accordance with all local, state, and federal requirements. Management plans for contaminated PPE, and tools are provided below.

9.2.4 Emergency Decontamination

If circumstances dictate that contaminated clothing cannot be readily removed, then remove gross contamination and wrap injured personnel with clean garments/blankets to avoid contaminating other personnel or transporting equipment. If the injured person can be moved, he/she will be decontaminated by site personnel as described above before emergency responders handle the victim. If the person cannot be moved because of the extent of the injury (a back or neck injury), provisions must be made to ensure that emergency response personnel will be able to respond to the victim without being exposed to potentially hazardous atmospheric conditions. If the potential for inhalation hazards exists, such as with open excavation, this area will be covered with polyethylene sheeting to eliminate any potential inhalation hazards. All

emergency personnel should be immediately informed of the injured person's condition, and potential contaminants, and provided with all pertinent data.

9.2.5 Hand-Held Equipment Decontamination

Hand-held equipment includes all monitoring instruments as stated earlier, samples, hand tools, and notebooks. The hand-held equipment is dropped at the first decontamination station to be decontaminated by one of the decontamination team members. These items must be decontaminated or discarded as waste prior to removal from the CRZ.

To aid in decontamination, monitoring instruments can be sealed in plastic bags or wrapped in polyethylene. This will also protect the instruments against contaminants. The instruments will be wiped clean using wipes or paper towels if contamination is visually evident. Sampling equipment, hand tools, etc. will be cleaned with non-phosphorous soap to remove any potentially contaminated soil and rinsed with deionized water. All decontamination fluids will be containerized and stored on-site pending waste characterization sampling and appropriate off-site disposal.

9.2.6 Heavy Equipment Decontamination

All heavy equipment and vehicles arriving at the work site will be free from contamination from offsite sources. Any vehicles arriving to work that are suspected of being impacted will not be permitted on the work site. Potentially contaminated heavy equipment will not be permitted to leave the EZ unless it has been thoroughly decontaminated and visually inspected by the HSO or his designee.

9.3 Support Zone

The support zone or cold zone will include the remaining areas of the job site. Break areas and support facilities (including equipment storage and maintenance areas) will be in this zone. No equipment or personnel will be permitted to enter the cold zone from the hot zone without passing through the decontamination station in the warm zone (if necessitated). Eating, smoking, and drinking will be allowed only in this area.

9.4 Communications

The following communications equipment will be utilized as appropriate.

- Telephones - A cellular telephone will be located with the HSO for communication with the HSM and emergency support services/facilities.

- Hand Signals - Hand signals must be used by field teams, along with the buddy system. The entire field team must know them before operations commence and their use covered during site-specific training. Typical hand signals are the following:

Hand Signal	Meaning
Hand gripping throat	Out of air, cannot breathe
Grip your partner's wrists or place both hands around the waist	Leave immediately without debate
Hands on top of head	Need assistance
Thumbs up	OK; I am all right; I understand
Thumbs down	No; negative
Simulated "stick" break with fists	Take a break; stop work

9.5 The Buddy System

When working in teams of two or more, workers will use the "buddy system" for all work activities to ensure that rapid assistance can be provided in the event of an emergency. This requires work groups to be organized such that workers can remain close together and maintain visual contact with one another. Workers using the "buddy system" have the following responsibilities:

- Provide his/her partner with assistance.
- Observe his/her partner for signs of chemical or heat exposure.
- Periodically check the integrity of his/her partner's PPE.
- Notify the HSO or other site personnel if emergency service is needed.

10.0 NEAREST MEDICAL ASSISTANCE

The address and telephone number of the nearest hospital:

New York-Presbyterian Lower Manhattan Hospital
170 William Street
New York, New York
212-312-5000

A map with directions to the hospital is shown in Figure 2. This information will either be posted prominently at the site or will be available to all personnel all the time. Further, all field personnel, including the HSO & FTL, will know the directions to the hospital.

11.0 STANDING ORDERS/SAFE WORK PRACTICES

The standing orders, which consist of a description of safe work practices that must always be followed while on-site by Langan employees and contractors, are shown in Attachment A. The

site HSO and FTL each have the responsibility for enforcing these practices. The standing orders will be posted prominently at the site or are made available to all personnel at all times. Those who do not abide by these safe work practices will be removed from the site.

12.0 SITE SECURITY

No unauthorized personnel must be permitted access to the work areas.

13.0 UNDERGROUND UTILITIES

As provided in Langan's Underground Utility Clearance Guidelines, the following safe work practices should be followed by Langan personnel and the contractor before and during subsurface work in accordance with federal, state, and local regulations:

- Obtain available utility drawings from the property owner/client or operator.
- Provide utility drawings to the project team.
- In the field, mark the proposed area of subsurface disturbance (when possible).
- Ensure that the utility clearance system has been notified.
- Ensure that utilities are marked before beginning subsurface work.
- Discuss subsurface work locations with the owner/client and contractors.
- Obtain approval from the owner/client and operators for proposed subsurface work locations.
- Use safe digging procedures when applicable.
- Stay at least 10-feet from all equipment performing subsurface work.

14.0 SITE SAFETY INSPECTION

The Langan HSO or alternate will check the work area daily, at the beginning and end of each work shift, or more frequently to ensure safe work conditions. The HSO or alternate must complete the Jobsite Safety Inspection Checklist, found in Attachment F. Any deficiencies must be shared with the FTL, HSM, and PM and will be discussed at the daily tailgate meeting.

15.0 HAND AND POWER TOOLS

All hand- and electric-power tools and similar equipment must be maintained in a safe operating condition. All electric-power tools must be inspected before initial use. Damaged tools must be removed immediately from service or repaired. Tools must be used only for the purpose for which they were designed. All users must be trained in their safe operation.

16.0 EMERGENCY RESPONSE

16.1 General

This section establishes procedures and provides information for use during a project emergency. Emergencies happen unexpectedly and quickly, and require an immediate response; therefore, contingency planning and advanced training of staff is essential. Specific elements of emergency support procedures that are addressed in the following subsections include communications, local emergency support units, and preparation for medical emergencies, first aid for injuries incurred on site, record keeping, and emergency site evacuation procedures. In case of emergency, in addition to 911, call *WorkCare - Incident Intervention®* at 1-888-479-7787 to report their injuries. For all other communications, contact the Langan Incident Hotline at **973-560-4699** as soon as possible.

Should outside assistance be needed for accidents, fire, or release of hazardous substances, the emergency numbers will be available and posted at the site (Table 5) where a readily accessible telephone is made available for emergency use.

Also, in the event of an incident where a team member becomes exposed or suffers from an acute symptom from contact with site materials and must be taken to a hospital, a short medical data sheet (Attachment C) for that individual will be made available to the attending physician. The medical data sheet will include the following:

- Name, address, home phone
- Age, height, weight
- Name of person to be notified in case of an accident.
- Allergies
- Sensitivities
- Does he/she wear contact lenses?
- Short checklist of previous illness
- Name of personal physician and phone
- Name of company physician and phone
- Prescription and non-prescription medications currently used.

An incident reporting form is included in Attachment C.

16.2 Responsibilities

16.2.1 Health and Safety Officer (HSO)

The HSO is responsible for ensuring that all personnel are evacuated safely, and that machinery and processes are shut down or stabilized in the event of a stop work order or evacuation. The HSO is responsible for ensuring the HSM is notified of all incidents, all injuries, near misses, fires, spills, releases, or equipment damage. The HSO is required to immediately notify the HSM of any fatalities or catastrophes (three or more workers injured and hospitalized) so that the HSM can notify OSHA within the required time frame.

16.2.2 Emergency Coordinator

The HSO or their designated alternate will serve as the Emergency Coordinator. The Emergency Coordinator is responsible for ensuring that all personnel are evacuated safely, and that machinery and processes are shut down or stabilized in the event of a stop work order or evacuation. They are also responsible for ensuring the HSM is notified of all incidents, all injuries, near misses, fires, spills, releases, or equipment damage. The Emergency Coordinator is required to immediately notify the HSM of any fatalities or catastrophes (three or more workers injured and hospitalized.

The Emergency Coordinator must locate emergency phone numbers and identify hospital routes prior to beginning work on the sites. The Emergency Coordinator must make necessary arrangements to be prepared for any emergencies that could occur.

The Emergency Coordinator is responsible for implementing the Emergency Response Plan.

16.2.3 Site Personnel

Project site personnel are responsible for knowing the Emergency Response Plan and the procedures contained herein. All personnel are expected to notify the Emergency Coordinator of situations that could constitute a site emergency. Project site personnel, including all subcontractors, will be trained in the Emergency Response Plan.

16.3 Communications

Once an emergency has been stabilized, the injured Langan personnel should contact *WorkCare - Incident Intervention®* at 1-888-479-7787 to report their injuries. For all other communications, contact the Langan Incident Hotline at **973-560-4699** as soon as possible.

16.4 Local Emergency Support Units

To be able to deal with any emergency that might occur during investigative activities at the site, the Emergency Notification Numbers (Table 5) will be posted and provided to all personnel conducting work within the EZ.

Figure 2 shows the hospital route map. Outside emergency number 911 and local ambulance should be relied on for response to medical emergencies and transport to emergency rooms. Always contact first responders when there are serious or life-threatening emergencies on the site. Project personnel are instructed not to drive injured personnel to the Hospital. In the event of an injury, provide first aid and keep the injured party calm and protected from the elements, and treat for shock when necessary.

16.5 Pre-Emergency Planning

Langan will communicate directly with administrative personnel from the emergency room at the hospital to determine whether the hospital has the facilities and personnel needed to treat cases of trauma resulting from any of the contaminants expected to be found on the site. Instructions for finding the hospital will be posted conspicuously in the site office and each site vehicle.

16.6 Emergency Medical Treatment

The procedures and rules in this HASP are designed to prevent employee injury. However, if an injury occurs, no matter how slight, it will be reported to the HSO immediately. First-aid equipment will be available on-site at the following locations:

- First Aid Kit: Contractor Vehicles
- Emergency Eye Wash: Contractor Vehicles

During the site safety briefing, project personnel will be informed of the location of the first aid station(s) that has been set up. Some injuries, such as severe cuts and lacerations or burns, may require immediate treatment. Any first-aid instructions that can be obtained from doctors or paramedics, before an emergency-response squad arrives at the site or before the injured person can be transported to the hospital, will be followed closely.

16.7 Personnel with current first aid and CPR certification will be identified.

Only in non-emergency situations may an injured person be transported to an urgent care facility. Due to hazards that may be present at the site and the conditions under which operations are conducted, an emergency may develop. Emergencies can be characterized as injury or acute

chemical exposure to personnel, fire or explosion, environmental release, or hazardous weather conditions.

16.8 Emergency Site Evacuation Routes and Procedures

All project personnel will be instructed on proper emergency response procedures and locations of emergency telephone numbers during the initial site safety meeting. If an emergency occurs because of the site investigation activities, including but not limited to fire, explosion, or significant release of toxic gas into the atmosphere, the Langan Project Manager will be verbally notified immediately. All heavy equipment will be shut down and all personnel will evacuate the work areas and assemble at the nearest intersection to be accounted for and to receive further instructions.

If an emergency arises, the FTL will implement an immediate evacuation of all project personnel due to immediate or impending danger. The FTL will also immediately communicate with the contractor to coordinate any needed evacuation of the property.

The FTL or Site Supervisor will give necessary instructions until the Designated Incident Commander (IC) assumes control. After the emergency has been resolved, the FTL or Site Supervisor will coordinate with the IC and indicate when staff should resume their normal duties. If dangers are present for those at the designated assembly point, another designated location of assembly will be established.

It will be the responsibility of the FTL or Site Supervisor to report a fire or emergency, assess the seriousness of the situation, and initiate emergency measures until the arrival of the local fire fighters or other first responders, should they be necessary. The FTL, working with emergency responders, may also order the closure of the Site for an indefinite period if it is deemed necessary.

Under no circumstances will incoming visitors be allowed to proceed to the area of concern, once an emergency evacuation has been implemented. Visitors or other persons present in the emergency must be instructed to evacuate the area. The FTL will ensure that access roads are not obstructed and will remain on-site to provide stand-by assistance upon the arrival of emergency personnel.

If it is necessary to temporarily control traffic in the event of an emergency, those persons controlling traffic will wear proper reflection warning vests until the arrival of police or fire personnel.

16.8.1 Designated Assembly Locations

All personnel will evacuate the site and assemble at a designated assembly location. The assembly location will be designated by Langan personnel and discussed during each shift's pre-job safety briefing.

16.8.2 Accounting for Personnel

All contractor and subcontractor supervisors are responsible for the accounting of all personnel assembled at the designed assembly area. The Designated Incident Commander must be notified if personnel are not found.

16.9 Fire Prevention and Protection

In the event of a fire or explosion, procedures will include immediately evacuating the site and notification of the Langan Project Manager of the investigation activities. Portable fire extinguishers will be provided at the work zone. The extinguishers located in the various locations should also be identified prior to the start of work. No personnel will fight a fire beyond the stage where it can be put out with a portable extinguisher (incipient stage).

16.9.1 Fire Prevention

Fires will be prevented by adhering to the following precautions:

- Good housekeeping and storage of materials.
- Storage of flammable liquids and gases away from oxidizers.
- Shutting off engines to refuel.
- Grounding and bonding metal containers during transfer of flammable liquids.
- Use of UL approved flammable storage cans.
- Fire extinguishers rated at least 10-pounds ABC located on all heavy equipment, in all trailers and near all hot work activities.

The person responsible for the control of fuel source hazards and the maintenance of fire prevention and/or control equipment is the HSO.

16.10 Significant Vapor Release

Based on the proposed tasks, the potential for a significant vapor release is low. However, if a release occurs, the following steps will be taken:

- Move all personnel to an upwind location. All non-essential personnel must evacuate.
- Upgrade to Level C Respiratory Protection.

- Downwind perimeter locations must be monitored for volatile organics.
- If the release poses a potential threat to human health or the environment in the community, the Emergency Coordinator must notify the Langan Project Manager.
- Local emergency response coordinators will be notified.

16.11 Overt Chemical Exposure

The following are standard procedures to treat chemical exposures. Other, specific procedures detailed on the Material Safety Data Sheet (MSDS) will be followed, when necessary.

SKIN AND EYE: Use copious amounts of soap and water from eye-wash kits and portable hand-wash stations.

CONTACT: Wash/rinse affected areas thoroughly, then provide appropriate medical attention. Skin must also be rinsed for 15 minutes if contact with caustics, acids, or hydrogen peroxide occurs. Affected items of clothing must also be removed from contact with skin.

Providing wash water and soap will be the responsibility of each individual contractor or subcontractor on-site.

16.12 Decontamination during Medical Emergencies

If emergency lifesaving first aid and/or medical treatment is required, normal decontamination procedures may need to be abbreviated or omitted. The HSO or designee will accompany contaminated victims to the medical facility to advice on matters involving decontamination when necessary. The outer garments can be removed if they do not cause delays, interfere with treatment or aggravate the problem. Respiratory equipment must always be removed. Protective clothing can be cut away. If the outer contaminated garments cannot be safely removed on site, a plastic barrier placed between the injured individual and clean surfaces should be used to help prevent contamination of the inside of ambulances and/or medical personnel. Outer garments may then be removed at the medical facility. No attempt will be made to wash or rinse the victim if his/her injuries are life threatening unless it is known that the individual has been contaminated with an extremely toxic or corrosive material which could also cause severe injury or loss of life to emergency response personnel. For minor medical problems or injuries, normal decontamination procedures will be followed.

16.13 Adverse Weather Conditions

In the event of adverse weather conditions, the HSO will determine if work will continue without potentially risking the safety of all field workers. Some of the items to be considered prior to determining if work should continue are:

- Potential for heat stress and heat-related injuries.
- Potential for cold stress and cold-related injuries.
- Treacherous weather-related working conditions (hail, rain, snow, ice, high winds).
- Limited visibility (fog).
- Potential for electrical storms.
- Earthquakes.
- Other major incidents.

Site activities will be limited to daylight hours, or when suitable artificial light is provided, and acceptable weather conditions prevail. The HSO will determine the need to cease field operations or observe daily weather reports and evacuate, if necessary, in case of severe inclement weather conditions.

16.14 Spill Control and Response

All small spills/environmental releases must be contained as close to the source as possible. Whenever possible, the MSDS will be consulted to assist in determining proper waste characterization and the best means of containment and cleanup. For small spills, sorbent materials such as sand, sawdust, or commercial sorbents should be placed directly on the substance to contain the spill and aid recovery. Any acid spills should be diluted or neutralized carefully prior to attempting recovery. Berms of earthen or sorbent materials can be used to contain the leading edge of the spills. All spill containment materials will be properly disposed of. An exclusion zone of 50 to 100 feet around the spill area should be established depending on the size of the spill.

All contractor vehicles must have spill kits on them with enough material to contain and absorb the worst-case spill from that vehicle. All vehicles and equipment must be inspected prior to being admitted on-site. Any vehicle or piece of equipment that develops a leak will be taken out of service and removed from the job site.

The following seven steps must be taken by the Emergency Coordinator:

1. Determine the nature, identity, and amounts of major spills.
2. Make sure all unnecessary persons are removed from the spill area.
3. Notify the HSO immediately.
4. Use proper PPE in consultation with the HSO.
5. If a flammable liquid, gas, or vapor is involved, remove all ignition sources and use non-sparking and/or explosion-proof equipment to contain or clean up the spill (diesel-only vehicles, air-operated pumps, etc.)
6. If possible, try to stop the leak with the appropriate material.

7. Remove all surrounding materials that can react or compound with the spill.

In addition to the spill control and response procedures described in this HASP, Langan personnel will coordinate with the designated project manager relative to spill response and control actions. Notification to the Project Manager must be immediate and, to the extent possible, include the following information:

- Time and location of the spill.
- Type and nature of the material spilled.
- Amount spilled.
- Whether the spill has affected or has a potential to affect a waterway or sewer.
- A brief description of affected areas/equipment.
- Whether the spill has been contained.
- Expected time of cleanup completion. If spill cleanup cannot be handled by Langan's on-site personnel alone, such fact must be conveyed to the Project Manager immediately.

Langan will not make any notification of spills to outside agencies. The client will notify regulatory agencies as per their reporting procedures.

16.15 Emergency Equipment

The following minimum emergency equipment must be kept and maintained on site:

- Industrial first aid kit.
- Fire extinguishers (one per site).

16.16 Restoration and Salvage

After an emergency, prompt restoration of utilities, fire protection equipment, medical supplies, and other equipment will reduce the possibility of further losses. Some of the items that may need to be addressed are:

- Refilling fire extinguishers.
- Refilling medical supplies.
- Recharging eyewashes and/or showers.
- Replenishing spill control supplies.

16.17 Documentation

Immediately following an incident or near miss, unless emergency medical treatment is required, either the employee or a coworker must contact the Langan Incident/Injury Hotline at 1-(800)-9-

LANGAN (extension 4699) and the client representative to report the incident or near miss. For emergencies involving personnel injury and/or exposure, the HSO and affected employee will complete and submit an Employee Exposure/Injury Incident Report (Attachment C) to the Langan Corporate Health and Safety Manager as soon as possible following the incident.

17.0 SPECIAL CONDITIONS

This guideline contains information and requirements for special conditions that may not be routinely encountered.

17.1 Scope

The guideline applies to the specific projects identified within this document. Additional provisions will be addressed in each Site-Specific HEALTH AND SAFETY PLAN (HASP), as needed.

17.2 Responsibilities

Site Personnel - All site personnel must be alert to safety hazards on work sites and take action to minimize such hazards. Personnel must utilize the buddy system, watch for inappropriate behavior, and be alerted to changes in site conditions.

Health and Safety Officer (HSO) - The HSO is responsible for considering these procedures in the development of site-specific HASPs. The HSO must schedule frequent "tail gate" safety briefings to enhance safety awareness and discuss potential problems.

17.3 Procedures

The procedures outlined below must be followed when such conditions are encountered.

17.3.1 Ladders

Langan safety procedures must be used to ensure employee safety when using ladders in the office or work sites. All ladders must be coated or repaired to prevent injury to the employee from punctures or lacerations and to prevent snagging or clothing. Any wood ladders used must have an opaque covering except for identification or warning labels, which may be placed on one face only of a side rail.

17.3.1.1 Ladder Use

Employees must only use ladders for the purposes they were designed for and must not be used as scaffolding. Ladders will be maintained and inspected prior to use for slip hazards including

oil and grease. Employees must use ladders only on stable and level surfaces unless the ladder is secured to prevent possible displacement. Ladders should not be used on slippery surfaces unless secured or provided with slip-resistant feet to prevent accidental displacement. Ladders should not be used in locations where they could be displaced by workplace activities or traffic. Ladder rungs, cleats and steps must be parallel, level and uniformly spaced when the ladder is in the use position.

Employees should not be carrying anything including equipment that could cause injury if there was a fall while utilizing the ladder. The top and bottom of the ladder area must remain clear while in use. When ascending and descending the ladder, employees must face the ladder.

Ladders must not be loaded beyond the maximum intended load for which they were built or the manufacturer's rated capacity.

17.3.1.2 Portable Ladders

Rungs, cleats, and steps for portable ladders and fixed ladders must be spaced not less than 10 inches apart, nor more than 14-inches apart, as measured between center lines of the rungs, cleats, and steps. When used to access an upper landing surface, the ladder side rails must extend at least three feet above the upper landing surface to which the ladder is used to gain access. If this is not possible, due to the length of the ladder, then the top of the ladder must be secured at its top to a rigid support.

17.3.1.3 Step Stools

Rungs, cleats and steps of step stools must not be less than 8 inches apart, nor more than 12-inches apart, as measured between center lines of the rungs, cleats, and steps.

17.3.1.4 Extension Ladders

Rungs, cleats and steps of the base section of extension trestle ladders must be spaced not less than 8 inches apart, nor more than 18 inches apart, as measured between center lines of the rungs, cleats and steps. The rung spacing on the extension section of the extension trestle ladder must not be less than 6 inches nor more than 12-inches, as measured between the center lines of the rungs, cleats and steps. Ladders must be used at an angle such that the horizontal distance from the top support to the foot of the ladder is approximately one-quarter of the working length of the ladder (the distance along the ladder between the foot and the top support).

17.3.1.5 Inspection

Ladders will be inspected for visible detects periodically, prior to utilization or after any occurrence that could have negatively affected the ladder. Portable ladders with defects including broken or missing rungs, cleats, or steps, broken or split rails, corroded components, or other faulty components must not be used. The ladder will be immediately marked as defective, tagged as "Do Not Use" or blocked from being used and removed from service until repaired.

17.3.2 First Aid/Cardiopulmonary Resuscitation (CPR)

Langan field and office personnel will be encouraged to be trained in First Aid and Cardiopulmonary Resuscitation (CPR). Training will be provided free of charge by Langan to all employees. Employees will receive a training certificate that will be kept on file with the Health & Safety Coordinator (HSC). Training and certification will be provided by a credited provider such as American Red Cross or equivalent.

17.3.2.1 Emergency Procedures

Prior to site work, the Langan employees certified in first aid and CPR will be identified in the site-specific HASP. Langan will endear to have at least one employee at a job site trained and able to render first aid and CPR. The site-specific HASP will contain first aid information on both potential chemical and physical hazards. Emergency procedures to be followed in case of injury or illnesses are provided in the HASP. The HASP will include emergency contact information including local police and fire departments, hospital emergency rooms, ambulance services, on-site medical personnel, and physicians. The HASP will also include directions and contact information for the nearest emergency facility in case immediate medical attention is required. The emergency contact information will be conspicuously posted at the worksite. Employees that are injured and require immediate medical attention must call either 911 or the local posted emergency contacts. Employees should use ambulatory services to transport injured workers to the nearest facility for emergency medical care. In areas where 911 is not available, the telephone numbers of physicians, hospitals, or ambulances must be conspicuously posted.

17.3.2.2 First Aid Supplies

First aid supplies are readily available to all Langan employees when required. First aid kits are in each Langan office. Portable first aid kits are available for employees to use at work sites. First aid kits should consist of items needed to treat employees for potential chemical and physical injuries. At a minimum, first aid kits should contain items to allow basic first aid to be rendered. Where the eyes or body of an employee may be exposed to corrosive materials,

suitable facilities for quick drenching or flushing of the eyes and body must be provided within the work area for immediate emergency use including eye wash.

First aid kits will be weatherproof with individually sealed packages of each item. All portable first aid kits must be inspected by Langan employees before and after use to ensure all used items are replaced. When out in the field, employees must check first aid kits weekly to ensure used items are replaced.

17.3.3 Hydrogen Sulfide

Langan employees with the potential to be exposed to hydrogen sulfide while at work sites must have training in hydrogen sulfide awareness. The training will include the identification of areas where employees could be exposed to hydrogen sulfide, health effects, permissible exposure limits, first aid procedures, and personnel protective equipment. Langan employees could be exposed to hydrogen sulfide while at job sites including petroleum refineries, hazardous waste treatment, storage and disposal facilities, uncontrolled hazardous waste sites, and remediation projects.

17.3.3.1 Characteristics

Hydrogen sulfide is a colorless gas with a strong odor of rotten eggs that is soluble in water. Hydrogen sulfide is used to test and make other chemicals. It is also found as a by-product of chemical reactions, such as in sewer treatment. It is a highly flammable gas and a dangerous fire hazard. Poisonous gases are produced in fires including sulfur oxides. Hydrogen sulfide is not listed as a carcinogen.

17.3.3.2 Health Effects

Hydrogen Sulfide can affect employees if inhaled or through contact with skin or eyes. Acute (or short-term) health effects of hydrogen sulfide exposure include irritation of the nose and throat, dizziness, confusion, headache, and trouble sleeping. Inhalation of hydrogen sulfide can irritate the lungs causing coughing and/or shortness of breath. Higher levels of exposure can cause a build-up of fluid in the lungs (pulmonary edema), a medical emergency, with severe shortness of breath.

Chronic (or long-term) health effects of low levels of exposure to hydrogen sulfide can cause pain and redness of the eyes with blurred vision. Repeated exposure may cause bronchitis with cough, phlegm, and shortness of breath.

17.3.3.3 Protective Clothing and Equipment

Respirators are required for those operations in which employees will be exposed to hydrogen sulfide above OSHA permissible exposure level. The maximum OSHA permissible exposure limit (PEL) for hydrogen sulfide is 20-parts of hydrogen sulfide vapor per million parts of air (20 ppm) for an 8-hour workday and the maximum short-term exposure limit (STEL) is 10 ppm for any 10-minute period.

Where employees are exposed to levels up to 100-parts of hydrogen sulfide vapor per million parts of air (100 ppm), the following types of respiratory protection are allowed:

- Any powered, air-purifying respirator with cartridge(s).
- Any air-purifying, full-facepiece respirator (gas mask) with a chin style, front- or back-mounted canister.
- Any supplied air system with escape self-contained breathing apparatus, if applicable; and,
- Any self-contained breathing apparatus with a full facepiece.

Respirators used by employees must have joint Mine Safety and Health Administration and the National Institute for Occupational Safety and Health (NIOSH) seal of approval. Cartridges or canisters must be replaced before the end of their service life, or the end of the shift, whichever occurs first. Langan employees that have the potential to be exposed to hydrogen sulfide will be trained in the proper use of respirators. Respirator training is discussed under– Langan's Respiratory Protection Program.

Employees with potential exposure to hydrogen sulfide, or when required by the client, will wear a portable hydrogen sulfide gas detector. The detector should have an audible, visual and vibrating alarm. The detector may also provide detection for carbon monoxide, sulfur dioxide, and oxygen-deficient atmospheres. The hydrogen sulfide monitor will, at a minimum, be calibrated to detect hydrogen sulfide at a level of 20-parts of hydrogen sulfide vapor per million parts of air (20 ppm). Many portable gas detectors will have factory defaults with a low-level alarm at 10 ppm and a high-level alarm at 15 ppm. Langan employees must consult clients to determine if any site-specific threshold levels exist.

If the hydrogen sulfide gas detector sounds and employees are not wearing appropriate respiratory protection, employees must immediately vacate the area and meet at the assigned emergency location. Langan employees may not re- enter the site without proper respiratory protection and approval from the client or property owner if needed.

Employees must wear PPE to prevent eye and skin contact with hydrogen sulfide. Employees must wear appropriate protective clothing including boots, gloves, sleeves, and aprons, over any

parts of their body that could be exposed to hydrogen sulfide. Non-vented, impact-resistant goggles should be worn when working with or exposed to hydrogen sulfide.

17.3.3.4 Emergency and First Aid Procedures

Eye and Face Exposure

If hydrogen sulfide comes in contact with eyes, it should be washed out immediately with copious amounts of water for 30 minutes, occasionally lifting the lower and upper eye lids. Seek medical attention immediately.

Skin Exposure

If hydrogen sulfide contaminates clothing or skin, remove the contaminated clothing immediately and wash the exposed skin with copious amounts of water and soap. Seek medical attention immediately. Contaminated clothing should either be disposed of or washed before wearing again.

Breathing

If a Langan employee or other personnel breathe in hydrogen sulfide, immediately get the exposed person to fresh air. If breathing has stopped, artificial respiration should be started. Call for medical assistance or a doctor as soon as possible.

Safety Precautions

Hydrogen sulfide is a highly flammable gas and a dangerous fire hazard. Containers of hydrogen sulfide may explode in a fire situation. Poisonous gases are produced during fires.

Langan employees should contact property owners and operators prior to conducting work onsite to be aware of any site-specific contingency plans, identify where hydrogen sulfide is used at the facility, and be informed about additional safety rules or procedures.

17.3.4 Fire Protection/Extinguishers

Langan field personnel that have been provided with portable fire extinguishers for use at worksites will be trained to familiarize employees with general principles of fire extinguisher use and hazards associated with the incipient stage of firefighting. Training will be provided prior to the initial assignment for field work and annually thereafter.

Portable fire extinguishers must be visually inspected monthly and subjected to an annual maintenance check. Langan will retain records of the annual maintenance date.

17.3.5 Overhead lines

When field work is performed near overhead lines, the lines must be de-energized and grounded, or other protective measures must be provided before the work commences. If overhead lines are to be de-energized, arrangements must be made with the client, property owner, or organization that operates or controls the electric circuits involved to de-energize and ground them. If protective measures, such as guarding, isolating, or insulating, are provided, these precautions must prevent employees from contacting such lines directly with any part of their body or indirectly through conductive materials, tools, or equipment.

When unqualified Langan personnel are working in an elevated position near overhead lines, the location must be such that the person and the longest conductive object they may contact cannot come closer to any unguarded, energized overhead line than the following distances:

1. For voltages to ground 50-kilovolts (kV) or below – 10-feet; and
2. For voltages to ground over 50kV - 10 feet, plus 4-inches for every 10kV over 50kV.

As previously indicated, Langan does not retain qualified employees to perform work on energized equipment.

17.3.5.1 Vehicle and Equipment Clearance

Any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines must be operated so that a clearance of 10-feet is maintained. If the voltage of the overhead lines is higher than 50kV, the clearance must be increased by 4-inches for every 10kV over that voltage.

If any of the following discussed conditions occur, the clearance may be reduced.

- If the vehicle is in transit with its structure lowered, the clearance may be reduced to 4-feet. If the voltage is higher than 50kV, the clearance must be increased to 4-inches for every 10 kV over that voltage.
- If insulating barriers are installed to prevent contact with the lines, and if the barriers are rated for the voltage of the line being guarded and are not a part of or an attachment to the vehicle or its raised structure, the clearance may be reduced to a distance within the designed working dimensions of the insulating barrier.

Employees standing on the ground may not contact the vehicle or mechanical equipment or any of its attachments unless the employee is using protective equipment rated for the voltage, or the equipment is located so that no uninsulated part of its structure (that portion of the structure

that provides a conductive path to employees on the ground) can come closer to the overhead line than permitted.

If any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines is intentionally grounded, employees working on the ground near the point of grounding may not stand at the grounding location whenever there is a possibility of overhead line contact. Additional precautions, such as the use of barricades or insulation, must be taken to protect employees from hazardous ground potentials, depending on earth resistivity and fault currents, which can develop within the first few feet or more outward from the grounding point.

17.3.6 Trade Secret

Langan employees could potentially be provided trade secret information by the client or property owner when site-specific information is provided about highly hazardous chemicals. Trade secret means any confidential formula, pattern, process, device, information, or compilation of information that is used in an employer's business, and that allows the employer to obtain an advantage over competitors who do not know or use it. Langan employees understand that this information should be kept confident and if required, may enter into a confidentiality agreement with the client.

17.3.7 Bloodborne Pathogens

Langan employees that can anticipate exposure to blood or other potentially infectious material while at work sites must have training in bloodborne pathogens. Applicable employees would include those trained in first aid and serving a designated role as an emergency medical care provider. Bloodborne pathogens are pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include but are not limited to, hepatitis B virus and human immunodeficiency virus.

17.3.7.1 Training

Langan employees with potential occupational exposure to blood or other potentially infectious material must participate in a training program. Training must be conducted prior to the initial assignment where there would be potential for exposure and annually thereafter within one year of previous training. The training program will be provided to Langan employees at no cost to them and during working hours.

Langan will ensure the training program must consist of the following:

- An accessible copy of the regulatory text of 29 CFR 1910.1030 and an explanation of its

contents.

- A general explanation of the epidemiology and symptoms of bloodborne diseases.
- An explanation of the modes of transmission of bloodborne pathogens.
- An explanation of Langan's exposure control plan and how the employee can obtain a copy of the written plan.
- An explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials.
- An explanation of the use and limitations of personal protective equipment (PPE) to prevent and reduce exposure.
- Information on the types, proper use, location, removal, handling, and disposal of PPE.
- An explanation of the basis for the selection of PPE.
- Information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits of being vaccinated, and that the vaccine and vaccination will be offered free of charge.
- Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials.
- An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available.
- Information on the post-exposure evaluation and determining whether the employer is required to provide for the employee following an exposure incident.
- An explanation of the signs and labels and/or color coding required by paragraph 29 CFR 1910.1030(g)(1); and
- An opportunity for interactive questions and answers with the person conducting the training session.

Langan will develop and implement a written Exposure Control Plan, which will be designed to eliminate or minimize employee exposure to bloodborne pathogens. The Exposure Control Plan will contain the following elements:

- An exposure determination for employees.
- The schedule and method of implementation for Methods of Compliance (29 CFR 191.1030(d)), Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-up (29 CFR 1910.1030(f)), Communication of Hazards to Employees (29 CFR 1910.1030(g)) and (h) Recordkeeping (29 CFR 1910.1030(h)).
- The procedure for the evaluation of circumstances surrounding exposure incidents.
- Ensure a copy of the Exposure Control Plan will be accessible to employees; and,
- The Exposure Control Plan must be reviewed and updated at least annually.

Langan employees with occupational exposure to bloodborne pathogens include any employees trained in first aid that would be expected to provide emergency medical care. This determination is made without regard to the use of PPE, which could eliminate or minimize exposure.

Universal precautions must be observed to prevent contact with blood or other potentially infectious materials. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for bloodborne pathogens. When differentiation between body fluid types is difficult or impossible, all body fluids must be considered potentially infectious materials.

Work practice controls must be used to eliminate or minimize employee exposure, if applicable. Since Langan employees will have occupational exposure only during the rendering of first aid, personnel protective equipment will be utilized to reduce or minimize exposure. PPE that could be available to Langan personnel when administering first aid includes safety glasses, gloves, and Tyvek suits or sleeves. PPE and first aid kits will be provided to employees at no cost to them.

Langan employees that render first aid in office areas will have access to hand-washing facilities or restrooms. For first aid rendered at field locations, first aid kits will contain an appropriate antiseptic hand cleanser and clean cloth/paper towels or antiseptic towelettes. After using antiseptic hand cleansers or towelettes, employees must wash their hands with soap and running water as soon as feasible.

After administering first aid, potentially infectious materials, including towels, personnel protective equipment, clothes, and bandages, must be placed in a container, which prevents leakage during collection, handling, processing, storage, transport, or shipping. All PPE will be disposed of after use. Any equipment or working surfaces which was been exposed to blood or potentially infectious materials due to an injury will be decontaminated prior to reuse.

Langan will make available the hepatitis B vaccine and vaccination series to all employees who have occupational exposure, and post-exposure evaluation and follow-up to all employees who have had an exposure incident. These services will be available to the employee at no cost to them through a medical provider.

17.3.7.2 Recordkeeping

Langan will maintain training and medical records for each employee with occupational exposure to blood or potentially infectious materials. Medical and training records will be maintained by Langan's H&S Department.

Training records will include the following:

- Dates of the training sessions.
- Contents or a summary of the training sessions.
- Names and qualifications of persons conducting the training; and
- Names and job titles of all persons attending the training sessions.

Training records must be maintained for 3 years from the date on which the training occurred. Medical records will be preserved and maintained for the duration of employment plus 30 years.

All records will be made available upon request to employees, the Assistant Secretary of Labor for Occupational Safety and Health, and the Director of the National Institute for Occupational Safety and Health Director of OSHA for examination and copying. Medical records must have written consent from the employee before releasing.

If Langan ceases to do business, all records must be transferred to the successor employer. The successor employer must receive and maintain these records.

If there will not be a successor, Langan will notify current employees of their rights to access records at least three months prior to the cessation of business.

18.0 RECORDKEEPING

The following is a summary of required health and safety logs, reports, and recordkeeping.

18.1 Field Change Authorization Request

Any changes to the work to be performed that are not included in the HASP will require an addendum that is approved by the Langan project manager and Langan HSM to be prepared. Approved changes will be reviewed with all field personnel at a safety briefing.

18.2 Medical and Training Records

Copies or verification of training (40-hour, 8-hour, supervisor, site-specific training, documentation of three-day on-the-job training (OJT)), and respirator fit-test records) and medical clearance for site work and respirator use will be maintained in the office and available upon request. Records for all subcontractor employees must also be available upon request. All employee medical records will be maintained by the HSM.

18.3 Onsite Log

A log of personnel on-site each day will be kept by the HSO or designee.

18.4 Daily Safety Meetings ("Tailgate Talks")

Completed safety briefing forms will be maintained by the HSO.

18.5 Exposure Records

All personal monitoring results, laboratory reports, calculations, and air sampling data sheets are part of an employee exposure record. These records will be maintained by the HSO during site work. At the end of the project, they will be maintained according to 29 CFR 1910.1020.

18.6 Hazard Communication Program/MSDS-SDS

Material safety data sheets (MSDS) Safety Data Sheets (SDS) have been obtained for applicable substances and are included in this HASP (Attachment D). Langan's written hazard communication program, in compliance with 29 CFR 1910.1200, is maintained by the HSM.

18.7 Documentation

Immediately following an incident or near miss, unless emergency medical treatment is required, either the employee or a coworker must contact the Langan incident/injury hotline at 1-800-952-6426, extension 4699, and the Project Manager to report the incident or near miss. The Project Manager will contact the client or client representative. A written report must be completed and submitted HSM within 24 hours of the incident. For emergencies involving personnel injury and/or exposure, the employee will complete and submit the Langan incident/injury report to the Langan corporate health and safety manager as soon as possible following the incident. Accidents will be investigated in-depth to identify all causes and to recommend hazard control measures.

18.7.1 Accident and Injury Report Forms

18.7.1.1 Accident/Incident Report

All injuries, no matter how slight, must be reported to the FTL and the PM immediately. The accident/incident report forms, attached in Attachment C, will be filled out on all accidents by the applicable contractor supervision personnel, the FTL, or the HSO. Copies of all accident/incident reports must be kept on-site and available for review. Project personnel will be instructed on the location of the first aid station, hospital, and doctor and ambulance service near the job. The emergency telephone numbers will be conspicuously posted in site vehicles near the work zone. First aid supplies will be centrally located and conspicuously posted between restricted and nonrestricted areas to be readily accessible to all on the site.

18.7.1.2 First Aid Treatment Record

The forms will be used for recording all non-lost time injuries treated by the project first-aid attendant, the local physician or hospital will be entered in detail on this record. "Minor" treatment of scratches, cuts, etc. will receive the same recording attention as treatment of more severe injuries.

18.7.1.3 OSHA Form 300

An OSHA Form 300 will be kept at the Langan Corporate Office in Parsippany, New Jersey. All recordable injuries or illnesses will be recorded on this form. Subcontractor employers must also meet the requirements of maintaining an OSHA 300 form. The Incident Report form used to capture the details of work-related injuries/illnesses meets the requirements of the OSHA Form 301 (supplemental record) and must be maintained with the OSHA Form 300 for all recordable injuries or illnesses. Forms for recording OSHA work-related injuries and illnesses are included in Attachment C.

19.0 CONFINED SPACE ENTRY

Confined spaces are not anticipated at the Site during planned construction activities. If confined spaces are identified, the contractor must implement their own confined space program that all applicable federal, state, and local regulations. Confined spaces **will not** be entered by Langan personnel.

20.0 HASP ACKNOWLEDGEMENT FORM

All Langan personnel and contractors will sign this HASP Compliance Agreement indicating that they have become familiar with this HASP and that they understand it and agree to abide by it.

Printed Name	Signature	Company	Date

Printed Name	Signature	Company	Date

Printed Name	Signature	Company	Date

TABLES

TABLE 1
TASK HAZARD ANALYSES

Task	Hazard	Description	Control Measures	First Aid
1.3.1 – 1.3.13	Contaminated Soil or Groundwater-Dermal Contact	Contaminated water spills on skin, splashes in eyes; contact with contaminated soil/fill during construction activities or sampling.	Wear proper PPE; follow safe practices, maintain safe distance from construction activities	See Table 2, seek medical attention as required
1.3.1 – 1.3.13	Lacerations, abrasions, punctures	Cutting bailer twine, pump tubing, acetate liners, etc. with knife; cuts from sharp site objects or previously cut piles, tanks, etc.; Using tools in tight spaces	Wear proper PPE; follow safe practices	Clean wound, apply pressure and/or bandages; seek medical attention as required.
1.3.1 – 1.3.13	Contaminated Media Inhalation	Opening drums, tanks, wells; vapors for non-aqueous phase liquids or other contaminated site media; dust inhalation during excavation; vapor accumulation in excavation	Follow air monitoring plan; have quick access to respirator, do not move or open unlabeled drums found at the site, maintain safe distance from construction activities	See Table 2, seek medical attention as required
1.3.1 – 1.3.13	Lifting	Improper lifting/carrying of equipment and materials causing strains	Follow safe lifting techniques. Langan employees are not to carry contractor equipment or materials	Rest, ice, compression, elevation; seek medical attention as required
1.3.1 – 1.3.13	Slips, trips, and falls	Slips, trips and falls due to uneven surfaces, cords, steep slopes, debris and equipment in work areas	Good housekeeping at site; constant awareness and focus on the task; avoid climbing on stockpiles; maintain safe distance from construction activities and excavations; avoid elevated areas over six feet unless fully accredited in fall protection and wearing an approved fall protection safety apparatus	Rest, ice, compression, elevation; seek medical attention as required
1.3.1 – 1.3.13	Noise	Excavation equipment, hand tools, drilling equipment.	Wear hearing protection; maintain safe distance from construction activities	Seek medical attention as required
1.3.1 – 1.3.13	Falling objects	Soil material, tools, etc. dropping from drill rigs, front-end loaders, etc.	Hard hats to be always worn while in work zones; maintain safe distance from construction activities and excavations	Seek medical attention as required
1.3.1 – 1.3.13	Underground/ overhead utilities	Excavation equipment, drill rig auger contacts underground object; boom touches overhead utility	"One Call" before dig; follow safe practices; confirm utility locations with contractor; wear proper PPE; maintain safe distance from construction activities and excavations	Seek medical attention as required
1.3.1 – 1.3.13	Insects (bees, wasps, hornet, mosquitoes, and spider)	Sings, bites	Insect Repellent; wear proper protective clothing (work boots, socks, and light-colored pants); field personnel who may have insect allergies (e.g., bee sting) should provide this information to the HSO or FSO prior to commencing work and will have allergy medication on site.	Seek medical attention as required
1.3.1 – 1.3.13	Vehicle traffic / Heavy Equipment Operation	Vehicles unable to see workers on site, operation of heavy equipment in tight spaces, equipment failure, malfunctioning alarms	Wear proper PPE, especially visibility vest; use a buddy system to look for traffic; rope off area of work with cones and caution tape or devices at points of hazard, maintain safe distance from construction activities and equipment	Seek medical attention as required

TABLE 2
CONTAMINANT HAZARDS OF CONCERN

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	1,1,1,2-Tetrachloroethane R-130a	630-20-6	NA	None None	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes (redness, pain), skin (redness, burning sensation, pain). Inhalation: jaundice, enlarged liver, headaches, tremors, dizziness, numbness, and drowsiness. Ingestion: burning sensation, headache, nausea	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	1,1,2-Trichloro-1,2,2-trifluoroethane Chlorofluorocarbon-113 CFC-113 Freon® 113 Genetron® 113 Halocarbon 113 Refrigerant 113 TTE Frigen 113 TR Freon TF Trichlorotrifluoroethane	76-13-1	PID	1000 ppm 2000 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation skin, throat, drowsiness, dermatitis; central nervous system depression; dizziness, tremor, asphyxia, unconsciousness, cardiac arrhythmias, cardiac arrest; liquid: frostbite. In animals: cardiac arrhythmias, narcosis,	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	1,1,2-Trichloroethane 1,1,2-TCA 1,1,2-Trichloroethane Ethane trichloride β-Trichloroethane Vinyl trichloride	79-00-5	PID	10 ppm 100 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation eyes, nose; central nervous system depression; liver, kidney damage; dermatitis	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	1,1'-Biphenyl 1,1-Biphenyl Biphenyl Phenyl benzene Diphenyl	92-52-4	None	1 mg/m^3 100 mg/m^3	Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, throat; headache, nausea, lassitude (weakness, exhaustion), numb limbs; liver damage	Eye: Irrigate immediately Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	1,1-Dichloroethane Asymmetrical dichloroethane Ethylidene chloride 1,1-Ethylidene dichloride 1,1-DCA	75-34-3	PID	100 ppm 3000 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the skin; central nervous system depression; liver, kidney, lung damage	Eye: Irrigate immediately Skin: Soap flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	1,1-Dichloropropene 1.1-Dichloro-1-propene 1,1,-Dichloropopylene 1,1-Dichloropropylene	563-58-6	NA	NA	Soil Vapor	inhalation, ingestion, skin, and/or eye contact	Irritant to eyes, skin, mucous membranes, and respiratory system. May be harmful by ingestion, skin absorption and inhalation	Eye: Irrigate immediately Skin: Soap flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	1,2,3-Trichlorobenzene vic-Trichlorobenzene 1,2,6-Trichlorobenzene	87-61-6	PID	None None	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	1,2,3-Trichloropropane Allyl trichloride Glycerol trichlorohydrin Glyceryl trichlorohydrin	96-18-4	PID	50 ppm 100 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation eyes, nose, throat; central nervous system depression; In Animals: liver, kidney injury; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	1,2,4,5-Tetrachlorobenzene Benzene Tetrachloride	95-94-3	PID	None None	Soil	Inhalation, skin, eyes, ingestion	Cough	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	1,2,4,5-Tetramethylbenzene	95-93-2	NA	None None	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	1,2,4-Trichlorobenzene Unsym-Trichlorobenzene 1,2,4-Trichlorobenzol	120-82-1	NA	None None	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation eyes, skin, mucous membrane; In Animals: liver, kidney damage; possible teratogenic effects	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	1,2,4-Trimethylbenzene	95-63-6	PID	None None	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	1,2-Dibromo-3-chloropropane Dibromochloropropane DBCP	96-12-8	PID	None None	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation eyes, skin, nose, throat; drowsiness; nausea, vomiting; pulmonary edema; liver, kidney injury; sterility; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	1,2-Dichlorobenzene	95-50-1	PID	50 ppm 200 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eye, swelling periorbital (situated around the eye); profuse rhinitis; headache, anorexia, nausea, vomiting; weight loss, jaundice, cirrhosis; in animals: liver, kidney injury; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	1,2-Dichloroethane Ethylene dichloride 1,2-DCA DCE[1] Ethane dichloride Dutch liquid, Dutch oil Freon 150 Glycol dichloride	107-06-2	PID	1 ppm 50 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin absorption, skin, and/or eye contact	irritation to the eyes, corneal opacity; central nervous system depression; nausea, vomiting; dermatitis; liver, kidney, cardiovascular system damage; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	1,2-Dichloroethene 1,2-Dichloroethylene 1,2-DCE Total 1,2-Dichloroethene cis-1,2-Dichloroethylene mixture of cis and trans Acetylene dichloride cis-Acetylene dichloride sym-Dichloroethylene cis-1,2-Dichloroethene cDCE 1,1-dimethyl-;dimethyl1,1-cyclohexane sym-Dichloroethylene Dichloroethylenes	159-59-2 156-60-5 540-59-0	PID	200 ppm 4000 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	Irritant to eyes, skin, mucous membranes, and respiratory system. May be harmful by ingestion, skin absorption and inhalation	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	1,3,5-Trimethylbenzene Mesitylene sym-Trimethylbenzene	108-67-8	PID	None None	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	1,3-Butadiene Biethylene Bivinyl Butadiene Divinyl Erythrene Vinylethylene	106-99-0	PID	1 ppm 2000 ppm	Vapor	inhalation, skin, and/or eye contact (liquid)	irritation to the eyes, nose, throat; drowsiness, dizziness; liquid: frostbite; teratogenic, reproductive effects; [potential occupational carcinogen]	Eye: Frostbite Skin: Frostbite Breathing: Respiratory support

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	1,3-Dichlorobenzene m-Dichlorobenzol; m-Phenylene dichloride m-dichlorobenzene	541-73-1	PID	None None	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, swelling periorbital (situated around the eye); profuse rhinitis; headache, anorexia, nausea, vomiting; weight loss, jaundice, cirrhosis; in animals: liver, kidney injury; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	1,3-Dichloropropene Trans-1,3-dichloroproplyene AQL Agrocelhone DD92 1,3-D Dorlone, Nematox, Telone, Nemex, cis-Dichloropropene Di-Trapex CP, Vorlex 20 dichloro-1,3-propene 1,3-dichloro-1-propene 1,3-dichloro-2-propene alpha-chloroallylchloride Chloroallylchloride gamma-chloroallylchloride, chloroallyl chloride chloroorpropenyl chloride 1,3-dichloropropylene 2,2-Dichlorobenzene 3-D, DCP 3-Chloroallyl chloride Trans-1,3-Dichloropropen Cis-1,3-Dichloropropene Total, 1,3-Dichloropropene (Cis And Trans)	542-75-6	PID	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, respiratory system; eye, skin, burns; lacrimation (discharge of tears); headache, dizziness; in animals; liver, kidney damage; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	1,4-Dioxane 1,4-Dioxacyclohexane [1,4]Dioxane p-Dioxane [6]-crown-2 Diethylene dioxide Diethylene ether Dioxan Dioxane 1,4-Dioxane	123-91-1	PID	100 ppm 500 ppm	Groundwater Soil Vapor	Inhalation, ingestion, skin, and/or eye contact	Irritant to eyes, skin, mucous membranes, and respiratory system. May be harmful by ingestion, skin absorption and inhalation	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	1.2-Dibromoethane Ethylene Dibromide Ethylene bromide Glycol dibromide 1,2-Dibromoethane	106-93-4	PID	20 ppm 100 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation eyes, skin, respiratory system; dermatitis with vesiculation; liver, heart, spleen, kidney damage; reproductive effects; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	1H,1H,2H,2H.Perfluorooctanes ulfonic Acid (6:2FTS) Sodium 1H,1H, 2H, 2H-Perfluorooctane Sulfonate (6:2)(6:2FTS) 6:2 Fluorinated Telomer Sulfonates (6:2FTS) Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	27619-97-2	NA	NA NA	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	2,2,4-Trimethylpentane Isooctane	540-84-1	PID	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	2,2-Dichloropropane Isopropylidene dichloride	594-20-7	NA	NA NA	Groundwater Soil Vapor	Inhalation, ingestion, skin, and/or eye contact	Irritant to eyes, skin, mucous membranes, and respiratory system. May be harmful by ingestion, skin absorption and inhalation	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	2,4,5-Trichlorophenol 2,4,5-TCP 1-Hydroxy-2,4,5-trichlorobenzene	95-95-4	None	NA NA	Soil	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes (Redness. Pain. Blurred vision), skin, mucous membrane; Abdominal pain. Diarrhea. Dizziness. Headache. Vomiting. Fatigue. Sweating.	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	2,4,6-Trichlorophenol	88-06-2	None	NA NA	Soil	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; Convulsions. Diarrhea. Dizziness. Headache. Shortness of breath. Vomiting. Weakness. Ataxia.	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	2,4-Dichlorophenol	120-83-2	PID	NA NA	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact, in	irritation to the eyes, skin, mucous membrane, nose, throat, respiratory system; ingestion: burning sensation, abdominal pain, tremor, weakness, convulsion, labored breathing, shock, or collapse	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	2,4-Dimethylphenol 2,4-Xylenol m-Xylenol 1-Hydroxy-2,4-dimethylbenzene 2,4-Dimethylphenol 4-Hydroxy-1,3-dimethylbenzene 4,6-Dimethylphenol 1,3-Dimethyl-4-hydroxybenze	105-67-9	None	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; headache, narcosis, coma; dermatitis; in animals: liver, kidney damage	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	2,4-dinitrotoluene	121-14-2	PID	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	Irritation to the eyes, skin, respiratory system, Blue lips, or fingernails. Blue skin. Headache. Dizziness. Nausea. Confusion. Convulsions. Unconsciousness	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	2-Butanone Ethyl methyl ketone MEK Methyl acetone Methyl ethyl ketone	78-93-3	PID	200 ppm 3000 ppm	Soil Groundwater Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose; headache; dizziness; vomiting; dermatitis	Eye: Irrigate immediately Skin: Water wash immediately Breathing: Fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.13	2-Chloronaphthalene	91.58-7	NA	NA MA	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation eyes, nose; skin	Eye: Irrigate immediately, Medical attention Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention
1.3.1 – 1.3.13	2-Chlorophenol 2-Chloro-1-hydroxybenzene 2-Hydroxychlorobenzene Ortho- Chlorophenol	95-57-8	PID	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	2-Hexanone Butyl methyl ketone MBK Methyl butyl ketone Methyl n-butyl ketone	591-78-6	PID	100 ppm 1600 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, nose; peripheral neuropathy: lassitude (weakness, exhaustion), paresthesia; dermatitis; headache, drowsiness	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	2-Methylnaphthalene β-methylnaphthalene	91-57-6	PID	NA NA	Groundwater Soil Vapor	inhalation, ingestion or skin absorption, eye contact	irritation to the skin, eyes, mucous membranes, and upper respiratory tract. It may also cause headaches, nausea, vomiting, diarrhea, anemia, jaundice, euphoria, dermatitis, visual disturbances, convulsions and comatose	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	2-Nitroaniline o-Nitroaniline 1-Amino-2-nitrobenzene	88-74-4	NA	NA NA	Soil	inhalation, ingestion, skin, and/or eye contact	Irritant to eyes, skin, mucous membranes, and respiratory system. May be harmful by ingestion, skin absorption and inhalation	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Remove to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.13	2-Nitrophenol o-Nitrophenol 2-Hydroxynitrobenzene o-Hydroxynitrobenzene	88-75-5	NA	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	3,3'-Dichlorobenzidine 4-(4-Amino-3-chlorophenyl)-2-chloroaniline 4,4'-Diamino-3,3'-dichlorobiphenyl o,o'-Dichlorobenzidine 3,3'-Dichlorobiphenyl-4,4'-diamine 3,3'-Dichloro-4,4'-biphenyldiamine 3,3'-Dichloro-4,4'-diaminobiphenyl	91-94-1	None	NA NA	Soil Groundwater Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat, respiratory system;	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	3-Nitroaniline m-Nitroaniline 1-Amino-3-nitrobenzene	99-09-2	NA	NA NA	Soil	inhalation, ingestion, skin, and/or eye contact	Irritant to eyes, skin, mucous membranes, and respiratory system. May be harmful by ingestion, skin absorption and inhalation	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Remove to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.13	4,4′-DDD Dichlorodiphenyldichloroethane 1,1'-(2,2-Dichloroethylidene)bis (4-chlorobenzene) p,p'-DDD	72-54-8	None	NA NA	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin; paresthesia tongue, lips, face; tremor; anxiety, dizziness, confusion, malaise (vague feeling of discomfort), headache, lassitude (weakness, exhaustion); convulsions; paresis hands; vomiting; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	4,6-Dinitro-o-cresol 2-Methyl-4,6-dinitrophenol 4,6-Dinitro-2-methylphenol	534-52-1	None	0.2 mg/m^3 5 mg/m^3	Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	Sense of well-being; headache, fever, lassitude (weakness, exhaustion), profuse sweating, excess thirst, tachycardia, hyperpnea, cough, short breath, coma	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	4-bromophenyl phenyl ether Ether,p-bromophenyl phenyl; p-(Phenoxy)bromobenzene; p-Bromodiphenylether; p-Bromophenoxybenzene; p-Bromophenylphenyl ether; Diphenylether, 4-bromo-; Ether,4-bromophenyl phenyl; Phenylether,4-bromo-;1-Bromo-4-phenoxybenzene; 4-Bromodiphenylether; 4-Bromophenoxybenzene; 4-Bromophenyl phenyl ether; p-Bromphenyl phenyl ether; p-Phenoxyphenyl bromide	101-55-3	None	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, respiratory system;	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	4-Chloroaniline p-Chloroaniline	106-47-8	None	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin; paresthesia tongue, lips, face; tremor; anxiety, dizziness, confusion, malaise (vague feeling of discomfort), headache, lassitude (weakness, exhaustion); convulsions; paresis hands; vomiting; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	4-Chlorophenyl phenyl ether	7005-72-3	NA	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, respiratory system;	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	4-Chlorotoluene p-Chlorotoluene 1-Chloro-4-methylbenzene p-Tolyl chloride	106-43-4	PID	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation eyes, skin, mucous membrane; dermatitis; drowsiness, incoordination, anesthesia; cough; liver, kidney injury	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	4-Isopropyltoulene 1-Methyl-4-(1-methylethyl)benzene 4-Isopropyltoluene; 4-Methylcumene; 1-Methyl-4-isopropylbenzene Dolcymene Camphogen Paracymene Cymene p-Cymene p-Isopropyltoluene	99-87-6	PID	NA NA	Soil Groundwater Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; dermatitis; headache, narcosis, coma	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	4-Methyl-2-pentanone Hexone Isobutyl methyl ketone Methyl isobutyl ketone MIBK	108-10-1	PID	100 ppm 500 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; headache, narcosis, coma; dermatitis; in animals: liver, kidney damage	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	4-Nitroaniline p-Nitroaniline 1-Amino-4-nitrobenzene	100-01-6	NA	6 mg/m^3 300 mg/m^3	Soil	inhalation, ingestion, skin, and/or eye contact	Irritant to eyes, skin, mucous membranes, and respiratory system. May be harmful by ingestion, skin absorption and inhalation	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Remove to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.13	Acenaphthene 1,2-Dihydroacenaphthylene 1,8-Ethylenenaphthalene peri-Ethylenenaphthalene Naphthyleneethylene Tricyclododecapentaene	83-32-9	PID	NA NA	Soil	inhalation, ingestion, skin, and/or eye contact,	irritation to the skin, eyes, mucous membranes, and upper respiratory tract; If ingested, it can cause vomiting	Eye: Irrigate immediately Skin: Soap wash immediately, if redness or irritation develop, seek medical attention immediately Breathing: Move to fresh air Swallow: do not induce vomiting, seek medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Acenaphthylene Cycopental(de)naphthalene, Acenaphthalene	208-96-8	PID	NA NA	Soil	inhalation, ingestion, skin, and/or eye contact	irritation to the skin, eyes, mucous membranes, and upper respiratory tract	Eye: Irrigate immediately, seek medical attention immediately, Skin: Soap wash immediately, if redness or irritation develop, seek medical attention immediately Breathing: Move to fresh air Swallow: do not induce vomiting, seek medical attention immediately
1.3.1 – 1.3.13	Acetone Dimethyl ketone Ketone propane 2-Propanone	67-64-1	PID	1000 ppm 2500 ppm	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, nose, throat; headache, dizziness, central nervous system depression; dermatitis	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Acetophenone 1-phenylethanone Methyl phenyl ketone Phenylethanone	98-86-2	None	NA NA	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact	irritation to the skin, eyes, mucous membranes, and upper respiratory tract	Eye: Irrigate immediately, seek medical attention immediately, Skin: Soap wash immediately, if redness or irritation develop, seek medical attention immediately Breathing: Move to fresh air Swallow: do not induce vomiting, seek medical attention immediately
1.3.1 – 1.3.13	Acrylonitrile Acrylonitrile monomer AN Cyanoethylene Propenenitrile 2-Propenenitrile VCN, Vinyl cyanide	107-13-1	PID	1 ppm 85 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin; asphyxia; headache; sneezing; nausea, vomiting; lassitude (weakness, exhaustion), dizziness; skin, vesiculation; scaling dermatitis; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Water wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Aldrin 1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-endo-1,4-exo-5,8-dimethanonaphthalene HHDN Octalene	309-00-2	PID	0.25 ppm 5 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	headache, dizziness; nausea, vomiting, malaise (vague feeling of discomfort); myoclonic jerks of limbs; colonic, tonic convulsions; coma; hematuria (blood in the urine), azotemia; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Alpha-BHC alpha-Hexachlorocyclohexane -alpha,2-alpha,3-beta,4-alpha,5-beta,6-beta-Hexachlorocyclohexane alpha-1,2,3,4,5,6-Hexachlorocyclohexane alpha-Benzenehexachloride α-1,2,3,4,5,6-hexachlorocyclohexane α-HCH α-Benzenehexachloride alpha-hexacloran(e) alpha-Lindane Alpha Hexachlorocyclohexane	319-84-6	PID	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane possible carcinogenic, effects to liver, blood, and central nervous system	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Alpha-Chlordane Alpha Chlordane a-Chlordane	5103-71-9	None	0.5 mg/m^3 100 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	Blurred vision; confusion; ataxia, delirium; cough; abdominal pain, nausea, vomiting, diarrhea; irritability, tremor, convulsions; anuria	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Aluminum	7429-90-5	None	0.5 mg/m3 50 mg/m3	Soil	inhalation, skin, and/or eye contact	irritation to the eyes, skin, respiratory system	Eye: Irrigate immediately Breathing: Fresh air

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Ammonia Nitrogen, Ammonia	7664-41-7	None	50 ppm 300 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, respiratory system	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Anthracene	120-12-7	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	irritation to the skin, eyes, mucous membranes, and upper respiratory tract, abdominal pain if ingested.	Eye: Irrigate immediately, seek medical attention immediately, Skin: Soap wash immediately, Breathing: Move to fresh air, refer to medical attention. Swallow: refer to medical attention
1.3.1 – 1.3.13	Antimony	7440-36-0	None	0.5 mg/m^3 50 mg/m^3	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact	irritation skin, dermatitis; resp distress; diarrhea; muscle tremor, convulsions; possible gastrointestinal tract	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Aroclor 1016	12674-11-2	None	0.5 mg/m^3 5 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, chloracne	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Aroclor 1221	147601-87-4	None	0.5 mg/m^3 5 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, chloracne	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Aroclor 1232	11141-16-5	None	0.5 mg/m^3 5 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, chloracne	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Aroclor 1242	53469-21-9	None	0.5 mg/m^3 5 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, chloracne	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Aroclor 1248	12672-26-6	None	0.5 mg/m^3 5 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, chloracne	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Aroclor 1254	11097-69-1	None	0.5 mg/m^3 5 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, chloracne	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Aroclor 1260	11096-82-5	None	0.5 mg/m^3 5 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, chloracne	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Aroclor 1262	37324-23-5	None	0.5 mg/m^3 5 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, chloracne	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Aroclor 1268	11100-14-4	None	0.5 mg/m^3 5 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, chloracne	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Arsenic	NA	None	0.5 mg/m^3 NA	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact	irritation skin, dermatitis; resp distress; diarrhea; muscle tremor, convulsions; possible gastrointestinal tract	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Barium	10022-31-8	None	0.5 mg/m^3 50 mg/m^3	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse	Eye: Irrigate immediately Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Benzaldehyde Benzoic aldehyde Benzenecarbonal Benzenecarboxaldehyde Phenylmethanal	100-52-7	PIF	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, respiratory system	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Benzene Benzol Phenyl hydride Alkyl benzene isomers	71-43-2	PID	3.19 mg/m^3 1,595 mg/mg^3	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; lassitude (weakness, exhaustion) [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Benzo(a)anthracene Benzanthracene Benzanthrene 1,2-Benzanthracene Benzo[b]phenanthrene Tetraphene	56-55-3	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, skin or eye contact, ingestion	dermatitis, bronchitis, [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Benzo(a)pyrene	50-32-8	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	dermatitis, bronchitis, [potential occupational carcinogen]	Eye: Irrigate immediately, seek medical attention Skin: Soap wash immediately. Breathing: move to fresh air. Swallow: Induce vomiting if conscious, seek medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Benzo(b)fluoranthene	205-99-2	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation (dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.13	Benzo(g,h,i)perylene Benzo(ghi)perylene	191-24-2	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation (dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.13	Benzo(k)fluoranthene	207-08-9	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation (dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.13	Benzoic acid Carboxybenzene E210 Dracylic acid Phenylmethanoic acid Benzenecarboxylic acid Benzoic acid isomer	65-85-0	None	NA NA	Groundwater Soil Vapor	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Benzyl Alcohol Benzenemethanol Phenyl carbinol alpha-Hydroxytoluene Benzoyl alcohol Phenyl methanol	100-51-6	PID	NA NA	Groundwater Soil Vapor	inhalation, skin, or eye contact, ingestion	irritation to eyes and skin, respiratory irritation (dizziness, weakness, fatigue, nausea, headache	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.13	Benzyl butyl phthalate Butyl benzyl phthalate Butylbenzylphthalate	86-66-7	None	NA NA	Groundwater Soil Vapor	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation (dizziness, weakness, fatigue, nausea, headache	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.13	Beryllium	7440-41-7	None	0.002 mg/m^3 4 mg/m^3	Soil	inhalation, skin, and/or eye contact	berylliosis (chronic exposure): anorexia, weight loss, lassitude (weakness, exhaustion), chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irritation to the eyes; dermatitis; [potential occupational carcinogen]	Eye: Irrigate immediately Breathing: Fresh air

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Beta BHC Beta Hexachlorocyclohexane 1-alpha,2-beta,3-alpha,4-beta,5-alpha,6-beta-Hexachlorocyclohexane beta-1,2,3,4,5,6-Hexachlorocyclohexane Beta-BHC	319-85-7	None	NA NA	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin; paresthesia tongue, lips, face; tremor; anxiety, dizziness, confusion, malaise (vague feeling of discomfort), headache, lassitude (weakness, exhaustion); convulsions; paresis hands; vomiting; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Beta-Endosulfan Beta Endosulfan Endosulfan II (beta) Endosulfan II	33213-65-9	None	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation skin; nausea, confusion, agitation, flushing, dry mouth, tremor, convulsions, headache; in animals: kidney, liver injury; decreased testis weight	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Bis(2-chloroethoxy)methane Dichloroethylformal 2,2-Dichloroethylformal Di-2-chloroethyl formal Bis(2-Chloroethoxy) Methane	111-91-1	None	NA NA	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact	Toxic by inhalation and ingestion; Strong irritation	Eye: Irrigate immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Bis(2-chloroethyl)ether Dichloroethyl ether 2,2'-Dichlorodiethyl ether 2,2'-Dichloroethyl ether Bis(2-Chloroethyl) Ether 2-Chloroethyl Ether Bis(2-chloroethyl) ether (2-chloroethyl ether)	111-44-4	PID	15 ppm 100 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, mucous membrane; in animals: liver damage; teratogenic effects; [potential occupational carcinogen	Eye: Irrigate immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Bis(2-chloroisopropyl)ether 2-chloro-2-(2-chloropropan-2-yloxy)propane) 2,2′-ocybis(1-chloropropane 2,2'-oxybis[1-chloro-; β,β'-Dichlorodiisopropyl ether; DCIP; DCIP (Nematocide); 2,2'-Dichlorodiisopropyl Ether; (2-Chloro-1-methylethyl) ether; Bis(β-chloroisopropyl) ether; Dichlorodiisopropyl ether; Dichloroisopropyl ether; NCI-C50044; 2,2-Dichloroisopropyl ether; Bis(1-chloro-2-propyl) ether; Bis(2-Chloroisopropyl)ether; 2,2'-oxybis(1-chloropropane) Bis(2-Chloroisopropyl) Ether	108-60-1	None	NA NA	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact	Toxic by inhalation and ingestion; Strong irritation	Eye: Irrigate immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Bis(2-ethylhexyl)phthalate Bis(2-Ethylhexyl) Phthalate Di-sec octyl phthalate DEHP Di(2-ethylhexyl)phthalate Octyl phthalate bis(2-ethylexyl)phthalate Bis(2-Ethylhexyl) Phthalate	117-81-7	None	5 mg/m^3 5000 mg/m^3	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, mucous membrane; in animals: liver damage; teratogenic effects; [potential occupational carcinogen	Eye: Irrigate immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Bromobenzene Monobromobenzene Phenyl bromide Bromobenzoi	108-86-1	PID	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation eyes, skin, respiratory system;	Eye:Irrigate immediately Skin:Soap wash promptly Breathing:Respiratory support Swallow:Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Bromochloromethane Borothene Chloromethyl bromide Halon 1011 Methylene bromochloride Methyl chlorobromide Monochloromonobromomethane Chlorobromomethane Fluorocarbon 1011	74-97-5	None	200 ppm 2000 ppm	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact	irritation eyes, skin, throat; confusion, dizziness, central nervous system depression; pulmonary edema	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Bromodichloromethane Dichlorobromomethane Bromo(dichloro)methane	75-27-4	NA	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, upper respiratory system, stomach	Eye: Irrigate immediately Skin: Wash regularly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Bromoform Methyl tribromide Tribromomethane	75-25-2	PID	0.5 ppm 850 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation eyes, skin, respiratory system; central nervous system depression; liver, kidney damage	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Cadmium	7440-43-9	None	0.005 mg/m^3 9 mg/m^3	Soil	inhalation, ingestion	pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Calcium	7440-70-2	None	NA	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, upper resp tract; ulcer, perforation nasal septum; pneumonitis; dermatitis	Eye: Irrigate immediately Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Carbazole 9-azafluorene Dibenzopyrrole Diphenylenimine diphenyleneimide	86-74-8	None	NA NA	Soil	inhalation, skin absorption (liquid), skin, and/or eye contact	irritation to eyes and skin, respiratory irritation	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Carbon disulfide	75-15-0	PID	20 ppm 500 ppm	Soil Groundwater Vapor	inhalation, skin or eye contact, ingestion	irritation to the eyes, skin, respiratory system	Eye: Irrigate immediately (liquid) Skin: Water flush immediately (liquid) Breathing: Respiratory support
1.3.1 – 1.3.13	Carbon tetrachloride Carbon chloride Carbon tet Freon® 10 Halon® 104 Tetrachloromethane	56-23-5	PID	10 ppm 200 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin; central nervous system depression; nausea, vomiting; liver, kidney injury; drowsiness, dizziness, incoordination; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Chloride	16887-00-6	None	1 ppm 10 ppm	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, respiratory system	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Chlorobenzene benzene chloride monochlorobenzene Phenyl chloride Chlorobenzol MCB	108-90-7	PID	75 ppm 1000 ppm	Groundwater Soil Vapor	inhalation, skin or eye contact, ingestion	irritation to the eyes, skin, nose; drowsiness, incoordination; central nervous system depression; in animals: liver, lung, kidney injury	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Chloroform Methane trichloride Trichloromethane Chloro-3-methyl phenol	67-66-3	None	50 ppm 500 ppm	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin; dizziness, mental dullness, nausea, confusion; headache, lassitude (weakness, exhaustion); anesthesia; enlarged liver; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Chromium Total Chromium Chromium, Total	7440-47-3	None	1.0 mg/m^3 250 mg/m^3	Groundwater Soil	inhalation absorption ingestion	irritation to eye, skin, and respiratory	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Chrysene Benzo[a]phenanthrene 1,2-Benzphenanthrene	218-01-9	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, absorption, ingestion, consumption	irritation to eye, skin, and respiratory, gastrointestinal irritation nausea, vomit, diarrhea [potential occupational carcinogen]	Eyes: Irrigate immediately Skin: Soap wash promptly. Breath: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Cis-1,3-Dichlorpropene Cis-1,3-Dichlropropylene Cis-1,3-Dichloropropene cis-1,3-Dichloropropylene	10061-01-5	PID	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, respiratory system; eye, skin, burns; lacrimation (discharge of tears); headache, dizziness; in animals; liver, kidney damage; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Cobalt	7440-48-4	None	0.1mg/m^3 20 mg/m^3	Soil	inhalation, ingestion, skin, and/or eye contact	Cough, dyspnea (breathing difficulty), wheezing, decreased pulmonary function; weight loss; dermatitis; diffuse nodular fibrosis; resp hypersensitivity, asthma	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Copper	7440-50-8	None	1.0 mg/m^3 100 mg/m^3	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, nose, metallic taste; dermatitis; anemia	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Cumene Cumol Isopropylbenzene 2-Phenyl propane 1-methylethy lbenzene	98-82-8	PID	50 ppm 900 ppm	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; dermatitis; headache, narcosis, coma	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Cyanide	57-12-5	None	5 mg/m^3 25 mg/m^3	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact	Exposure to cyanide can cause weakness, headaches, confusion, dizziness, fatigue, anxiety, sleepiness, nausea and vomiting. Breathing can speed up then become slow and gasping. Coma, and convulsions also occur. If copious amounts of cyanide have been absorbed by the body, the person usually collapses, and death can occur very quickly. Long-term exposure to lower levels of cyanide can cause skin, and nose irritation, itching, rashes and thyroid changes.	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Cyclohexane Benzene hexahydride Hexahydrobenzene Hexamethylene Hexanaphthene	110-82-7	PID	300 ppm 1300 ppm	Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, respiratory system; drowsiness; dermatitis; narcosis, coma	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	DDE 4,4-DDE 4,4′-DDE 1,1-bis-(4-chlorophenyl)-2,2-dichloroethene Dichlorodiphenyldichloroethylene p,p'-DDE	72-55-9	None	NA NA	Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	Oral ingestion of food is the primary source of exposure for the general population. Acute and chronic ingestion may cause nausea, vomiting, diarrhea, stomach pain, headache, dizziness, disorientation, tingling, sensation, kidney damage, liver damage, convulsions, coma, and death. 4,4' DDE may cross the placenta and can be excreted in breast milk	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	DDT 4,4-DDT 4,4′-DDT p,p′-DDT Dichlorodiphenyltrichloroethane 1,1,1-Trichloro-2,2-bis(p-chlorophenyl)ethane	50-29-3	None	1 mg/m^3 500 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin; paresthesia tongue, lips, face; tremor; anxiety, dizziness, confusion, malaise (vague feeling of discomfort), headache, lassitude (weakness, exhaustion); convulsions; paresis hands; vomiting; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Delta BHC Delta-BHC Delta-hexachlorocyclohexane Delta Hexachlorocyclohexane	319-86-8	None	0.5 mg/m^3 50 mg/m^3	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat; headache; nausea; colonic convulsions; resp difficulty; cyanosis; aplastic anemia; muscle spasm; in animals: liver, kidney damage	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Dibenz(a,h)anthracene Dibenzo(a,h)anthracene Dibenzo[a,h]anthracene	53-70-3	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, absorption, ingestion, consumption	irritation to eyes, skin, respiratory, and digestion [potential occupational carcinogen]	Eyes: Irrigate immediately Skin: Soap wash promptly. Breath: Respiratory support PID Swallow: Medical attention immediately
1.3.1 – 1.3.13	Dibenzofuran	132-64-9	None	NA NA	Soil	inhalation, absorption	irritation to eyes, and skin	Eyes: Irrigate immediately Skin: Soap wash promptly.
1.3.1 – 1.3.13	Dibromochloromethane Dibromo(chloro)methane Chlorodibromomethane Monochlorodibromomethane	124-48-1	PID	NA NA		inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation eyes, skin, respiratory system; dermatitis with vesiculation; liver, heart, spleen, kidney damage; reproductive effects; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Dibromomethane Methylene bromide	74-95-3	NA	20 ppm 250 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin; lassitude (weakness, exhaustion), drowsiness, dizziness; numb, tingle limbs; nausea; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Dibutyl phthalate Di-n-butyl phthalate Butyl phthalate n-Butyl phthalate 1,2-Benzenedicarboxylic acid dibutyl ester o-Benzenedicarboxylic acid dibutyl ester DBP Palatinol C, Elaol Dibutyl-1,2-benzene-dicarboxylate Di-n-butylphthalate	84-74-2	None	5 mg/m^3 4000 mg/m^3	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, upper respiratory system, stomach	Eye: Irrigate immediately Skin: Wash regularly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Dichlorodifluoromethane Difluorodichloromethane, Fluorocarbon 12 Freon 12 Freon® 12 Genetron® 12 Halon® 122 Propellant 12 Refrigerant 12 Dichlorodifluromethane	75-71-8	None	1000 pp, 15,000 ppm	Groundwater Soil Vapor	inhalation, skin, and/or eye contact (liquid)	dizziness, tremor, asphyxia, unconsciousness, cardiac arrhythmias, cardiac arrest; liquid: frostbite	Eye: Frostbite Skin: Frostbite Breathing: Respiratory support
1.3.1 – 1.3.13	Dieldrin HEOD 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo exo-5,8-dimethanonaphthalene	60-57-1	PID	0.25 mg/m^3 50 mg/m^3	Groundwater Soil Water	inhalation, skin absorption, ingestion, skin, and/or eye contact	headache, dizziness; nausea, vomiting, malaise (vague feeling of discomfort), sweating; myoclonic limb jerks; colonic, tonic convulsions; coma; [potential occupational carcinogen]; in animals: liver, kidney damage	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Diesel Fuel automotive diesel fuel oil No. 2 distillate diesoline diesel oil diesel oil light diesel oil No. 1-D summer diesel	68334-30-5	PID	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat; burning sensation in chest; headache, nausea, lassitude (weakness, exhaustion), restlessness, incoordination, confusion, drowsiness; vomiting, diarrhea; dermatitis; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Diethyl phthalate DEP Diethyl ester of phthalic acid Ethyl phthalate Diethylphthalate	84-66-2	PID	NA NA	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact	irritation eyes, skin, nose, throat; headache, dizziness, nausea; lacrimation (discharge of tears); polyneuropathy, vestibular dysfunction; pain, numb, lassitude (weakness, exhaustion), spasms in arms & legs; In Animals: reproductive effects	Eye: Irrigate immediately Skin: Wash regularly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Dimethyl phthalate Dimethylphthalate dimethyl benzene-1,2-dicarboxylate	131-11-3	None	5 mg/m3 2000 mg/m3	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, upper respiratory system; stomach pain	Eye: Irrigate promptly Skin: Wash regularly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Di-n-octyl phthalate Di-n-cotylphthalate Di-n-octylphthalate Di-sec octyl phthalate Dioctyl phthalate DEHP, Di(2-ethylhexyl)phthalate, DOP, bis-(2-Ethylhexyl)phthalate, Octyl phthalate	117-84-0	None	5 mg/m^3 5000 mg/m^3	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, mucous membrane; in animals: liver damage; teratogenic effects; [potential occupational carcinogen]	Eye: Irrigate immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Endosulfan I Alpha Endosulfan	959-98-8	None	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation skin; nausea, confusion, agitation, flushing, dry mouth, tremor, convulsions, headache; in animals: kidney, liver injury; decreased testis weight	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Endosulfan sulfate 1,4,5,6,7,7-Hexachloro-5-norbornene-2,3-dimethanol, cyclic sulfate 6,7,8,9,10,10-hexachloro01,5,5a,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin-3,3-dioxide	1031-07-8	None	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	Hypersensitive to stimulation, sensation of prickling, tingling, or creeping on skin. Headache, dizziness, nausea, vomiting, incoordination, tremor, mental confusion, hyperexcitable state. In severe cases: convulsions, seizures, coma, and respiratory depression.	Eye: Irrigate immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Endrin 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo,endo-5,8-dimethanonaphthalene; Hexadrin	72-20-8	None	0.1 mg/m^3 2 mg/m^3	Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	epileptiform convulsions; stupor, headache, dizziness; abdominal discomfort, nausea, vomiting; insomnia; aggressiveness, confusion; drowsiness, lassitude (weakness, exhaustion); anorexia; in animals: liver damage	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Endrin aldehyde	7421-93-4	None	0.1 mg/m3 2 mg/m3	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	epileptiform convulsions; stupor, headache, dizziness; abdominal discomfort, nausea, vomiting; insomnia; aggressiveness, confusion; drowsiness, lassitude (weakness, exhaustion); anorexia; in animals: liver damage	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Ethanol Absolute alcohol Alcohol cologne spirit drinking alcohol ethane monoxide ethylic alcohol EtOH ethyl alcohol ethyl hydrate ethyl hydroxide ethylol grain alcohol hydroxyethane methylcarbinol	64-17-5	PID	1000 ppm 3300 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose; headache, drowsiness, lassitude (weakness, exhaustion), narcosis; cough; liver damage; anemia; reproductive, teratogenic effects	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Fresh air Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Ethyl benzene Ethylbenzene Ethylbenzol Phenylethane	100-41-4	PID	435 mg/m^3 3,472 mg/m^3	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Ethyl chloride Chloroethane Hydrochloric ether Monochloroethane Muriatic ether Hydrochloric ether	75-00-3	PID	1000 ppm 3800 ppm	Groundwater Soil Vapor	inhalation, skin absorption (liquid), ingestion (liquid), skin, and/or eye contact	incoordination, inebriation; abdominal cramps; cardiac arrhythmias, cardiac arrest; liver, kidney damage	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Ethyl ether Diethyl ether Diethyl oxide Ethyl oxide Ether Solvent ether	60-29-7	PID	400 ppm 1900 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, upper respiratory system; dizziness, drowsiness, headache, excited, narcosis; nausea, vomiting	Eye: Irrigate immediately Skin: Water wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Fluoranthene Benzo(j, k)fluorene	206-44-0	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation (dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Fluorene	86-73-7	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation (dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention
1.3.1 – 1.3.13	Fuel Oil No. 2	68476-30-2	PID	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat; burning sensation in chest; headache, nausea, lassitude (weakness, exhaustion), restlessness, incoordination, confusion, drowsiness; vomiting, diarrhea; dermatitis; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	gamma-Chlordane Gamma Chlordane y-Chlordane	5566-34-7	None	0.5 mg/m^3 100 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	Blurred vision; confusion; ataxia, delirium; cough; abdominal pain, nausea, vomiting, diarrhea; irritability, tremor, convulsions; anuria	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Gasoline	8006-61-9	PID	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Gasoline Range Organics	8006-61-9	PID	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Helium	7440-59-7	Helium Detector	NA NA	NA	inhalation	dizziness, headache, and nausea	Breathing: Respiratory support
1.3.1 – 1.3.13	Heptachlor	76-44-8	None	0.5 mg/m^3 35 mg/m^3	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	In animals: tremor, convulsions; liver damage; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Heptane n-Heptane	142-82-5	PID	500 ppm 750 ppm	Goundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	dizziness, stupor, incoordination; loss of appetite, nausea; dermatitis; chemical pneumonitis (aspiration liquid); unconsciousness	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Hexachlorobenzene Perchlorobenzene Pentachlorophenylchloride Benzene hexachloride Phenyl perchloryl HCB BHC	118-74-1	NA	NA NA	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact	Irritating to eyes, skin, and mucous membranes. Prolonged periods of ingestion may cause cutaneous porphyria	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Hexachlorobutadiene HCBD Hexachloro-1,3-butadiene 1,3-Hexachlorobutadiene Perchlorobutadiene	87-68-3	PID	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	In animals: irritation to the eyes, skin, respiratory system; kidney damage; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Hexachlorocyclopentadiene	77-47-4	PID	NA NA	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	Irritation eyes, skin, respiratory system; eye, skin, burns; lacrimation (discharge of tears); sneezing, cough, dyspnea (breathing difficulty), salivation, pulmonary edema; nausea, vomiting, diarrhea; In Animals: liver, kidney injury	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Hexachloroethane Carbon hexachloride Ethane hexachloride Perchloroethane	67-72-1	PID	1 ppm\ 300 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; In Animals: kidney damage; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Hexavalent Chromium Chromium VI Chromium, Hexavalent	18540-29-9	None	1.0 mg/m^3 250 mg/m^3	Groundwater Soil	inhalation absorption ingestion	irritation to eye, skin, and respiratory	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Indeno(1,2,3-cd)pyrene Indeno(1,2,3-c,d)Pyrene Indeno[1,2,3-cd]Pyrene	193-39-5	None	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, absorption, ingestion, consumption	irritation to eyes, skin, respiratory, and digestion [potential occupational carcinogen]	Eyes: Irrigate immediately Skin: Soap wash promptly. Breath: Respiratory support Swallow: Medical attention immediately, wash mouth with water
1.3.1 – 1.3.13	Iron	7439-89-6	None	10 mg/m^3 NA	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; abdominal pain, diarrhea, vomiting	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Isophorone 1,1,3-Trimethyl-3-cyclohexene-5-one Isoforone Isoacetophorone	78-59-1	None	25 ppm 200 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, respiratory system	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Isopropyl alcohol Iso-Propyl Alcohol Carbinol IPA Isopropanol 2-Propanol sec-Propyl alcohol Rubbing alcohol Isopropylalcohol	67-63-0	PID	400 ppm 2000 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, nose, throat; drowsiness, dizziness, headache; dry cracking skin; in animals: narcosis	Eye: Irrigate immediately Skin: Water flush Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Lead	7439-92-1	None	0.050 mg/m^3 100 mg/m^3	Groundwater Soil	inhalation, ingestion, skin, and/or eye contact	lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation to the eyes; hypertension	Eye: Irrigate immediately Skin: Soap flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Lindane Gamma BHC HCH ã-Hexachlorocyclohexane gamma isomer of 1,2,3,4,5,6-Hexachlorocyclohexane gamma-Hexachlorocyclohexane	58-89-9	None	0.5 mg/m^3 50 mg/m^3	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat; headache; nausea; colonic convulsions; resp difficulty; cyanosis; aplastic anemia; muscle spasm; in animals: liver, kidney damage	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Magnesium	7439-95-4	None	15 mg/m^3 NA	Soil	inhalation, skin, and/or eye contact	irritation to the eyes, skin, respiratory system; cough	Eye: Irrigate immediately Breathing: Fresh air
1.3.1 – 1.3.13	Manganese	7439-96-5	None	5 mg/m^3 500 mg/m^3	Groundwater Soil	inhalation, ingestion	aerosol is irritating to the respiratory tract	Eye: Irrigate immediately Skin: Soap flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	m-Cresol meta-Cresol 3-Cresol m-Cresylic acid 1-Hydroxy-3-methylbenzene 3-Hydroxytoluene 3-Methylphenol	108-39-4	PID	5 ppm 250 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; central nervous system effects: confusion, depression, resp failure; dyspnea (breathing difficulty), irregular rapid respiration, weak pulse; eye, skin burns; dermatitis; lung, liver, kidney, pancreas damage	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Mercury	7439-97-6	None	0.1 mg/m^3 10 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Methyl Acetate	79-20-9	PID	200 ppm 3100 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat; headache, drowsiness; optic nerve atrophy; chest tightness; in animals: narcosis	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Methyl Bromide Bromomethane Monobromomethane	74-83-9	PID	20 ppm 250 ppm	Soil Groundwater Vapor	inhalation, skin absorption (liquid), skin, and/or eye contact (liquid)	irritation to the eyes, skin, respiratory system; muscle weak, incoordination, visual disturbance, dizziness; nausea, vomiting, headache; malaise (vague feeling of discomfort); hand tremor; convulsions; dyspnea (breathing difficulty); skin, vesiculation; liquid: frostbite; [potential occupational carcinogen]	Eye: Irrigate immediately (liquid) Skin: Water flush immediately (liquid) Breathing: Respiratory support
1.3.1 – 1.3.13	Methyl Chloride Chloromethane Monochloromethane Refrigerant-40 R-40	74-87-3	NA	100 ppm 2000 ppm	Groundwater Soil	inhalation, skin, and/or eye contact	dizziness, nausea, vomiting; visual disturbance, stagger, slurred speech, convulsions, coma; liver, kidney damage; liquid: frostbite; reproductive, teratogenic effects; [potential occupational carcinogen]	Eye: Frostbite Skin: Frostbite Breathing: Respiratory support
1.3.1 – 1.3.13	Methyl chloroform Chlorothene 1,1,1-Trichloroethane 1,1,1-Trichloroethane-(stabilized) 1,1,1-TCA	71-55-6	PID	350 ppm 700 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression, poor equilibrium; dermatitis; cardiac arrhythmias; liver damage	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Methyl *tert*-butyl ether MTBE Methyl tertiary-butyl ether Methyl t-butyl ether tert-Butyl methyl ether tBME tert-BuOMe Methyl tert butyl ether	1634-04-4	PID	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat; burning sensation in chest; headache, nausea, lassitude (weakness, exhaustion), restlessness, incoordination, confusion, drowsiness; vomiting, diarrhea; dermatitis; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Methylcyclohexane Methyl cyclohexane Methylcyclohexane Hexahydrotoluene Cyclohexylmethane Toluene hexahydride	108-87-2	PID	500 ppm 1200 ppm	Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat; dizziness, drowsiness; in animals: narcosis	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Methylene Chloride Dichloromethane Methylene dichloride	75-09-2	PID	25 ppm 2300 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin; lassitude (weakness, exhaustion), drowsiness, dizziness; numb, tingle limbs; nausea; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	m-Xylenes 1,3-Dimethylbenzene m-Xylol Metaxylene	108-38-3 179601-23-1	PID	100 ppm 900 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; nausea, vomiting, abdominal pain; dermatitis	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Naphthalene Naphthalin Tar camphor White tar	91-20-3	PID	50 mg/m^3 250 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; hematuria (blood in the urine); dermatitis, optical neuritis	Eye: Irrigate immediately Skin: Molten flush immediately/solid-liquid soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	n-Butylbenzene Butylbenzene 1-phenylbutane	104-51-8	PID	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin; dry nose, throat; headache; low blood pressure, tachycardia, abnormal cardiovascular system stress; central nervous system, hematopoietic depression; metallic taste; liver, kidney injury	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	N-ethyl perfluorooctane sulfonamido acetic acid NEtFOSAA N-Ethylperfluorooctanesulfonamide	4151-50-2	NA	NA NA	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	n-Hexane Hexane, Hexyl hydride, normal-Hexane	110-54-3	PID	500 ppm 1100 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, nose; nausea, headache; peripheral neuropathy: numb extremities, muscle weak; dermatitis; dizziness; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Nickel	7440-02-0	None	NA 10 mg/m^3	Groundwater Soil	ion, ingestion, skin, and/or eye contact	sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]	Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Nitrate	14797-55-8	None	NA NA	Groundwater Soil	inhalation, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane	Eye: Irrigate immediately Skin: Soap wash Breathing: Fresh air

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Nitrobenzene Essence of mirbane Nitrobenzol Oil of mirbane	98-95-3	None	1 ppm 200 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation eyes, skin; anoxia; dermatitis; anemia; methemoglobinemia; In Animals: liver, kidney damage; testicular effects	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	N-methyl perfluorooctane-sulfonamidoacetic acid NMeFOSAA	2355-31-9	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	N-Nitrosodi-n-propylamine N-nitroso-di-n-propylamine	621-64-7	None	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, respiratory system	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	N-Nitrosodiphenylamine	86-30-6	PID	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, respiratory system	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Non-Flammable Gas Mixture CALGAS (Equipment Calibration Gas : Oxygen Methane Hydrogen Sulfide Carbon Monoxide Nitrogen	 7782-44-7 74-82-8 7783-08-4 830-08-0 7727-37-9	Multi-Gas PID	 NA/NA NA/NA 10/100 ppm 50/1200 ppm NA/NA	NA	inhalation	dizziness, headache, and nausea	Breathing: Respiratory support
1.3.1 – 1.3.13	Non-Flammable Gas Mixture CALGAS (Equipment Calibration Gas : Oxygen Isobutylene Nitrogen	 7782-44-7 115-11-7 7727-37-9	PID	 NA/NA NA/NA NA/NA	NA	inhalation	dizziness, headache, and nausea	Breathing: Respiratory support
1.3.1 – 1.3.13	n-Propylbenzene Isocumene Propylbenzene 1-Phenylpropane 1-Propylbenzene Phenylpropane	103-65-1	PID	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin; dry nose, throat; headache; low blood pressure, tachycardia, abnormal cardiovascular system stress; central nervous system, hematopoietic depression; metallic taste; liver, kidney injury	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	o-Chlorotoluene 1-Chloro-2-methylbenzene 2-Chloro-1-methylbenzene 2-Chlorotoluene o-Tolyl chloride 2-Cyclohexane	95-49-8	PID	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation eyes, skin, mucous membrane; dermatitis; drowsiness, incoordination, anesthesia; cough; liver, kidney injury	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	o-Cresol ortho-Cresol 2-Cresol o-Cresylic acid 1-Hydroxy-2-methylbenzene 2-Hydroxytoluene 2-Methyl phenol 2-Methylphenol 2-Metyhlphenol	95-48-7	PID	5 ppm 250 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; central nervous system effects: confusion, depression, resp failure; dyspnea (breathing difficulty), irregular rapid respiration, weak pulse; eye, skin burns; dermatitis; lung, liver, kidney, pancreas damage	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	o-Xylenes 1,2-Dimethylbenzene ortho-Xylene o-Xylol	95-47-6 179601-23-1	PID	100 ppm 900 ppm	Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; nausea, vomiting, abdominal pain; dermatitis	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	p-Chlorocresol 4-Chloro-3-methylphenol p-Chloro-m-cresol 2-Chloro-5-hydroxytoluene	59-50-7	PID	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; central nervous system effects: confusion, depression, resp failure; dyspnea (breathing difficulty), irregular rapid respiration, weak pulse; eye, skin, burns; dermatitis; lung, liver, kidney, pancreas damage	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	p-Cresol para-Cresol 4-Cresol p-Cresylic acid 1-Hydroxy-4-methylbenzene 4-Hydroxytoluene 4-Methylphenol	106-44-5	PID	5 ppm 250 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; central nervous system effects: confusion, depression, resp failure; dyspnea (breathing difficulty), irregular rapid respiration, weak pulse; eye, skin burns; dermatitis; lung, liver, kidney, pancreas damage	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	p-Dichlorobenzene p-DCB 1,4-Dichlorobenzene para-Dichlorobenzene Dichlorocide	106-46-7	PID	75 ppm 150 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, swelling periorbital (situated around the eye); profuse rhinitis; headache, anorexia, nausea, vomiting; weight loss, jaundice, cirrhosis; in animals: liver, kidney injury; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	p-Diethylbenzene 1,4-Diethylbenzene 1,4-Diethyl benzene	105-05-5	PID	None None	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, respiratory system; skin burns; in animals: central nervous system depression	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Pentachlorophenol PCP; Penta; 2,3,4,5,6-Pentachlorophenol	87-86-5	PID	0.5 mg/m^3 2.5 mg/m^3	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, nose, throat; sneezing, cough; lassitude (weakness, exhaustion), anorexia, weight loss; sweating; headache, dizziness; nausea, vomiting; dyspnea (breathing difficulty), chest pain; high fever; dermatitis	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Perfluorobutanesulfonic acid FC-98 Nonaflate Nonafluorobutanesulphonic acid Perfluorobutanesulfonic Acid Perfluorobutane sulfonate PFBS	375-73-5	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Perfluorobutanoic Acid Heptafluorobutyric acid Heptafluorobutanoic acid Perfluorobutyric acid PFBA	375-22-4	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Perfluorodecanesulfonic Acid PFDS	335-77-3	NA	NA NA	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Perfluorodecanoic acid PFDA	335-76-2	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Perfluorododecanoic acid Perfluoralauric acid Tricosafluorododecanoic acid PFDoA	307-55-1	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Perfluoroheptane sulfonic Acid Perfluoroheptane sulfonate Perfluoroheptanesulfonic acid PFHpS	375-92-8	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Perfluoroheptanoic acid Perfluoroheptanoic acid Tridecafluoroheptanoic acid PFHpA	375-85-9	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Perfluorohexanesulfonic Acid perfluorohexanesulfonate perfluorohexanesulfonic acid Perfluorohexane-1-sulphonic acid PFHxS	355-46-4	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Perfluorohexanoic Acid PFHxA	307-24-4	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Perfluorononanoic Acid Perfluorononanoic Acid PFNA perfluoro-n-nonanoic acid perfluorononanoate	375-95-1	NA	None None	Groundwater	Groundwater	inhalation, skin or eye contact, ingestion; strong acid	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Perfluorooctanesulfonamide Erfluoroctylsulfonamide Perfluorooctane sulfonamide Heptadecafluorooctanesulphonamide Perfluorooctanesulfonic acid amide Deethylsulfluramid FC-99 PFOSA FOSA	754-91-6	NA	NA NA	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Perfluorooctanesulfonic Acid PFOS	1763-23-1	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Perfluorooctanoic Acid PFOA pentadecafluorooctanoic acid perfluorooctanoate perfluorocaprylic acid	335-67-1	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Perfluoropentanoic Acid PFPeA	2706-90-3	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Perfluorotetradecanoic Acid PFTA	376-06-7	NA	None None	Groundwater	inhalation, skin, or eye contact, ingestion	irritation to eyes with eye damage, skin, causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Perfluorotridecanoic Acid PFTrDA	72629-94-8	NA	None None	Groundwater	inhalation, skin, or eye contact, ingestion	irritation to eyes with eye damage, skin, causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Perfluoroundecanoic Acid PFUnA PFUnDA Perfluoroundecanoic Acid Henicosafluoroundecanoic Acid	4234-23-5	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	p-Ethyltoluene 4-Ethyltoluene 1-ethyl-4-methyl-benzene 1-methyl-4-ethylbenzene	622-96-8	NA	NA NA	Soil	ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Petroleum Hydrocarbons (C09-C12) Aliphatic PHCC9C12ALHydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)	64742-82-1	PID	5 mg/m^3 NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Petroleum Hydrocarbons (C10-C12) Aromatics PHCC10C12ARO Hydrocarbons, C10-C13, aromatics, <1% naphthalene	64742-94-5	PID	5 mg/m³ NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Petroleum Hydrocarbons (C12-C16) Aliphatic PHCC12C16AL	ALIPGR1	PID	5 mg/m³ NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Petroleum Hydrocarbons (C12-C16) Aromatics PHCC12C16ARO	ALIPGR2	PID	5 mg/m³ NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Petroleum Hydrocarbons (C16-C21) Aromatics PHCC16C21ARO	ALIPGR3	PID	5 mg/m^3 NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Phenanthrene	85-01-8	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation (dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.13	Phenol Carbolic acid Hydroxybenzene, Monohydroxybenzene Phenyl alcohol Phenyl hydroxide	108-95-2	PID	5 ppm 250 ppm	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, nose, throat; anorexia, weight loss; lassitude (weakness, exhaustion), muscle ache, pain; dark urine, skin burns; dermatitis; tremor, convulsions, twitching	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	p-Nitrophenol 4-Nitrophenol 4-hydroxynitrobenzene	100-02-7	NA	NA NA	Groundwater Soil	ingestion, inhalation, skin, and/or eye contact	Irritant to eyes, skin, mucous membranes, and respiratory system, irritant to digestive track	Eye: Irrigate immediately, medical attention immediately. Skin: Water flush promptly, medical attention immediately. Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Posphate	14265-44-2	NA	0.1 mg/m^3 70 mg/m^3	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, respiratory system	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Potassium	7440-09-7	None	NA NA	Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact inhalation, ingestion, skin, and/or eye contact	eye: Causes eye burns. Skin: Causes skin burns. Reacts with moisture in the skin to form potassium hydroxide and hydrogen with much heat. ingestion: Causes gastrointestinal tract burns. inhalation: May cause irritation of the respiratory tract with burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema. Causes chemical burns to the respiratory tract. inhalation may be fatal because of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema.	Eyes: Get medical aid immediately Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Ingestion: If victim is conscious and alert, give 2-4 full cups of milk or water. Get medical aid immediately. inhalation: Get medical aid immediately.
1.3.1 – 1.3.13	Propylene dichloride Dichloro-1,2-propane 1,2-Dichloropropane	78-87-5	PIDL	75 ppm 400 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, respiratory system; drowsiness, dizziness; liver, kidney damage; in animals: central nervous system depression; [potential occupational carcinogen]	irritation to the eyes, skin, respiratory system; drowsiness, dizziness; liver, kidney damage; in animals: central nervous system depression; [potential occupational carcinogen]

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	p-Xylenes 1,4-Dimethylbenzene para-Xylene p-Xylol	106-42-3	PID	100 ppm 900 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; nausea, vomiting, abdominal pain; dermatitis	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Pyrene benzo[def]phenanthrene	129-00-0	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation (dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.13	sec-Butylbenzene	135-98-8	PID	10 ppm 100 ppm	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, nose, throat. inhalation: nausea or vomiting	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Selenium	7782-49-2	None	1 mg/m^3 0.2 mg/m^3	Soil	inhalation, ingestion, skin, and/or eye contact	irritation to the 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	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Silver	7440-22-4	None	0.01 mg/m^3 10 mg/m^3	Soil	inhalation, ingestion, skin, and/or eye contact	blue-gray eyes, nasal septum, throat, skin; irritation, ulceration skin; gastrointestinal disturbance	Eye: Irrigate immediately Skin: Water flush Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Silvex 2-(2,4,5-Trichlorophenoxy)propionic acid Fenoprop 2,4,5-TP Acid 2,4,5-TP	93-72-1	PID	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, nose, respiratory system; headache, lassitude (weakness, exhaustion), dizziness, confusion, malaise (vague feeling of discomfort), drowsiness, unsteady gait; narcosis; defatting dermatitis; liver injury; reproductive effects	Eye: Irrigate immediately Skin: Water flush Breathing: Respiratory support Swallow: Medical attention

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Sodium	7440-23-5	None	NA NA	Groundwater Soil	ion, ingestion, skin, and/or eye contact	sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]	Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate; 8:2 FTS	27619-96-1	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with eye damage, skin causing rash, redness or burning, irritation to nose, throat, and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Styrene Ethenyl benzene Phenylethylene Styrene monomer Styrol Vinyl benzene	100-42-5	PID	100 ppm 700 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, nose, respiratory system; headache, lassitude (weakness, exhaustion), dizziness, confusion, malaise (vague feeling of discomfort), drowsiness, unsteady gait; narcosis; defatting dermatitis; liver injury; reproductive effects	Eye: Irrigate immediately Skin: Water flush Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Sulfate	14808-79-8	None	NA NA	Groundwater Soil	inhalation, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane	Eye: Irrigate immediately Skin: Soap wash Breathing: Fresh air

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Tert-Butyl Alcohol Tertiary Butyl Alcohol Tert-Butanol Butyl alcohol 2-Methyl-2-propanol Trimethyl carbinol TBA	75-65-0	PID	100 ppm 1600 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat; drowsiness, narcosis	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	tert-Butylbenzene *t*-Butylbenzene 2-Methyl-2-phenylpropane Pseudobutylbenzene	98-06-6	PID	10 ppm NA	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	eye, skin irritation; dry nose, throat; headaches; low blood pressure, tachycardia; abnormal cardiovascular system; central nervous system depression; hematopoietic depression	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Tetrachloroethane 1,1,2,2-Tetrachloroethane Acetylene tetrachloride Symmetrical tetrachloroethane	79-34-5	PID	5 ppm 100 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	nausea, vomiting, abdominal pain; tremor fingers; jaundice, hepatitis, liver tenderness; dermatitis; leukocytosis (increased blood leukocytes); kidney damage; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Tetrachloroethylene Perchlorethylene Perchloroethylene PCE Perk Tetrachlorethylene Tetrachloroethene	127-18-4	PID	100 ppm 150 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Tetrahydrofuran Diethylene oxide 1,4-Epoxybutane Tetramethylene oxide THF	109-99-9	PID	200 ppm 2000 ppm	Groundwater Soil Vapor	inhalation, skin, and/or eye contact, ingestion	irritation to the eyes, upper respiratory system; nausea, dizziness, headache, central nervous system depression	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Thallium	7440-28-0	None	0.1 mg/m^3 15 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	nausea, diarrhea, abdominal pain, vomiting; ptosis, strabismus; peri neuritis, tremor; retrosternal (occurring behind the sternum) tightness, chest pain, pulmonary edema; convulsions, chorea, psychosis; liver, kidney damage; alopecia; paresthesia legs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Toluene Methyl benzene Methyl benzol Phenyl methane Toluol	108-88-3	PID	200 ppm 500 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, paresthesia; dermatitis	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Total Extractable Petroleum Hydrocarbons TEPH	TEPH	PID	5 mg/m^3 NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Total PCBs Chlorodiphenyl (42% chlorine) Aroclor® 1242 PCB Polychlorinated biphenyl	53469-21-9	None	0.5 mg/m^3 5 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, chloracne	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Total Petroleum Hydrocarbons TPH	CASID30220	PID	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Total Xylenes Dimethylbenzene Xylol	1330-20-7	PID	100 ppm 900 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; nausea, vomiting, abdominal pain; dermatitis	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Trans-1,2-Dichloroethene trans-1,2-Dichloroethylene tDEC trans-Acetylene dichloride	156-60-5	PID	200 ppm 4000 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	Irritant to eyes, skin, mucous membranes, and respiratory system. May be harmful by ingestion, skin absorption and inhalation	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Trans-1,3-dichloropropylene trans-1,3-Dichloropropene Propene 1,3-dichloro- (E) (E)-1,3-Dichloropropene trans-1,3-Dichloro-1-Propene trans-1,3-Dichloropropene trans-1,3-Dichloropropylene (1E)-1,3-Dichloro-1-propene	10061-02-6	None	Na NA	Groundwater Soil Vapor	inhalation, ingestion, skin absorption, skin, and/or eye contact	irritation to the eyes, skin, mucous membrane	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Trans-1,4-Dichloro-2-butene trans-1,4-Dichlorobutene	110-57-6	None	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	irritation to the eyes, skin, respiratory system;	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Trichloroethylene Ethylene trichloride TCE Trichloroethene Trilene	79-01-6	PID	100 ppm 1000 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin, and/or eye contact	irritation to the eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Trichlorofluoromethane Fluorotrichloromethane Freon® 11 Monofluorotrichloromethane Refrigerant 11 Trichloromonofluoromethane	75-69-4	PID	1000 ppm 2000 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin, and/or eye contact	incoordination, tremor; dermatitis; cardiac arrhythmias, cardiac arrest; asphyxia; liquid: frostbite	Eye: Irrigate immediately Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Trivalent Chromium Chromium III Chromium, Trivalent	NA	None	1.0 mg/m^3 250 mg/m^3	Groundwater Soil	inhalation absorption ingestion	irritation to eye, skin, and respiratory	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.13	Vanadium	7440-62-2	None	0.1 mg/m3 15 mg/m3	Groundwater Soil	inhalation, skin absorption, ingestion, skin, and/or eye contact	nausea, diarrhea, abdominal pain, vomiting; ptosis, strabismus; peri neuritis, tremor; retrosternal (occurring behind the sternum) tightness, chest pain, pulmonary edema; convulsions, chorea, psychosis; liver, kidney damage; alopecia; paresthesia legs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.13	Vinyl Chloride Chloroethene Chloroethylen Ethylene monochloride Monochloroethene Monochloroethylene VC Vinyl chloride monomer (VCM)	75-01-4	PID	1 ppm NA	Groundwater Soil Vapor	inhalation, skin, and/or eye contact (liquid)	lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen]	Eye: Frostbite Skin: Frostbite Breathing: Respiratory support
1.3.1 – 1.3.13	Zinc	7440-62-2	None	15 mg/m^3 500 mg/m^3	Groundwater Soil	inhalation	chills, muscle ache, nausea, fever, dry throat, cough; lassitude (weakness, exhaustion); metallic taste; headache; blurred vision; low back pain; vomiting; malaise (vague feeling of discomfort); chest tightness; dyspnea (breathing difficulty), rales, decreased pulmonary function	Breathing: Respiratory support`

EXPLANATION OF ABBREVIATIONS

PID = Photoionization Detector

PEL = Permissible Exposure Limit (8-hour Time Weighted Average)

IDLH = Immediately Dangerous to Life and Health

ppm = part per million
mg/m^3 = milligrams per cubic meter
500 mg/m^3

TABLE 3
SUMMARY OF MONITORING EQUIPMENT

Instrument	Operation Parameters
Photoionization Detector (PID)	**Hazard Monitored:** Many organic and some inorganic gases and vapors. **Application:** Detects total concentration of many organic and some inorganic gases and vapors. Some identification of compounds is possible if more than one probe is measured. **Detection Method:** Ionizes molecules using UV radiation; produces a current that is proportional to the number of ions. **General Care/Maintenance:** Recharge or replace battery. Regularly clean lamp window. Regularly clean and maintain the instrument and accessories. **Typical Operating Time:** 10 hours. 5 hours with strip chart recorder.
Oxygen Meter	**Hazard Monitored:** Oxygen (O_2). **Application:** Measures the percentage of O_2 in the air. **Detection Method:** Uses an electrochemical sensor to measure the partial pressure of O_2 in the air and converts the reading to O_2 concentration. **General Care/Maintenance:** Replace detector cell according to manufacturer's recommendations. Recharge or replace batteries prior to explanation of the specified interval. If the ambient air is less than 0.5% C O_2, replace the detector cell frequently. **Typical Operating Time:** 8 – 12 hours.
Additional equipment (if needed, based on site conditions)	
Combustible Gas Indicator (CGI)	**Hazard Monitored:** Combustible gases and vapors. **Application:** Measures the concentration of combustible gas or vapor. **Detection Method:** A filament, usually made of platinum, is heated by burning the combustible gas or vapor. The increase in heat is measured. Gases and vapors are ionized in a flame. A current is produced in proportion to the number of carbon atoms present. **General Care/Maintenance:** Recharge or replace battery. Calibrate immediately before use. **Typical Operating Time:** Can be used for as long as the battery lasts, or for the recommended interval between calibrations, whichever is less.
Flame Ionization Detector (FID) with Gas Chromatography Option *(i.e., Foxboro Organic Vapor Analyzer (OVA))*	**Hazard Monitored:** Many organic gases and vapors (approved areas only). **Application:** In survey mode, detects the concentration of many organic gases and vapors. In gas chromatography (GC) mode, identifies and measures specific compounds. In survey mode, all the organic compounds are ionized and detected at the same time. In GC mode, volatile species are separated. **General Care/Maintenance:** Recharge or replace battery. Monitor fuel and/or combustion air supply gauges. Perform routine maintenance as described in the manual. Check for leaks. **Typical Operating Time:** 8 hours; 3 hours with strip chart recorder.
Potable Infrared (IR) Spectrophotometer	**Hazard Monitored:** Many gases and vapors. **Application:** Measures concentration of many gases and vapors in air. Designed to quantify one or two component mixtures. **Detection Method:** Passes different frequencies of IR through the sample. The frequencies absorbed are specific for each compound. **General Care/Maintenance:** As specified by the manufacturer.

Instrument	Operation Parameters
Direct Reading Colorimetric Indicator Tube	**Hazard Monitored:** Specific gas and vapors. **Application:** Measures concentration of specific gases and vapors. **Detection Method:** The compound reacts with the indicator chemical in the tube, producing a stain whose length or color change is proportional to the compound's concentration. **General Care/Maintenance:** Do not use a previously opened tube even if the indicator chemical is not stained. Check pump for leaks before and after use. Refrigerate before use to maintain a shelf life of about 2 years. Check expiration dates of tubes. Calibrate pump volume at least quarterly. Avoid rough handling which may cause channeling.
Aerosol Monitor	**Hazard Monitored:** Airborne particulate (dust, mist, fume) concentrations. **Application:** Measures total concentration of semi-volatile organic compounds, PCBs, and metals. **Detection Method:** Based on light-scattering properties of particulate matter. Using an internal pump, air sample is drawn into the sensing volume where near infrared light scattering is used to detect particles. **General Care/Maintenance:** As specified by the mfr. Also, the instrument must be calibrated with particulates of a size and refractive index like those to be measured in the ambient air.
Monitox	**Hazard Monitored:** Gases and vapors. **Application:** Measures specific gases and vapors. **Detection Method:** Electrochemical sensor specific for the chemical species in question. **General Care/Maintenance:** Moisten sponge before use; check the function switch; change the battery when needed.
Gamma Radiation Survey Instrument	**Hazard Monitored:** Gamma Radiation. **Application:** Environmental radiation monitor. **Detection Method:** Scintillation detector. **General Care/Maintenance:** Must be calibrated annually at a specialized facility. **Typical Operating Time:** Can be used for as long as the battery lasts, or for the recommended interval between calibrations, whichever is less.

TABLE 4
INSTRUMENTATION ACTION LEVELS

Photoionization Detector Action Levels	**Action Required**
Background to 5-parts per million (ppm)[1]	No respirator needed; no further action
>5ppm but </= 15 ppm at the perimeter of the work area	• Work temporarily halted and monitoring continues. • If instantaneous readings decrease below 5 ppm above background, work activities will resume with continued monitoring
>5ppm but </= 25 ppm at the downwind perimeter of the hot zone	• Work activities will be halted. • Source of vapors identified. • Corrective actions taken to abate emissions. • Continued monitoring. • Workers will don appropriate respirators and work can resume if vapor levels 200-feet downwind or the hot zone or half the distance to the nearest potential receptor or residential or commercial structure, whichever is less – but in no case less than 20 feet – is below 5 ppm above background for the 15-minute average
>25ppm at the parameter of the hot zone	Activities will shut down

Particulate Monitoring Action Levels	**Action Required**
Background to 100-micrograms per cubic meter (µg/m³)[2], no dust observed	No further action
Background to 100 µg/m³, dust observed leaving the work area	Dust suppression must be employed.
100 to 150 µg/m³ at the downwind parameter of the hot zone	• Work activities will be halted. • Source of dust identified. • Dust suppression activities initiated. • Corrective actions taken to abate emissions. • Continued monitoring. • Workers will don appropriate respirators. • Work can resume if dust suppression measures and other controls are successful in reducing the downwind PM10 concentration to within 150 µg/m³ of the upwind level and in preventing visible dust migration.
>150 µg/m³ at the parameter of the hot zone	Activities will shut down

[1] VOC concentrations are 15-minute averages above site background (upwind parameter)
[2] Particulate concentrations are 15-minute averages above site background (upwind parameter)

TABLE 5
EMERGENCY NOTIFICATION LIST

ORGANIZATION	CONTACT	TELEPHONE
Local Police Department		911
Local Fire Department		911
Ambulance/Rescue Squad		911
Hospital	NewYork-Presbyterian Lower Manhattan Hospital	911 or 212-312-5000
Langan Incident Hotline		800-952-6426 extension 4699
Medical Treatment Hotline	WorkCare™	911 or 888-449-7757
Langan Environmental Project Manager	Michael Au	917-715-7723 (cell)
Langan Health and Safety Manager (HSM)	Tony Moffa	215-756-2523 (cell)
Langan Health & Safety Officer (HSO)	William Bohrer	410-984-3068 (cell)
Langan Field Team Leader (FTL)	To Be Determined	
Client's Representative	Adam Meister	646-822-6970
National Response Center (NRC)		800-424-8802
Chemical Transportation Emergency Center (Chemtrec)		800-424-9300
Center for Disease Control (CDC)		404-639-3534
EPA (RCRA Superfund Hotline)		800-424-9346
TSCA Hotline		202-554-1404
Poison Control Center		800-222-1222

Immediately following an injury, unless immediate emergency medical treatment is required, the injured employee must contact WorkCare - Incident Intervention® at 888-449-7787.

For all other incidents or near misses, unless emergency response is required, either the employee or a coworker must contact the Langan Incident Hotline at 973-560-4699.

TABLE 6
SUGGESTED FREQUENCY OF PHYSIOLOGICAL MONITORINGFOR FIT AND ACCLIMATED WORKERS[A]

Adjusted Temperature[b]	Normal Work Ensemble[c]	Impermeable Ensemble
90°F or above (32.2°C) or above	After each 45 min. of work	After each 15 min. of work
87.5°F (30.8°-32.2°C)	After each 60 min. of work	After each 30 min. of work
82.5°-87.5°F (28.1°-30.8°C)	After each 90 min. of work	After each 60 min. of work
77.5°-82.5°F (25.3°-28.1°C)	After each 120 min. of work	After each 90 min. of work
72.5°-77.5°F (22.5°-25.3°C)	After each 150 min. of work	After each 120 min. of work

a For work levels of 250 kilocalories/hour.

b Calculate the adjusted air temperature (ta adj) by using this equation: ta adj ^{o}F = ta ^{o}F + (13 x % sunshine). Measure air temperature (ta) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow. (100 percent sunshine = no cloud cover and a sharp, distinct shadow; 0 percent sunshine = no shadows.)

c A normal work ensemble consists of cotton coveralls or other cotton clothing with long sleeves and pants.

TABLE 7

HEAT INDEX

ENVIRONMENTAL TEMPERATURE (Fahrenheit)

RELATIVE HUMIDITY	70	75	80	85	90	95	100	105	110	115	120
	APPARENT TEMPERATURE*										
0%	64	69	73	78	83	87	91	95	99	103	107
10%	65	70	75	80	85	90	95	100	105	111	116
20%	66	72	77	82	87	93	99	105	112	120	**130**
30%	67	73	78	84	90	96	104	113	123	**135**	**148**
40%	68	74	79	86	93	101	110	123	**137**	**151**	
50%	69	75	81	88	96	107	120	**135**	**150**		
60%	70	76	82	90	100	114	**132**	**149**			
70%	70	77	85	93	106	124	**144**				
80%	71	78	86	97	113	**136**					
90%	71	79	88	102	122						
100%	72	80	91	108							

*Combined Index of Heat and Humidity...what it "feels like" to the body
Source: National Oceanic and Atmospheric Administration

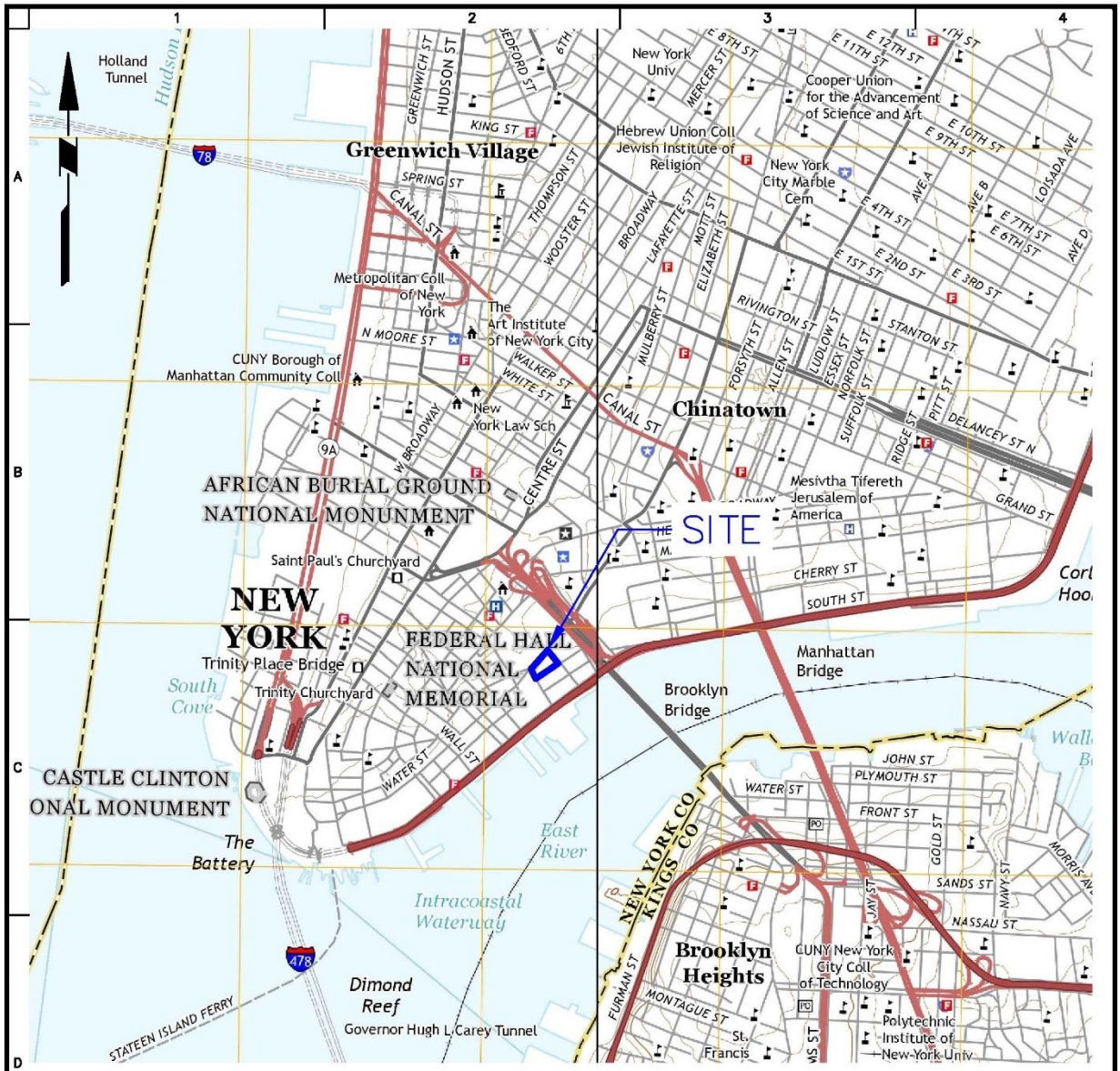
How to use Heat Index:
1. Across top locate Environmental Temperature
2. Down left side locate Relative Humidity
3. Follow across and down to find Apparent Temperature
4. Determine Heat Stress Risk on chart at right

Note: Exposure to full sunshine can increase Heat Index values by up to 15 degrees F.

Apparent Temperature	Heat Stress Risk with Physical Activity and/or Prolonged Exposure
90-105	Heat Cramps or Heat Exhaustion Possible
105-130	Heat Cramps or Heat Exhaustion Likely, Heat Stroke Possible
>130	Heatstroke Highly Likely

FIGURES

FIGURE 1
SITE LOCATION MAP



NOTES:
1. BASE MAP REFERENCE: USGS 7.5 MINUTE SERIES QUADRANGLE MAP OF JERSEY CITY, NJ, AND BROOKLYN, NY, DATED 2016

2000 0 1000 2000
SCALE IN FEET

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001
T: 212.479.5400 F: 212.479.5444 www.langan.com

Project	Drawing Title	Project No.	Drawing No.
250 WATER STREET BLOCK No. 98, LOT No.1 NEW YORK NEW YORK	SITE LOCATION MAP	170381202 Date 12/23/2020 Drawn By JFY Checked By PM	1

Filename: \\langan.com\data\NY\data2\170381202\Project Data\CAD\02\SheetFiles\Environmental\BCP RAWP\Figure 1 - Site Location Map.dwg Date: 2/5/2021 Time: 14:22 User: astappenbeck Style Table: Langan.stb Layout: ANSI-BP

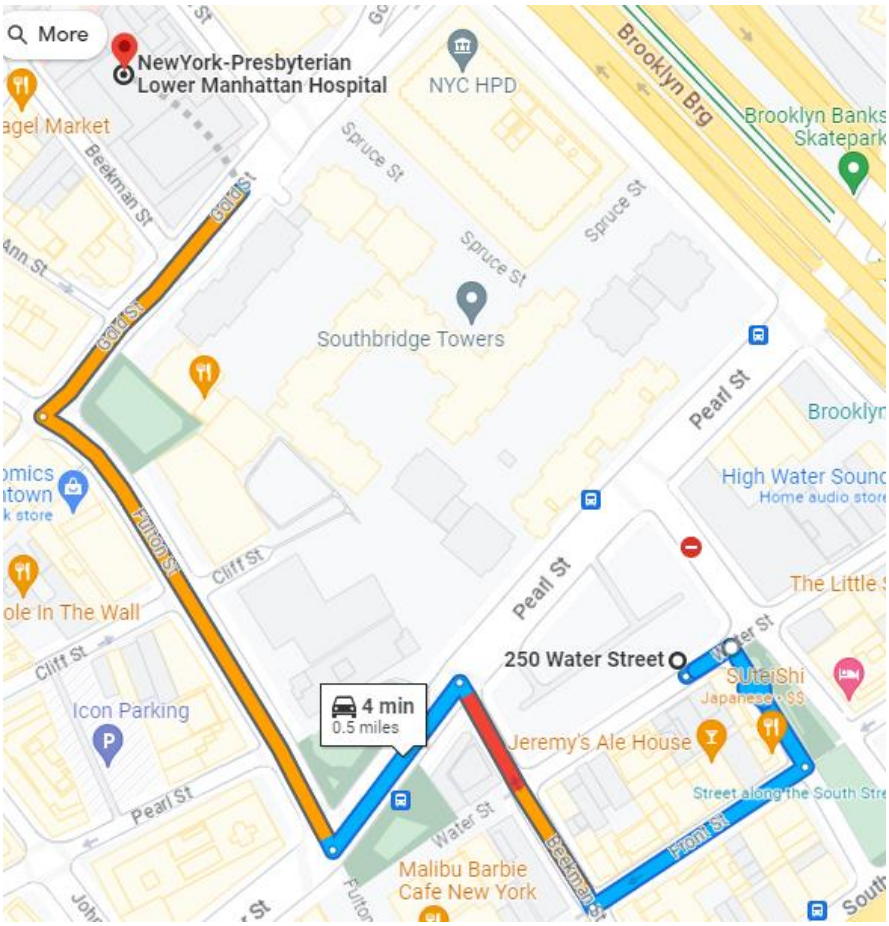
FIGURE 2
HOSPITAL ROUTE PLAN

Hospital Location: **NewYork-Presbyterian Lower Manhattan Hospital**
170 Willams Street
New York, NY
212-312-5000

START: 250 Water Street, New York, New York

1. Head northeast on Water St to Peck Slip
2. Turn right onto Peck Slip
3. Turn right onto Front St
4. Turn right onto Beckman St
5. Turn left onto Pearl St
6. Turn right onto Fulton St
7. Turn right onto Gold St, destination will be on the left.

END: NewYork-Presbyterian Lower Manhattan Hospital, 170 Willams Street, New York, NY



ATTACHMENTS

ATTACHMENT A

STANDING ORDERS

STANDING ORDERS

GENERAL

- No smoking, eating or drinking in this work zone.
- Upon leaving the work zone, personnel will thoroughly wash their hands and face.
- Minimize contact with contaminated materials through proper planning of work areas and decontamination areas, and by following proper procedures. Do not place equipment on the ground. Do not sit on contaminated materials.
- No open flames in the work zone.
- Only trained and equipped personnel are permitted to work in potentially contaminated areas.
- Always use the appropriate level of personal protective equipment (PPE).
- Maintain close contact with your buddy in the work zone.
- Contaminated material will be contained in the Exclusion Zone (EZ).
- Report any unusual conditions.
- Work areas will be kept clear and uncluttered. Debris and other slip, trip, and fall hazards will be removed as frequently as possible.
- The number of personnel and equipment in the work zone will be kept to an essential minimum.
- Be alert to the symptoms of fatigue and heat/cold stress, and their effects on the normal caution and judgment of personnel.
- Conflicting situations which may arise concerning safety requirements and working conditions must be addressed and resolved quickly by the site HSO.

TOOLS AND HEAVY EQUIPMENT

- Do not, under any circumstances, enter or ride in or on any backhoe bucket, materials hoist, or any other device not specifically designed to carry passengers.
- Loose-fitting clothing or loose long hair is prohibited around moving machinery.
- Ensure that heavy equipment operators and all other personnel in the work zone are using the same hand signals to communicate.
- Drilling/excavating within 10-feet in any direction of overhead power lines is prohibited.
- The locations of all underground utilities must be identified and marked out prior to initiating any subsurface activities.
- Check to ensure that the equipment operator has lowered all blades and buckets to the ground before shutting off the vehicle.
- If the equipment has an emergency stop device, have the operator show all personnel its location and how to activate it.
- Help the operator ensure adequate clearances when the equipment must negotiate in tight quarters; serve as signalman to direct backing, as necessary.
- Ensure that all heavy equipment that is used in the Exclusion Zone is kept in that zone until the job is done and that such equipment is completely decontaminated before moving it into the clean area of the work zone.
- Samplers must not reach into or get near rotating equipment such as the drill rig. If personnel must work near any tools that could rotate, the equipment operator must completely shut down the rig prior to initiating such work. It may be necessary to use a remote sampling device.

ATTACHMENT B

DECONTAMINATION PROCEDURES

PERSONNEL DECONTAMINATION

LEVEL C DECONTAMINATION

Station 1:	Equipment Drop	1. Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross-contamination. During hot weather operations, cool down stations may be set up within this area.
Station 2:	Outer Garment, Boots, and Gloves Wash and Rinse	2. Scrub outer boots, outer gloves, and chemical-resistant splash suit with decon solution or detergent and water. Rinse off using copious amounts of water.
Station 3:	Outer Boot and Glove Removal	3. Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4:	Canister or Mask Change	4. If worker leaves Exclusion Zone to change canister. (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer. gloves and boot cover donned, joints taped, and worker returns to duty.
Station 5:	Boot, Gloves and Outer Garment Removal	5. Boots, chemical-resistant splash suit, inner gloves removed and deposited in separate containers lined. with plastic.
Station 6:	Face piece Removal	6. Face piece is removed (avoid touching face with fingers). Face piece deposited on plastic sheets.
Station 7:	Field Wash	7. Hands and face are thoroughly washed. Shower as soon as possible.

LEVEL D DECONTAMINATION

Station 1:	Equipment Drop	1. Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, cool down stations may be set up within this area.
Station 2:	Outer Garment, Boots, and Gloves Wash and Rinse	2. Scrub outer boots, outer gloves and chemical-resistant splash suit with decon solution or detergent and water. Rinse off using copious amounts of water.
Station 3:	Outer Boot and Glove Removal	3. Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4:	Boot, Gloves and Outer Garment Removal	4. Boots, chemical-resistant splash suit, inner gloves removed and deposited in separate containers lined. with plastic.
Station 5:	Field Wash	5. Hands and face are thoroughly washed. Shower as soon as possible.

EQUIPMENT DECONTAMINATION

GENERAL:

Equipment to be decontaminated during the project may include tools, monitoring equipment, respirators, sampling containers, laboratory equipment, and drilling equipment.

All decontamination will be done by personnel in protective gear, appropriate for the level of decontamination, as determined by the site HSO. The decontamination work tasks will be split or rotated among support and work crews.

Depending on site conditions, backhoes and pumps may be decontaminated over a portable decontamination pad to contain wash water; or wash water may be allowed to run off into a storm sewer system. Equipment needed may include a steam generator with high-pressure water, empty drums, screens, screen support structures, and shovels. Drums will be used to hold contaminated wash water pumped from the lined pit. These drums will be labeled as such.

Miscellaneous tools and equipment will be dropped into a plastic bucket, tub, or other containers. They will be brushed off and rinsed with a detergent solution, and finally rinsed with clean water.

MONITORING EQUIPMENT:

Monitoring equipment will be protected as much as possible from contamination by draping, masking, or otherwise covering as many of the instruments as possible with plastic without hindering the operation of the unit. The PID, HNu, or OVA meter, for example, can be placed in a plastic bag, which allows reading of the scale and operation of knobs. The probes can be partially wrapped keeping the sensor tip and discharge port clear.

The contaminated equipment will be taken from the drop area and the protective coverings removed and disposed of in the appropriate containers. Any dirt or obvious contamination will be brushed or wiped with a disposable paper wipe.

RESPIRATORS:

Respirators will be cleaned and disinfected after every use. Taken from the drop area, the masks (with the cartridges removed and disposed of with other used disposable gear) will be immersed in a cleaning solution and scrubbed gently with a soft brush, followed by a rinse in plain warm water, and then allowed to air dry. In the morning, new cartridges will be installed. Personnel will inspect their own masks for serviceability prior to donning them. And, once the mask is on, the wearer will check the respirator for leakage using the negative and positive pressure fit check techniques.

ATTACHMENT C

EMPLOYEE EXPOSURE/INJURY INCIDENT REPORT

EMPLOYEE INCIDENT/INJURY REPORT
LANGAN ENGINEERING & ENVIRONMENTAL SERVICES

(Complete and return to Tony Moffa in the Doylestown Office)

Affected Employee Name: _____ Date: _____

Incident type: ☐ Injury ☐ Report Only/No Injury
☐ Near Miss ☐ Other: _____

EMPLOYEE INFORMATION (Person completing Form)

Employee Name: _____ Employee No: _____

Title: _____ Office Location: _____

Length of time employed or date of hire: _____

Mailing address: _____

_____

Sex: M ☐ F ☐ Birth date: _____

Business phone & extension: _____ Residence/cell phone: _____

ACCIDENT INFORMATION

Project: _____ Project #: _____

Date & time of incident: _____ Time work started & ended: _____

Site location: _____

Incident Type: Possible Exposure ☐ Exposure ☐ Physical Injury ☐

Names of person(s) who witnessed the incident:_____

_____

_____

Exact location incident occurred:

_____

_____

Describe work being done:_____

_____

_____

_____

Describe what affected employee was doing prior to the incident occurring:

_____

_____

_____

Describe in detail how the incident occurred:

_____

_____

_____

_____

Nature of the incident (List the parts of the body affected):

_____

_____

_____

_____

Person(s) to whom the incident was reported (Time and Date):

_____

_____

List the names of other persons affected during this incident:

_____

_____

Possible causes of the incident (equipment, unsafe work practices, lack of PPE, etc.):

Weather conditions during incident:

MEDICAL CARE INFORMATION

Did affected employee receive medical care? Yes ☐ No ☐

If Yes, when, and where was medical care received:

Provide name of facility (hospital, clinic, etc.):

Length of stay at the facility.

Did the employee miss any work time? Yes ☐ No ☐ Undetermined ☐

Date employee last worked: _____ Date employee returned to work:

Has the employee returned to work? Yes ☐ No ☐

Does the employee have any work limitations or restrictions from the injury?: Yes ☐ No ☐

If Yes, please describe:

Did the exposure/injury result in permanent disability? Yes ☐ No ☐ Unknown ☐

If Yes, please describe:

HEALTH & SAFETY INFORMATION

Was the operation being conducted under an established site-specific HEALTH AND SAFETY PLAN?
Yes ☐ No ☐ Not Applicable: ☐

Describe protective equipment and clothing used by the employee:

_____

_____

_____

Did any limitations in safety equipment or protective clothing contribute to or affect exposure/injury? If so, explain:

_____

_____

_____

_____

Employee Signature Date

_____

Langan Representative Date

ATTACHMENT D

CALIBRATION LOG

DATE: ________________ PROJECT:____________________

CALIBRATION LOG

Date & Time	Inst Type	Inst #	Media	Initial Reading	Span #	Calibrat. Reading	Performed By:

ATTACHMENT E

MATERIAL SAFETY DATA SHEETS
SAFETY DATA SHEETS

All Langan Field Personnel Completing This Work Plan Are To Have Real-Time Accessibility To Material Safety Data Sheets (MSDS) or Safety Data Sheets (SDSs) Through Their Smart Phone.

The link is http://www.msds.com/
The login name is "drapehead"
The password is "2angan987"

If You Are Unable To Use the Smart Phone App, You Are To Bring Printed Copies of the MSDS/SDSs to the Site

ATTACHMENT F

JOBSITE SAFETY INSPECTION CHECKLIST

Jobsite Safety Inspection Checklist

Date: _____ **Inspected By:** _____

Location: _____ **Project #:** _____

Check one of the following: **A:** Acceptable NA: Not Applicable **D**: Deficiency

	A	NA	D	Remark
1. HASP available onsite for inspection?				
2. Health & Safety Compliance agreement (in HASP) appropriately signed by Langan employees and contractors?				
3. Hospital route map with directions posted on site?				
4. Emergency Notification List posted on site?				
5. First Aid kit available and properly stocked?				
6. Personnel trained in CPR/First Aid on site?				
7. MSDSs readily available, and all workers knowledgeable about the specific chemicals and compounds to which they may be exposed?				
8 Appropriate PPE being worn by Langan employees and contractors?				
9. Project site safe practices ("Standing Orders") posted?				
10. Project staff have 40-hr./8-hr./Supervisor HAZWOPER training?				
11. Project staff medically cleared to work in hazardous waste sites and fit-tested to wear respirators, if needed?				
12. Respiratory protection readily available?				
13. Health & Safety Incident Report forms available?				
14. Air monitoring instruments calibrated daily, and results recorded on the Daily Instrument Calibration check sheet?				
15. Air monitoring readings recorded on the air monitoring data sheet/field logbook?				
16. Subcontract workers have received 40-hr./8-hr./Spvsr. HAZWOPER training, as appropriate?				
17. Subcontract workers medically cleared to work on site, and fit-tested for respirator wear?				
18. Subcontract workers have respirators readily available?				
19. Mark outs of underground utilities done prior to initiating any subsurface activities?				
20. Decontamination procedures being followed as outlined in HASP?				
21. Are tools in good condition and properly used?				
22. Drilling performed in areas free from underground objects including utilities?				

23. Adequate size/type fire extinguisher supplied?				
24. Equipment at least 20-feet from overhead powerlines?				
25. Evidence that drilling operator is responsible for the safety of his rig.				
26. Trench sides shored, layer back, or boxed?				
27. Underground utilities located, and authorities contacted before digging?				
28. Ladders in trench (25-foot spacing)?				
29. Excavated material placed more than 2-feet away from excavation edge?				
30. Public protected from exposure to open excavation?				
31. People entering the excavation regarding it as a permit-required confined space and following appropriate procedures?				
32. Confined space entry permit is completed and posted?				
33. All persons knowledgeable about the conditions and characteristics of the confined space?				
34. All persons engaged in confined space operations have been trained in safe entry and rescue (non-entry)?				
35. Full body harnesses, lifelines, and hoisting apparatus available for rescue needs?				
36. Attendant and/or supervisor certified in basic first aid and CPR?				
37. Confined space atmosphere checked before entry and continuously while the work is going on?				
38. Results of confined space atmosphere testing recorded?				
39. Evidence of coordination with off-site rescue services to perform entry rescue, if needed?				
40. Are extension cords rated for this work being used and are they properly maintained?				
41. Are GFCIs provided and being used?				

Unsafe Acts: _____

_____

_____

_____

Notes: _____

_____

_____

_____

ATTACHMENT G

JOB SAFETY ANALYSIS FORM

LANGAN	Job Safety Analysis (JSA) Health and Safety
JSA TITLE: **JSA NUMBER:**	**DATE CREATED:** **CREATED BY**: **REVISION DATE:** **REVISED BY:**
Langan employees must review and revise the Job Safety Analysis (JSA) as needed to address the any site-specific hazards not identified. Employees must provide their signatures on the last page of the JSA indicating they have review the JSA and are aware the potential hazards associated with this work and will follow the provided preventive or corrective measures.	

PERSONAL PROTECTIVE EQUIPMENT REQUIRED: (PPE): ■ Required ☒ As Needed		
☐ Steel-toed boots	☐ Nitrile gloves	☐ Dermal Protection (Specify)
☐ Long-sleeved shirt	☐ Leather/ Cut-resistant gloves	☐ High visibility vest/clothing
☐ Safety glasses	☐ Face Shield	☐ Hard hat
ADDITIONAL PERSONAL PROTECTIVE EQUIPMENT NEEDED (Provide specific type(s) or descriptions)		
☐ Air Monitoring:	☐ Respirators:	☐ Other:
☐ Dermal Protection:	☐ Cartridges:	☐ Other:

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE OR CORRECTIVE ACTION
1.	1. 2.	1a. 1b. 2a. 2b.
2.	1.	1
Additional items identified in the field.		
Additional Items.		

If additional items are identified during daily work activities, please notify all relevant personnel about the change and document on this JSA.

LANGAN	Job Safety Analysis (JSA) Health and Safety
JSA Title: COVID-19 Awareness – Site Work **JSA Number: JSA046-00**	
A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last-Minute Risk Assessment.	

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Boots	☐ Long Sleeves	☐ Safety Vest (Class 2)	☐ Hard Hat	☐ Hearing Protection
☐ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☐ Nitrile Gloves	☐ PVC Gloves
☐ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	
☒ Other: Alcohol-based hand sanitizer, disinfectant wipes/spray				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
1. All Activities	1. Transmittal/exposure of COVID-19	1. Ask yourself and your managers – is this work essential? Can this be done remotely? 2. Stay home if sick or showing symptoms of COVID-19 (e.g., fever, cough, etc.). 3. Carry nitrile gloves, alcohol-based hand sanitizer, face coverings and disinfectant wipes/spray during field work. 4. Check federal, state, and/or local travel restrictions **prior** to travel. Many states, counties, and cities are passing strict "shelter-in-place" or business restrictions in response to COVID-19. 5. Immediately notify Beverly Williams or Rory Johnston (Supervisor if employee chooses) if you display symptoms of COVID-19. Symptoms include fever (over 100.4 F), cough, and shortness of breath. 6. Notify Beverly Williams or Rory Johnston, Supervisor and Coronavirus Task Force if you had close contact with an individual who tested positive or displayed symptoms of COVID-19. 7. Do not touch your face, to the extent possible. 8. Wear face coverings when around other worker to minimize spread of COVID-19. (May be required in certain states or locations.)

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
		9. Practice social distancing, maintaining at least 6-feet of distance between yourself and others. Avoid gatherings of more than 10-people. Limit, to the extent possible, contact with public items/objects. 10. Clean your hands frequently with soap and water for at least 20-seconds especially after you have been in a public place, or after blowing your nose, coughing, sneezing, or using the rest room. 11. If soap and water are not readily available, use a hand sanitizer that contains at least 60% alcohol. Cover all surfaces of your hands and rub them together until they feel dry. 12. Cover your mouth and nose with a tissue when you cough or sneeze or use the inside of your elbow. 13. Clean and disinfect frequently touched surfaces daily, for example, cell phones, computer equipment, headsets, tables, doorknobs, light switches, countertops, handles, desks, toilets, faucets, and sinks.
2. Travel to Jobsite	1. Transmittal/exposure of COVID-19 between passengers 2. Transmittal/exposure of COVID-19 from previous occupants (rental and fleet vehicles) 3. Transmittal/exposure of COVID-19 while refueling	1. Limit the number of occupants to each vehicle to two people. Employees should sit as far away from each other as possible. 2. Disinfect high "hand-traffic" areas of the vehicle: Door handles, steering wheel, turn signal and control rods, dashboard controls, seatbelts, armrests, etc. To the extent possible, do not use recycled air for heat/AC and travel with the windows open. 3. Use hand sanitizer before and after pumping gas and only return to the inside of the vehicle after refueling is complete. 4. Wear nitrile gloves if available or disinfect the keypad, pump handle, and fuel grade button prior to use. 5. Recommend face coverings are worn to minimize spread of COVID-19.
3. Conduct Tailgate Safety Meeting & Complete H&S Paperwork	1. Transmittal/exposure of COVID-19 between meeting participants	1. Practice social distancing, maintaining at least 6-feet of distance between yourself and others. 2. Recommend face coverings are worn when around other workers to minimize spread of COVID-19, 3. Hold meetings outside and keep in mind wind direction. To the extent possible, remain crosswind from other people. 4. Designate a single person to maintain sign-in sheets/permits throughout the day to limit the passing of pens/clipboards between people. 5. Each person should complete their own JSA, even if they are completing similar tasks as others to limit the passing of paper/pens/clipboards between people. 6. Include COVID-19 topics and prevention measures in safety meetings.
4. Conduct Site Work	1. Transmittal/exposure of COVID-19 between site workers and public.	1. Practice social distancing maintaining 6-feet of distance between yourself and others. 2. Recommend face coverings are worn when around other workers to minimize spread of COVID-19, 3. To the extent possible, do not interact with the public. If it is necessary, politely explain you are practicing social distance and request they stay at least 6-feet away and they do not attempt to pass objects to you. 4. Wear nitrile gloves during site work underneath the appropriate gloves for your task. Utilize appropriate decontamination procedures, securely bag all waste (including nitrile gloves) generated during site work and dispose of.

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
		5. Do not share tools. Each person should be equipped with the tools to complete their task or tasks should be divided to remove the need to share tools. If tools must be shared, surfaces should be disinfected. 6. Clean and disinfect surfaces of rental tools and equipment upon receipt. To the extent possible rent equipment from Langan's internal equipment reservation center, where cleaning/disinfecting procedures can be verified.
5. Use of Construction Trailers	1. Transmittal/exposure of COVID-19 between site workers and others.	1. Avoid use of shared trailers, if possible. Minimize trailer use to essential personnel. 2. Practice social distancing; maintaining 6-feet of distance between yourself and others in trailer. 3. Clean and disinfect areas including desks, phones, chairs, and other public areas, before and after use.
6. Purchasing Food from a Restaurant	1. Transmittal/exposure of COVID-19 from other customers, staff, surfaces.	1. To the extent possible, bring your own food. 2. If you must visit a restaurant, call ahead for take-out or "contactless delivery." Do not dine in. When picking up food, follow guidelines for Job Step #8: Purchasing Supplies at Retail/Shipping Centers. 3. Wash hands before and after eating.
7. Smoking Cigarettes	1. Transmittal/exposure of COVID-19 by touching mouth with hands	1. Cigarette smokers at greater risk of complications arising from COVID-19. Nicotine patches/lozenges/gum, smoking cessation programs, and prescription medications may aid in "kicking the habit" if you decide to quit. 2. Wash hands thoroughly before and after smoking. 3. Discard cigarette butts properly. Do not light cigarettes from others and do not give cigarettes to others.
8. Hotel Stay	1. Transmittal/exposure of COVID-19 from previous occupants, hotel staff, public areas.	1. Verify the hotel chain/brand has modified cleaning procedures to reflect risk of COVID-19. Most hotel companies have issued statements on their websites and in email blasts reflecting these new procedures. 2. Use the front door, and not peripheral entrances. Front doors of hotels are automatic. 3. Request ground floor room to avoid elevator use and a room that has not be utilized in 48-72 hours. 4. If elevator use is required, do not directly touch elevator buttons with your hands. Do not ride elevators with other people, to the extent possible. 5. Bring disinfecting wipes or sanitizing spray. Upon arrival, disinfect high "hand-traffic" areas of the hotel room: Door handles, light switches, shower/sink faucet handles, TV remote, curtain/blind handles. Clean these surfaces daily. 6. Place the "Do Not Disturb" Sign on your door to prevent people (housekeeping) from entering your room. 7. Avoid common spaces and hotel sponsored events where crowds will be present. 8. Confirm hotel cleaning procedures have been modified to address COVID-19. Confirm no COVID-19 cases have occurred in hotel
9. Purchasing Supplies at Retail/Shipping Centers	1. Transmittal/exposure of COVID-19 from other customers, staff, surfaces.	1. Plan your travel to limit the need to visit retail/shipping centers. 2. Practice social distancing, maintaining at least 6-feet of distance between yourself and others. If the store is too crowded/small, consider visiting another store or returning at a different time. 3. Avoid high "hand-traffic" items/areas like door handles (i.e. use your shoulder, hip/butt, or open with a disposable napkin/paper towel), credit cards terminals (i.e. use Apple/Android pay if available), shopping carts/baskets (i.e. bring your own shopping bags), counter tops (i.e. ask clerk if you can hold the items while they are scanned) and bulk/buffet items (i.e. just avoid them).

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
		4. Disinfect your hands before and after visiting a retail/shipping center.

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN	Job Safety Analysis (JSA) Health and Safety
JSA Title: Environmental Sampling **JSA Number:** JSA021-01 **A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last-Minute Risk Assessment.**	 **S** – ***Stop,*** *what has changed?* **T** – ***Think*** *about the task* **E** – ***Evaluate*** *potential hazards* **P** – ***Plan*** *safe approach* **S** - ***Start*** *task / **Stop** & regroup*

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☐ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☐ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☒ Fire Resistant Clothing	☐ Rubber Boots
☒ Insect/Animal Repellent	☒ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	
☒ Other: Tyvek Sleeves				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
1. Drive to sample location	1. Rough/Off Road terrain	1. Pay attention to road conditions such as road erosion, unprotected embankments, and soft road conditions.
2. Sample Collection (Walking)	1. Slip/Trips/Falls 2. Back strains 3. Wildlife (Insects, Stray animals, rodents) 4. Poisonous vegetation	1. Minimize distance to sample area/ Plan route and check surface prior to carrying heavy equipment/ Locate safest access point/ Follow good housekeeping procedures/ Mark significant below grade hazards (holes, trenches) with spray paint or cones/ Wear foot protection with ankle support and gripping soles. 2. Use proper lifting techniques/ Use wheeled transport/ Obtain assistance where and when needed/ Consider load weight when evaluating what is safe and unsafe to carry. 3. Be aware of surroundings for the presence of wildlife. Do not approach stray animals. Carry and use animal repellant when needed/ Use bug spray when needed. 4. Keep skin covered/ Identify and avoid poisonous vegetation/ Clean areas after contact with suspected vegetation.
3. Sample Collection (Water)	1. Drowning Hazards 2. Chemical burns (when adding acid preservative to sample) 3. Back Strains 4. Ergonomic issues 5. Slip/Trips/Falls	1. Use buddy system/ Wear flotation vest if water is deeper than 2-feet or swift moving/ Select working area with stable footing. Do not attempt to cross or stand in swift moving water. 2. Wear proper PPE (Nitrile gloves, Tyvek Sleeves) 3. Use proper lifting techniques/ Use wheeled transport/ Obtain assistance where and when needed/ Consider load weight when evaluating what is safe or unsafe to carry. 4. When possible, avoid bending over for extended periods of time/ Use a small stool for sitting or knee pad for kneeling.

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
		5. Minimize distance to sample area/ Plan route and check surface prior to carrying heavy equipment/ Locate safest access point/ Follow good housekeeping procedures/ Mark significant below grade hazards (holes, trenches) with spray paint or cones/ Wear foot protection with ankle support and gripping soles/ Avoid standing water or slippery terrain.
4. All activities	1. Slips/ Trips/ Falls 2. Hand injuries, cuts, or lacerations during manual handling of materials 3. Foot injuries 4. Back injuries 5. Traffic 6. Wildlife: Stray dogs, Mice/rats, Vectors (i.e., mosquitoes, bees, etc.) 7. High Noise levels 8. Overhead hazards 9. Heat Stress/ Cold Stress 10. Eye Injuries	1. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards 2. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves 3. Wear Langan approved safety shoes 4. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible 5. Wear high visibility clothing & vest / Use cones or signs to designate work area 6. Be aware of surroundings at all times, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed 7. Wear hearing protection 8. Wear hard hat / Avoid areas where overhead hazards exist. 9. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress 10. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: **Subsurface Investigation**
JSA Number: **JSA030-01**

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last-Minute Risk Assessment.

S – ***Stop,*** *what has changed?*

T – ***Think*** *about the task*

E – ***Evaluate*** *potential hazards*

P – ***Plan*** *safe approach*

S - ***Start*** *task /* ***Stop*** *& regroup*

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☒ Safety Goggles	☐ Face Shield	☐ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☒ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	
☒ Other: Dielectric Overshoes, Sun Block				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
5. Transport equipment to work area	2. Back/strain 3. Slip/Trip/Falls 4. Traffic 5. Cuts/abrasions/contusions from equipment 6. Accidents due to vehicle operations	1. Use proper lifting techniques/Use wheeled transport 2. Minimize distance to work area/unobstructed path to work area/follow good housekeeping procedures 3. Wear proper PPE (high visibility vest or clothing) 4. Wear proper PPE (leather gloves, long sleeves, Langan approved safety shoes) 5. Observe posted speed limits/ Wear seat belts at all times
6. Traffic	1. Hit by moving vehicle	1. Use traffic cones and signage/ Use High visibility traffic vests and clothing/ Caution tape when working near active roadways.
7. Field Work (drilling, resistivity testing, and inspection)	1. Biological Hazards: insects, rats, snakes, poisonous plants, and other animals 2. Heat stress/injuries 3. Cold Stress/injuries 4. High Energy Transmission Lines 5. Underground Utilities 6. Electrical (soil resistivity testing)	1. Inspect work area to identify biological hazards. Wear light colored long sleeve shirt and long pants/ Use insect repellant as necessary/ Beware of tall grass, bushes, woods, and other areas where ticks may live/ Avoid leaving garbage on site to prevent attracting animals/ Identify and avoid contact with poisonous plants/Beware of rats, snakes, or stray animals. 2. Wear proper clothing (light colored)/ drink plenty of water/ take regular breaks/use sun block. 3. Wear proper clothing/ dress in layers/ take regular breaks. 4. Avoid direct contact with high energy transmission lines/ position equipment at least 15-feet or as required by PSE&G from the transmission lines/ wear proper PPE (dielectric overshoes 15 kV minimum rating).

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
		5. Call one-call service before performing intrusive field work/ Review utility mark-outs and available utility drawings (with respect to proposed work locations)/ Follow Underground Utility Guidelines 6. See AGI Sting R1 operating manual for specific concerns during operating instrument
8. All activities	1. Slips/ Trips/ Falls 2. Hand injuries, cuts, or lacerations during manual handling of materials 3. Foot injuries 4. Back injuries 5. Traffic 6. Wildlife: Stray dogs, Mice/rats, Vectors (i.e., mosquitoes, bees, etc.) 7. High Noise levels 8. Overhead hazards 9. Heat Stress/ Cold Stress 10. Eye Injuries	7. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards. 8. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves. 9. Wear Langan approved safety shoes. 10. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible. 11. Wear high visibility clothing & vest / Use cones or signs to designate work area. 12. Be always aware of surroundings, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed. 13. Wear proper hearing protection. 14. Wear hard hat / Avoid areas where overhead hazards exist. 15. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress. 16. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN	Job Safety Analysis (JSA) Health and Safety
JSA Title: Field Sampling **JSA Number:** JSA022-01 **A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last-Minute Risk Assessment.**	 S – *Stop,* what has changed? T – *Think* about the task E – *Evaluate* potential hazards P – *Plan* safe approach S - *Start* task / *Stop* & regroup

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☐ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☒ Traffic Cones/Signs	☐ Life Vest/Jacket	
☐ Other:				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
9. Unpack/Transport equipment to work area.	7. Back Strains 8. Slip/Trips/Falls 9. Cuts/Abrasions from equipment 10. Contusions from dropped equipment	6. Use proper lifting techniques/Use wheeled transport. 7. Minimize distance to work area/Unobstructed path to work area/follow good housekeeping procedures. Mark slip/trip/fall hazards with orange safety cones. 8. Wear proper PPE (leather gloves, long sleeves). 9. Wear proper PPE (Langan approved safety shoes).
10. Initial Site Arrival-Site Assessment	5. Traffic	5. Situational awareness (be alert of your surroundings). Secure area from through traffic.
11. Surface Water Sampling	6. Contaminated media. Skin/eye contact with biological agents and/or chemicals.	6. Wear appropriate PPE (Safety glasses, appropriate gloves). Review (M)SDS for all chemicals being.
12. Sampling from bridges	1. Struck by vehicles	1. Wear appropriate PPE (Safety Vest). Use buddy system and orange safety cones.
13. Icing of Samples/ Transporting coolers/equipment from work area.	11. Back Strains 12. Slips/Trips/Falls 13. Cuts/Abrasions from equipment 14. Pinch/Crushing Hazards.	17. Drain coolers of water. Use proper lifting techniques. Use wheeled transport. 18. Have unobstructed path from work area. Aware of surroundings. 19. Wear proper PPE (Leather gloves, long sleeves) 20. Wear proper PPE (Leather gloves, long sleeves)
14. Site Departure	1. Contaminated PPE/Vehicle	1. Contaminated PPE should be disposed of on-site. Remove boots and soiled clothing for secure storage in trunk. Wash hands promptly.

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
15. All activities	1. Slips/ Trips/ Falls 2. Hand injuries, cuts, or lacerations during manual handling of materials 3. Foot injuries 4. Back injuries 15. Traffic 16. Wildlife: Stray dogs, Mice/rats, Vectors (i.e., mosquitoes, bees, etc.) 17. High Noise levels 18. Overhead hazards 19. Heat Stress/ Cold Stress 20. Eye Injuries	1. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards 2. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves 3. Wear Langan approved safety shoes 4. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible 21. Wear high visibility clothing & vest / Use cones or signs to designate work area. 22. Be always aware of surroundings, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed. 23. Wear hearing protection 24. Wear hard hat / Avoid areas where overhead hazards exist. 25. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress. 26. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN	Job Safety Analysis (JSA) Health and Safety
JSA Title: Equipment Transportation and Set-up **JSA Number:** JSA012-01	
A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last-Minute Risk Assessment.	S – ***Stop,*** *what has changed?* T – ***Think*** *about the task* E – ***Evaluate*** *potential hazards* P – ***Plan*** *safe approach* S - ***Start*** *task /* ***Stop*** *& regroup*

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☐ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	
☐ Other:				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
16. Transport equipment to work area	11. Back Strain 12. Slips/ Trips/ Falls 13. Traffic 14. Cuts/abrasions from equipment 15. Contusions from dropped equipment	1. Use proper lifting techniuqes / Use wheeled transport. 2. Minimize distance to work area / Have unobstructed path to work area / Follow good housekeeping procedures. 3. Wear proper PPE (high visibility vest or clothing) 4. Wear proper PPE (leather gloves, long sleeves) 5. Wear proper PPE (safety shoes)
17. Moving equipment to its planned location	6. Pinch Hazard 7. Slips/ Trips/ Falls	1. Wear proper PPE (leather gloves) 2. Be aware of potential trip hazards / Practice good housekeeping procedures / Mark significant below-grade hazards (i.e., holes, trenches) with safety cones or spray paint
18. Equipment Set-up	7. Pinch Hazard 8. Cuts/abrasions to knuckles/hands. 9. Back Strain	1. Wear proper PPE (leather gloves) 2. Wear proper PPE (leather gloves) 3. Use proper lifting techniques / Use wheeled transport
19. All activities	21. Slips/ Trips/ Falls 22. Hand injuries, cuts, or lacerations during manual handling of materials 23. Foot injuries 24. Back injuries 25. Traffic 26. Wildlife: Stray dogs, Mice/rats, Vectors (i.e., mosquitoes, bees, etc.)	27. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards. 28. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves. 29. Wear Langan approved safety shoes.

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
4. All activities (cont'd)	27. High Noise levels 28. Overhead hazards 29. Heat Stress/ Cold Stress 30. Eye Injuries	30. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible. 31. Wear high visibility clothing & vest / Use cones or signs to designate work area. 32. Be always aware of surroundings, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed. 33. Wear hearing protection 34. Wear hard hat / Avoid areas where overhead hazards exist. 35. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress. 36. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	**Sign Name**	**Date**
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: 55-gallon Drum Sampling
JSA Number: JSA043-01

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last-Minute Risk Assessment.

S – ***Stop,*** *what has changed?*
T – ***Think*** *about the task*
E – ***Evaluate*** *potential hazards*
P – ***Plan*** *safe approach*
S - ***Start*** *task /* ***Stop*** *& regroup*

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☐ Hearing Protection
☒ Safety Glasses	☒ Safety Goggles	☒ Face Shield	☒ Nitrile Gloves	☒ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	
☒ Other: All Drums are required to be labeled. Langan employees do not open or move undocumented drums or unlabeled drums without proper project manager authorization.				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
20. Unpack/Transport equipment to work area.	16. Back Strains 17. Slip/Trips/Falls 18. Cuts/Abrasions from equipment 4. Contusions from dropped equipment	10. Use proper lifting techniques/Use wheeled transport. 11. Minimize distance to work area/Unobstructed path to work area/follow good housekeeping procedures. Mark slip/trip/fall hazards with orange safety cones. 12. Wear proper PPE (leather gloves, long sleeves). 4. Wear proper PPE (Langan approved safety shoes).
21. Open Drums	1. Hand Injuries, cuts or lacerations when untightening drum locking bolt, removing drum lid strap, or removing lid. 2. Pressure from drums.	1. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves. Use non-metallic mallet and non-sparking tools/wrenches. 2. Open drum slowly to relieve pressure. Wear proper PPE: face shield and goggles; correct gloves; and over garments.
22. Collecting Soil/Fluid Sample	8. Irritation to eye from vapor, soil dust, or splashing. 9. Irritation to exposed skin	6. Wear proper eye protection including safety glasses/ face shield/googles and when necessary, splash guard. If dust or vapor phase is present, wear appropriate safety breathing gear (1/2 mask or full face mask with correct filter) 7. Wear proper skin protection including nitrile gloves.
23. Closing Drums	1. Hand Injuries, cuts or lacerations when untightening drum locking bolt, removing drum lid strap, or removing lid.	7. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves. Use non-metallic mallet and non-sparking tools/wrenches.

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
24. Moving Drums	2. Hand Injuries, cuts or lacerations when untightening drum locking bolt, removing drum lid strap, or removing lid. 3. Back Strains	2. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves. Use non-metallic mallet and non-sparking tools/wrenches. 3. Use proper lifting techniques/Use wheeled transport.
25. All activities	31. Slips/ Trips/ Falls 32. Hand injuries, cuts, or lacerations during manual handling of materials 33. Foot injuries 34. Back injuries 35. Traffic 36. Wildlife: Stray dogs, Mice/rats, Vectors (i.e., mosquitoes, bees, etc.) 37. High Noise levels 38. Overhead hazards 39. Heat Stress/ Cold Stress 40. Eye Injuries	37. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards. 38. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves. 39. Wear Langan approved safety shoes. 40. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible. 41. Wear high visibility clothing & vest / Use cones or signs to designate work area. 42. Be always aware of surroundings, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed. 43. Wear hearing protection 44. Wear hard hat / Avoid areas where overhead hazards exist. 45. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress. 46. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN	Job Safety Analysis (JSA) Health and Safety
JSA Title: Excavation Oversight **JSA Number:** JSA041-01 **A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last-Minute Risk Assessment.**	 **S** – ***Stop,*** *what has changed?* **T** – ***Think*** *about the task* **E** – ***Evaluate*** *potential hazards* **P** – ***Plan*** *safe approach* **S** - ***Start*** *task /* ***Stop*** *& regroup*

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☒ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	
☐ Other:				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
26. Transport equipment to work area	19. Back Strain 20. Slips/Trips/Falls 21. Traffic 22. Cuts/abrasions/contusions from equipment	13. Use proper lifting techniques / Use wheeled transport. 14. Minimize distance to work area / Have unobstructed path to work area / Follow good housekeeping procedures. 15. Wear proper PPE (high visibility vest or clothing) 16. Wear proper PPE (leather gloves, long sleeves, safety shoes)
27.Earth Moving Equipment	10. Equipment running over employee	8. Ensure you have direct line of sight with operator of equipment; do not walk behind equipment; maintain a safe distance away from equipment. 9. Wear proper PPE (high vis vest/clothing)
28.Excavation	10. Excavation collapse 11. Confined space 12. Soil	8. Use proper shoring/benching/sloping techniques; Ladder is properly situated in excavation; no water in excavation; competent person has inspected excavation prior to allow employees to enter. 9. Langan employees are not authorized to enter a confined space; 10. Soil and equipment are kept atleast 2-feet from edge of excavation
29.Excavated soil	1. Hazardous substances	1. Use proper equipment to monitor excavated soil for contaminates; ensure levels do not exceed PEL's for contaminates; Wear proper PPE
30. All activities	41. Slips/ Trips/ Falls 42. Hand injuries, cuts, or lacerations during manual handling of materials 43. Foot injuries 44. Back injuries 45. Traffic 46. Wildlife: Stray dogs, Mice/rats, Vectors (i.e., mosquitoes, bees, etc.)	47. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards. 48. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves. 49. Wear proper PPE (Langan approved safety shoes)

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
	47. High Noise levels 48. Overhead hazards 49. Heat Stress/ Cold Stress 50. Eye Injuries	50. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible. 51. Wear high visibility clothing & vest / Use cones or signs to designate work area. 52. Be always aware of surroundings, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed. 53. Wear hearing protection 54. Wear hard hat / Avoid areas where overhead hazards exist. 55. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress. 56. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: General Construction Activities
JSA Number: JSA010-01

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last-Minute Risk Assessment.

S – *Stop,* what has changed?
T – *Think* about the task
E – *Evaluate* potential hazards
P – *Plan* safe approach
S - *Start* task / *Stop* & regroup

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☒ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☒ Traffic Cones/Signs	☐ Life Vest/Jacket	
☐ Other:				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
31. Transport equipment to work area	23. Back Strain 24. Slips/ Trips/ Falls 25. Traffic 26. Cuts/abrasions from equipment 27. Contusions from dropped equipment	6. Use proper lifting techniques / Use wheeled transport. 7. Minimize distance to work area / Have unobstructed path to work area / Follow good housekeeping procedures. 8. Wear proper PPE (high visibility vest or clothing) 9. Wear proper PPE (leather gloves, long sleeves) 10. Wear proper PPE (safety shoes)
32. Installation of piping from vapor wells to skid connections and from discharge pipping to effluent stack	11. Pinch fingers when connecting pipes. 12. Slips/ Trips/ Falls 13. Machinery Hazards	3. Wear proper PPE (leather gloves) 4. Be aware of potential trip hazards / Practice good housekeeping procedures / Mark significant below-grade hazards (i.e., holes, trenches) with safety cones or spray paint 5. Wear proper PPE (safety vest) / Maintain safe distance from operating machinery
33. Remediation equipment installation	13. Back strain when lifting heavy equipment. 14. Slips/ Trips/ Falls 15. Traffic	5. Use proper lifting techniques / Use wheeled transport / Minimize distance to vehicle. 6. Be aware of potential trip hazards / Practice good housekeeping procedures / Mark significant below-grade hazards (i.e., holes, trenches) with safety cones or spray pain 7. Wear proper PPE (safety vest)
34. All activities	51. Slips/ Trips/ Falls 52. Hand injuries, cuts, or lacerations during manual handling of materials 53. Foot injuries 54. Back injuries 55. Traffic	57. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards. 58. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves. 59. Wear Langan approved safety shoes.

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
4. All activities (cont'd)	56. Wildlife: Stray dogs, Mice/rats, Vectors (i.e., mosquitoes, bees, etc.) 57. High Noise levels 58. Overhead hazards 59. Heat Stress/ Cold Stress 60. Eye Injuries	60. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible. 61. Wear high visibility clothing & vest / Use cones or signs to designate work area. 62. Be always aware of surroundings, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed. 63. Wear hearing protection 64. Wear hard hat / Avoid areas where overhead hazards exist. 65. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress. 66. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN	Job Safety Analysis (JSA) Health and Safety
JSA Title: Site Inspection **JSA Number:** JSA024-01 **A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last-Minute Risk Assessment.**	 **S** – ***Stop,*** *what has changed?* **T** – ***Think*** *about the task* **E** – ***Evaluate*** *potential hazards* **P** – ***Plan*** *safe approach* **S** - ***Start*** *task /* ***Stop*** *& regroup*

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☒ Rubber Boots
☒ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☒ Traffic Cones/Signs	☐ Life Vest/Jacket	
☐ Other:				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
35. Jobsite Pre-briefing	28. None	17. Review JSA, SOP's, and discuss hazards that may be present and control measures for present hazards while on-site.

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
2. Working near railroads	1. Passing Trains. 2. Slip/Trips/Falls.	1. Wear reflective vest/ Stay away from tracks/ Do not cross tracks within 10 ft. of train car or when there is a train within view/listen for train horn. 2. Be aware of tripping hazards/ Follow good housekeeping procedures/ Mark significant hazards with spray paint or cones.
3. Walking around site	4. Uneven terrain 5. Wildlife: Stray animals, mice/rats, vectors (i.e., mosquitoes, bees, etc.) 6. Weather: Heat/cold stress 7. Slip/Trips/Falls 8. Foot injuries 9. Eye injuries	4. Pay attention to surrounding area (puddles, wet, frozen, uneven areas), Mark with cones or spray paint. 5. Use bug spray/ Avoid stray animals/Use repellant when needed. 6. Dress for the correct weather situation/ Use sunscreen or protective clothing in sunlight, layers in cold weather/ Drink plenty of fluids/ Take breaks when needed. 4. Be aware of tripping hazards/ Follow good housekeeping procedures/ Mark significant hazards with spray paint or cones. 5. Wear proper PPE (Langan approved safety shoes)/ Change wet socks during cold weather. 6. Wear proper PPE (safety glasses/goggles).
4. Working near road	1. Passing vehicles 2. Slip/Trips/Falls	1. Wear reflective vest/ Stay away from roadway/ Use buddy system/ Place signage or cones when needed. 2. Be aware of tripping hazards/ Follow good housekeeping procedures/ Mark significant hazards with spray paint or cones.
5. All activities	61. Slips/ Trips/ Falls 62. Hand injuries, cuts, or lacerations during manual handling of materials 63. Foot injuries 64. Back injuries 65. Traffic 66. Wildlife: Stray dogs, Mice/rats, Vectors (i.e., mosquitoes, bees, etc.) 67. High Noise levels 68. Overhead hazards 69. Heat Stress/ Cold Stress 70. Eye Injuries	67. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards. 68. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves. 69. Wear Langan approved safety shoes. 70. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible. 71. Wear high visibility clothing & vest / Use cones or signs to designate work area. 72. Be always aware of surroundings, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed. 73. Wear hearing protection 74. Wear hard hat / Avoid areas where overhead hazards exist. 75. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress. 76. Wear safety glasses
Additional items.		

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: **Direct-Push Soil Borings**
JSA Number: **JSA004-01**

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last-Minute Risk Assessment.

S – ***Stop,*** *what has changed?*
T – ***Think*** *about the task*
E – ***Evaluate*** *potential hazards*
P – ***Plan*** *safe approach*
S - ***Start*** *task /* ***Stop*** *& regroup*

PERSONAL PROTECTIVE EQUIPMENT REQUIRED:				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☒ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	
☒ Other: Half-face respirator, dust cartridges, PID (if applicable)				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
36. Move equipment to work site	29. Back strain when lifting equipment. 30. Slips/ Trips/ Falls while moving equipment. 31. Traffic (if applicable) 32. Pinched fingers or running over toes during geoprobe set-up. 33. Overturn drilling rig while transporting to loading dock on flat-bed tow truck	18. Use proper lifting technique (use legs for bending and lifting and not the back)/ Use wheeled transport for heavy equipment / Get assistance when handling loads greater than 50 lbs. / Minimize distance to vehicle 19. Use proper lifting technique (use legs for bending and lifting and not the back) / Use wheeled transport for heavy equipment / Get assistance when handling loads greater than 50 lbs. / Minimize distance to vehicle / Have unobstructed path to vehicle or collection point / Do not lift/walk with boxes that are heavy/difficult to lift 20. Wear high visibility safety vests or clothing / Exercise caution 21. Wear proper PPE (cut-resistant gloves) / Stay alert, be aware of geoprobe rig at all times 22. Drill rig should be parked in center of flat-bed tow truck / Emergency brake shall be used at all times during transport on the flat-bed truck/ All unnecessary personnel should stay away from the flat-bed truck during moving activities
37. Calibration of monitoring equipment	14. Skin or eye contact with calibration chemicals 15. Pinch fingers in monitoring equipment	10. Wear proper PPE (safety glasses/ goggles) 11. Wear proper PPE (leather gloves)
38. Set-up geoprobe rig	16. Geoprobe rig movement	11. All field personnel should stay clear of the geoprobe rig while moving / Use a spotter when backing up the geoprobe
39. Advance geoprobe rods below ground surface to desired depth	10. Underground utilities 11. High noise levels	7. Clean all subsurface soil borings to a minimum of 5-feet below grade. 8. Wear proper PPE (hearing protection)

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
40. Remove and open acetate liner. 5. Remove and open acetate liner (cont'd)	71. Pinched fingers while removing macrocore. 72. Cuts/lacerations when cutting acetate liner open. 73. Exposure to hazardous vapors 74. Skin contacts with contaminated soil	1. Wear proper PPE (nitrile gloves, cut-resistant or leather gloves 2. Wear proper PPE (cut-resistant or leather gloves) 3. Do not place face over acetate liner when opening / Monitor hazardous vapors in air with PID / Upgrade PPE as necessary based on levels contained in the Health and Safety Plan 4. Wear proper PPE (nitrile gloves)
41. Sample Collections a) Monitor parameters. b) Prepare sample containers and labels	1. Contact with potentially contaminated soil. 2. Lacerations from broken sample bottles 3. Back strain while transporting full coolers. 4. Internal exposure to contaminants and metals through inhalation of dust 5. Slips/ Trips/ Falls	1. Use monitoring devices / Wear proper PPE (safety glasses, nitrile gloves) 2. Do not over-tighten bottle caps / Handle bottles safely to prevent breakage. 9. Use proper lifting techniques / Do not lift heavy loads without assistance. 10. Avoid creating dust / If necessary, wear a half mask respirator with applicable dust cartridge / Inspect respirator for damage and cleanliness prior to use / Clean respirator after each use and store in a clean, secure location. 11. Be alert / Follow good housekeeping procedures
42. Remove excess soil from acetate liner and place in 55-gallon drum (IF NOT PERFORMED BY LANGAN, REMOVE!)	1. Cuts/lacerations from acetate liner 2. Pinched fingers/hand while opening/closing drum. 3. Skin contacts with contaminated soil 4. Soil debris in eyes	1. Wear proper PPE (cut-resistant or leather gloves) 2. Wear proper PPE (cut-resistant or leather gloves) 3. Wear proper PPE (nitrile gloves) 4. Wear proper PPE (safety glasses)

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
8. Transport drums to central staging location (IF NOT PERFORMED BY LANGAN, REMOVE!)	1. Back, arm or shoulder strain from moving drums. 2. Pinch fingers/hand in drum cart when moving drums. 3. Pinch fingers/hand when operating lift-gate on vehicle. 4. Contact with potentially contaminated groundwater when moving improperly sealed drums. 5. Slips when moving drums. 6. Drop drum on feet/toes	77. Use drum cart for moving drums / Use proper lifting techniques / Do not lift heavy loads without assistance. 78. Wear proper PPE (cut-resistant or leather gloves) 79. Wear proper PPE (cut-resistant or leather gloves) 80. Wear proper PPE (nitrile gloves underneath work gloves) 81. Follow good housekeeping procedures / Ensure route to move drum and storage space is free from obstructions 82. Wear proper PPE (safety shoes) / Work in a safe manner to prevent dropped drum
9. All activities 9. All activities (cont'd)	1. Slips/ Trips/ Falls 2. Hand injuries, cuts, or lacerations during manual handling of materials 3. Foot injuries 4. Back injuries 5. Traffic 6. Wildlife: Stray dogs, Mice/rats, Vectors (i.e., mosquitoes, bees, etc.) 7. High Noise levels 8. Overhead hazards 9. Heat Stress/ Cold Stress 10. Eye Injuries	1. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards. 2. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves. 3. Wear Langan approved safety shoes. 4. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible. 5. Wear high visibility clothing & vest / Use cones or signs to designate work area. 6. Be always aware of surroundings, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed. 7. Wear hearing protection 8. Wear hard hat / Avoid areas where overhead hazards exist. 9. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress. 10. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date

Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: Groundwater Sampling
JSA Number: JSA008-01

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last-Minute Risk Assessment.

S – *Stop,* what has changed?
T – *Think* about the task
E – *Evaluate* potential hazards
P – *Plan* safe approach
S - *Start* task / *Stop* & regroup

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☒ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	
☒ Other: Tyvek sleeves, Dermal Protection, PID				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
43. Transport equipment to work area	1. Back Strain 2. Slips/ Trips/ Falls 3. Traffic 4. Cuts/abrasions from equipment 5. Contusions from dropped equipment	1. Use proper lifting techniques / Use wheeled transport. 2. Minimize distance to work area / Have unobstructed path to work area / Follow good housekeeping procedures. 3. Wear proper PPE (high visibility vest or clothing) 4. Wear proper PPE (leather gloves, long sleeves) 5. Wear proper PPE (safety shoes)
44. Remove well cover	16. Scrape knuckles/hand 17. Strain wrist/bruise palm 18. Pinch fingers or hand	6. Wear proper PPE (leather gloves) 7. Using a hammer, tap the end of the wrench to loosen grip of bolts. 8. Wear proper PPE (leather gloves)
45. Remove well cap and lock	17. Well can pops from pressure. 18. Exposure to hazardous substances through inhalation or dermal exposure 19. Scrape knuckles/hand 20. Strain write/bruise palm	8. Remove cap slowly to relieve pressure / Do not place face over well when opening / Wear proper PPE (safety glasses) 9. Use direct air monitoring/reading instrument (i.e., PID) / Be familiar with and follow actions prescribed in the HASP / Wear proper PPE (nitrile gloves) 10. Wear proper PPE (leather gloves) 11. Using hammer, tap the end of the wrench to loosen grip
46. Measure head-space vapor levels	1. Exposure to hazardous substances through inhalation	1. Do not place face over well when collecting measurement
47. Remove dedicated tubing (if necessary)	1. Exposure to hazardous substances through inhalation or dermal exposure 2. Tubing swings around after removal	1. Wear proper PPE (nitrile gloves, Tyvek sleeves) 2. Wear proper PPE (safety glasses)
48. Set-up plastic sheeting for work site around the well	1. Lacerations when cutting plastic sheeting.	1. Use scissors to cut plastic sheeting / Cut motions should always be away from body and body parts

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
49. Measure depth to water	1. Exposure to hazardous substances through inhalation or dermal exposure 2. Pinch fingers or hand in water level instrument	1. Wear proper PPE (nitrile gloves) 2. Wear proper PPE (leather gloves)
50. Calibrate monitoring equipment	1. Skin or eye contact with calibration chemicals 2. Pinch fingers or hand in monitoring equipment	1. Wear proper PPE (safety glasses, nitrile gloves) 2. Wear proper PPE (leather gloves) / Avoid pinch points
51. Install sampling pump in well	1. Hand injuries during installation of pump 2. Lacerations when cutting tubing. 3. Back strain during installation of pump 4. Physical hazards associated with manual lifting of heavy equipment. 5. Back strain from starting generator. 6. Burns from hot exhaust from generator. 7. Electrical shock from improper use of generator and pump 8. Contaminated water spray from loose connections	1. Wear proper PPE (leather gloves, nitrile gloves) 2. Use safety tubing cutter. 3. Use proper lifting techniques. 4. Use proper lifting techniques / Use wheeled transport for heavy equipment. 5. Use arm when starting generator / Do not over-strain if generator does not start. 6. Do not touch generator near exhaust / Use proper handle to carry / Allow generator to cool down before moving. 7. Properly plug in pump to generator / Do not allow the pump or generator to contact water / Check for breaks in the cord. 8. Check all tubing connections to ensure they are tight and secure

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
10. Purge water	1. Contact with potentially contaminated groundwater. 2. Back strain from lifting buckets of water 3. Tripping potential on sample discharge lines and pump electric lines	1. Wear proper PPE (safety glasses, nitrile gloves) 2. Use proper lifting techniques / Use wheeled transport. 3. Organize discharge of electric line to keep out of way as much as possible / Mark potential tripping hazards with caution tape or safety cones
11. Sample water collection	1. Contact with potentially contaminated groundwater through dermal exposure. 2. Contact with and burns from acid used for sample preservation. 3. Tripping potential on sample discharge lines and pump electric lines 4. Lacerations from broken sample bottles 5. Back strain when transporting coolers full of collected samples. 6. Slips/ Trips/ Falls	1. Wear proper PPE (safety glasses, nitrile gloves) 2. Wear proper PPE (safety glasses, nitrile gloves) / Ensure sample bottle lids are secure before use and after sample collection. 3. Organize line to keep out of the way as much as possible / Mark potential tripping hazards with caution tape or safety cones. 4. Do not over-tighten bottle caps / Handle bottles safely to prevent breakage / Wrap glass bottles in bubble wrap, if possible 5. Use proper lifting techniques / Use wheeled transport / Seek assistance if coolers weight exceeds 50lbs. / Minimize distance to vehicle. 6. Have unobstructed path to vehicle or collection point / Follow good housekeeping procedures / Do not lift/walk with coolers that are too heavy/difficult to lift
12. Remove pump and pack up equipment	1. Back strain when removing pump or lifting heavy equipment	1. Use proper lifting technique / Use wheeled transport for heavy equipment
13. Replace well cap and lock	1. Scrape fingers/hand 2. Strain wrist/bruise palm	1. Wear proper PPE (leather gloves) 2. Using hammer, tap the end of the well cap to tighten grip
14. Replace well cover	1. Scrape knuckles/hand 2. Strain write/bruise palm. 3. Pinch fingers or hand	1. Wear proper PPE (leather gloves) 2. Using hammer, tap the end of the wrench to tighten the grip of the bolts. 3. Wear proper PPE (leather gloves)
15. Transport drums to disposal staging location	1. Back, arm or shoulder strain from moving drums. 2. Pinch hazard 3. Contact with potentially contaminated groundwater when moving improperly sealed drums. 4. Slips/ Trips/ Falls when moving drum. 5. Drop drum on feet/toes	1. Use drum cart for moving drums / Use proper lifting techniques / Obtain assistance, if needed 2. Wear proper PPE (leather gloves) 3. Wear proper PPE (nitrile gloves under leather gloves) / Properly seal drum to prevent leak. 4. Ensure route to move drum to storage space is dry and free from obstructions. 5. Wear proper PPE (safety shoes)
16. Place used PPE in designated disposal drum	1. Pressure build-up inside drum 2. Pinch hazard	1. Remove cap from bung hole in drum to relieve pressure. 2. Wear proper PPE (leather gloves)
17. Decontaminate equipment	1. Splashing water/soap from decontamination 2. Contact with potentially contaminated groundwater through dermal exposure. 3. Electrical shock from broken electric cords	1. Wear proper PPE (safety glasses) 2. Wear proper PPE (safety glasses, dermal protection) 3. Properly plug in pump to generator / Do not allow the pump or generator to contact water / Check for breaks in the cord
18. All activities	75. Slips/ Trips/ Falls 76. Hand injuries, cuts, or lacerations during manual handling of materials 77. Foot injuries 78. Back injuries 79. Traffic 80. Wildlife: Stray dogs, Mice/rats, Vectors (i.e., mosquitoes, bees, etc.)	83. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards. 84. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves. 85. Wear Langan approved safety shoes.

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
	81. High Noise levels 82. Overhead hazards 83. Heat Stress/ Cold Stress 84. Eye Injuries	86. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible. 87. Wear high visibility clothing & vest / Use cones or signs to designate work area. 88. Be always aware of surroundings, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed. 89. Wear hearing protection 90. Wear hard hat / Avoid areas where overhead hazards exist. 91. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress. 92. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	**Sign Name**	**Date**
Prepared by:		
Reviewed by:		

LANGAN	Job Safety Analysis (JSA) Health and Safety
JSA Title: Well Installation **JSA Number: JSA019-01**	 **S** – ***Stop,*** *what has changed?* **T** – ***Think*** *about the task* **E** – ***Evaluate*** *potential hazards* **P** – ***Plan*** *safe approach* **S** - ***Start*** *task /* ***Stop*** *& regroup*
A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last-Minute Risk Assessment.	

PERSONAL PROTECTIVE EQUIPMENT REQUIRED:				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	
☒ Other: PID, Tyvek sleeves				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
52. Move equipment to work site	34. Back strain when lifting equipment. 35. Slips/ Trips/ Falls while moving equipment. 36. Traffic (if applicable) 37. Pinched fingers or running over toes during geoprobe set-up. 38. Overturn drilling rig while transporting to loading dock on flat-bed tow truck	23. Use proper lifting technique (use legs for bending and lifting and not the back)/ Use wheeled transport for heavy equipment / Get assistance when handling loads greater than 50 lbs. / Minimize distance to vehicle 24. Use proper lifting technique (use legs for bending and lifting and not the back) / Use wheeled transport for heavy equipment / Get assistance when handling loads greater than 50 lbs. / Minimize distance to vehicle / Have unobstructed path to vehicle or collection point / Do not lift/walk with boxes that are heavy/difficult to lift 25. Wear high visibility safety vests or clothing / Exercise caution 26. Wear proper PPE (cut-resistant gloves) / Stay alert, be aware of geoprobe rig at all times 27. Drill rig should be parked in center of flat-bed tow truck / Emergency brake shall be used at all times during transport on the flat-bed truck/ All unnecessary personnel should stay away from the flat-bed truck during moving activities
53. Calibration of monitoring equipment	19. Skin or eye contact with calibration chemicals 20. Pinch fingers in monitoring equipment	12. Wear proper PPE (safety glasses/ goggles) 13. Wear proper PPE (leather gloves)
14. Set-up geoprobe rig	21. Geoprobe rig movement	12. All field personnel should stay clear of the geoprobe rig while moving / Use a spotter when backing up the geoprobe
15. Advance geoprobe rods below ground surface to desired depth	12. Underground utilities 13. High noise levels	12. Clean all subsurface soil borings to a minimum of 5-feet below grade. 13. Wear proper PPE (hearing protection)

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
16. Remove and open acetate liner. 5. Remove and open acetate liner (cont'd)	85. Pinched fingers while removing macrocore. 86. Cuts/lacerations when cutting acetate liner open. 87. Exposure to hazardous vapors 88. Skin contacts with contaminated soil	5. Wear proper PPE (nitrile gloves, cut-resistant or leather gloves 6. Wear proper PPE (cut-resistant or leather gloves) 7. Do not place face over acetate liner when opening / Monitor hazardous vapors in air with PID / Upgrade PPE as necessary based on levels contained in the Health and Safety Plan 8. Wear proper PPE (nitrile gloves)
6. Remove excess soil from acetate liner and place in 55-gallon drum (IF NOT PERFORMED BY LANGAN, REMOVE!)	5. Cuts/lacerations from acetate liner 6. Pinched fingers/hand while opening/closing drum. 7. Skin contacts with contaminated soil 8. Soil debris in eyes	5. Wear proper PPE (cut-resistant or leather gloves) 6. Wear proper PPE (cut-resistant or leather gloves) 7. Wear proper PPE (nitrile gloves) 8. Wear proper PPE (safety glasses)
7. Attach hollow-stem augers to the geoprobe rig. Advance augers and attach. additional augers until desired depth is reached	1. Strain wrist/bruise palm 2. Pinched fingers 3. Back Strain 4. Clothing entanglement 5. Carbon monoxide poisoning 6. Bruise toes/foot 7. High noise levels 8. Skin contacts with contaminated soil	1. Wear proper PPE (cut-resistant or leather gloves) 2. Wear proper PPE (cut-resistant or leather gloves) 3. Use proper lifting techniques. 4. Wear proper work attire (no loose clothing/strings) 5. Properly ventilate work area 6. Wear proper PPE (safety shoes) 7. Wear proper PPE (hearing protection) 8. Wear proper PPE (Tyvek sleeves, nitrile gloves)
8. Install monitoring well	1. Pinched fingers 2. Lacerations/abrasions 3. Back Strain	1. Wear proper PPE (cut-resistant or leather gloves) 2. Wear proper PPE (cut-resistant or leather gloves) 3. Use proper lifting techniques
9. Tremie-grout annulus space above bentonite seal	1. Back strain 2. Pinched fingers	1. Use proper lifting techniques. 2. Wear proper PPE (cut-resistant or leather gloves)
10. Install flush-mount monitoring well pad	1. Splashed concrete. 2. Pinched fingers 3. Cuts/lacerations	1. Wear proper PPE (safety glasses) 2. Wear proper PPE (cut-resistant or leather gloves) 3. Wear proper PPE (cut-resistant or leather gloves)
11. Decontaminate equipment	1. Splashing water/soap 2. Contact with potentially contaminated groundwater/soil through dermal exposure. 3. Electrical shock from broken electric cords	1. Wear proper PPE (safety glasses) 2. Wear proper PPE (safety glasses, dermal protection) 3. Properly plug in pump to generator / Do not allow the pump or generator to contact water / Check for breaks in the cord
12. Transport drums to central staging location (IF NOT PERFORMED BY LANGAN, REMOVE!)	7. Back, arm or shoulder strain from moving drums. 8. Pinch fingers/hand in drum cart when moving drums. 9. Pinch fingers/hand when operating lift-gate on vehicle. 10. Contact with potentially contaminated groundwater when moving improperly sealed drums. 11. Slips when moving drums. 12. Drop drum on feet/toes	93. Use drum cart for moving drums / Use proper lifting techniques / Do not lift heavy loads without assistance. 94. Wear proper PPE (cut-resistant or leather gloves) 95. Wear proper PPE (cut-resistant or leather gloves) 96. Wear proper PPE (nitrile gloves underneath work gloves) 97. Follow good housekeeping procedures / Ensure route to move drum and storage space is free from obstructions 98. Wear proper PPE (safety shoes) / Work in a safe manner to prevent dropped drum

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
13. All activities 13. All activities (cont'd)	11. Slips/ Trips/ Falls 12. Hand injuries, cuts, or lacerations during manual handling of materials 13. Foot injuries 14. Back injuries 15. Traffic 16. Wildlife: Stray dogs, Mice/rats, Vectors (i.e., mosquitoes, bees, etc.) 17. High Noise levels 18. Overhead hazards 19. Heat Stress/ Cold Stress 20. Eye Injuries	11. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards. 12. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves. 13. Wear Langan approved safety shoes. 14. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible. 15. Wear high visibility clothing & vest / Use cones or signs to designate work area. 16. Be always aware of surroundings, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed. 17. Wear hearing protection 18. Wear hard hat / Avoid areas where overhead hazards exist. 19. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress. 20. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN	Job Safety Analysis (JSA) Health and Safety
JSA Title: Monitoring Well Development **JSA Number: JSA026-01**	
A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last-Minute Risk Assessment.	

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☐ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☒ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☒ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	
☒ Other: Tyvek Sleeves				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
54. Transport equipment to work area	39. Back Strains 40. Slips/Trips/Falls 41. Traffic 42. Cuts/Abrasions/Contusions from equipment	28. Use proper lifting techniques/ Use wheeled transport/ use buddy system when lifting equipment. 29. Minimize distance from work area/ unobstructed path to collection points and vehicle/ Follow good housekeeping procedures. 30. Wear high-visibility vest or clothing/Exercise caution/ Use traffic cones or signage if needed. 31. Wear proper PPE (leather gloves, long sleeves, Langan approved safety shoes).
55. Measure depth of water	21. Exposure to hazardous substances 22. Pinched fingers	17. Wear proper PPE (Nitrile gloves, Safety glasses/Face shield). 18. Wear proper PPE (cut-resistant gloves).
56. Install Tremie pipe in the monitoring well and connect to water source.	22. Hand injuries during installation (pinched fingers/hands). 23. Back strain from holding Tremie pipe. 24. High pressure water spray.	13. Wear proper PPE (Nitrile gloves/cut-resistant gloves). 14. Use proper lifting techniques/ Use two personnel when lowering pump greater than 80-feet. 15. Ensure all hose connections are tight and secure/ Use proper PPE (face shield and safety glasses).
57. Install pump in to well. a. Connect pump to sample tubing. b. Lower pump to desired depth in well. c. Connect sample tubing to flowthrough cell. d. Connect pump to power source	14. Hand injuries during pump installation and sample tubing cutting. 15. Back strain 16. Electric shock 17. Exhaust gases from generator 18. Burns from hot equipment	14. Wear proper PPE when installing pump and cutting sample tubing (Nitrile and cut-resistant gloves)/ Use tubing cutter. 15. Proper lifting techniques/ Two personnel when installing pump at depths greater than 80-feet/ Use buddy when lifting heavy loads (pump, generator)/Use wheeled transport. 16. Ensure equipment is (LO/TO: locked out/tagged out) prior to preforming any electrical connections/ Inspect wires for frays or cuts/Ensure generator is properly grounded prior to starting.

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
(generator) e. Turn on power source (generator)		17. Position generator so that exhaust is flowing away from work area. 18. Do not touch exhaust or any hot part of generator/ Allow equipment time to cool down prior to carrying/ Use proper PPE (long sleeves, leather gloves)
58. Develop monitoring well. a. Jet water into well using Tremie pipe. b. Turn pump on and adjust to desired flow rate. c. Surge pump up and down well to remove sediment from screen. d. Containerize all purge water from well.	89. Hand injuries 90. Face injuries 91. Contaminated spray from water	99. Wear proper PPE (cut-resistant gloves and nitrile gloves). 100. Wear proper PPE (face shield and safety glasses)/do not stand over well opening. 101. Wear proper PPE (Face shield and safety goggles)/Tyvek over garments/ Ensure all connections are secure and tight/ Tubing outlet is contained in an overflow container.
59. Drum staging area.	1. Back, Arm, and shoulder strain. 2. Pinch points 3. Cross contamination 4. Slip/Trips/Falls	1. Use proper lifting techniques/ Use drum carts when moving drums/ use buddy system for moving of drums if needed/Move drums shortest distance needed. 2. Keep fingers and feet away from pinch points/ Use proper PPE (cut-resistant gloves, Langan approved safety shoes) 3. Use proper PPE (Nitrile gloves, Tyvek sleeves) 4. Ensure pathway is clear prior to moving equipment/ Mark all hazards/ Use additional person as a spotter if needed.
60. Equipment pack-up	1. Back Strains 2. Slips/Trips/Falls 3. Traffic 4. Cuts/Abrasions/Contusions from equipment.	1. Use proper lifting techniques/ Use wheeled transport/ use buddy system when lifting equipment. 2. Minimize distance from work area/ Unobstructed path to collection points and vehicle/ Follow good housekeeping procedures. 3. Wear high-visibility vest or clothing/Exercise caution/ Use traffic cones or signage if needed. 102. Wear proper PPE (leather gloves, long sleeves, Langan approved safety shoes).
61. All activities	1. Slips/ Trips/ Falls 2. Hand injuries, cuts, or lacerations during manual handling of materials 3. Foot injuries 92. Back injuries 93. Traffic 94. Wildlife: Stray dogs, Mice/rats, Vectors (i.e., mosquitoes, bees, etc.) 95. High Noise levels 96. Overhead hazards 97. Heat Stress/ Cold Stress 98. Eye Injuries	1. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards 2. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves 3. Wear Langan approved safety shoes 4. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible 5. Wear high visibility clothing & vest / Use cones or signs to designate work area 6. Be aware of surroundings at all times, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed 7. Wear hearing protection 8. Wear hard hat / Avoid areas where overhead hazards exist. 9. Wear proper attire for weather conditions (sunscreen or protective clothing

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
		in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress 10. Wear safety glasses.
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: **Groundwater/Product Purging/Sampling with Bailer**
JSA Number: **JSA053**

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last-Minute Risk Assessment.

S – ***Stop,*** *what has changed?*
T – ***Think*** *about the task*
E – ***Evaluate*** *potential hazards*
P – ***Plan*** *safe approach*
S - ***Start*** *task /* ***Stop*** *& regroup*

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☒ Safety Goggles	☒ Face Shield	☒ Nitrile Gloves	☒ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☒ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☒ Traffic Cones/Signs	☐ Life Vest/Jacket	
☒ Other: Tyvek sleeves, Dermal Protection, PID, absorbent pads				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
62. Transport equipment to work area	6. Back Strain 7. Slips/ Trips/ Falls 8. Traffic 9. Cuts/abrasions from equipment 10. Contusions from dropped equipment	6. Use proper lifting techniques / Use wheeled transport. 7. Minimize distance to work area / Have unobstructed path to work area / Follow good housekeeping procedures. 8. Wear proper PPE (high visibility vest or clothing) 9. Wear proper PPE (leather gloves, long sleeves) 10. Wear proper PPE (safety shoes)
63. Remove well cover	23. Scrape knuckles/hand 24. Strain wrist/bruise plan 25. Pinch fingers or hand	9. Wear proper PPE (leather gloves) 10. Using a hammer, tap the end of the wrench to loosen grip of bolts. 11. Wear proper PPE (leather gloves)
64. Remove well cap and lock	25. Well can pops from pressure. 26. Exposure to hazardous substances through inhalation or dermal exposure 27. Scrape knuckles/hand 28. Pinch points 29. Strain write/bruise palm	12. Remove cap slowly to relieve pressure / Do not place face over well when opening / Wear proper PPE (safety glasses, face shield, hand protection) 13. Use direct air monitoring/reading instrument (i.e., PID) / Be familiar with and follow actions prescribed in the HASP / Wear proper PPE (nitrile gloves) 14. Wear proper PPE (leather gloves) 15. Using hammer, tap the end of the wrench to loosen grip
65. Measure head-space vapor levels	2. Exposure to hazardous substances through inhalation	2. Do not place face over well when collecting measurement
66. Set-up plastic sheeting/absorbent pads	2. Lacerations when cutting plastic sheeting/absorbent pads.	2. Use scissors to cut plastic sheeting/absorbent pads / Cut motions should always be away from body and body parts

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
for work site around the well		
67. Lower Bailer sleeve into well	7. Repetitive motion injury (pulled arm/back muscles) 8. Dehydration	7. Take breaks while lowering bailer into well/ Use a mechanical device to lower bailer into well/ Rotate employees (take turns conducting the manual labor portion) 8. Take breaks and drink water.

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
7. Purge/Sample water/product collection	1. Contact with potentially contaminated groundwater or product through dermal exposure 2. Contact with and burns from acid used for sample preservation 9. Tripping potential on sampling lanyard 10. Lacerations from broken sample bottles 11. Back strain when transporting coolers full of collected samples. 12. Slips/ Trips/ Falls	1. Wear proper PPE (safety glasses, nitrile gloves, safety shield, Tyvek) 2. Ensure sample bottle lids are secure before use and after sample collection 3. Organize lanyard to keep out of the way as much as possible / Mark potential tripping hazards with caution tape or safety cones 9. Do not over-tighten bottle caps / Handle bottles safely to prevent breakage / Wrap glass bottles in bubble wrap, if possible 10. Use proper lifting techniques / Use wheeled transport / Seek assistance if coolers weight exceeds 50lbs. / Minimize distance to vehicle. 11. Have unobstructed path to vehicle or collection point / Follow good housekeeping procedures / Do not lift/walk with coolers that are too heavy/difficult to lift
8. Retrieval of bailer	9. Repetitive motion injury (pulled arm/back muscles) 10. Dehydration	9. Take breaks while retrieving bailer out of the well/ Use a mechanical device to raise bailer out of well/ Rotate employees (take turns conducting the manual labor portion) 10. Take breaks and drink water.
9. Pack-up equipment	2. Back strain when removing or lifting heavy equipment	2. Use proper lifting technique / Use wheeled transport for heavy equipment
10. Replace well cap and lock	3. Scrape fingers/hand 4. Strain wrist/bruise palm	3. Wear proper PPE (leather gloves) 4. Using hammer, tap the end of the well cap to tighten grip
11. Replace well cover	4. Scrape knuckles/hand 5. Strain write/bruise palm. 6. Pinch fingers or hand	4. Wear proper PPE (leather gloves) 5. Using hammer, tap the end of the wrench to tighten the grip of the bolts. 6. Wear proper PPE (leather gloves)
12. Place used PPE in designated disposal drum	3. Pressure build-up inside drum 4. Pinch hazard	3. Remove cap from bung hole in drum to relieve pressure. 4. Wear proper PPE (leather gloves) 5. Product drums may require additional spill protection/electrical grounding, check local regulations
13. Decontaminate equipment	4. Splashing water/soap from decontamination 5. Contact with potentially contaminated groundwater through dermal exposure.	4. Wear proper PPE (safety glasses) 5. Wear proper PPE (safety glasses, dermal protection)

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
14. All activities	99. Slips/ Trips/ Falls 100. Hand injuries, cuts, or lacerations during manual handling of materials 101. Foot injuries 102. Back injuries 103. Traffic 104. Wildlife: Stray dogs, Mice/rats, Vectors (i.e., mosquitoes, bees, etc.) 105. High Noise levels 106. Overhead hazards 107. Heat Stress/ Cold Stress 108. Eye Injuries	103. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards. 104. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves. 105. Wear Langan approved safety shoes. 106. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible. 107. Wear high visibility clothing & vest / Use cones or signs to designate work area. 108. Be always aware of surroundings, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed. 109. Wear hearing protection 110. Wear hard hat / Avoid areas where overhead hazards exist. 111. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress. 112. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: **Sub-slab soil gas temporary point installation and sampling**
JSA Number: **JSA037-01**

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last-Minute Risk Assessment.

S – *Stop,* what has changed?
T – *Think* about the task
E – *Evaluate* potential hazards
P – *Plan* safe approach
S - *Start* task / *Stop* & regroup

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☐ Hearing Protection
☒ Safety Glasses	☒ Safety Goggles	☐ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☒ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☒ Traffic Cones/Signs	☐ Life Vest/Jacket	
☒ Other: Tyvek Sleeves				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
68. Transport equipment to work site	43. Back injuries 44. Slips/Trips/Falls 45. Traffic 46. Hand injuries	32. Use proper lifting techniques/ Use wheeled transport/ Get assistance when need with moving equipment/ Minimize distance from vehicle 33. Minimize distance from vehicle/ Have unobstructed pathway to vehicle and collection points/ Mark tripping hazards with spray paint, cones, or caution tape/ Observe good housekeeping procedures. 34. Wear proper PPE (High Visibility vest and clothing)/ Exercise caution (stay alert-stay alive) 35. Wear proper PPE (leather gloves)/ Keep finger and hands clear of pinch points.
69. Mark area for drilling	26. Slips/Trips/Falls	19. Minimize distance from vehicle/ Have unobstructed pathway to vehicle and collection points/ Mark tripping hazards with spray paint, cones, or caution tape/ Observe good housekeeping procedures
70. Drill sampling points with hammer drill	30. Eye injuries 31. Dust exposure 32. Hand injuries 33. Catch items (clothing) 34. Electric shock 35. Chemical atmosphere hazard (vapor) 36. Slips/Trips/Falls	16. Wear proper PPE (safety glasses) 17. Wear proper PPE (dust mask) 18. Wear proper PPE (leather gloves)/ Keep hands and fingers out of pinch points/ Avoid drill catching on ground and twisting wrist or hand/ Release drill grip if drill becomes caught/ Ensure drill is unplugged prior to inserting bit. 19. Tie up or tuck-in all loose clothing/ Maintain distance from drill. 20. Inspect power cable for cuts or nicks before use/ Use GFCI outlet on power cord/ Do not use in wet conditions. 21. Monitor air, vapors with Photo-ionization detector (PID)

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
		22. Minimize distance from vehicle/ Have unobstructed pathway to vehicle and collection points/ Mark tripping hazards with spray paint, cones, or caution tape/ Observe good housekeeping procedures
71. Measure vapor content and depth to bottom of hole	1. Chemical atmosphere hazard (vapors)	1. Monitor air, vapors with Photo-ionization detector (PID)/ Keep face away from opening of hole while collecting measurements
72. Set-up of shroud and sampling canister system	1. Hand injuries 2. Chemical atmosphere hazard (vapors) 3. Slips/Trips/Falls	1. Wear proper PPE (leather gloves, nitrile gloves)/ Keep fingers away from pinch points when installing pump/ Do not use open blades, use tubing cutter 2. Monitor air, vapors with Photo-ionization detector (PID)/ Keep face away from opening of hole while collecting measurements 3. Minimize distance from vehicle/ Have unobstructed pathway to vehicle and collection points/ Mark tripping hazards with spray paint, cones, or caution tape/ Observe good housekeeping procedures
73. Purge soil gas	1. Chemical atmosphere hazard (vapors)	1. Monitor air, vapors with Photo-ionization detector (PID)/ Keep face away from exhaust port of pump
74. Sample collection (opening and closing valves)	1. Hand injuries	1. Wear proper PPE (leather gloves)/ Keep fingers away from pinch points
75. Sealing sampling holes	1. Back injuries 2. Concrete dust 3. Eye injuries	1. Use proper lifting techniques for lifting of cement bags 2. Wear proper PPE (dust mask) 3. Wear proper PPE (safety glasses)
76. All activities	109. Slips/ Trips/ Falls 110. Hand injuries, cuts, or lacerations during manual handling of materials 111. Foot injuries 112. Back injuries 113. Traffic 114. Wildlife: Stray animals, Mice/rats, Vectors (i.e., mosquitoes, bees, etc.) 115. High Noise levels 116. Overhead hazards 117. Heat or cold injuries 118. Eye Injuries	113. Be aware of potential trip hazards/ Follow good housekeeping procedures/ Mark significant hazards. 114. Inspect for jagged/sharp edges, and rough or slippery surfaces/ Keep fingers away from pinch points/ Wipe off greasy, wet, slippery, or dirty objects before handling/ Wear leather/ cut-resistant gloves. Wear proper PPE (Langan approved safety shoes) 115. Use proper lifting techniques/ Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift/ Obtain assistance when possible. 116. Wear high visibility clothing & vest/ Use cones or signs to designate work area. 117. Be always aware of surroundings, including the presence of wildlife/ Do not approach stray animals/ Carry and use animal repellant when needed/ Use bug spray when needed. 118. Wear hearing protection 119. Wear hard hat/ Avoid areas where overhead hazards exist. 120. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather)/ Drink plenty of fluids to avoid dehydration/ Takes breaks as necessary to avoid heat/cold stress. 121. Wear safety glasses

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: Indoor Air Sampling
JSA Number: JSA007-01

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last-Minute Risk Assessment.

S – ***Stop,*** *what has changed?*
T – ***Think*** *about the task*
E – ***Evaluate*** *potential hazards*
P – ***Plan*** *safe approach*
S - ***Start*** *task /* ***Stop*** *& regroup*

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☒ Traffic Cones/Signs	☐ Life Vest/Jacket	
☒ Other: PID, Respiratory Protection (if necessary)				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
77. Building walkthrough and background contaminant removal	47. Slips / Trips/ Falls 48. Exposure to substances/vapors during removal	11. Be aware of potential trip hazards / Follow good housekeeping procedures / Mark significant below-grade hazards (i.e., holes, trenches) with safety cones or spray paint. 12. Monitor indoor air concentrations with a PID / Wear proper PPE (nitrile gloves) / Wear proper respiratory protection if necessary
78. Transport equipment to work area	11. Back Strain 12. Slips/ Trips/ Falls 13. Traffic 14. Cuts/abrasions from equipment 15. Contusions from dropped equipment	11. Use proper lifting techniques / Use wheeled transport. 12. Minimize distance to work area / Have unobstructed path to work area / Follow good housekeeping procedures. 13. Wear proper PPE (high visibility vest or clothing) 14. Wear proper PPE (leather gloves, long sleeves) 15. Wear proper PPE (safety shoes)
79. Mark out areas for indoor air sampling	27. Slips/ Trips/ Falls	12. Be aware of potential trip hazards / Follow good housekeeping procedures / Mark significant below-grade hazards (i.e., holes, trenches) with safety cones or spray paint
80. Set-up canisters and begin indoor air sampling	37. Dropping crates or canisters 38. Pinch hazard	16. Exercise caution when moving crates and canisters / Use proper housekeeping of materials during sample events / Do not carry too many items at one time / Perform several trips, if necessary 17. Wear proper PPE (leather gloves)
81. Sample collection	3. Dropping crates or canisters 4. Pinched fingers from opening valves	3. Exercise caution when moving crates and canisters / Use proper housekeeping of materials during sample events / Do not carry too many items at one time / Perform several trips, if necessary 4. Wear proper PPE (leather gloves) / Keep fingers away from pinch points
82. Pack up equipment	3. Back strain	3. Use proper lifting techniques / Use wheeled transport.

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
	4. Slips/ Trips/ Falls 5. Traffic	4. Be aware of potential trip hazards / Follow good housekeeping procedures / Minimize distance to vehicle. 5. Wear proper PPE (safety vest)
83. All activities	119. Slips/ Trips/ Falls 120. Hand injuries, cuts, or lacerations during manual handling of materials 121. Foot injuries 122. Back injuries 123. Traffic 124. Wildlife: Stray dogs, Mice/rats, Vectors (i.e., mosquitoes, bees, etc.) 125. High Noise levels 126. Overhead hazards 127. Heat Stress/ Cold Stress 128. Eye Injuries	122. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards. 123. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves. 124. Wear Langan approved safety shoes. 125. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible. 126. Wear high visibility clothing & vest / Use cones or signs to designate work area. 127. Be always aware of surroundings, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed. 128. Wear hearing protection 129. Wear hard hat / Avoid areas where overhead hazards exist. 130. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress. 131. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: Hammer Drill
JSA Number: JSA049

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last-Minute Risk Assessment.

S – ***Stop,*** *what has changed?*
T – ***Think*** *about the task*
E – ***Evaluate*** *potential hazards*
P – ***Plan*** *safe approach*
S - ***Start*** *task /* ***Stop*** *& regroup*

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☒ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☒ Traffic Cones/Signs	☐ Life Vest/Jacket	
☐ Other:				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
84. Transport equipment to work area	49. Back Strain 50. Slips/ Trips/ Falls 51. Traffic 52. Cuts/abrasions from equipment 53. Contusions from dropped equipment	13. Use proper lifting techniques / Use wheeled transport. 14. Minimize distance to work area / Have unobstructed path to work area / Follow good housekeeping procedures. 15. Wear proper PPE (high visibility vest or clothing) 16. Wear proper PPE (leather gloves, long sleeves) 17. Wear proper PPE (safety shoes)
85. Electrical Connection	28. Inspect electrical cord to drill. 29. Inspect hammer drill. 30. Inspect extension cord. 31. Test GFCI	13. Check the plug, ensure all connections are in place, check cord for frayed sections. If plug or cord are worn, do not use equipment until repaired. 14. Inspect chuck for proper grasping and holding of bit, check that plastic housing is not cracked or missing pieces. Do not use if chuck does not work properly or housing is compromised. 15. Inspect extension cord, if worn or stripped pull from service and replace 16. Test GFCI, replace if GFCI fails
86. Drill Bit	1. Inspect drill bit	1. Replace if worn. 2. Wear proper PPE (leather gloves) when installing and removing drill bit. 3. Ensure equipment is unplugged from electrical power when removing and installing drill bit.
87. Use of Hammer Drill	1. Hazards associated with using hammer drill, flying objects, heavy equipment, ground level hazards and dust. 2. Slips/ Trips/ Falls 3. Hazards associated drilling into concrete slab	1. Maintain a safe distance from other site operations / Wear proper PPE (hard hat, safety glasses, safety shoes, safety vest, ear protection and leather gloves) 2. Be aware of potential trip hazards / Follow good housekeeping procedures / Mark extension cord pathway with safety cones. 3. Do not push hammer drill during use.

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
88. All activities 4. All activities (cont'd)	129. Slips/ Trips/ Falls 130. Hand injuries, cuts, or lacerations during manual handling of materials 131. Foot injuries 132. Back injuries 133. Traffic 134. Wildlife: Stray dogs, Mice/rats, Vectors (i.e., mosquitoes, bees, etc.) 135. High Noise levels 136. Overhead hazards 137. Heat Stress/ Cold Stress 138. Eye Injuries	132. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards. 133. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery, or dirty objects before handling / Wear leather/ cut-resistant gloves. 134. Wear Langan approved safety shoes. 135. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible. 136. Wear high visibility clothing & vest / Use cones or signs to designate work area. 137. Be always aware of surroundings, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed. 138. Wear hearing protection 139. Wear hard hat / Avoid areas where overhead hazards exist. 140. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress. 141. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

ATTACHMENT H

TAILGATE SAFETY BRIEFING FORM

LANGAN TAILGATE SAFETY BRIEFING

Date:_____ Time: _____

Leader:_____ Location:_____

Work Task:

_____

_____

SAFETY TOPICS (*provide some detail of discussion points*)

Chemical Exposure Hazards and Control:_____

_____

Physical Hazards and Control: _____

Air Monitoring: _____

PPE: _____

_____

Communications:_____

Safe Work Practices: _____

_____

Emergency Response: _____

Hospital/Medical Center Location: _____

Phone Nos.: _____

Other: _____

FOR FOLLOW-UP (the issues, responsibilities, due dates, etc.)

_____

_____

_____

ATTENDEES

PRINT NAME	COMPANY	SIGNATURE

ATTACHMENT I

THE CITY OF NEW YORKEXECUTIVE ORDER NO. 74

Langan employees and their direct hire contractors will comply with all provisions of the New York City Executive Order No. 74 as signed by the Mayor on July 31, 2021. Specifically, effective August 2, 2021

- Will always don face masks while on-site; and
- Provide proof upon demand of full vaccination status.

A copy of the New York City Executive Order No. 74 is provided on the following pages.

APPENDIX F

Quality Assurance Project Plan

QUALITY ASSURANCE PROJECT PLAN

for

250 WATER STREET
New York, New York
NYSDEC BCP Site No. C231127

Prepared for:
250 Seaport District, LLC
c/o: The Howard Hughes Corporation
199 Water Street, 28th Floor
New York, NY 10038

Prepared by:
Langan Engineering, Environmental, Surveying,
Landscape Architecture and Geology, D.P.C.
21 Penn Plaza
360 West 31st Street, 8th Floor
New York, New York 10001

July 28, 2023
Langan Project No. 170381202

LANGAN

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1.0 PROJECT DESCRIPTION

1.1 INTRODUCTION

This Quality Assurance Project Plan (QAPP) was completed on behalf of 250 Seaport District, LLC (the Volunteer) for the property identified as Block 98, Lot 1 on the New York City Tax Map (the site). The Volunteers entered into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) to remediate the site in conjunction with new development, pursuant to a Brownfield Cleanup Agreement (BCA), dated August 1, 2019; the site was assigned BCP Site No. C231127. Additional site information and data collected previously by Langan and others is provided in the Site Management Plan (SMP). This QAPP accompanies the SMP and specifies analytical methods to be used to ensure that data collected during site management activities are precise, accurate, representative, comparable, complete, and meet the sensitivity requirements of the project.

1.2 PROJECT OBJECTIVES

This QAPP addresses sampling and analytical methods that may be necessary in support of future site improvements or proposed modifications to the SMP. These objectives have been established in order to meet standards that will protect public health and the environment for the site.

Future building renovations and improvements or new construction requiring the disturbance, excavation, and/or off-site disposal of soil may warrant the collection and analysis of soil samples in accordance with the Excavation Work Plan (EWP) of the SMP, and NYSDEC Division of Environmental Remediation (DER)-10: Technical Guidance for Site Investigation and Remediation. Groundwater and soil vapor samples may also be required in accordance with the SMP.

1.3 SCOPE OF WORK

- The specific scope of work covered in this QAPP includes any future intrusive work at the site that may be conducted and any site activities covered under the SMP. The SMP governs future activities relative to the site which may include soil, groundwater, or soil vapor sampling.

2.0 DATA QUALITY OBJECTIVES AND PROCESS

The quality assurance and quality control objectives for all measurement data include:

- **Precision** – an expression of the reproducibility of measurements of the same parameter under a given set of conditions. Field sampling precision will be determined by analyzing coded duplicate samples and analytical precision will be determined by analyzing internal QC duplicates and/or matrix spike duplicates.
- **Accuracy** – a measure of the degree of agreement of a measured value with the true or expected value of the quantity of concern. For soil and groundwater samples, accuracy will be determined through the assessment of the analytical results of field blanks, equipment blanks, and trip blanks for each sample set. Analytical accuracy will be assessed by examining the percent recoveries of surrogate compounds that are added to each sample (organic analyses only), internal standards, laboratory method blanks, instrument calibration, and the percent recoveries of matrix spike compounds added to selected samples and laboratory blanks.

  For soil vapor or air samples, analytical accuracy will be assessed by examining the percent recoveries that are added to each sample, internal standards, laboratory method blanks, and instrument calibration.
- **Representativeness** – expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is dependent upon the adequate design of the sampling program and will be satisfied by ensuring that the scope of work is followed and that specified sampling and analysis techniques are used. Representativeness in the laboratory is ensured by compliance to nationally-recognized analytical methods, meeting sample holding times, and maintaining sample integrity while the samples are in the laboratory's possession. This is accomplished by following all applicable methods, laboratory-issued standard operating procedures (SOPs), the laboratory's Quality Assurance Manual, and this QAPP. The laboratory is required to be properly certified and accredited.
- **Completeness** – the percentage of measurements made which are judged to be valid. Completeness will be assessed through data validation. The QC objective for completeness is generation of valid data for at least 90 percent of the analyses requested.

- **Comparability** – expresses the degree of confidence with which one data set can be compared to another. The comparability of all data collected for this project will be ensured using several procedures, including standard methods for sampling and analysis as documented in the QAPP, using standard reporting units and reporting formats, and data validation.
- **Sensitivity** – the ability of the instrument or method to detect target analytes at the levels of interest. The project manager will select, with input from the laboratory and QA personnel, sampling and analytical procedures that achieve the required levels of detection.

3.0 PROJECT ORGANIZATION

Any future remedial activities and investigations will be overseen by Langan or another environmental consultant for the Volunteer or a future owner. The environmental consultant will also arrange data analysis and reporting tasks. The analytical services will be performed by an ELAP-certified laboratory. Data validation services will be performed by approved data validation contractor(s). Key contacts for this project are as follows:

Name	**Contact/Phone/Email Address**
250 Seaport Distcict, LLC, c/o The Howard Hughes Corporation (the Volunteer)	Adam Meister Telephone: (646) 822-6970 adam.meister@howardhughes.com
Remedial Engineer (RE)	Jason Hayes Telephone: (212) 479-5427 jhayes@langan.com
Qualified Environmental Professional (QEP)	Mimi S. Raygorodetsky Telephone: (212) 479-5441 mraygorodetsky@langan.com
Langan Project Manager	Paul McMahon, PE Telephone: (212) 479-5451 pmcmahon@langan.com
Langan Quality Assurance Officer	Michael Burke Telephone: (212) 479-5413 mburke@langan.com

4.0 QUALITY ASSURANCE OBJECTIVES FOR COLLECTION OF DATA

The overall quality assurance objective is to develop and implement procedures for sampling, laboratory analysis, field measurements, and reporting that will provide data of sufficient quality to evaluate the engineering controls on the site. The sample set, chemical analysis results, and interpretations must be based on data that meet or exceed quality assurance objectives established for the site. Quality assurance objectives are usually expressed in terms of accuracy or bias, sensitivity, completeness, representativeness, comparability, and sensitivity of analysis. Variances from the quality assurance objectives at any stage of the investigation will result in the implementation of appropriate corrective measures and an assessment of the impact of corrective measures on the usability of the data.

4.1 PRECISION

Precision is a measure of the degree to which two or more measurements are in agreement. Field precision is assessed through the collection and measurement of field duplicates. Laboratory precision and sample heterogeneity also contribute to the uncertainty of field duplicate measurements. This uncertainty is taken into account during the data assessment process. For field duplicates, results less than 2x the reporting limit (RL) meet the precision criteria if the absolute difference is less than ±2x the RL and acceptable based on professional judgment. For results greater than 2x the RL, the acceptance criteria is a relative percent difference (RPD) of ≤50% (soil and air), <30% (water). RLs and method detection limits (MDL) are provided in Attachment B.

4.2 ACCURACY

Accuracy is the measurement of the reproducibility of the sampling and analytical methodology. It should be noted that precise data may not be accurate data. For the purpose of this QAPP, bias is defined as the constant or systematic distortion of a measurement process, which manifests itself as a persistent positive or negative deviation from the known or true value. This may be due to (but not limited to) improper sample collection, sample matrix, poorly calibrated analytical or sampling equipment, or limitations or errors in analytical methods and techniques.

Accuracy in the field is assessed through the use of field and equipment blanks and through compliance to all sample handling, preservation, and holding time requirements. All field blanks should be non-detect when analyzed by the laboratory. Any contaminant detected in an associated field or equipment blank will be evaluated against laboratory

blanks (preparation or method) and evaluated against field samples collected on the same day to determine potential for bias. Trip blanks are not required for non-aqueous matrices but are planned for non-aqueous matrices where high concentrations of VOCs are anticipated.

Laboratory accuracy is assessed by evaluating the percent recoveries of matrix spike/matrix spike duplicate (MS/MSD) samples, laboratory control samples (LCS), surrogate compound recoveries, and the results of method preparation blanks. MS/MSD, LCS, and surrogate percent recoveries will be compared to either method-specific control limits or laboratory-derived control limits. Sample volume permitting, samples displaying outliers should be reanalyzed. All associated method blanks should be non-detect when analyzed by the laboratory.

4.3 COMPLETENESS

Laboratory completeness is the ratio of total number of samples analyzed and verified as acceptable compared to the number of samples submitted to the fixed-base laboratory for analysis, expressed as a percent. Three measures of completeness are defined:

- Sampling completeness, defined as the number of valid samples collected relative to the number of samples planned for collection;
- Analytical completeness, defined as the number of valid sample measurements relative to the number of valid samples collected; and
- Overall completeness, defined as the number of valid sample measurements relative to the number of samples planned for collection.

Air, soil vapor, soil, and groundwater data will meet a 90% completeness criterion. If the criterion is not met, sample results will be evaluated for trends in rejected and unusable data. The effect of unusable data required for a determination of compliance will also be evaluated.

4.4 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 within a defined spatial and/or temporal boundary. Representativeness is dependent upon the adequate design of the sampling program and will be satisfied by ensuring that the scope of work is followed and that

specified sampling and analysis techniques are used. This is performed by following applicable SOPs and this QAPP. All field technicians will be given copies of appropriate documents prior to sampling events and are required to read, understand, and follow each document as it pertains to the tasks at hand.

Representativeness in the laboratory is ensured by compliance to nationally-recognized analytical methods, meeting sample holding times, and maintaining sample integrity while the samples are in the laboratory's possession. This is performed by following all applicable EPA methods, laboratory-issued SOPs, the laboratory's Quality Assurance Manual, and this QAPP. The laboratory is required to be properly certified and accredited.

4.5 COMPARABILITY

Comparability is an expression of the confidence with which one data set can be compared to another. Comparability is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the sampling plan is followed and that sampling is performed according to the SOPs or other project-specific procedures. Analytical data will be comparable when similar sampling and analytical methods are used as documented in the QAPP. Comparability will be controlled by requiring the use of specific nationally-recognized analytical methods and requiring consistent method performance criteria. Comparability is also dependent on similar quality assurance objectives. Previously collected data will be evaluated to determine whether they may be combined with contemporary data sets.

4.6 SENSITIVITY

Sensitivity is the ability of the instrument or method to detect target analytes at the levels of interest. The project director will select, with input from the laboratory and QA personnel, sampling and analytical procedures that achieve the required levels of detection and QC acceptance limits that meet established performance criteria. Concurrently, the project director will select the level of data assessment to ensure that only data meeting the project DQOs are used in decision-making.

Field equipment will be used that can achieve the required levels of detection for analytical measurements in the field. In addition, the field sampling staff will collect and submit full volumes of samples as required by the laboratory for analysis, whenever possible. Full volume aliquots will help ensure achievement of the required limits of detection and allow for reanalysis if necessary. The concentration of the lowest level check standard in a multi-point calibration curve will represent the reporting limit.

Analytical methods and quality assurance parameters associated with the sampling program are presented in Attachment C. The frequency of associated field blanks and duplicate samples will be based on the recommendations listed in DER-10, and as described in Section 5.3.

Site-specific MS and MSD samples will be prepared and analyzed by the analytical laboratory by spiking an aliquot of submitted sample volume with analytes of interest. Additional sample volume is not required by the laboratory for this purpose. An MS/MSD analysis will be analyzed at a rate of 1 out of every 20 samples, or one per analytical batch. MS/MSD samples are only required for soil and groundwater samples.

5.0 SAMPLE COLLECTION AND FIELD DATA ACQUISITION PROCEDURES

Soil sampling will be conducted in accordance with the established NYSDEC protocols contained in DER-10/Technical Guidance for Site Investigation and Remediation (May 2010). The following sections describe procedures to be followed for specific tasks.

5.1 FIELD DOCUMENTATION PROCEDURES

Soil and groundwater sampling, if necessary, will be conducted in accordance with the established NYSDEC protocols contained in DER-10/Technical Guidance for Site Investigation and Remediation (May 2010). Air sampling, if necessary, will be conducted in accordance with the established New York State Department of Health (NYSDOH) protocols contained in the Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006).

5.1.1 Field Data and Notes

Field notebooks contain the documentary evidence regarding procedures conducted by field personnel. Hard cover, bound field notebooks will be used because of their compact size, durability, and secure page binding. The pages of the notebook will not be removed.

Entries will be made in waterproof, permanent blue or black ink. No erasures will be allowed. If an incorrect entry is made, the information will be crossed out with a single strike mark and the change initialed and dated by the team member making the change. Each entry will be dated. Entries will be legible and contain accurate and complete documentation of the individual or sampling team's activities or observations made. The level of detail will be sufficient to explain and reconstruct the activity conducted. Each entry will be signed by the person(s) making the entry.

The following types of information will be provided for each sampling task, as appropriate:

- Project name and number
- Reasons for being on-site or taking the sample
- Date and time of activity
- Sample identification numbers

- Geographical location of sampling points with references to the site, other facilities or a map coordinate system. Sketches will be made in the field logbook when appropriate
- Physical location of sampling locations such as depth below ground surface
- Description of the method of sampling including procedures followed, equipment used and any departure from the specified procedures
- Description of the sample including physical characteristics, odor, etc.
- Readings obtained from health and safety equipment
- Weather conditions at the time of sampling and previous meteorological events that may affect the representative nature of a sample
- Photographic information including a brief description of what was photographed, the date and time, the compass direction of the picture and the number of the picture on the camera
- Other pertinent observations such as the presence of other persons on the site, actions by others that may affect performance of site tasks, etc.
- Names of sampling personnel and signature of persons making entries

Field records will also be collected on field data sheets including boring logs, which will be used for geologic and drilling data during soil boring activities. Field data sheets will include the project-specific number and stored in the field project files when not in use. At the completion of the field activities, the field data sheets will be maintained in the central project file.

5.1.2 Sample Labeling

Each sample collected will be assigned a unique identification number in accordance with the sample nomenclature guidance included in Attachment D, and placed in an appropriate sample container. Each sample container will have a sample label affixed to the outside with the date and time of sample collection and project name. In addition, the label will contain the sample identification number, analysis required and chemical preservatives added, if any. All documentation will be completed in waterproof ink.

5.2 EQUIPMENT CALIBRATION AND PREVENTATIVE MAINTENANCE

A PID will be used during the sampling activities to evaluate work zone action levels and screen soil samples. Field calibration and/or field checking of the PID will be the responsibility of the field team leader and the site HSO, and will be accomplished by following the procedures outlined in the operating manual for the instrument. At a minimum, field calibration and/or field equipment checking will be performed once daily, prior to use. Field calibration will be documented in the field notebook. Entries made into the logbook regarding the status of field equipment will include the following information:

- Date and time of calibration
- Type of equipment serviced and identification number (such as serial number)
- Reference standard used for calibration
- Calibration and/or maintenance procedure used
- Other pertinent information

Equipment that fails calibration or becomes inoperable during use will be removed from service and segregated to prevent inadvertent utilization. The equipment will be properly tagged to indicate that it is out of calibration. Such equipment will be repaired and recalibrated to the manufacturer's specifications by qualified personnel. Equipment that cannot be repaired will be replaced.

Off-site calibration and maintenance of field instruments will be conducted as appropriate throughout the duration of project activities. All field instrumentation, sampling equipment and accessories will be maintained in accordance with the manufacturer's recommendations and specifications and established field equipment practice. Off-site calibration and maintenance will be performed by qualified personnel. A logbook will be kept to document that established calibration and maintenance procedures have been followed. Documentation will include both scheduled and unscheduled maintenance.

5.3 SAMPLE COLLECTION

Soil Samples

Soil samples will be visually classified and field screened using a PID to assess potential impacts from VOCs and for health and safety monitoring. Soil samples collected for

analysis of VOCs will be collected using either EnCore® or Terra Core® sampling equipment. For analysis of non-volatile parameters, samples will be homogenized and placed into glass jars.

Soil sampling for PFAS will be conducted in accordance with EPA Method 1633 Field Sampling Guidelines. PFAS samples will be collected first in High Density Polyethylene (HDPE)/polypropylene containers using sampling equipment either made with stainless steel, HDPE, or polypropylene. Food and beverages will be prohibited near the sampling equipment. Additionally, no cosmetics, moisturizers, hand cream, sun screen or clothing materials containing Gore-Tex™ or Tyvek® will be worn during sampling.

All soil samples being run for full Part 375/TCL parameters will be analyzed for PFAS by USEPA Method 1633 Modified and 1,4-dioxane by USEPA Method 8270. Both methods listed above will be able to meet the reporting limits for PFAS (1 microgram per kilogram [µg/kg]) and 1,4-Dioxane (0.1 milligram per kilogram [mg/kg]) in soil.

After collection, all sample jars will be capped and securely tightened, and placed in iced coolers and maintained at 4°C ±2°C until they are transferred to the laboratory for analysis, in accordance with the procedures outlined in Section 5.4. Analysis and/or extraction and digestion of collected soil samples will meet the holding times required for each analyte as specified in Attachment C. In addition, analysis of collected soil sample will meet all quality assurance criteria set forth by this QAPP and DER-10.

Groundwater Samples

Groundwater sampling will be conducted using low-flow sampling procedures following USEPA guidance ("Low Stress [low flow] Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells", EQASOP-GW 004, January 19, 2017).

During purging, field parameters should be measured, including: water level drawdown, purge rate, pH, specific conductance, temperature, dissolved oxygen, turbidity and oxidation-reduction-potential (ORP), every five minutes using a water quality meter (Horiba U-52 or similar) and a depth-to-water interface probe that should be decontaminated between wells. Samples should generally not be collected until the field parameters have stabilized. Field parameters will be considered stable once three sets of measurements are within ±0.1 standard units for pH, ±3% for conductivity and temperature, ±10 millivolts for ORP, and ±10% for turbidity and dissolved oxygen. Purge rates should be adjusted to keep the drawdown in the well to less than 0.3 feet, as

practical. Additionally, an attempt should be made to achieve a stable turbidity reading of less than 10 Nephelometric Turbidity Units (NTU) prior to sampling. If the turbidity reading does not stabilize at reading of less than 10 NTU for a given well, then both filtered and unfiltered samples should be collected from that well. If necessary, field filtration should be performed using a 0.45 micron disposable in-line filter. Groundwater samples should be collected after parameters have stabilized as noted above or the readings are within the precision of the meter. Deviations from the stabilization and drawdown criteria, if any, should be noted on the sampling logs.

Groundwater sampling for PFAS and 1,4-dioxane will be performed in accordance with a NYSDEC-approved sampling plan, which specifies purging three to five well volumes prior to sample collection. The pump will be decontaminated with Alconox and water. Field personnel will wear nitrile gloves while collecting and handing groundwater samples.

Groundwater sampling for PFAS will be conducted in accordance with EPA Method 1633 Field Sampling Guidelines. PFAS samples will be collected first in High Density Polyethylene (HDPE)/polypropylene containers using sampling equipment either made with stainless steel, HDPE, or polypropylene. Food and beverages will be prohibited near the sampling equipment. Additionally, no cosmetics, moisturizers, hand cream, sun screen or clothing materials containing Gore-Tex™ or Tyvek® will be worn during sampling.

Groundwater samples will analyzed for PFAS by USEPA Method 1633 Modified and 1,4-dioxane by USEPA Method 8270 SIM. Both methods listed above will be able to meet the reporting limits for PFAS (2 nanograms per liter [ng/L]) and 1,4-Dioxane (0.35 micrograms per liter [µg/L]) in groundwater.

Samples should be collected directly into laboratory-supplied jars. After collection, all sample jars will be capped and securely tightened, and placed in iced coolers and maintained at 4°C ±2°C until they are transferred to the laboratory for analysis, in accordance with the procedures outlined in Section 5.4. Analysis and/or extraction and digestion of collected groundwater samples will meet the holding times required for each analyte as specified in Attachment C. In addition, analysis of collected groundwater sample will meet all quality assurance criteria set forth by this QAPP and DER-10.

A list of the PFCS is provided in Attachment B. Groundwater samples collected for analysis of per- and polyfluoroalkyl substances (PFAS) will be collected in accordance with the specialized protocol outlined in Attachment E.

Air Samples

Prior to sample collection, a pre-sampling inspection will be conducted to document chemicals and potential subsurface pathways at the Site. The pre-sampling inspection will assess the potential for interference from chemical storage nearby or within the building. Air samples will be collected into laboratory-supplied, batch certified-clean 6-L Summa® canisters calibrated for a sampling rate of two hours. The pressure gauges on each calibrated flow controller should be monitored throughout sample collection. Sample collection should be stopped when the pressure reading reaches -4 mmHg.

Mercury vapor samples will be collected into laboratory-supplied glass sorbent tubes containing one section of 200 mg hopcalite. Glass sorbent tubes will be connected to personal sampling pumps pumping at 0.15 to 0.25 liters per minute (L/min) for 2 hours. Sample collection should be greater than 2 liter but not exceed 100 liters.

Sample Field Blanks, Equipment Blanks, and Duplicates

Field blanks will be collected for quality assurance purposes at a rate of one per 20 soil and groundwater investigation samples per analysis. Field blanks will be obtained by pouring laboratory-demonstrated analyte-free water on or through a decontaminated sampling device following use and implementation of decontamination protocols. The water will be collected off of the sampling device into a laboratory-provided sample container for analysis. Field blank samples will be analyzed for the complete list of analytes on the day of sampling. Trip blanks will be collected at a rate of one per day if soil samples are analyzed for VOCs during that day.

Equipment blanks will be collected for quality assurance purposes when soil and groundwater samples are being collected for PFAS at a rate of one per day per media. Equipment blanks will be obtained by pouring laboratory-demonstrated PFA-free water on or through a decontaminated field equipment following use and implementation of decontamination protocols. The water will be collected off of the sampling device into a laboratory-provided sample container for analysis. Equipment blank samples will be analyzed for the NYSDEC list PFAS.

Duplicate soil and groundwater samples will be collected and analyzed for quality assurance purposes. Duplicate samples will be collected at a frequency of 1 per 20 investigative soil samples per analysis and will be submitted to the laboratory as "blind"

samples. If less than 20 samples are collected during a particular sampling event, one duplicate sample will be collected.

5.4 SAMPLE CONTAINERS AND HANDLING

Certified, commercially clean sample containers will be obtained from the analytical laboratory. If soil or groundwater samples are being collected, the laboratory will also prepare and supply the required trip blanks, equipment blanks, and field blank sample containers and reagent preservatives. Sample bottle containers, including the field and equipment blank containers, will be placed into plastic coolers by the laboratory. These coolers will be received by the field sampling team within 24 hours of their preparation in the laboratory. Prior to the commencement of field work, Langan field personnel will fill the plastic coolers with ice in Ziploc® bags (or equivalent) to maintain a temperature of 4° ±2° C.

Soil, groundwater and soil vapor samples collected in the field for laboratory analysis will be placed directly into the laboratory-supplied sample containers. Soil and groundwater samples will then be placed and stored on-ice in laboratory provided coolers until shipment to the laboratory. Blue ice will not be used to cool PFAS samples. The temperature in the coolers containing samples and associated field and equipment blanks will be maintained at a temperature of 4°±2°C while on-site and during sample shipment to the analytical laboratory.

Possession of samples collected in the field will be traceable from the time of collection until they are analyzed by the analytical laboratory or are properly disposed. Chain-of-custody procedures, described in Section 5.9, will be followed to maintain and document sample possession. Samples will be packaged and shipped as described in Section 5.6.

5.5 SPECIAL CONSIDERATIONS FOR PFAS SAMPLE COLLECTION

The following special considerations apply to the collection of groundwater samples for PFAS analysis to prevent cross-contamination:

- Field equipment will not contain Teflon®
- All sampling material will be made from stainless steel, HDPE, acetate, silicon, or polypropylene
- No waterproof field books will be used
- No plastic clipboards, binders, or spiral hard cover notebooks will be used

- No adhesives will be used
- No sharpies or permanent markers will be used; ball point pens are acceptable
- Aluminum foil will not be used
- PFAS samples will be kept in a separate cooler from other sampling containers
- Coolers will be filled only with regular ice

PFAS compound sampling protocol and the laboratories SOP for PFAS analysis are provided in Attachment E.

5.6 SAMPLE PRESERVATION

Sample preservation measures will be used in an attempt to prevent sample decomposition by contamination, degradation, biological transformation, chemical interactions and other factors during the time between sample collection and analysis. Preservation will commence at the time of sample collection and will continue until analyses are performed. Should chemical preservation be required, the analytical laboratory will add the preservatives to the appropriate sample containers before shipment to the office or field. Samples will be preserved according to the requirements of the specific analytical method selected, as shown in Attachment C.

5.6 SAMPLE SHIPMENT

5.6.1 Packaging

Soil sample containers will be placed in plastic coolers. Ice in Ziploc® bags (or equivalent) will be placed around sample containers. Cushioning material will be added around the sample containers if necessary. Chains-of-custody and other paperwork will be placed in a Ziploc® bag (or equivalent) and placed inside the cooler. The cooler will be taped closed and custody seals will be affixed to one side of the cooler at a minimum. If the samples are being shipped by an express delivery company (e.g. FedEx) then laboratory address labels will be placed on top of the cooler.

5.6.2 Shipping

Standard procedures to be followed for shipping environmental samples to the analytical laboratory are outlined below.

- All environmental samples will be transported to the laboratory by a laboratory-provided courier under the chain-of-custody protocols described in Section 5.9.

- Prior notice will be provided to the laboratory regarding when to expect shipped samples. If the number, type or date of shipment changes due to site constraints or program changes, the laboratory will be informed.

5.7 DECONTAMINATION PROCEDURES

Decontamination procedures will be used for non-dedicated sampling equipment. Decontamination of field personnel is discussed in the site-specific HASP included in Appendix C of the SMP. Field sampling equipment that is to be reused will be decontaminated in the field in accordance with the following procedures:

1. Laboratory-grade glassware detergent and tap water scrub to remove visual contamination
2. Generous tap water rinse
3. Distilled/de-ionized water rinse

Any field sampling equipment that is to be reused for PFAS sampling will be decontaminated in the field in accordance with the following procedures:

1. Alconox detergent and "PFAS-free" water scrub to remove visual contamination
2. Generous PFAS-free" water rinse

5.8 RESIDUALS MANAGEMENT

Debris (e.g., paper, plastic and disposable PPE) will be collected in plastic garbage bags and disposed of as non-hazardous industrial waste. Debris is expected to be transported to a local municipal landfill for disposal. If applicable, residual solids (e.g., leftover soil cuttings) will be placed back in the borehole from which it was sampled. If gross contamination is observed, soil will be collected and stored in Department of Transportation (DOT)-approved 55-gallon drums in a designated storage area at the Site. The residual materials stored in a designated storage area at the site for further characterization, treatment or disposal.

Residual fluids (such as purge water) will be collected and stored in DOT-approved (or equivalent) 55-gallon drums in a designated storage area at the site. The residual fluids

will be transported to the on-site wastewater treatment plant or analyzed, characterized and disposed off-site in accordance with applicable federal and state regulations. Residual fluids such as decontamination water may be discharged to the ground surface, however, if gross contamination is observed, the residual fluids will be collected, stored, and transported similar purge water or other residual fluids.

5.9 CHAIN OF CUSTODY PROCEDURES

A chain-of-custody protocol has been established for collected samples that will be followed during sample handling activities in both field and laboratory operations. The primary purpose of the chain-of-custody procedures is to document the possession of the samples from collection through shipping, storage and analysis to data reporting and disposal. Chain-of-custody refers to actual possession of the samples. Samples are considered to be in custody if they are within sight of the individual responsible for their security or locked in a secure location. Each person who takes possession of the samples, except the shipping courier, is responsible for sample integrity and safe keeping. Chain-of-custody procedures are provided below:

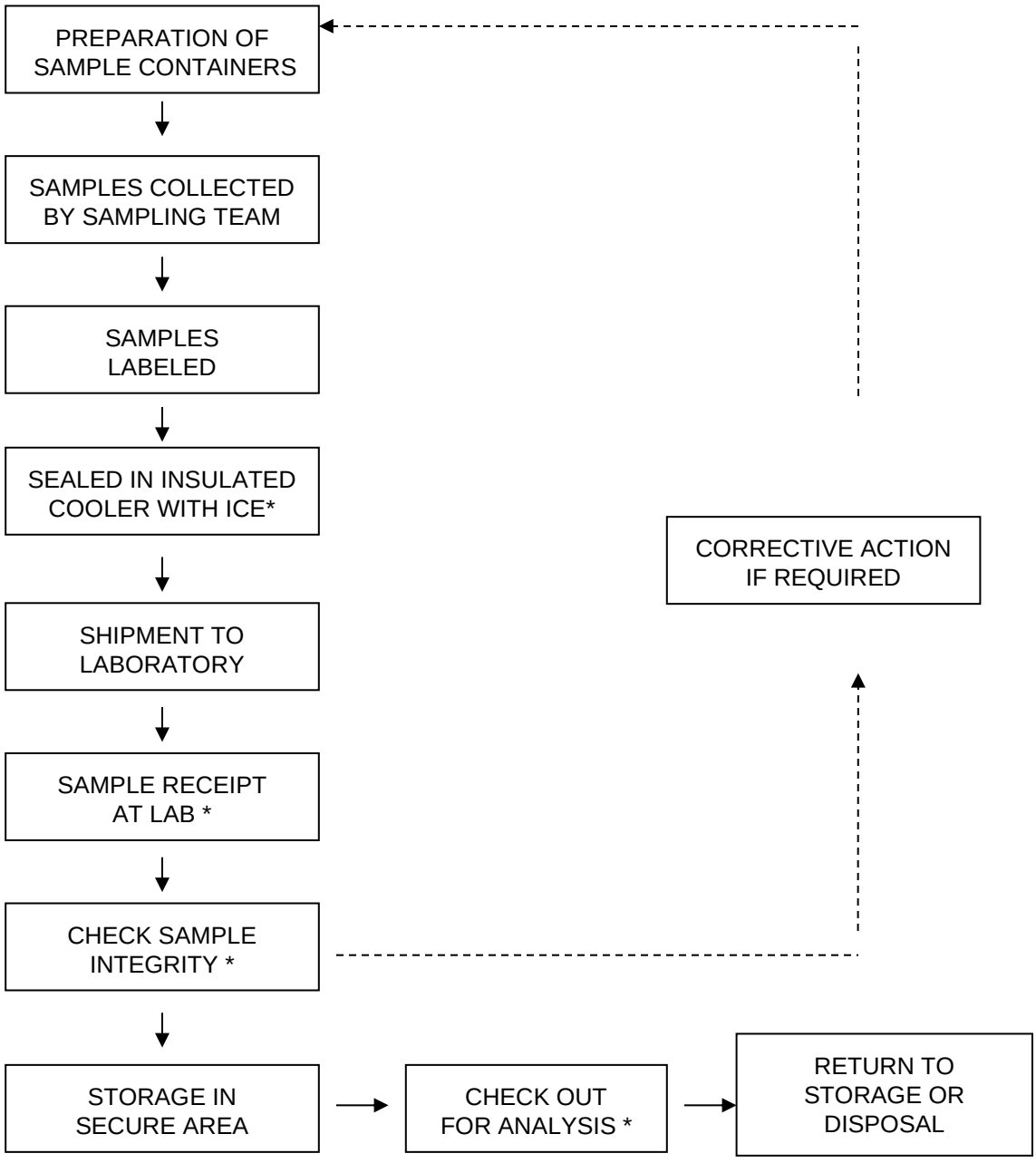
- Chain-of-custody will be initiated by the laboratory supplying the pre-cleaned and prepared sample containers. Chain-of-custody forms will accompany the sample containers.
- Following sample collection, the chain-of-custody form will be completed for the sample collected. The sample identification number, date and time of sample collection, analysis requested and other pertinent information (e.g., preservatives) will be recorded on the form. All entries will be made in waterproof, permanent blue or black ink.
- Langan field personnel will be responsible for the care and custody of the samples collected until the samples are transferred to another party, dispatched to the laboratory, or disposed. The sampling team leader will be responsible for enforcing chain-of-custody procedures during field work.
- When the form is full or when all samples have been collected that will fit in a single cooler, the sampling team leader will check the form for possible errors and sign the chain-of-custody form. Any necessary corrections will be made to the record with a single strike mark, dated, and initialed.

Sample coolers will be accompanied by the chain-of-custody form, sealed in a Ziploc® bag (or equivalent) and placed on top of the samples or taped to the inside of the cooler lid. If

applicable, a shipping bill will be completed for each cooler and the shipping bill number recorded on the chain-of-custody form.

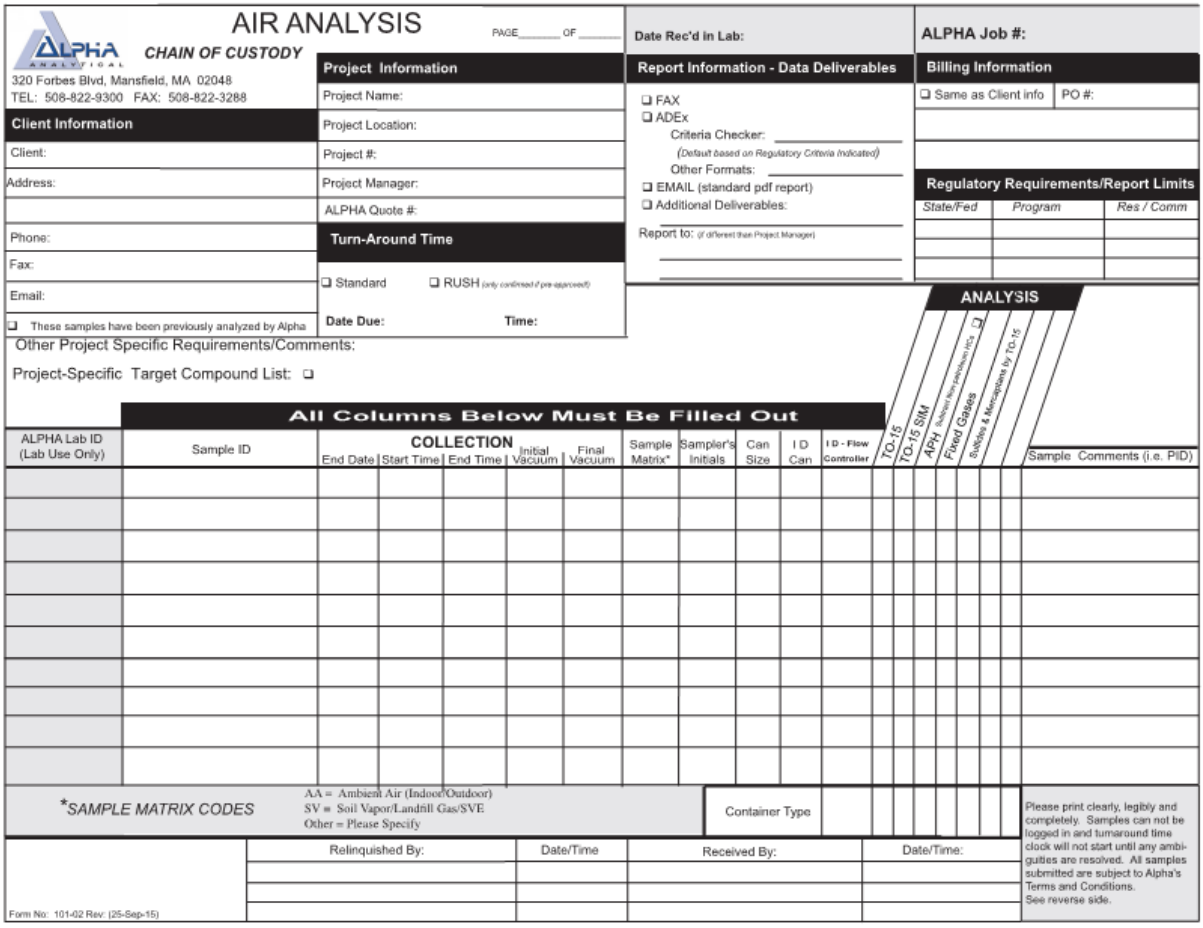
Samples will be packaged for shipment to the laboratory with the appropriate chain-of-custody form. A copy of the form will be retained by the sampling team for the project file and the original will be sent to the laboratory with the samples. Bills of lading will also be retained as part of the documentation for the chain-of-custody records, if applicable. When transferring custody of the samples, the individuals relinquishing and receiving custody of the samples will verify sample numbers and condition and will document the sample acquisition and transfer by signing and dating the chain-of-custody form. This process documents sample custody transfer from the sampler to the analytical laboratory. A flow chart showing a sample custody process is included as Figure 5.1, and chain-of-custody forms from Alpha are included as Figures 5.2 and 5.3.

Figure 5.1 Sample Custody



* REQUIRES SIGN-OFF ON CHAIN-OF-CUSTODY FORM

Figure 5.2 Sample Chain-of-Custody Form – Air Sample



AIR ANALYSIS — CHAIN OF CUSTODY

PAGE_____ OF _____

ALPHA ANALYTICAL
320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Client Information
Client:
Address:
Phone:
Fax:
Email:
❑ These samples have been previously analyzed by Alpha

Project Information
Project Name:
Project Location:
Project #:
Project Manager:
ALPHA Quote #:

Turn-Around Time
❑ Standard ❑ RUSH (only confirmed if pre-approved)
Date Due: Time:

Date Rec'd in Lab:

Report Information - Data Deliverables
❑ FAX
❑ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
❑ EMAIL (standard pdf report)
❑ Additional Deliverables:
Report to: (if different than Project Manager)

ALPHA Job #:

Billing Information
❑ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ❑

All Columns Below Must Be Filled Out

ANALYSIS: TO-15 | TO-15 SIM | APH (Solvent Range Petroleum HCs) ❑ | Fixed Gases | Sulfides & Mercaptans by TO-15

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-15	TO-15 SIM	APH	Fixed Gases	Sulfides & Mercaptans by TO-15		Sample Comments (i.e. PID)

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

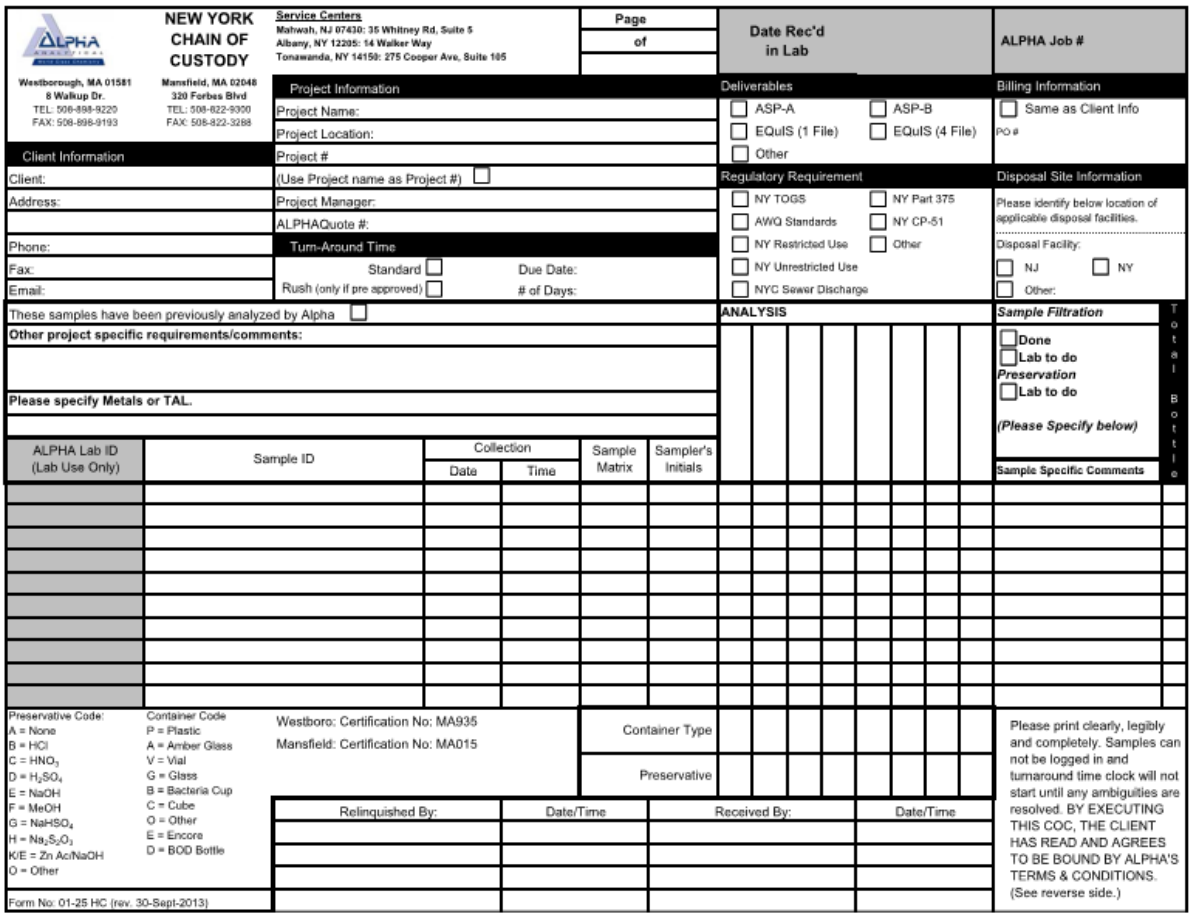
Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:

Form No: 101-02 Rev: (25-Sep-15)

Figure 5.3 Sample Chain-of-Custody Form – Soil and Groundwater



ALPHA ANALYTICAL

NEW YORK CHAIN OF CUSTODY

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page of

Date Rec'd in Lab

ALPHA Job #

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Project Information
Project Name:
Project Location:
Project #
(Use Project name as Project #)
Project Manager:
ALPHAQuote #:
Turn-Around Time
Standard
Rush (only if pre approved)
Due Date:
# of Days:

Deliverables
ASP-A
ASP-B
EQuIS (1 File)
EQuIS (4 File)
Other

Billing Information
Same as Client Info
PO #

Client Information
Client:
Address:
Phone:
Fax:
Email:

Regulatory Requirement
NY TOGS
NY Part 375
AWQ Standards
NY CP-51
NY Restricted Use
Other
NY Unrestricted Use
NYC Sewer Discharge

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
NJ
NY
Other:

These samples have been previously analyzed by Alpha

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
Done
Lab to do
Preservation
Lab to do
(Please Specify below)

Total Bottles

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Sample Specific Comments

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type
Preservative

Relinquished By:	Date/Time	Received By:	Date/Time

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

Laboratory chain-of-custody will be maintained throughout the analytical processes as described in the laboratory's Quality Assurance (QA) Manual. The analytical laboratory will provide a copy of the chain-of-custody in the analytical data deliverable package. The chain-of-custody becomes the permanent record of sample handling and shipment.

5.10 LABORATORY SAMPLE STORAGE PROCEDURES

The subcontracted laboratory will use a laboratory information management system (LIMS) to track and schedule samples upon receipt by the analytical laboratories. Any sample anomalies identified during sample log-in must be evaluated on individual merit for the impact upon the results and the data quality objectives of the project. When irregularities do exist, the environmental consultant must be notified to discuss recommended courses of action and documentation of the issue must be included in the project file.

For samples requiring thermal preservation, the temperature of each cooler will be immediately recorded. Each sample and container will be will be assigned a unique laboratory identification number and secured within the custody room walk-in coolers designated for new samples. Samples will be, as soon as practical, disbursed in a manner that is functional for the operational team. The temperature of all coolers and freezers will be monitored and recorded using a certified temperature sensor. Any temperature excursions outside of acceptance criteria (i.e., below 2°C or above 6°C) will initiate an investigation to determine whether any samples may have been affected. Samples for VOCs will be maintained in satellite storage areas within the VOC laboratory. Following analysis, the laboratory's specific procedures for retention and disposal will be followed as specified in the laboratory's SOPs and/or QA manual.

6.0 DATA REDUCTION, VALIDATION, AND REPORTING

6.1 INTRODUCTION

Endpoint or investigation sampling data collected during the remedial activities will be reduced and reviewed by the laboratory QA personnel, and a report on the findings will be tabulated in a standard format. The criteria used to identify and quantify the analytes will be those specified for the applicable methods in the USEPA SW-846 and subsequent updates. The data package provided by the laboratory will contain all items specified in the USEPA SW-846 appropriate for the analyses to be performed, and be reported in standard format.

The completed copies of the chain-of-custody records (both external and internal) accompanying each sample from time of initial bottle preparation to completion of analysis shall be attached to the analytical reports.

6.2 DATA REDUCTION

The Analytical Services Protocol (ASP) Category B data packages and an electronic data deliverable (EDD) will be provided by the laboratory after receipt of a complete sample delivery group. The Project Manager will immediately arrange for archiving the results and preparation of result tables. These tables will form the database for assessment of the site contamination condition.

Each EDD deliverable must be formatted using a Microsoft Windows operating system and the NYSDEC data deliverable format for EQuIS. To avoid transcription errors, data will be loaded directly into the ASCII format from the laboratory information management system (LIMS). If this cannot be accomplished, the consultant should be notified via letter of transmittal indicating that manual entry of data is required for a particular method of analysis. All EDDs must also undergo a QC check by the laboratory before delivery. The original data, tabulations, and electronic media are stored in a secure and retrievable fashion.

The Project Manager will maintain close contact with the QA reviewer to ensure all non-conformance issues are acted upon prior to data manipulation and assessment routines. Once the QA review has been completed, the Project Manager may direct the Team Leaders or others to initiate and finalize the analytical data assessment.

6.3 DATA VALIDATION

Data validation will be performed by a third party in accordance with the USEPA validation guidelines for organic and inorganic data review. Validation will include the following:

- Verification of the QC sample results,
- Verification of the identification of sample results (both positive hits and non-detects),
- Recalculation of 10% of all investigative sample results, and
- Preparation of Data Usability Summary Reports (DUSR).

A DUSR will be prepared and reviewed by the QAO before issuance. The DUSR will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and COC procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method. A detailed assessment of each SDG will follow. For each of the organic analytical methods, the following will be assessed:

- Holding times;
- Instrument tuning;
- Instrument calibrations;
- Blank results;
- System monitoring compounds or surrogate recovery compounds (as applicable);
- Internal standard recovery results;
- MS and MSD results;
- Target compound identification;
- Chromatogram quality;
- Pesticide cleanup (if applicable);
- Compound quantitation and reported detection limits;
- System performance; and
- Results verification.

For each of the inorganic compounds, the following will be assessed:

- Holding times;
- Calibrations;
- Blank results;
- Interference check sample;
- Laboratory check samples;
- Duplicates;
- Matrix Spike;
- Furnace atomic absorption analysis QC;
- ICP serial dilutions; and
- Results verification and reported detection limits.

Based on the results of data validation, the validated analytical results reported by the laboratory will be assigned one of the following usability flags:

- "U" - Not detected. The associated number indicates the approximate sample concentration necessary to be detected significantly greater than the level of the highest associated blank;
- "UJ" - Not detected. Quantitation limit may be inaccurate or imprecise;
- "J" - Analyte is present. Reported value may be associated with a higher level of uncertainty than is normally expected with the analytical method
- "N" – Tentative identification. Analyte is considered present in the sample;
- "R" – Unreliable result; data is rejected or unusable. Analyte may or may not be present in the sample; and
- No Flag - Result accepted without qualification.

7.0 QUALITY ASSURANCE PERFORMANCE AUDITS AND SYSTEM AUDITS

7.1 INTRODUCTION

Quality assurance audits may be performed by the project quality assurance group under the direction and approval of the QAO. These audits will be implemented to evaluate the capability and performance of project and subcontractor personnel, items, activities, and documentation of the measurement system(s). Functioning as an independent body and reporting directly to corporate quality assurance management, the QAO may plan, schedule, and approve system and performance audits based upon procedures customized to the project requirements. At times, the QAO may request additional personnel with specific expertise from company and/or project groups to assist in conducting performance audits. However, these personnel will not have responsibility for the project work associated with the performance audit.

7.2 SYSTEM AUDITS

System audits may be performed by the QAO or designated auditors, and encompass a qualitative evaluation of measurement system components to ascertain their appropriate selection and application. In addition, field and laboratory quality control procedures and associated documentation may be system audited. These audits may be performed once during the performance of the project. However, if conditions adverse to quality are detected or if the Project Manager requests, additional audits may occur.

7.3 PERFORMANCE AUDITS

The laboratory may be required to conduct an analysis of Performance Evaluation samples or provide proof that Performance Evaluation samples submitted by USEPA or a state agency have been analyzed within the past twelve months.

7.4 FORMAL AUDITS

Formal audits refer to any system or performance audit that is documented and implemented by the QA group. These audits encompass documented activities performed by qualified lead auditors to a written procedure or checklists to objectively verify that quality assurance requirements have been developed, documented, and instituted in accordance with contractual and project criteria. Formal audits may be performed on project and subcontractor work at various locations.

Audit reports will be written by auditors who have performed the site audit after gathering and evaluating all data. Items, activities, and documents determined by lead auditors to be in noncompliance shall be identified at exit interviews conducted with the involved management. Non-compliances will be logged, and documented through audit findings, which are attached to and are a part of the integral audit report. These audit-finding forms are directed to management to satisfactorily resolve the noncompliance in a specified and timely manner.

The Project Manager has overall responsibility to ensure that all corrective actions necessary to resolve audit findings are acted upon promptly and satisfactorily. Audit reports must be submitted to the Project Manager within fifteen days of completion of the audit. Serious deficiencies will be reported to the Project Manager within 24 hours. All audit checklists, audit reports, audit findings, and acceptable resolutions are approved by the QAO prior to issue. Verification of acceptable resolutions may be determined by re-audit or documented surveillance of the item or activity. Upon verification acceptance, the QAO will close out the audit report and findings

8.0 CORRECTIVE ACTION

8.1 INTRODUCTION

The following procedures have been established to ensure that conditions adverse to quality, such as malfunctions, deficiencies, deviations, and errors, are promptly investigated, documented, evaluated, and corrected.

8.2 PROCEDURE DESCRIPTION

When a significant condition adverse to quality is noted at site, laboratory, or subcontractor location, the cause of the condition will be determined and corrective action will be taken to preclude repetition. Condition identification, cause, reference documents, and corrective action planned to be taken will be documented and reported to the QAO, Project Manager, Field Team Leader and involved contractor management, at a minimum. Implementation of corrective action is verified by documented follow-up action.

All project personnel have the responsibility, as part of the normal work duties, to promptly identify, solicit approved correction, and report conditions adverse to quality. Corrective actions will be initiated as follows:

- When predetermined acceptance standards are not attained;
- When procedure or data compiled are determined to be deficient;
- When equipment or instrumentation is found to be faulty;
- When samples and analytical test results are not clearly traceable;
- When quality assurance requirements have been violated;
- When designated approvals have been circumvented;
- As a result of system and performance audits;
- As a result of a management assessment;
- As a result of laboratory/field comparison studies; and
- As required by USEPA SW-846, and subsequent updates, or by the NYSDEC ASP.

Project management and staff, such as field investigation teams, remedial response planning personnel, and laboratory groups, monitor on-going work performance in the normal course of daily responsibilities. Work may be audited at the sites, laboratories, or contractor locations. Activities, or documents ascertained to be noncompliant with quality

assurance requirements will be documented. Corrective actions will be mandated through audit finding sheets attached to the audit report. Audit findings are logged, maintained, and controlled by the Project Manager.

Personnel assigned to quality assurance functions will have the responsibility to issue and control Corrective Action Request (CAR) Forms (Figure 12.1 or similar). The CAR identifies the out-of-compliance condition, reference document(s), and recommended corrective action(s) to be administered. The CAR is issued to the personnel responsible for the affected item or activity. A copy is also submitted to the Project Manager. The individual to whom the CAR is addressed returns the requested response promptly to the QA personnel, affixing his/her signature and date to the corrective action block, after stating the cause of the conditions and corrective action to be taken. The QA personnel maintain the log for status of CARs, confirms the adequacy of the intended corrective action, and verifies its implementation. CARs will be retained in the project file for the records.

Any project personnel may identify noncompliance issues; however, the designated QA personnel are responsible for documenting, numbering, logging, and verifying the close out action. The Project Manager will be responsible for ensuring that all recommended corrective actions are implemented, documented, and approved.

FIGURE 8.1

CORRECTIVE ACTION REQUEST
Number: _____ Date: _____
TO: _____ You are hereby requested to take corrective actions indicated below and as otherwise determined by you to (a) resolve the noted condition and (b) to prevent it from recurring. Your written response is to be returned to the project quality assurance manager by _____
CONDITION:
REFERENCE DOCUMENTS:
RECOMMENDED CORRECTIVE ACTIONS:
_____ _____ _____ _____ _____ _____ Originator Date Approval Date Approval Date
RESPONSE
CAUSE OF CONDITION
CORRECTIVE ACTION (A) RESOLUTION (B) PREVENTION (C) AFFECTED DOCUMENTS
C.A. FOLLOWUP: CORRECTIVE ACTION VERIFIED BY: _____ DATE:_____

9.0 REFERENCES

NYSDEC. Division of Environmental Remediation. DER-10/Technical Guidance for Site Investigation and Remediation, dated May 3, 2010.

NYSDOH. Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006.

Taylor, J. K., 1987. Quality Assurance of Chemical Measurements. Lewis Publishers, Inc., Chelsea, Michigan

USEPA, 1986. SW-846 "Test Method for Evaluating Solid Waste," dated November 1986. U.S. Environmental Protection Agency, Washington, D.C.

USEPA, 1987. Data Quality Objectives for Remedial Response Actions Activities: Development Process, EPA/540/G-87/003, OSWER Directive 9355.0-7- U.S. Environmental Protection Agency, Washington, D.C.

USEPA, 1992a. CLP Organics Data Review and Preliminary Review. SOP No. HW-6, Revision #8, dated January 1992. USEPA Region II.

USEPA, 1992b. Evaluation of Metals Data for the Contract Laboratory Program (CLP) based on SOW 3/90. SOP No. HW-2, Revision XI, dated January 1992. USEPA Region II.

USEPA. Hazardous Waste Support Section. Analysis of Volatile Organic Compounds in Air Contained in Canisters by Method TO-15. SOP No. HW-31, Revision #6, dated June 2014.

ATTACHMENT A

Resumes

JASON J. HAYES, PE, LEED AP

PRINCIPAL/VICE PRESIDENT

ENVIRONMENTAL ENGINEERING

Mr. Hayes has experience in New York, New Jersey, Washington D.C., California, Washington, Oregon, Alaska, and Internationally. His experience includes Environmental Protection Agency (EPA), New York State (NYS) Brownfields applications, investigation, and remediation; New York City Department of Environmental Protection (NYCDEP) and New York City Office of Environmental Remediation (OER) E-designated site applications, investigations, and remediation. His expertise also includes Phase I and II Environmental Site Investigations and Assessments; contaminated building cleanup and demolition; Underground Storage Tank (UST) permitting, removal specifications, and closure reporting; soil vapor intrusion investigation and mitigation system design (depressurization systems, etc.); development of groundwater contaminant plume migration models; environmental analysis; and oversight, design and specification generation for remediation operations with contaminants of concern to include polychlorinated biphenyls (PCBs), solvents, mercury, arsenic, petroleum products, asbestos, mold and lead.

SELECTED PROJECTS

- NYCDPR Bushwick Inlet Park (Phase I ESA, Approvals for NYC E-Designation), Brooklyn, NY
- WCS New York Aquarium, Shark Tank and Animal Care Facility (Environmental Remediation), Coney Island, NY
- NYC School Construction Authority (PCB Remediation), Various Locations, New York, NY
- 28-29 High Line (Phase I ESA, Phase II ESI, and Environmental Remediation), New York, NY
- Georgetown Heating Plant (Phase II ESI and Remedial Design for Mercury Impacted Site), Washington D.C.
- 268 West Street (BCP Application, RI and RIWP), New York, NY
- Confidential Multiple Mixed-Use Tower Location (BCP Application, RI, Phase I ESA, and Phase II ESI), New York, NY
- Dock 72 at Brooklyn Navy Yard, (NYS Voluntary Cleanup Program), Brooklyn, NY
- 27-21 44th Drive (BCP Application, Remedial Investigation Phase I ESA, and Phase II ESI), Long Island City, NY
- Purves Street Development, BCP Application, RAWP, and Phase II ESI, Long Island City, NY
- 267-273 West 87th Street (BCP Application, Remedial Investigation, RIWP, RAWP), New York, NY
- International Leadership Charter School (Environmental Remediation), Bronx, NY
- West & Watts (BCP Application), New York, NY
- Hudson Yards Redevelopment (Phase I ESA and Phase II ESI), New York, NY
- 627 Smith Street (RI and Report), Brooklyn, NY

EDUCATION

M.S., Environmental Engineering
Columbia University

B.S., Chemistry, Environmental Toxicology (Business Administration minor)
Humboldt State University

PROFESSIONAL REGISTRATION

Professional Engineer (PE) in NY

LEED Accredited Professional (LEED AP)

Troxler Certification for Nuclear Densometer Training

OSHA 40-Hour HAZWOPER

OSHA HAZWOPER Site Supervisor

AFFILIATIONS

US Green Building Council, NYC Chapter, Communications Committee

Urban Land Institute (ULI), member

Commercial Real Estate Development Associations (NAIOP), member

- Gateway Center II Retail (Phase I ESA and Phase II ESI), Brooklyn, NY
- 261 Hudson Street (Phase I ESA, Phase II ESI, BCP, and RAWP), New York, NY
- Riverside Center, Building 2 (BCP, Phase I ESA and Phase II ESI), New York, NY
- New York Police Academy, (Sub-Slab Depressurization and Vapor Barrier System), College Point, NY
- Bronx Terminal Market (BCP, RIWP, RAWP, Phase I ESA and Phase II ESI), Bronx, NY
- Jacob Javits Convention Center (Phase I ESA and Phase II ESI), New York, NY
- Yankee Stadium Development Waterfront Park (NYSDEC Spill Sites), Bronx, NY
- Silvercup West (BCP, RIWP, RIR, RAWP, and RAA), Long Island City, NY
- 29 Flatbush, Tall Residential Building (Groundwater Studies, RIR and RAWP), Brooklyn, NY
- Gowanus Village I (BCP, RIWP and RIR), Brooklyn, NY
- Sullivan Street Hotel (Site Characterization Study and Owner Representation), New York, NY
- Riker's Island Co-Generation Plant (Soil and Soil Vapor Quality Investigations), Bronx, NY
- The Shops at Atlas Park (Sub-Slab Depressurization and Vapor Barrier Design), Glendale, NY
- Memorial Sloan-Kettering Cancer Center (Subsurface and Soil Vapor Intrusion Investigations), New York, NY
- Element West 59th Street (Oversight and Monitoring of Sub-Slab Depressurization and Vapor Barrier Systems), New York, NY
- Teterboro Airport (Delineation and Remedial Oversight of Petroleum-Contaminated Soils), Teterboro, NJ
- Proposed New York JETS Stadium (Phase I ESA), New York, NY
- Former Con Edison Manufactured Gas Plant Sites (Research Reports), New York, NY
- 7 World Trade Center (Endpoint Sampling and Final Closure Report), New York, NY
- Peter Cooper Village, Environmental Subsurface Investigations, New York, NY
- Greenpoint Terminal Market (BCP), Brooklyn, NY
- Confidential Location (Remediation for Mercury-Contaminated Site), New York, NY
- Confidential Location (Phase II ESI and Remedial Design for Mercury Impacted Site), Brooklyn, NY

NYC Brownfield Partnership, member

SELECTED PUBLICATIONS, REPORTS, AND PRESENTATIONS

NYC Mayor's Office of Environmental Remediation – Big Apple Brownfield Workshop – Presented on Soil Vapor Intrusion Remedies (e.g., SSD Systems, Vapor Barriers, Modified HVAC)

New York City Brownfield Partnership – Presented on environmental considerations and complications of the Hudson Yards Development

Waterfront Development Technical Course – Presented on Impacted Waterfront Planning Considerations

MICHAEL D. BURKE, PG, CHMM, LEED AP

PRINCIPAL/VICE PRESIDENT

ENVIRONMENTAL ENGINEERING AND REMEDIATION

Mr. Burke is a geologist/environmental scientist whose practice involves site investigation and remediation, transactional due diligence, environmental site assessments, in-situ remedial technology, and manufactured gas plant (MGP) site characterization and remediation. His additional services include multi-media compliance audits, sub-slab depressurization system design, non-hazardous and hazardous waste management, emergency response, community air monitoring programs, environmental and geotechnical site investigations, and health and safety monitoring. He has experience with projects in the New York State Department of Environmental Conservation (NYSDEC) and New York State Brownfield Cleanup (NYS BCP) Programs; Inactive Hazardous Waste, and Spill Programs, and New York City Office of Environmental Remediation (OER) e-designated and New York City Voluntary Cleanup Program (NYC VCP) sites.

SELECTED PROJECTS

- 227-14 North Conduit Avenue, Industrial Wastewater Compliance, Jamaica, NY
- 420 Kent Avenue, NYS Brownfield Cleanup Program, Brooklyn, NY
- 572 Eleventh Avenue, NYC VCP, New York, NY
- Monian Site A, OER E-Designated Site, New York, NY
- 537 Sackett Street, Gowanus Canal Due Diligence/MGP Site, Brooklyn, NY
- ABC Blocks 25, 26 and 27, NYS Brownfield Cleanup Program Sites, Long Island City, NY
- 432 Rodney Street, NYS Brownfield Cleanup Program, Petroleum and Chlorinated Volatile Organic Compound Investigation and Remediation, Brooklyn, NY
- 787 Eleventh Avenue, NYS Brownfield Cleanup Program Site, New York, NY
- President Street at Gowanus Canal, NYS Brownfield Cleanup Program Site, Brooklyn, NY
- 22-36 Second Avenue at Gowanus Canal, NYS Brownfield Cleanup Program Site, Brooklyn, NY
- 563 Sacket Street, NYS Brownfield Cleanup Program Site, MGP Investigation, and Remediation, Brooklyn, NY
- 156-162 Perry Street, NYS Brownfield Cleanup Program Site, New York, NY
- Christopher and Weehawken Streets, NYS Brownfield Cleanup Program, New York, NY
- Phelps Dodge Block 2529 (Lots 40, 50, and 45), Inactive Hazardous Waste Disposal Site, Maspeth NY
- 42-50 24th Street, NYS Brownfield Cleanup Program Site, Long Island City, NY
- Storage Deluxe (163 6th Street), OER E-Designation Site, New York, NY

EDUCATION

M.S., Environmental Geology
Rutgers University

B.S., Geological Sciences
Rutgers University

B.S., Environmental Science
Rutgers University

PROFESSIONAL REGISTRATION

Professional Geologist (PG) in NY

Certified Hazardous Materials Manager – CHMM No. 15998

LEED Accredited Professional (LEED AP)

OSHA Certification for Hazardous Waste Site Supervisor

OSHA 29 CFR 1910.120 Certification for Hazardous Waste Operations and Emergency Response

NJDEP Certification for Community Noise Enforcement

AFFILIATIONS

New York State Council of Professional Geologists – Board of Directors

LANGAN

- Prospect Park Redevelopment, Landfill Reclamation, Prospect Park, NJ
- 431 Carroll Street, Gowanus Canal Due Diligence, Brooklyn, NY
- 76 4th Street Property, Gowanus Due Diligence, Brooklyn, NY
- Foxgate/MREC, Due Diligence and Solid Waste Compliance, Central Islip, NY
- 175-225 3rd Street at Gowanus Canal, NYS Brownfield Cleanup Program, Brooklyn, NY
- New York University Tandon School of Engineering, Spill Investigation/Remediation Dual Phase Recovery, and Laser Fluorescence Investigation, Brooklyn, NY
- 2420-2430 Amsterdam Avenue, NYS Brownfield Cleanup Program/Board of Standards and Appeals Variance, New York, NY
- 170 Amsterdam Avenue, NYC VCP, New York, NY
- 538-540 Hudson Street, NYS Brownfield Cleanup Program (Former Gas Station), New York, NY
- 234 Butler Street, Gowanus Canal Due Diligence, Brooklyn, NY
- 550 Clinton Street, NYS Brownfield Cleanup Program E-Designation, Brooklyn, NY
- 111 Leroy Street, OER E-Designation Site, New York, NY
- 335 Bond Street, NYS Brownfield Cleanup Program, New York, NY
- Gowanus Canal Northside, NYS BCP Former Fuel Oil Terminal, Brooklyn, NY
- Multiple Buildings, Major Oil Storage Facility, Gowanus Canal Location, Brooklyn, NY
- 197-205 Smith Street at Gowanus Canal, MGP Due Diligence, Brooklyn, NY
- 450 Union Street at Gowanus Canal, NYS Brownfield Cleanup Program, Brooklyn, NY
- 86 Fleet Place, NYC VCP E-Designation, Brooklyn, NY
- New York University College of Nursing at 433 1st Avenue, NYS BCP, Bronx, NY
- Retail Building at 225 3rd Street, Brooklyn, NY
- 29-37 41st Avenue, NYS Brownfield Cleanup Program, Long Island City, NY
- 43-01 22nd Street, NYS Brownfield Cleanup Program, Long Island City, NY
- Compliance Audit for NYU at Washington Square Park, New York, NY
- Former Watermark Locations, NYS Brownfield Cleanup Program, Chlorinated Volatile Organic Compound Investigation and Remediation; AS/SVE, Brooklyn, NY
- Former Gas Station (1525 Bedford Avenue), Brooklyn, NY
- NYS Brownfield Cleanup Program at 514 West 24th Street, New York, NY
- Gowanus Canal Due Diligence at 76 4th Street, Brooklyn, NY
- Urban Health Plan, Medical Building, NYS Brownfield Cleanup Program CVOC Investigation and Remediation, Bronx, NY
- 420 East 54th Street, NYS Spill Closure, New York, NY
- Equity Residential at 160 Riverside Boulevard, NYS Spill Closure, New York, NY
- 357-359 West Street and 156 Leroy Street, NYC VCP, New York, NY
- Emergency Spill Response at 322 West 57th Street, Investigation and Closure, New York, NY

New York Building Congress – Energy Committee

- Hurricane Sandy, Emergency Response at 21 West Street, New York, NY
- Hurricane Sandy, Emergency Response at 71 Pine Street, New York, NY
- Greenpoint Landing, NYC E-Designation, Brooklyn, NY
- 23-01 42nd Road, NYS Brownfield Cleanup Program, Long Island City, NY
- Greenpoint Waterfront Development, NYS Brownfield Cleanup Program, Brooklyn, NY
- 125th Street and Lenox Avenue, NYC VCP, New York, NY
- Whitehead Realty Solvent Site, Inactive Hazardous Waste site, CVOC, Investigation and Remediation, Brooklyn, NY
- SunCap Property Group Environmental On-Call Consulting, Various Locations, Nationwide
- Con Edison, Underground Storage Tank On-Call Contract, Five Boroughs of New York City, NY
- Con Edison, Construction Inspections On-Call Contract, Five Boroughs of New York City, NY
- Con Edison, Appendix B Spill Sites On-Call Contract, Five Boroughs of New York City, NY
- Meeker Avenue Plume Trackdown Site, Brooklyn, NY
- Distribution Facility, Superfund Redevelopment, Long Island City, NY
- Edison Properties, West 17th Street Development Site (Former MGP Site), New York, NY
- Con Edison, Governors Island Dielectric Fluid Spill, Investigation and Remediation, New York, NY
- 144-150 Barrow Street, NYS Brownfield Cleanup Program, New York, NY
- West 17th Street Development, NYS Brownfield Cleanup Program, MGP Investigation and Remediation, New York, NY
- Montefiore Medical Center, Emergency Response, PCB Remediation, Bronx, NY
- New York University, 4 Washington Square Village Fuel Oil Remediation, New York, NY
- NYCSCA, Proposed New York City School Construction Sites, Five Boroughs of New York City, NY
- Con Edison, East 60th Street Generating Station, New York, NY
- Residential Building at 82 Irving Place, Environmental Remediation, New York, NY
- 1113 York Avenue, Storage Tank Closures, New York, NY
- Peter Cooper Village/Stuyvesant Town, Phase I ESA, New York, NY
- Superior Ink, Waste Characterization and Remedial Action Plans, New York, NY
- Bronx Mental Health Redevelopment Project, Phase I ESA, Bronx, NY
- 2950 Atlantic Avenue, Site Characterization Investigation, Brooklyn, NY
- Con Edison, East 74th Street Generating Station, Sediment Investigation, New York, NY
- Con Edison, First Avenue Properties, New York, NY
- Queens West Development Corp. Stage II, Long Island City, NY
- Article X Project Environmental Reviews, Various New York State Electrical Generation Sites, NY
- Poletti Generating Station, Astoria, NY

- Arthur Kill Generating Station, Staten Island, NY
- Distribution Facility, Phase I & Phase II ESA and Regulatory Compliance, Bohemia, NY
- Huntington Station Superfund Due Diligence, Huntington Station, NY
- Garvies Point Bulkhead, Glen Cove, NY
- Johnson & Hoffman Metal Stamping Facility, Environmental Compliance, Carle Place, NY
- Floral Park Storage Facility, Phase I and Phase II ESA
- Garden City Phase I ESAs at two sites, including part of a Superfund Site, Garden City, NY
- Huntington Station Storage Facility, Phase I and II ESA, Huntington Station, NY
- Trevor Day School, NYS Spill Site Expert Testimony, New York, NY
- 320 West Fordham Road, Bronx, NY
- Bedford Union Armory, NYS Brownfield Cleanup Program, Brooklyn, NY

SELECTED PUBLICATIONS, REPORTS, AND PRESENTATIONS

Burke, M., Ciambruschini, S., Nicholls, G., Tashji, A., Vaidya, S., “Redeveloping a Remediated MGP Site”, MGP Symposium 2019, Atlantic City, NJ.

MIMI RAYGORODETSKY

PRINCIPAL/VICE PRESIDENT

ENVIRONMENTAL ENGINEERING

Ms. Raygorodetsky sources and directs large, complex environmental remediation and redevelopment projects from the earliest stages of pre-development diligence, through the remediation/construction phase, to long-term operation and monitoring of remedial systems and engineering controls. She has a comprehensive understanding of federal, state and local regulatory programs and she uses this expertise to guide her clients through a preliminary cost benefit analysis to select the right program(s) given the clients' legal obligations, development desires and risk tolerance. She is particularly strong at integrating the requirements of selected programs and client development needs to develop and design targeted and streamlined diligence programs and remediation strategies. Ms. Raygorodetsky is also highly skilled in integrating remediation with construction on large urban waterfront projects, which tend to more complex than landside projects.

In 2022, Bisnow honored Ms. Raygorodetsky with the Women Leading Real Estate Award and Crain's New York Business named her as a Notable Woman in Construction, Design & Architecture.

SELECTED PROJECTS

- 25 Kent Avenue, Due Diligence for Purchase of a Brownfields Location, Brooklyn, NY
- Ferry Point Waterfront Park, Redevelopment of a Former Landfill into a Park, Bronx, NY
- Battery Maritime Building (10 South Street), Phase I ESA, New York, NY
- Residential Development at 351-357 Broadway, Phase 1 ESA, New York, NY
- 450 Union Street, Phase I and Phase II Remediation (NYS DEC Brownfield Cleanup Program), New York, NY
- Echo Bay Center, NYS DEC Brownfield Cleanup Program, New York, NY
- 420 Kent Avenue, NYS DEC Brownfield Cleanup Program, Brooklyn, NY
- 416 Kent Avenue, NYS DEC Brownfield Cleanup Program, Brooklyn, NY
- 264 Fifth Avenue, Phase I ESA, New York, NY
- 262 Fifth Avenue, Phase I ESA, New York, NY
- ABC Blocks 25-27 (Mixed-Use Properties), Brownfield Cleanup Program, Long Island City, NY
- Residences at 100 Barrow Street, Phase I ESA, New York, NY
- Residences at 22-12 Jackson Avenue, Due Diligence for Building Sale, Long Island City, NY
- Residences at 2253-2255 Broadway, Phase I and Phase II Services, New York, NY
- Prince Point, Phase I ESA, Staten Island, NY
- 787 Eleventh Avenue (Office Building Renovation), Phase I UST Closure, New York, NY

EDUCATION

B.A., Biology and Spanish Literature
Colby College

AFFILIATIONS

New York Women Executives in Real Estate (WX) - Board Member; Networking and Special Events Committee Co-Chair

New York Building Congress, Council of Industry Women - Committee Member

New York City Brownfield Partnership - Founding Member and President

NYC Office of Environmental Remediation Technical Task Force - Committee Member

New York League of Conservation Voters (NYLCV), Education Fund – State Board Member

- 218 Front Street/98 Gold Street, Planning and Brownfield Consulting, Brooklyn, NY
- Mark JCH of Bensonhurst, Phase I and HazMat Renovation, Brooklyn, NY
- 39 West 23rd Street, E-Designation Brownfield, New York, NY
- 250 Water Street, Phase I and Phase II Property Transaction, New York, NY
- 27-19 44th Drive, Residential Redevelopment, Long Island City, NY
- 515 West 42nd Street, E-Designation, New York, NY
- 310 Meserole Street, Due Diligence Property Purchase, Brooklyn, NY
- Former Georgetown Heating Plant, HazMat and Phase I ESA, Washington D.C.
- 80-110 Flatbush Avenue, Brooklyn, NY
- 132 East 23rd Street, New York, NY
- 846 Sixth Avenue, New York, NY
- Greenpoint Landing, Remediation/Redevelopment, Brooklyn, NY
- 711 Eleventh Avenue, Due Diligence/Owner's Representative, New York, NY
- Brooklyn Bridge Park, Pier 1, Waste Characterization and Remediation, Brooklyn, NY
- Post-Hurricane Sandy Mold Remediation, Various Private Homes, Far Rockaway, NY
- Brooklyn Bridge Park, One John Street Development, Pre-Construction Due Diligence and Construction Administration, Brooklyn, NY
- 7 West 21st Street, Brownfields Remediation, New York, NY
- 546 West 44th Street, Brownfields Remediation, New York, NY
- Post-Hurricane Sandy Mold Remediation, Various Private Homes, Nassau and Suffolk Counties, Long Island, NY
- 55 West 17th Street, Brownfield Site Support, New York, NY
- Pratt Institute, 550 Myrtle Avenue Renovations, Environmental Remediation, Brooklyn, NY
- 42-02 Crescent Street Redevelopment, Phase I and II Environmental, Long Island City, NY
- IAC Building (555 West 18th Street), New York, NY
- Retirement Communities on100-acre Parcels in ME, NJ, MA, CT, and NJ
- 363-365 Bond Street/400 Carroll Street, Brooklyn, NY
- 160 East 22nd Street, New York, NY
- 110 Third Avenue, New York, NY
- Lycee Francais (East 76th Street & York Avenue), New York, NY
- Winchester Arms Munitions Factory, New Haven, CT

SELECTED PUBLICATIONS, REPORTS, AND PRESENTATIONS

Raygorodetsky, M., "The Perils and Pleasures of Urban Waterfront Development", Environmental Law In New York, February 3, 2020.

PAUL MCMAHON, PE

SENIOR PROJECT MANAGER

ENVIRONMENTAL ENGINEERING

Mr. McMahon is an environmental engineer working in the NY Metro area. He has experience with projects in the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP), Voluntary Cleanup Program (VCP) and Spill Programs, and New York City Office of Environmental Remediation (NYCOER) "E" Designated and VCP sites. His field experience includes conducting Phase II Environmental Site Investigations (ESI), remedial investigations, and indoor air quality analysis Investigations, and performing remediation oversight. Mr. McMahon's most recent experience includes the preparation of investigation reports and investigation work plans, management of NYSDEC BCP remediation projects and NYSDEC spill remediation projects, design of submembrane depressurization systems, and development of remediation work plans.

EDUCATION

M.E., Environmental Engineering
Manhattan College

B.S., Civil Engineering
Washington University in St. Louis

PROFESSIONAL REGISTRATION

Professional Engineer (PE) in NY

10-Hour OSHA

40-Hour OSHA HAZWOPER

SELECTED PROJECTS

- 55 Bank Street, NYSDEC BCP Site Remediation Project Management,
  White Plains, NY
- 23-01 42nd Road, NYSDEC BCP Site Remediation Oversight and Project Management, Long Island City, NY
- 23-10 Queens Plaza South, NYSDEC BCP Remedial Investigation Report, Interim Remedial Measures Work Plan, and Remediation Project Management, Long Island City, NY
- Brooklyn Navy Yard Dock 72, Management of Environmental Oversight in Accordance with NYSDEC VCP Site Management Plan, Brooklyn, NY
- Purves Street Development, Tall Residential Building, Phase II ESI/NYSDEC BCP Remedial Investigation, Remedial Action Work Plan, and Site Remediation Project Management, Long Island City, NY
- 27-21 44th Drive, NYSDEC BCP Site Remediation Project Management, Long Island City, NY
- NYU Tandon School of Engineering, NYSDEC Spill Investigation and Remediation Project Management, Brooklyn, NY
- Parcel B West, East Harlem, Affordable Housing Development, NYSDEC BCP Remedial Investigation, Remedial Action Work Plan, and Site Remediation Project Management, New York, NY
- 267-273 West 87th Street, NYSDEC BCP Remedial Investigation and Remedial Action Work Plan, and Site Remediation Project Management, New York, NY
- DuPont-Stauffer Landfill, NYSDEC Superfund Site, Site Management Plan Compliance, Newburgh, NY
- 190 Riverside Drive, Fuel Oil Spill Emergency Response, Site Investigation, and Remediation, New York, NY
- 473 President Street, NYSDEC BCP Remedial Investigation, Interim Remedial Measures, Project Management, Brooklyn, NY

- 175-225 3rd Street, NYSDEC BCP Remedial Investigation, Project Management, Brooklyn, NY
- 322 West 57th Street, Sheffield Building Oversight of Emergency Spill Response, New York, NY
- Hudson Yards Terra Firma and Hudson Yards Platform, Construction Oversight and Community Air Monitoring Program, New York, NY
- Columbia University Manhattanville Redevelopment, Remediation Oversight and Community Air Monitoring Program, New York, NY

MICHAEL S. AU, EIT

SENIOR STAFF ENGINEER

ENVIRONMENTAL ENGINEERING

Mr. Au is an environmental engineer with 6 years of experience in environmental engineering and remediation in New York City. He has a background in environmental remediation, site assessments and investigations, remedial oversight and implementation, data management and analysis, and report preparation. He has performed environmental field work including air quality monitoring, field sample collection, photo documentation of work and daily field inspections to verify compliance with contract/construction documents. He currently manages field oversight and environmental investigations, reviews/approves contractor submittals, and prepares remedial work plans and reports.

Prior to joining Langan, Mr. Au gained two years of experience with the New York City Department of Environmental Protection (NYCDEP) working in long-term planning for capital infrastructure projects. He is also experienced in several computer design and drafting programs, including AutoCAD Civil 3D and ArcGIS.

EDUCATION

B.S., Environmental Engineering
University of Delaware

PROFESSIONAL REGISTRATION

Engineer in Training (EIT) in NY

OSHA 10-Hour

40-Hour OSHA HAZWOPER

SELECTED PROJECTS

- Con Edison Construction Inspections, New York, NY
- 159 Boerum Street, Brooklyn, NY
- 459 Smith Street, Brooklyn, NY
- 595-659 Smith Street, Brooklyn, NY
- 1400 Ferris Place, Bronx, NY
- Greenpoint Marina, Brooklyn, NY
- 1 Huron Street, Brooklyn, NY
- 17th Street Development, New York, NY
- 1185 Broadway, New York, NY
- 156-162 Perry Street, New York, NY
- 187 Broadway, New York, NY
- 241 West 28th Street, New York, NY
- 144-150 Barrow Street, New York, NY
- 250 Water Street, New York, NY
- 7 West 17th Street, New York, NY
- 561 Greenwich Street, New York, NY
- 4 Hudson Square, New York, NY
- 37-11 30th Avenue, Astoria, NY
- 38-21 12th Street, Astoria, NY
- 46-81 Metropolitan Avenue, Ridgewood, NY
- 36-04 14th Street, Astoria, NY

MARLA MILLER, PE, BCEE

SENIOR PROJECT ENGINEER

ENVIRONMENTAL ENGINEERING

Ms. Miller has over 19 years of experience managing site characterization and remediation projects. She is a senior environmental engineer experienced in environmental permitting, industrial pretreatment, compliance monitoring, and water quality evaluation. She has a strong background in data validation, laboratory analyses, and sampling procedures for soil, water, and air matrices. Her expertise in data interpretation includes natural attenuation monitoring, petroleum hydrocarbon chromatography, and aqueous geochemistry.

SELECTED PROJECTS

Data Validation

- St. Joseph's Parish Redevelopment Data Quality Assessment (DQA) and Data Usability (DUE) preparation, New York, NY
- 175 – 225 3rd Street Data Usability Summary Report (DUSR), Brooklyn, NY
- 805 – 825 Atlantic Ave DUSR, Brooklyn, NY
- John Evans Superfund Site DUSR, Lansdale, PA
- 50 North Road (Nokia Chester), DQA and DUE preparation, Chester, NJ
- Data Validation/Data Management for Brownfields Site Assessment, Port St. Joe, FL*

Industrial Wastewater Pretreatment

- Industrial Wastewater Discharge Limit Development, Inland Empire Utilities Agency (IEUA), CA*
- Local Limits Study, Hopewell, VA*
- Local Limits Study, Mesa, AZ*
- Local Limits Development and Sewer Use Ordinance Development, Prescott, AZ*
- Implementation of Industrial Pretreatment Program, Prescott, AZ*
- Industrial Pretreatment Development, Queen Creek, AZ*
- Selenium Wastewater Treatment Options for Meat Packing Facility, Tolleson, AZ*
- Arizona Pollutant Discharge Elimination System (AZPDES) Permit Application Preparation, Phoenix, AZ
- Preparation of Sampling and Analysis Plan for Sub-Regional Operating Group (SROG) Local Limits Development, Phoenix and Surrounding Cities, AZ

EDUCATION

M.S., Environmental Engineering
University of California, Berkeley

B.S., Biology
Loyola Marymount University

PROFESSIONAL REGISTRATION

Professional Engineer (PE) in AZ

Board Certified Environmental Engineer (BCEE) – Hazardous Waste Management (09-10019)

CERTIFICATIONS

The Wastewater Treatment, Wastewater Collection, and Water Distribution Operator Certification

Grade 2
Water Treatment Operator Certification Grade 1

Backflow Tester Certification (AABP)

*Denotes projects performed prior to employment at Langan

Site Investigation/Remediation/Compliance

- Arizona Electric Power Cooperative (AEPCO) Apache Generating Station Arizona Protection Permit (APP), Wilcox, AZ
- Arizona Department of Environmental Quality (ADEQ) Water Quality Assurance Revolving Fund (WQARF) Projects, Phoenix and Gilbert, AZ
- Long-Term Monitoring Program and 5-Year CERCLA Review, Luke Air Force Base (AFB), Glendale, AZ*
- Development of Stormwater Prevention Pollution Plan (SWPPP) and Stormwater Flow Modeling, Luke AFB, Glendale, AZ*
- Site Investigation and Clean Closure for Confidential Industrial Client, Tempe, AZ*
- RCRA Facility Investigation/Corrective Measures Assessment, San Jose, CA*
- Technical Resource for X-Ray Fluorescence (XRF) Field Screening Program for Former Small Arms Firing Range, Nogales, AZ*
- Designed and Implemented Sampling Procedures for Volatile Emissions from Tailings Impoundment Using Flux Chambers, Henderson, CO*
- Conceptual Site Model and Statistical Evaluation for Water Treatment Plant, Denver, CO*

Mining Project

- Third-Party Construction Quality Assurance (CQA) for Geotextile-Lined Tailings Repository, Casa Grande, AZ*
- CQA For Reclamation at Smelter, Miami, AZ*
- XRF Field Screening for Excavation at Former Smelter Site, El Paso, TX*
- CQA for Reclamation Projects at Active Smelter, Miami, AZ

ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

Date Created: 03/03/23
Created By: Ben Rao
File: PM14007-1

Langan Engineering & Environmental

TCL Volatiles - EPA 8260D/5035 High&Low (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - 1 Vial MeOH/2 Vial Water

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Methylene chloride	75-09-2	5	2.29	ug/kg	70-130	30	70-130	30	30			
1,1-Dichloroethane	75-34-3	1	0.145	ug/kg	70-130	30	70-130	30	30			
Chloroform	67-66-3	1.5	0.14	ug/kg	70-130	30	70-130	30	30			
Carbon tetrachloride	56-23-5	1	0.23	ug/kg	70-130	30	70-130	30	30			
1,2-Dichloropropane	78-87-5	1	0.125	ug/kg	70-130	30	70-130	30	30			
Dibromochloromethane	124-48-1	1	0.14	ug/kg	70-130	30	70-130	30	30			
1,1,2-Trichloroethane	79-00-5	1	0.267	ug/kg	70-130	30	70-130	30	30			
Tetrachloroethene	127-18-4	0.5	0.196	ug/kg	70-130	30	70-130	30	30			
Chlorobenzene	108-90-7	0.5	0.127	ug/kg	70-130	30	70-130	30	30			
Trichlorofluoromethane	75-69-4	4	0.695	ug/kg	70-139	30	70-139	30	30			
1,2-Dichloroethane	107-06-2	1	0.257	ug/kg	70-130	30	70-130	30	30			
1,1,1-Trichloroethane	71-55-6	0.5	0.167	ug/kg	70-130	30	70-130	30	30			
Bromodichloromethane	75-27-4	0.5	0.109	ug/kg	70-130	30	70-130	30	30			
trans-1,3-Dichloropropene	10061-02-6	1	0.273	ug/kg	70-130	30	70-130	30	30			
cis-1,3-Dichloropropene	10061-01-5	0.5	0.158	ug/kg	70-130	30	70-130	30	30			
1,3-Dichloropropene, Total	542-75-6	0.5	0.158	ug/kg				30	30			
1,1-Dichloropropene	563-58-6	0.5	0.159	ug/kg	70-130	30	70-130	30	30			
Bromoform	75-25-2	4	0.246	ug/kg	70-130	30	70-130	30	30			
1,1,2,2-Tetrachloroethane	79-34-5	0.5	0.166	ug/kg	70-130	30	70-130	30	30			
Benzene	71-43-2	0.5	0.166	ug/kg	70-130	30	70-130	30	30			
Toluene	108-88-3	1	0.543	ug/kg	70-130	30	70-130	30	30			
Ethylbenzene	100-41-4	1	0.141	ug/kg	70-130	30	70-130	30	30			
Chloromethane	74-87-3	4	0.932	ug/kg	52-130	30	52-130	30	30			
Bromomethane	74-83-9	2	0.581	ug/kg	57-147	30	57-147	30	30			
Vinyl chloride	75-01-4	1	0.335	ug/kg	67-130	30	67-130	30	30			
Chloroethane	75-00-3	2	0.452	ug/kg	50-151	30	50-151	30	30			
1,1-Dichloroethene	75-35-4	1	0.238	ug/kg	65-135	30	65-135	30	30			
trans-1,2-Dichloroethene	156-60-5	1.5	0.137	ug/kg	70-130	30	70-130	30	30			
Trichloroethene	79-01-6	0.5	0.137	ug/kg	70-130	30	70-130	30	30			
1,2-Dichlorobenzene	95-50-1	2	0.144	ug/kg	70-130	30	70-130	30	30			
1,3-Dichlorobenzene	541-73-1	2	0.148	ug/kg	70-130	30	70-130	30	30			
1,4-Dichlorobenzene	106-46-7	2	0.171	ug/kg	70-130	30	70-130	30	30			
Methyl tert butyl ether	1634-04-4	2	0.201	ug/kg	66-130	30	66-130	30	30			
p/m-Xylene	179601-23-1	2	0.56	ug/kg	70-130	30	70-130	30	30			
o-Xylene	95-47-6	1	0.291	ug/kg	70-130	30	70-130	30	30			
Xylene (Total)	1330-20-7	1	0.291	ug/kg				30	30			
cis-1,2-Dichloroethene	156-59-2	1	0.175	ug/kg	70-130	30	70-130	30	30			
1,2-Dichloroethene (total)	540-59-0	1	0.137	ug/kg				30	30			
Dibromomethane	74-95-3	2	0.238	ug/kg	70-130	30	70-130	30	30			
Styrene	100-42-5	1	0.196	ug/kg	70-130	30	70-130	30	30			
Dichlorodifluoromethane	75-71-8	10	0.915	ug/kg	30-146	30	30-146	30	30			
Acetone	67-64-1	10	4.811	ug/kg	54-140	30	54-140	30	30			

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Langan Engineering & Environmental

TCL Volatiles - EPA 8260D/5035 High&Low (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - 1 Vial MeOH/2 Vial Water

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Carbon disulfide	75-15-0	10	4.55	ug/kg	59-130	30	59-130	30	30			
2-Butanone	78-93-3	10	2.22	ug/kg	70-130	30	70-130	30	30			
Vinyl acetate	108-05-4	10	2.15	ug/kg	70-130	30	70-130	30	30			
4-Methyl-2-pentanone	108-10-1	10	1.28	ug/kg	70-130	30	70-130	30	30			
1,2,3-Trichloropropane	96-18-4	2	0.127	ug/kg	68-130	30	68-130	30	30			
2-Hexanone	591-78-6	10	1.18	ug/kg	70-130	30	70-130	30	30			
Bromochloromethane	74-97-5	2	0.205	ug/kg	70-130	30	70-130	30	30			
2,2-Dichloropropane	594-20-7	2	0.202	ug/kg	70-130	30	70-130	30	30			
1,2-Dibromoethane	106-93-4	1	0.279	ug/kg	70-130	30	70-130	30	30			
1,3-Dichloropropane	142-28-9	2	0.167	ug/kg	69-130	30	69-130	30	30			
1,1,1,2-Tetrachloroethane	630-20-6	0.5	0.132	ug/kg	70-130	30	70-130	30	30			
Bromobenzene	108-86-1	2	0.145	ug/kg	70-130	30	70-130	30	30			
n-Butylbenzene	104-51-8	1	0.167	ug/kg	70-130	30	70-130	30	30			
sec-Butylbenzene	135-98-8	1	0.146	ug/kg	70-130	30	70-130	30	30			
tert-Butylbenzene	98-06-6	2	0.118	ug/kg	70-130	30	70-130	30	30			
o-Chlorotoluene	95-49-8	2	0.191	ug/kg	70-130	30	70-130	30	30			
p-Chlorotoluene	106-43-4	2	0.108	ug/kg	70-130	30	70-130	30	30			
1,2-Dibromo-3-chloropropane	96-12-8	3	0.998	ug/kg	68-130	30	68-130	30	30			
Hexachlorobutadiene	87-68-3	4	0.169	ug/kg	67-130	30	67-130	30	30			
Isopropylbenzene	98-82-8	1	0.109	ug/kg	70-130	30	70-130	30	30			
p-Isopropyltoluene	99-87-6	1	0.109	ug/kg	70-130	30	70-130	30	30			
Naphthalene	91-20-3	4	0.65	ug/kg	70-130	30	70-130	30	30			
Acrylonitrile	107-13-1	4	1.15	ug/kg	70-130	30	70-130	30	30			
n-Propylbenzene	103-65-1	1	0.171	ug/kg	70-130	30	70-130	30	30			
1,2,3-Trichlorobenzene	87-61-6	2	0.322	ug/kg	70-130	30	70-130	30	30			
1,2,4-Trichlorobenzene	120-82-1	2	0.272	ug/kg	70-130	30	70-130	30	30			
1,3,5-Trimethylbenzene	108-67-8	2	0.193	ug/kg	70-130	30	70-130	30	30			
1,2,4-Trimethylbenzene	95-63-6	2	0.334	ug/kg	70-130	30	70-130	30	30			
1,4-Dioxane	123-91-1	80	35.1	ug/kg	65-136	30	65-136	30	30			
1,4-Diethylbenzene	105-05-5	2	0.177	ug/kg	70-130	30	70-130	30	30			
4-Ethyltoluene	622-96-8	2	0.384	ug/kg	70-130	30	70-130	30	30			
1,2,4,5-Tetramethylbenzene	95-93-2	2	0.191	ug/kg	70-130	30	70-130	30	30			
Ethyl ether	60-29-7	2	0.341	ug/kg	67-130	30	67-130	30	30			
trans-1,4-Dichloro-2-butene	110-57-6	5	1.42	ug/kg	70-130	30	70-130	30	30			
1,2-Dichloroethane-d4	*17060-07-0*									*70-130*		
2-Chloroethoxyethane												
Toluene-d8	*2037-26-5*									*70-130*		
4-Bromofluorobenzene	*460-00-4*									*70-130*		
Dibromofluoromethane	*1868-53-7*									*70-130*		

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NYTCL Semivolatiles - EPA 8270E (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Acenaphthene	83-32-9	133.6	17.3012	ug/kg	31-137	50	31-137	50	50			
1,2,4-Trichlorobenzene	120-82-1	167	19.1048	ug/kg	38-107	50	38-107	50	50			
Hexachlorobenzene	118-74-1	100.2	18.704	ug/kg	40-140	50	40-140	50	50			
Bis(2-chloroethyl)ether	111-44-4	150.3	22.6452	ug/kg	40-140	50	40-140	50	50			
2-Chloronaphthalene	91-58-7	167	16.5664	ug/kg	40-140	50	40-140	50	50			
1,2-Dichlorobenzene	95-50-1	167	29.9932	ug/kg	40-140	50	40-140	50	50			
1,3-Dichlorobenzene	541-73-1	167	28.724	ug/kg	40-140	50	40-140	50	50			
1,4-Dichlorobenzene	106-46-7	167	29.1582	ug/kg	28-104	50	28-104	50	50			
3,3'-Dichlorobenzidine	91-94-1	167	44.422	ug/kg	40-140	50	40-140	50	50			
2,4-Dinitrotoluene	121-14-2	167	33.4	ug/kg	40-132	50	40-132	50	50			
2,6-Dinitrotoluene	606-20-2	167	28.6572	ug/kg	40-140	50	40-140	50	50			
Fluoranthene	206-44-0	100.2	19.1716	ug/kg	40-140	50	40-140	50	50			
4-Chlorophenyl phenyl ether	7005-72-3	167	17.869	ug/kg	40-140	50	40-140	50	50			
4-Bromophenyl phenyl ether	101-55-3	167	25.4842	ug/kg	40-140	50	40-140	50	50			
Bis(2-chloroisopropyl)ether	108-60-1	200.4	28.5236	ug/kg	40-140	50	40-140	50	50			
Bis(2-chloroethoxy)methane	111-91-1	180.36	16.7334	ug/kg	40-117	50	40-117	50	50			
Hexachlorobutadiene	87-68-3	167	24.4488	ug/kg	40-140	50	40-140	50	50			
Hexachlorocyclopentadiene	77-47-4	477.62	151.302	ug/kg	40-140	50	40-140	50	50			
Hexachloroethane	67-72-1	133.6	27.0206	ug/kg	40-140	50	40-140	50	50			
Isophorone	78-59-1	150.3	21.6766	ug/kg	40-140	50	40-140	50	50			
Naphthalene	91-20-3	167	20.3406	ug/kg	40-140	50	40-140	50	50			
Nitrobenzene	98-95-3	150.3	24.716	ug/kg	40-140	50	40-140	50	50			
NitrosoDiPhenylAmine(NDPA)/DPA	86-30-6	133.6	19.0046	ug/kg	36-157	50	36-157	50	50			
n-Nitrosodi-n-propylamine	621-64-7	167	25.7848	ug/kg	32-121	50	32-121	50	50			
Bis(2-Ethylhexyl)phthalate	117-81-7	167	57.782	ug/kg	40-140	50	40-140	50	50			
Butyl benzyl phthalate	85-68-7	167	42.084	ug/kg	40-140	50	40-140	50	50			
Di-n-butylphthalate	84-74-2	167	31.6632	ug/kg	40-140	50	40-140	50	50			
Di-n-octylphthalate	117-84-0	167	56.78	ug/kg	40-140	50	40-140	50	50			
Diethyl phthalate	84-66-2	167	15.4642	ug/kg	40-140	50	40-140	50	50			
Dimethyl phthalate	131-11-3	167	35.07	ug/kg	40-140	50	40-140	50	50			
Benzo(a)anthracene	56-55-3	100.2	18.8042	ug/kg	40-140	50	40-140	50	50			
Benzo(a)pyrene	50-32-8	133.6	40.748	ug/kg	40-140	50	40-140	50	50			
Benzo(b)fluoranthene	205-99-2	100.2	28.1228	ug/kg	40-140	50	40-140	50	50			
Benzo(k)fluoranthene	207-08-9	100.2	26.72	ug/kg	40-140	50	40-140	50	50			
Chrysene	218-01-9	100.2	17.368	ug/kg	40-140	50	40-140	50	50			
Acenaphthylene	208-96-8	133.6	25.7848	ug/kg	40-140	50	40-140	50	50			
Anthracene	120-12-7	100.2	32.565	ug/kg	40-140	50	40-140	50	50			
Benzo(ghi)perylene	191-24-2	133.6	19.6392	ug/kg	40-140	50	40-140	50	50			
Fluorene	86-73-7	167	16.2324	ug/kg	40-140	50	40-140	50	50			
Phenanthrene	85-01-8	100.2	20.3072	ug/kg	40-140	50	40-140	50	50			
Dibenzo(a,h)anthracene	53-70-3	100.2	19.3052	ug/kg	40-140	50	40-140	50	50			
Indeno(1,2,3-cd)Pyrene	193-39-5	133.6	23.2798	ug/kg	40-140	50	40-140	50	50			

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Langan Engineering & Environmental

NYTCL Semivolatiles - EPA 8270E (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Pyrene	129-00-0	100.2	16.5998	ug/kg	35-142	50	35-142	50	50			
Biphenyl	92-52-4	380.76	21.71	ug/kg	37-127	50	37-127	50	50			
4-Chloroaniline	106-47-8	167	30.394	ug/kg	40-140	50	40-140	50	50			
2-Nitroaniline	88-74-4	167	32.1976	ug/kg	47-134	50	47-134	50	50			
3-Nitroaniline	99-09-2	167	31.4962	ug/kg	26-129	50	26-129	50	50			
4-Nitroaniline	100-01-6	167	69.138	ug/kg	41-125	50	41-125	50	50			
Dibenzofuran	132-64-9	167	15.7982	ug/kg	40-140	50	40-140	50	50			
2-Methylnaphthalene	91-57-6	200.4	20.1736	ug/kg	40-140	50	40-140	50	50			
Acetophenone	98-86-2	167	20.6746	ug/kg	14-144	50	14-144	50	50			
2,4,6-Trichlorophenol	88-06-2	100.2	31.6632	ug/kg	30-130	50	30-130	50	50			
P-Chloro-M-Cresol	59-50-7	167	24.883	ug/kg	26-103	50	26-103	50	50			
2-Chlorophenol	95-57-8	167	19.7394	ug/kg	25-102	50	25-102	50	50			
2,4-Dichlorophenol	120-83-2	150.3	26.8536	ug/kg	30-130	50	30-130	50	50			
2,4-Dimethylphenol	105-67-9	167	55.11	ug/kg	30-130	50	30-130	50	50			
2-Nitrophenol	88-75-5	360.72	62.792	ug/kg	30-130	50	30-130	50	50			
4-Nitrophenol	100-02-7	233.8	68.136	ug/kg	11-114	50	11-114	50	50			
2,4-Dinitrophenol	51-28-5	801.6	77.822	ug/kg	4-130	50	4-130	50	50			
4,6-Dinitro-o-cresol	534-52-1	434.2	80.16	ug/kg	10-130	50	10-130	50	50			
Pentachlorophenol	87-86-5	133.6	36.74	ug/kg	17-109	50	17-109	50	50			
Phenol	108-95-2	167	25.217	ug/kg	26-90	50	26-90	50	50			
2-Methylphenol	95-48-7	167	25.885	ug/kg	30-130.	50	30-130.	50	50			
3-Methylphenol/4-Methylphenol	108-39-4/106-44-5	240.48	26.1522	ug/kg	30-130	50	30-130	50	50			
2,4,5-Trichlorophenol	95-95-4	167	31.9972	ug/kg	30-130	50	30-130	50	50			
Benzoic Acid	65-85-0	541.08	169.004	ug/kg	10-110	50	10-110	50	50			
Benzyl Alcohol	100-51-6	167	51.102	ug/kg	40-140	50	40-140	50	50			
Carbazole	86-74-8	167	16.2324	ug/kg	54-128	50	54-128	50	50			
1,4-Dioxane	123-91-1	25.05	7.682	ug/kg	40-140	50	40-140	50	50			
2-Fluorophenol	*367-12-4*									*25-120*		
Phenol-d6	*13127-88-3*									*10-120*		
Nitrobenzene-d5	*4165-60-0*									*23-120*		
2-Fluorobiphenyl	*321-60-8*									*30-120*		
2,4,6-Tribromophenol	*118-79-6*									*10-136*		
4-Terphenyl-d14	*1718-51-0*									*18-120*		

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TCL Pesticides - EPA 8081B (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Delta-BHC	319-86-8	1.6008	0.31349	ug/kg	30-150	30	30-150	50	50			
Lindane	58-89-9	0.667	0.298149	ug/kg	30-150	30	30-150	50	50			
Alpha-BHC	319-84-6	0.667	0.189428	ug/kg	30-150	30	30-150	50	50			
Beta-BHC	319-85-7	1.6008	0.60697	ug/kg	30-150	30	30-150	50	50			
Heptachlor	76-44-8	0.8004	0.358846	ug/kg	30-150	30	30-150	50	50			
Aldrin	309-00-2	1.6008	0.563615	ug/kg	30-150	30	30-150	50	50			
Heptachlor epoxide	1024-57-3	3.0015	0.90045	ug/kg	30-150	30	30-150	50	50			
Endrin	72-20-8	0.667	0.27347	ug/kg	30-150	30	30-150	50	50			
Endrin aldehyde	7421-93-4	2.001	0.70035	ug/kg	30-150	30	30-150	50	50			
Endrin ketone	53494-70-5	1.6008	0.412206	ug/kg	30-150	30	30-150	50	50			
Dieldrin	60-57-1	1.0005	0.50025	ug/kg	30-150	30	30-150	50	50			
4,4'-DDE	72-55-9	1.6008	0.370185	ug/kg	30-150	30	30-150	50	50			
4,4'-DDD	72-54-8	1.6008	0.570952	ug/kg	30-150	30	30-150	50	50			
4,4'-DDT	50-29-3	1.6008	1.28731	ug/kg	30-150	30	30-150	50	50			
Endosulfan I	959-98-8	1.6008	0.378189	ug/kg	30-150	30	30-150	50	50			
Endosulfan II	33213-65-9	1.6008	0.534934	ug/kg	30-150	30	30-150	50	50			
Endosulfan sulfate	1031-07-8	0.667	0.317492	ug/kg	30-150	30	30-150	50	50			
Methoxychlor	72-43-5	3.0015	0.9338	ug/kg	30-150	30	30-150	50	50			
Toxaphene	8001-35-2	30.015	8.4042	ug/kg	30-150	30	30-150	50	50			
cis-Chlordane	5103-71-9	2.001	0.557612	ug/kg	30-150	30	30-150	50	50			
trans-Chlordane	5103-74-2	2.001	0.528264	ug/kg	30-150	30	30-150	50	50			
Chlordane	57-74-9	13.34	5.30265	ug/kg	30-150	30	30-150	50	50			
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*		
Decachlorobiphenyl	*2051-24-3*									*30-150*		

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Langan Engineering & Environmental

Herbicides -EPA 8151A (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
2,4-D	94-75-7	0.1665	0.0104895	mg/kg	30-150	30	30-150	30	30			
2,4,5-T	93-76-5	0.1665	0.0051615	mg/kg	30-150	30	30-150	30	30			
2,4,5-TP (Silvex)	93-72-1	0.1665	0.0044289	mg/kg	30-150	30	30-150	30	30			
DCAA	*19719-28-9*									*30-150*		

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Langan Engineering & Environmental

TCL PCBs - EPA 8082A (SOIL)

Holding Time: 365 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Aroclor 1016	12674-11-2	0.05	0.00444	mg/kg	40-140	50	40-140	50	50			
Aroclor 1221	11104-28-2	0.05	0.00501	mg/kg	40-140	50	40-140	50	50			
Aroclor 1232	11141-16-5	0.05	0.0106	mg/kg	40-140	50	40-140	50	50			
Aroclor 1242	53469-21-9	0.05	0.00674	mg/kg	40-140	50	40-140	50	50			
Aroclor 1248	12672-29-6	0.05	0.0075	mg/kg	40-140	50	40-140	50	50			
Aroclor 1254	11097-69-1	0.05	0.00547	mg/kg	40-140	50	40-140	50	50			
Aroclor 1260	11096-82-5	0.05	0.00924	mg/kg	40-140	50	40-140	50	50			
Aroclor 1262	37324-23-5	0.05	0.00635	mg/kg	40-140	50	40-140	50	50			
Aroclor 1268	11100-14-4	0.05	0.00518	mg/kg	40-140	50	40-140	50	50			
PCBs, Total	1336-36-3	0.05	0.00444	mg/kg				50	50			
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*		
Decachlorobiphenyl	*2051-24-3*									*30-150*		

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METALS by 6010D (SOIL)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria	Holding Time	Container
Aluminum, Total	7429-90-5	4	1.08	mg/kg	48-151		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Antimony, Total	7440-36-0	2	0.152	mg/kg	1-208		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Arsenic, Total	7440-38-2	0.4	0.0832	mg/kg	79-121		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Barium, Total	7440-39-3	0.4	0.0696	mg/kg	83-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Beryllium, Total	7440-41-7	0.2	0.0132	mg/kg	83-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Cadmium, Total	7440-43-9	0.4	0.0392	mg/kg	83-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Calcium, Total	7440-70-2	4	1.4	mg/kg	81-119		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Chromium, Total	7440-47-3	0.4	0.0384	mg/kg	80-120		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Cobalt, Total	7440-48-4	0.8	0.0664	mg/kg	84-115		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Copper, Total	7440-50-8	0.4	0.1032	mg/kg	81-118		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Iron, Total	7439-89-6	2	0.3612	mg/kg	45-155		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Lead, Total	7439-92-1	2	0.1072	mg/kg	81-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Magnesium, Total	7439-95-4	4	0.616	mg/kg	76-124		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Manganese, Total	7439-96-5	0.4	0.0636	mg/kg	81-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Nickel, Total	7440-02-0	1	0.0968	mg/kg	83-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Potassium, Total	7440-09-7	100	5.76	mg/kg	71-129		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Selenium, Total	7782-49-2	0.8	0.1032	mg/kg	78-122		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Silver, Total	7440-22-4	0.2	0.1132	mg/kg	75-124		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Sodium, Total	7440-23-5	80	1.26	mg/kg	72-127		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Thallium, Total	7440-28-0	0.8	0.126	mg/kg	80-120		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Vanadium, Total	7440-62-2	0.4	0.0812	mg/kg	78-122		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Zinc, Total	7440-66-6	2	0.1172	mg/kg	82-118		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved

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Langan Engineering & Environmental

METALS by 7471B (SOIL)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria	Holding Time	Container
Mercury, Total	7439-97-6	0.08	0.05216	mg/kg	72-128		80-120	20	20		28 days	1 - Metals Only-Glass 60mL/2oz unpreserved

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Langan Engineering & Environmental

WETCHEM (SOIL)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Method	Holding Time	Container
Chromium, Hexavalent	18540-29-9	0.8	0.16	mg/kg	80-120	20	75-125	20	20	7196A	30 days	1 - Glass 120ml/4oz unpreserved
Cyanide, Total	57-12-5	1	0.212	mg/kg	80-120	35	75-125	35	35	9010C/9012B	14 days	1 - Glass 250ml/8oz unpreserved

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Langan Engineering & Environmental

PFAAs via LCMSMS-Isotope Dilution (SOIL)

Holding Time: 90 days
Container/Sample Preservation: 1 - Plastic 8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Perfluorobutanoic Acid (PFBA)	375-22-4	0.8	0.0504	ng/g	40-150	30	40-150	30	30			
Perfluoropentanoic Acid (PFPeA)	2706-90-3	0.4	0.056	ng/g	40-150	30	40-150	30	30			
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	0.2	0.0432	ng/g	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	0.8	0.0808	ng/g	40-150	30	40-150	30	30			
Perfluorohexanoic Acid (PFHxA)	307-24-4	0.2	0.0464	ng/g	40-150	30	40-150	30	30			
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	0.2	0.0232	ng/g	40-150	30	40-150	30	30			
Perfluoroheptanoic Acid (PFHpA)	375-85-9	0.2	0.0232	ng/g	40-150	30	40-150	30	30			
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	0.2	0.0592	ng/g	40-150	30	40-150	30	30			
Perfluorooctanoic Acid (PFOA)	335-67-1	0.2	0.052	ng/g	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	0.8	0.28	ng/g	40-150	30	40-150	30	30			
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	0.2	0.0368	ng/g	40-150	30	40-150	30	30			
Perfluorononanoic Acid (PFNA)	375-95-1	0.2	0.0784	ng/g	40-150	30	40-150	30	30			
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	0.2	0.0792	ng/g	40-150	30	40-150	30	30			
Perfluorodecanoic Acid (PFDA)	335-76-2	0.2	0.0752	ng/g	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	0.8	0.3872	ng/g	40-150	30	40-150	30	30			
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	0.2	0.0424	ng/g	40-150	30	40-150	30	30			
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA	2355-31-9	0.2	0.1	ng/g	40-150	30	40-150	30	30			
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	0.2	0.0512	ng/g	40-150	30	40-150	30	30			
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	0.2	0.032	ng/g	40-150	30	40-150	30	30			
Perfluorooctanesulfonamide (FOSA)	754-91-6	0.2	0.0432	ng/g	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	0.2	0.0824	ng/g	40-150	30	40-150	30	30			
Perfluorododecanoic Acid (PFDoA)	307-55-1	0.2	0.0408	ng/g	40-150	30	40-150	30	30			
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	0.2	0.0528	ng/g	40-150	30	40-150	30	30			
Perfluorotetradecanoic Acid (PFTA)	376-06-7	0.2	0.1064	ng/g	40-150	30	40-150	30	30			
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Pro	13252-13-6	0.8	0.0984	ng/g	40-150	30	40-150	30	30			
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	919005-14-4	0.8	0.1464	ng/g	40-150	30	40-150	30	30			
Perfluorododecane Sulfonic Acid (PFDoDS)	79780-39-5	0.2	0.0384	ng/g	40-150	30	40-150	30	30			
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3	756426-58-1	0.8	0.196	ng/g	40-150	30	40-150	30	30			
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-	763051-92-9	0.8	0.1672	ng/g	40-150	30	40-150	30	30			
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	31506-32-8	0.2	0.1	ng/g	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	4151-50-2	0.2	0.112	ng/g	40-150	30	40-150	30	30			
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	24448-09-7	2	0.2504	ng/g	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	1691-99-2	2	0.5104	ng/g	40-150	30	40-150	30	30			
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	377-73-1	0.4	0.0408	ng/g	40-150	30	40-150	30	30			
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	863090-89-5	0.4	0.0312	ng/g	40-150	30	40-150	30	30			
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	113507-82-7	0.4	0.0832	ng/g	40-150	30	40-150	30	30			
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	151772-58-6	0.4	0.0952	ng/g	40-150	30	40-150	30	30			
3-Perfluoropropyl Propanoic Acid (3:3FTCA)	356-02-5	1	0.144	ng/g	40-150	30	40-150	30	30			
2H,2H,3H,3H-Perfluorooctanoic Acid (5:3FTCA)	914637-49-3	5	0.5048	ng/g	40-150	30	40-150	30	30			
3-Perfluoroheptyl Propanoic Acid (7:3FTCA)	812-70-4	5	1.76	ng/g	40-150	30	40-150	30	30			
Perfluoro[13C4]Butanoic Acid (MPFBA)	*NONE*									*20-150*		
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	*NONE*									*20-150*		

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Langan Engineering & Environmental

PFAAs via LCMSMS-Isotope Dilution (SOIL)

Holding Time: 90 days
Container/Sample Preservation: 1 - Plastic 8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4	*NONE*									*20-150*		
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	*NONE*									*20-150*		
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	*NONE*									*20-150*		
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	*NONE*									*20-150*		
Perfluoro[13C8]Octanoic Acid (M8PFOA)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6	*NONE*									*20-150*		
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	*NONE*									*20-150*		
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	*NONE*									*20-150*		
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8	*NONE*									*20-150*		
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (	*NONE*									*20-150*		
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	*NONE*									*20-150*		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	*NONE*									*20-150*		
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5	*NONE*									*20-150*		
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	*NONE*									*20-150*		
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	*NONE*									*20-150*		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13	*NONE*									*20-150*		
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	*NONE*									*20-150*		
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	*NONE*									*20-150*		
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol	*1265205-95-5*									*20-150*		
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (	*NONE*									*20-150*		

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TCL Volatiles - EPA 8260D (WATER)

Holding Time: 14 days
Container/Sample Preservation: 3 - Vial HCl preserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Methylene chloride	75-09-2	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,1-Dichloroethane	75-34-3	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Chloroform	67-66-3	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Carbon tetrachloride	56-23-5	0.5	0.134	ug/l	63-132	20	63-132	20	20			
1,2-Dichloropropane	78-87-5	1	0.137	ug/l	70-130	20	70-130	20	20			
Dibromochloromethane	124-48-1	0.5	0.149	ug/l	63-130	20	63-130	20	20			
1,1,2-Trichloroethane	79-00-5	1.5	0.5	ug/l	70-130	20	70-130	20	20			
Tetrachloroethene	127-18-4	0.5	0.181	ug/l	70-130	20	70-130	20	20			
Chlorobenzene	108-90-7	2.5	0.7	ug/l	75-130	20	75-130	20	20			
Trichlorofluoromethane	75-69-4	2.5	0.7	ug/l	62-150	20	62-150	20	20			
1,2-Dichloroethane	107-06-2	0.5	0.132	ug/l	70-130	20	70-130	20	20			
1,1,1-Trichloroethane	71-55-6	2.5	0.7	ug/l	67-130	20	67-130	20	20			
Bromodichloromethane	75-27-4	0.5	0.192	ug/l	67-130	20	67-130	20	20			
trans-1,3-Dichloropropene	10061-02-6	0.5	0.164	ug/l	70-130	20	70-130	20	20			
cis-1,3-Dichloropropene	10061-01-5	0.5	0.144	ug/l	70-130	20	70-130	20	20			
1,3-Dichloropropene, Total	542-75-6	0.5	0.144	ug/l				20	20			
1,1-Dichloropropene	563-58-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Bromoform	75-25-2	2	0.65	ug/l	54-136	20	54-136	20	20			
1,1,2,2-Tetrachloroethane	79-34-5	0.5	0.167	ug/l	67-130	20	67-130	20	20			
Benzene	71-43-2	0.5	0.159	ug/l	70-130	20	70-130	20	20			
Toluene	108-88-3	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Ethylbenzene	100-41-4	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Chloromethane	74-87-3	2.5	0.7	ug/l	64-130	20	64-130	20	20			
Bromomethane	74-83-9	2.5	0.7	ug/l	39-139	20	39-139	20	20			
Vinyl chloride	75-01-4	1	0.0714	ug/l	55-140	20	55-140	20	20			
Chloroethane	75-00-3	2.5	0.7	ug/l	55-138	20	55-138	20	20			
1,1-Dichloroethene	75-35-4	0.5	0.169	ug/l	61-145	20	61-145	20	20			
trans-1,2-Dichloroethene	156-60-5	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Trichloroethene	79-01-6	0.5	0.175	ug/l	70-130	20	70-130	20	20			
1,2-Dichlorobenzene	95-50-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,3-Dichlorobenzene	541-73-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,4-Dichlorobenzene	106-46-7	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Methyl tert butyl ether	1634-04-4	2.5	0.7	ug/l	63-130	20	63-130	20	20			
p/m-Xylene	179601-23-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
o-Xylene	95-47-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Xylene (Total)	1330-20-7	2.5	0.7	ug/l				20	20			
cis-1,2-Dichloroethene	156-59-2	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,2-Dichloroethene (total)	540-59-0	2.5	0.7	ug/l				20	20			
Dibromomethane	74-95-3	5	1	ug/l	70-130	20	70-130	20	20			
1,2,3-Trichloropropane	96-18-4	2.5	0.7	ug/l	64-130	20	64-130	20	20			
Acrylonitrile	107-13-1	5	1.5	ug/l	70-130	20	70-130	20	20			
Styrene	100-42-5	2.5	0.7	ug/l	70-130	20	70-130	20	20			

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Langan Engineering & Environmental

TCL Volatiles - EPA 8260D (WATER)

Holding Time: 14 days
Container/Sample Preservation: 3 - Vial HCl preserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Dichlorodifluoromethane	75-71-8	5	1	ug/l	36-147	20	36-147	20	20			
Acetone	67-64-1	5	1.46	ug/l	58-148	20	58-148	20	20			
Carbon disulfide	75-15-0	5	1	ug/l	51-130	20	51-130	20	20			
2-Butanone	78-93-3	5	1.94	ug/l	63-138	20	63-138	20	20			
Vinyl acetate	108-05-4	5	1	ug/l	70-130	20	70-130	20	20			
4-Methyl-2-pentanone	108-10-1	5	1	ug/l	59-130	20	59-130	20	20			
2-Hexanone	591-78-6	5	1	ug/l	57-130	20	57-130	20	20			
Bromochloromethane	74-97-5	2.5	0.7	ug/l	70-130	20	70-130	20	20			
2,2-Dichloropropane	594-20-7	2.5	0.7	ug/l	63-133	20	63-133	20	20			
1,2-Dibromoethane	106-93-4	2	0.65	ug/l	70-130	20	70-130	20	20			
1,3-Dichloropropane	142-28-9	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,1,1,2-Tetrachloroethane	630-20-6	2.5	0.7	ug/l	64-130	20	64-130	20	20			
Bromobenzene	108-86-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
n-Butylbenzene	104-51-8	2.5	0.7	ug/l	53-136	20	53-136	20	20			
sec-Butylbenzene	135-98-8	2.5	0.7	ug/l	70-130	20	70-130	20	20			
tert-Butylbenzene	98-06-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
o-Chlorotoluene	95-49-8	2.5	0.7	ug/l	70-130	20	70-130	20	20			
p-Chlorotoluene	106-43-4	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,2-Dibromo-3-chloropropane	96-12-8	2.5	0.7	ug/l	41-144	20	41-144	20	20			
Hexachlorobutadiene	87-68-3	2.5	0.7	ug/l	63-130	20	63-130	20	20			
Isopropylbenzene	98-82-8	2.5	0.7	ug/l	70-130	20	70-130	20	20			
p-Isopropyltoluene	99-87-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Naphthalene	91-20-3	2.5	0.7	ug/l	70-130	20	70-130	20	20			
n-Propylbenzene	103-65-1	2.5	0.7	ug/l	69-130	20	69-130	20	20			
1,2,3-Trichlorobenzene	87-61-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,2,4-Trichlorobenzene	120-82-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,3,5-Trimethylbenzene	108-67-8	2.5	0.7	ug/l	64-130	20	64-130	20	20			
1,2,4-Trimethylbenzene	95-63-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,4-Dioxane	123-91-1	250	60.8	ug/l	56-162	20	56-162	20	20			
1,4-Diethylbenzene	105-05-5	2	0.7	ug/l	70-130	20	70-130	20	20			
4-Ethyltoluene	622-96-8	2	0.7	ug/l	70-130	20	70-130	20	20			
1,2,4,5-Tetramethylbenzene	95-93-2	2	0.542	ug/l	70-130	20	70-130	20	20			
Ethyl ether	60-29-7	2.5	0.7	ug/l	59-134	20	59-134	20	20			
trans-1,4-Dichloro-2-butene	110-57-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,2-Dichloroethane-d4	*17060-07-0*									*70-130*		
Toluene-d8	*2037-26-5*									*70-130*		
4-Bromofluorobenzene	*460-00-4*									*70-130*		
Dibromofluoromethane	*1868-53-7*									*70-130*		

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NYTCL Semivolatiles - EPA 8270E (LVI) (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 250ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Acenaphthene	83-32-9	2.002	0.44408	ug/l	37-111	30	37-111	30	30			
1,2,4-Trichlorobenzene	120-82-1	5.0232	0.49868	ug/l	39-98	30	39-98	30	30			
Hexachlorobenzene	118-74-1	2.002	0.46592	ug/l	40-140	30	40-140	30	30			
Bis(2-chloroethyl)ether	111-44-4	2.002	0.50596	ug/l	40-140	30	40-140	30	30			
2-Chloronaphthalene	91-58-7	2.002	0.4368	ug/l	40-140	30	40-140	30	30			
1,2-Dichlorobenzene	95-50-1	2.002	0.455	ug/l	40-140	30	40-140	30	30			
1,3-Dichlorobenzene	541-73-1	2.002	0.40404	ug/l	40-140	30	40-140	30	30			
1,4-Dichlorobenzene	106-46-7	2.002	0.43316	ug/l	36-97	30	36-97	30	30			
3,3'-Dichlorobenzidine	91-94-1	5.0232	1.62344	ug/l	40-140	30	40-140	30	30			
2,4-Dinitrotoluene	121-14-2	5.0232	1.1648	ug/l	48-143	30	48-143	30	30			
2,6-Dinitrotoluene	606-20-2	5.0232	0.93184	ug/l	40-140	30	40-140	30	30			
Fluoranthene	206-44-0	2.002	0.257348	ug/l	40-140	30	40-140	30	30			
4-Chlorophenyl phenyl ether	7005-72-3	2.002	0.48776	ug/l	40-140	30	40-140	30	30			
4-Bromophenyl phenyl ether	101-55-3	2.002	0.37856	ug/l	40-140	30	40-140	30	30			
Bis(2-chloroisopropyl)ether	108-60-1	2.002	0.5278	ug/l	40-140	30	40-140	30	30			
Bis(2-chloroethoxy)methane	111-91-1	5.0232	0.50232	ug/l	40-140	30	40-140	30	30			
Hexachlorobutadiene	87-68-3	2.002	0.65884	ug/l	40-140	30	40-140	30	30			
Hexachlorocyclopentadiene	77-47-4	20.02	0.68796	ug/l	40-140	30	40-140	30	30			
Hexachloroethane	67-72-1	2.002	0.58604	ug/l	40-140	30	40-140	30	30			
Isophorone	78-59-1	5.0232	1.20484	ug/l	40-140	30	40-140	30	30			
Naphthalene	91-20-3	2.002	0.46592	ug/l	40-140	30	40-140	30	30			
Nitrobenzene	98-95-3	2.002	0.77168	ug/l	40-140	30	40-140	30	30			
NitrosoDiPhenylAmine(NDPA)/DPA	86-30-6	2.002	0.4186	ug/l	40-140	30	40-140	30	30			
n-Nitrosodi-n-propylamine	621-64-7	5.0232	0.64428	ug/l	29-132	30	29-132	30	30			
Bis(2-Ethylhexyl)phthalate	117-81-7	3.003	1.53608	ug/l	40-140	30	40-140	30	30			
Butyl benzyl phthalate	85-68-7	5.0232	1.17208	ug/l	40-140	30	40-140	30	30			
Di-n-butylphthalate	84-74-2	5.0232	0.38948	ug/l	40-140	30	40-140	30	30			
Di-n-octylphthalate	117-84-0	5.0232	1.274	ug/l	40-140	30	40-140	30	30			
Diethyl phthalate	84-66-2	5.0232	0.3822	ug/l	40-140	30	40-140	30	30			
Dimethyl phthalate	131-11-3	5.0232	1.82	ug/l	40-140	30	40-140	30	30			
Benzo(a)anthracene	56-55-3	2.002	0.32578	ug/l	40-140	30	40-140	30	30			
Benzo(a)pyrene	50-32-8	2.002	0.40768	ug/l	40-140	30	40-140	30	30			
Benzo(b)fluoranthene	205-99-2	2.002	0.355264	ug/l	40-140	30	40-140	30	30			
Benzo(k)fluoranthene	207-08-9	2.002	0.37492	ug/l	40-140	30	40-140	30	30			
Chrysene	218-01-9	2.002	0.341068	ug/l	40-140	30	40-140	30	30			
Acenaphthylene	208-96-8	2.002	0.46592	ug/l	45-123	30	45-123	30	30			
Anthracene	120-12-7	2.002	0.32942	ug/l	40-140	30	40-140	30	30			
Benzo(ghi)perylene	191-24-2	2.002	0.296296	ug/l	40-140	30	40-140	30	30			
Fluorene	86-73-7	2.002	0.41496	ug/l	40-140	30	40-140	30	30			
Phenanthrene	85-01-8	2.002	0.33124	ug/l	40-140	30	40-140	30	30			
Dibenzo(a,h)anthracene	53-70-3	2.002	0.323232	ug/l	40-140	30	40-140	30	30			
Indeno(1,2,3-cd)Pyrene	193-39-5	2.002	0.39676	ug/l	40-140	30	40-140	30	30			

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NYTCL Semivolatiles - EPA 8270E (LVI) (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 250ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Pyrene	129-00-0	2.002	0.279552	ug/l	26-127	30	26-127	30	30			
Biphenyl	92-52-4	2.002	0.45864	ug/l	40-140	30	40-140	30	30			
4-Chloroaniline	106-47-8	5.0232	1.07016	ug/l	40-140	30	40-140	30	30			
2-Nitroaniline	88-74-4	5.0232	0.49868	ug/l	52-143	30	52-143	30	30			
3-Nitroaniline	99-09-2	5.0232	0.81536	ug/l	25-145	30	25-145	30	30			
4-Nitroaniline	100-01-6	5.0232	0.8008	ug/l	51-143	30	51-143	30	30			
Dibenzofuran	132-64-9	2.002	0.49868	ug/l	40-140	30	40-140	30	30			
2-Methylnaphthalene	91-57-6	2.002	0.455	ug/l	40-140	30	40-140	30	30			
Acetophenone	98-86-2	5.0232	0.5278	ug/l	39-129	30	39-129	30	30			
2,4,6-Trichlorophenol	88-06-2	5.0232	0.61152	ug/l	30-130	30	30-130	30	30			
P-Chloro-M-Cresol	59-50-7	2.002	0.35126	ug/l	23-97	30	23-97	30	30			
2-Chlorophenol	95-57-8	2.002	0.48048	ug/l	27-123	30	27-123	30	30			
2,4-Dichlorophenol	120-83-2	5.0232	0.41132	ug/l	30-130	30	30-130	30	30			
2,4-Dimethylphenol	105-67-9	5.0232	1.77996	ug/l	30-130	30	30-130	30	30			
2-Nitrophenol	88-75-5	10.01	0.84812	ug/l	30-130	30	30-130	30	30			
4-Nitrophenol	100-02-7	10.01	0.6734	ug/l	10-80	30	10-80	30	30			
2,4-Dinitrophenol	51-28-5	20.02	6.6612	ug/l	20-130	30	20-130	30	30			
4,6-Dinitro-o-cresol	534-52-1	10.01	1.81636	ug/l	20-164	30	20-164	30	30			
Pentachlorophenol	87-86-5	10.01	1.79452	ug/l	9-103	30	9-103	30	30			
Phenol	108-95-2	5.0232	0.56784	ug/l	12-110	30	12-110	30	30			
2-Methylphenol	95-48-7	5.0232	0.4914	ug/l	30-130	30	30-130	30	30			
3-Methylphenol/4-Methylphenol	108-39-4/106-44-5	5.0232	0.48048	ug/l	30-130	30	30-130	30	30			
2,4,5-Trichlorophenol	95-95-4	5.0232	0.77532	ug/l	30-130	30	30-130	30	30			
Benzoic Acid	65-85-0	50.232	2.66084	ug/l	10-164	30	10-164	30	30			
Benzyl Alcohol	100-51-6	2.002	0.58968	ug/l	26-116	30	26-116	30	30			
Carbazole	86-74-8	2.002	0.4914	ug/l	55-144	30	55-144	30	30			
2-Fluorophenol	*367-12-4*									*21-120*		
Phenol-d6	*13127-88-3*									*10-120*		
Nitrobenzene-d5	*4165-60-0*									*23-120*		
2-Fluorobiphenyl	*321-60-8*									*15-120*		
2,4,6-Tribromophenol	*118-79-6*									*10-120*		
4-Terphenyl-d14	*1718-51-0*									*41-149*		

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NYTCL Semivolatiles -EPA 8270E-SIM (LVI) (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 250ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Acenaphthene	83-32-9	0.1001	0.01442168	ug/l	40-140	40	40-140	40	40			
2-Chloronaphthalene	91-58-7	0.2002	0.01804712	ug/l	40-140	40	40-140	40	40			
Fluoranthene	206-44-0	0.1001	0.02054052	ug/l	40-140	40	40-140	40	40			
Hexachlorobutadiene	87-68-3	0.5005	0.04674852	ug/l	40-140	40	40-140	40	40			
Naphthalene	91-20-3	0.1001	0.04882696	ug/l	40-140	40	40-140	40	40			
Benzo(a)anthracene	56-55-3	0.1001	0.0198198	ug/l	40-140	40	40-140	40	40			
Benzo(a)pyrene	50-32-8	0.1001	0.01493856	ug/l	40-140	40	40-140	40	40			
Benzo(b)fluoranthene	205-99-2	0.1001	0.01156792	ug/l	40-140	40	40-140	40	40			
Benzo(k)fluoranthene	207-08-9	0.1001	0.00889616	ug/l	40-140	40	40-140	40	40			
Chrysene	218-01-9	0.1001	0.01198288	ug/l	40-140	40	40-140	40	40			
Acenaphthylene	208-96-8	0.1001	0.01222676	ug/l	40-140	40	40-140	40	40			
Anthracene	120-12-7	0.1001	0.01450176	ug/l	40-140	40	40-140	40	40			
Benzo(ghi)perylene	191-24-2	0.1001	0.01365	ug/l	40-140	40	40-140	40	40			
Fluorene	86-73-7	0.1001	0.01456364	ug/l	40-140	40	40-140	40	40			
Phenanthrene	85-01-8	0.1001	0.02333604	ug/l	40-140	40	40-140	40	40			
Dibenzo(a,h)anthracene	53-70-3	0.1001	0.0127218	ug/l	40-140	40	40-140	40	40			
Indeno(1,2,3-cd)Pyrene	193-39-5	0.1001	0.01217216	ug/l	40-140	40	40-140	40	40			
Pyrene	129-00-0	0.1001	0.01902264	ug/l	40-140	40	40-140	40	40			
2-Methylnaphthalene	91-57-6	0.1001	0.02192372	ug/l	40-140	40	40-140	40	40			
Pentachlorophenol	87-86-5	0.8008	0.0143416	ug/l	40-140	40	40-140	40	40			
Hexachlorobenzene	118-74-1	0.8008	0.00938028	ug/l	40-140	40	40-140	40	40			
Hexachloroethane	67-72-1	0.8008	0.06320132	ug/l	40-140	40	40-140	40	40			
2-Fluorophenol	*367-12-4*									*21-120*		
Phenol-d6	*13127-88-3*									*10-120*		
Nitrobenzene-d5	*4165-60-0*									*23-120*		
2-Fluorobiphenyl	*321-60-8*									*15-120*		
2,4,6-Tribromophenol	*118-79-6*									*10-120*		
4-Terphenyl-d14	*1718-51-0*									*41-149*		

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TCL Pesticides - EPA 8081B (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 120ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Delta-BHC	319-86-8	0.02	0.00467	ug/l	30-150	20	30-150	30	30			
Lindane	58-89-9	0.02	0.00434	ug/l	30-150	20	30-150	30	30			
Alpha-BHC	319-84-6	0.02	0.00439	ug/l	30-150	20	30-150	30	30			
Beta-BHC	319-85-7	0.02	0.0056	ug/l	30-150	20	30-150	30	30			
Heptachlor	76-44-8	0.02	0.0031	ug/l	30-150	20	30-150	30	30			
Aldrin	309-00-2	0.02	0.00216	ug/l	30-150	20	30-150	30	30			
Heptachlor epoxide	1024-57-3	0.02	0.00415	ug/l	30-150	20	30-150	30	30			
Endrin	72-20-8	0.04	0.00429	ug/l	30-150	20	30-150	30	30			
Endrin aldehyde	7421-93-4	0.04	0.0081	ug/l	30-150	20	30-150	30	30			
Endrin ketone	53494-70-5	0.04	0.00477	ug/l	30-150	20	30-150	30	30			
Dieldrin	60-57-1	0.04	0.00429	ug/l	30-150	20	30-150	30	30			
4,4'-DDE	72-55-9	0.04	0.00381	ug/l	30-150	20	30-150	30	30			
4,4'-DDD	72-54-8	0.04	0.00464	ug/l	30-150	20	30-150	30	30			
4,4'-DDT	50-29-3	0.04	0.00432	ug/l	30-150	20	30-150	30	30			
Endosulfan I	959-98-8	0.02	0.00345	ug/l	30-150	20	30-150	30	30			
Endosulfan II	33213-65-9	0.04	0.00519	ug/l	30-150	20	30-150	30	30			
Endosulfan sulfate	1031-07-8	0.04	0.00481	ug/l	30-150	20	30-150	30	30			
Methoxychlor	72-43-5	0.2	0.00684	ug/l	30-150	20	30-150	30	30			
Toxaphene	8001-35-2	0.2	0.0627	ug/l	30-150	20	30-150	30	30			
cis-Chlordane	5103-71-9	0.02	0.00666	ug/l	30-150	20	30-150	30	30			
trans-Chlordane	5103-74-2	0.02	0.00627	ug/l	30-150	20	30-150	30	30			
Chlordane	57-74-9	0.2	0.0463	ug/l	30-150	20	30-150	30	30			
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*		
Decachlorobiphenyl	*2051-24-3*									*30-150*		

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Herbicides -EPA 8151A (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 1000ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
2,4-D	94-75-7	10	0.498	ug/l	30-150	25	30-150	25	25			
2,4,5-T	93-76-5	2	0.531	ug/l	30-150	25	30-150	25	25			
2,4,5-TP (Silvex)	93-72-1	2	0.539	ug/l	30-150	25	30-150	25	25			
DCAA	*19719-28-9*									*30-150*		

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TCL PCBs - EPA 8082A (LVI) (WATER)

Holding Time: 365 days
Container/Sample Preservation: 2 - Amber 120ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Aroclor 1016	12674-11-2	0.0000714	0.000061047	mg/l	40-140	50	40-140	50	50			
Aroclor 1221	11104-28-2	0.0000714	0.000061047	mg/l	40-140	50	40-140	50	50			
Aroclor 1232	11141-16-5	0.0000714	0.000061047	mg/l	40-140	50	40-140	50	50			
Aroclor 1242	53469-21-9	0.0000714	0.000061047	mg/l	40-140	50	40-140	50	50			
Aroclor 1248	12672-29-6	0.0000714	0.000061047	mg/l	40-140	50	40-140	50	50			
Aroclor 1254	11097-69-1	0.0000714	0.000061047	mg/l	40-140	50	40-140	50	50			
Aroclor 1260	11096-82-5	0.0000714	0.000061047	mg/l	40-140	50	40-140	50	50			
Aroclor 1262	37324-23-5	0.0000714	0.000061047	mg/l	40-140	50	40-140	50	50			
Aroclor 1268	11100-14-4	0.0000714	0.000061047	mg/l	40-140	50	40-140	50	50			
PCBs, Total	1336-36-3	0.0000714	0.000061047	mg/l				50	50			
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*		
Decachlorobiphenyl	*2051-24-3*									*30-150*		

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METALS by 6020B (WATER)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria	Holding Time	Container
Aluminum, Total	7429-90-5	0.01	0.00327	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Antimony, Total	7440-36-0	0.004	0.000429	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Arsenic, Total	7440-38-2	0.0005	0.000165	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Barium, Total	7440-39-3	0.0005	0.000173	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Beryllium, Total	7440-41-7	0.0005	0.000107	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Cadmium, Total	7440-43-9	0.0002	0.0000599	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Calcium, Total	7440-70-2	0.1	0.0394	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Chromium, Total	7440-47-3	0.001	0.000178	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Cobalt, Total	7440-48-4	0.0005	0.000163	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Copper, Total	7440-50-8	0.001	0.000384	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Iron, Total	7439-89-6	0.05	0.0191	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Lead, Total	7439-92-1	0.001	0.000343	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Magnesium, Total	7439-95-4	0.07	0.0242	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Manganese, Total	7439-96-5	0.001	0.00044	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Nickel, Total	7440-02-0	0.002	0.000556	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Potassium, Total	7440-09-7	0.1	0.0309	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Selenium, Total	7782-49-2	0.005	0.00173	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Silver, Total	7440-22-4	0.0004	0.000163	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Sodium, Total	7440-23-5	0.1	0.0293	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Thallium, Total	7440-28-0	0.001	0.000143	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Vanadium, Total	7440-62-2	0.005	0.00157	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved
Zinc, Total	7440-66-6	0.01	0.00341	mg/l	80-120		75-125	20	20		180 days	1 - Plastic 500ml HNO3 preserved

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Langan Engineering & Environmental

METALS by 7470A (WATER)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria	Holding Time	Container
Mercury, Total	7439-97-6	0.0002	0.0000915	mg/l	80-120		75-125	20	20		28 days	1 - Plastic 500ml HNO3 preserved

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Langan Engineering & Environmental

WETCHEM (WATER)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Method	Holding Time	Container
Chromium, Hexavalent	18540-29-9	0.01	0.003	mg/l	85-115	20	85-115	20	20	7196A	24 hours	1 - Plastic 500ml unpreserved
Cyanide, Total	57-12-5	0.005	0.0018	mg/l	85-115	20	80-120	20	20	9010C/9012B	14 days	1 - Plastic 250ml NaOH preserved

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1,4 Dioxane via EPA 8270E-SIM (WATER)

Holding Time: 7 days
Container/Sample Preservation: 2 - Amber 250ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
1,4-Dioxane	123-91-1	150	33.9	ng/l	40-140	30	40-140	30	30			
1,4-Dioxane-d8	*17647-74-4*									*15-110*		
1,4-Dioxane-d8 (IS)	17647-74-4			ng/l								

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Langan Engineering & Environmental

PFAAs via LCMSMS-Isotope Dilution (WATER)

Holding Time: 28 days
Container/Sample Preservation: 3 - Plastic 500ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Perfluorobutanoic Acid (PFBA)	375-22-4	6.4	1.024	ng/l	40-150	30	40-150	30	30			
Perfluoropentanoic Acid (PFPeA)	2706-90-3	3.2	0.856	ng/l	40-150	30	40-150	30	30			
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	1.6	0.536	ng/l	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	6.4	1.672	ng/l	40-150	30	40-150	30	30			
Perfluorohexanoic Acid (PFHxA)	307-24-4	1.6	0.472	ng/l	40-150	30	40-150	30	30			
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	1.6	0.28	ng/l	40-150	30	40-150	30	30			
Perfluoroheptanoic Acid (PFHpA)	375-85-9	1.6	0.32	ng/l	40-150	30	40-150	30	30			
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	1.6	0.384	ng/l	40-150	30	40-150	30	30			
Perfluorooctanoic Acid (PFOA)	335-67-1	1.6	0.696	ng/l	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	6.4	2.16	ng/l	40-150	30	40-150	30	30			
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	1.6	0.432	ng/l	40-150	30	40-150	30	30			
Perfluorononanoic Acid (PFNA)	375-95-1	1.6	0.504	ng/l	40-150	30	40-150	30	30			
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	1.6	0.728	ng/l	40-150	30	40-150	30	30			
Perfluorodecanoic Acid (PFDA)	335-76-2	1.6	0.648	ng/l	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	6.4	2.488	ng/l	40-150	30	40-150	30	30			
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	1.6	0.496	ng/l	40-150	30	40-150	30	30			
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA	2355-31-9	1.6	0.872	ng/l	40-150	30	40-150	30	30			
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	1.6	0.696	ng/l	40-150	30	40-150	30	30			
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	1.6	0.368	ng/l	40-150	30	40-150	30	30			
Perfluorooctanesulfonamide (FOSA)	754-91-6	1.6	0.432	ng/l	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	1.6	0.864	ng/l	40-150	30	40-150	30	30			
Perfluorododecanoic Acid (PFDoA)	307-55-1	1.6	0.736	ng/l	40-150	30	40-150	30	30			
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	1.6	0.6	ng/l	40-150	30	40-150	30	30			
Perfluorotetradecanoic Acid (PFTA)	376-06-7	1.6	0.424	ng/l	40-150	30	40-150	30	30			
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Prc	13252-13-6	6.4	0.896	ng/l	40-150	30	40-150	30	30			
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	919005-14-4	6.4	1.008	ng/l	40-150	30	40-150	30	30			
Perfluorododecane Sulfonic Acid (PFDoDS)	79780-39-5	1.6	0.608	ng/l	40-150	30	40-150	30	30			
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3	756426-58-1	6.4	1.32	ng/l	40-150	30	40-150	30	30			
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-	763051-92-9	6.4	1.32	ng/l	40-150	30	40-150	30	30			
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	31506-32-8	1.6	0.696	ng/l	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	4151-50-2	1.6	0.736	ng/l	40-150	30	40-150	30	30			
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	24448-09-7	16	3.76	ng/l	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	1691-99-2	16	1.96	ng/l	40-150	30	40-150	30	30			
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	377-73-1	3.2	0.456	ng/l	40-150	30	40-150	30	30			
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	863090-89-5	3.2	0.424	ng/l	40-150	30	40-150	30	30			
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	113507-82-7	3.2	0.352	ng/l	40-150	30	40-150	30	30			
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	151772-58-6	3.2	1.888	ng/l	40-150	30	40-150	30	30			
3-Perfluoropropyl Propanoic Acid (3:3FTCA)	356-02-5	8	2.64	ng/l	40-150	30	40-150	30	30			
2H,2H,3H,3H-Perfluorooctanoic Acid (5:3FTCA)	914637-49-3	40	9.36	ng/l	40-150	30	40-150	30	30			
3-Perfluoroheptyl Propanoic Acid (7:3FTCA)	812-70-4	40	6.312	ng/l	40-150	30	40-150	30	30			
Perfluoro[13C4]Butanoic Acid (MPFBA)	*NONE*									*20-150*		
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	*NONE*									*20-150*		

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Langan Engineering & Environmental

PFAAs via LCMSMS-Isotope Dilution (WATER)

Holding Time: 28 days
Container/Sample Preservation: 3 - Plastic 500ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4	*NONE*									*20-150*		
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	*NONE*									*20-150*		
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	*NONE*									*20-150*		
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	*NONE*									*20-150*		
Perfluoro[13C8]Octanoic Acid (M8PFOA)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6	*NONE*									*20-150*		
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	*NONE*									*20-150*		
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	*NONE*									*20-150*		
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8	*NONE*									*20-150*		
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (	*NONE*									*20-150*		
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	*NONE*									*20-150*		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	*NONE*									*20-150*		
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5	*NONE*									*20-150*		
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	*NONE*									*20-150*		
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	*NONE*									*20-150*		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13	*NONE*									*20-150*		
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	*NONE*									*20-150*		
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	*NONE*									*20-150*		
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol	*1265205-95-5*									*20-150*		
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (	*NONE*									*20-150*		

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Volatile Organics in Air: TO-15 (AIR)

Holding Time: 30 days
Container/Sample Preservation: 1 - Canister - 2.7 Liter

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
1,1,1-Trichloroethane	71-55-6	0.2	0.0614	ppbV	70-130			25	25			
1,1,2,2-Tetrachloroethane	79-34-5	0.2	0.052	ppbV	70-130			25	25			
1,1,2-Trichloroethane	79-00-5	0.2	0.0582	ppbV	70-130			25	25			
1,1-Dichloroethane	75-34-3	0.2	0.0568	ppbV	70-130			25	25			
1,1-Dichloroethene	75-35-4	0.2	0.0568	ppbV	70-130			25	25			
1,2,3-Trimethylbenzene	526-73-8	0.2	0.0576	ppbV	70-130			25	25			
1,2,4-Trichlorobenzene	120-82-1	0.2	0.1	ppbV	70-130			25	25			
1,2,4-Trimethylbenzene	95-63-6	0.2	0.0577	ppbV	70-130			25	25			
1,2,4,5-Tetramethylbenzene	95-93-2	0.2	0.135	ppbV	70-130			25	25			
1,2-Dibromoethane	106-93-4	0.2	0.0544	ppbV	70-130			25	25			
1,2-Dichlorobenzene	95-50-1	0.2	0.0619	ppbV	70-130			25	25			
1,2-Dichloroethane	107-06-2	0.2	0.0787	ppbV	70-130			25	25			
1,2-Dichloropropane	78-87-5	0.2	0.0631	ppbV	70-130			25	25			
1,3,5-Trimethylbenzene	108-67-8	0.2	0.06	ppbV	70-130			25	25			
1,3-Butadiene	106-99-0	0.2	0.0619	ppbV	70-130			25	25			
1,3-Dichlorobenzene	541-73-1	0.2	0.0777	ppbV	70-130			25	25			
1,4-Dichlorobenzene	106-46-7	0.2	0.0826	ppbV	70-130			25	25			
1,4-Dioxane	123-91-1	0.2	0.0538	ppbV	70-130			25	25			
2,2,4-Trimethylpentane	540-84-1	0.2	0.0692	ppbV	70-130			25	25			
2-Butanone	78-93-3	0.5	0.099	ppbV	70-130			25	25			
2-Hexanone	591-78-6	0.2	0.0912	ppbV	70-130			25	25			
2-Methylthiophene	554-14-3	0.2	0.0622	ppbV	70-130			25	25			
3-Methylthiophene	616-44-4	0.2	0.0634	ppbV	70-130			25	25			
3-Chloropropene	107-05-1	0.2	0.086	ppbV	70-130			25	25			
2-Ethylthiophene	872-55-9	0.2	0.0612	ppbV	70-130			25	25			
4-Ethyltoluene	622-96-8	0.2	0.0554	ppbV	70-130			25	25			
Acetone	67-64-1	1	0.515	ppbV	40-160			25	25			
Benzene	71-43-2	0.2	0.0643	ppbV	70-130			25	25			
Benzyl chloride	100-44-7	0.2	0.0939	ppbV	70-130			25	25			
Benzothiophene	95-15-8	0.5	0.273	ppbV	70-130			25	25			
Bromodichloromethane	75-27-4	0.2	0.0689	ppbV	70-130			25	25			
Bromoform	75-25-2	0.2	0.0596	ppbV	70-130			25	25			
Bromomethane	74-83-9	0.2	0.0547	ppbV	70-130			25	25			
Carbon disulfide	75-15-0	0.2	0.0465	ppbV	70-130			25	25			
Carbon tetrachloride	56-23-5	0.2	0.0686	ppbV	70-130			25	25			
Chlorobenzene	108-90-7	0.2	0.0516	ppbV	70-130			25	25			
Chloroethane	75-00-3	0.2	0.0649	ppbV	70-130			25	25			
Chloroform	67-66-3	0.2	0.0552	ppbV	70-130			25	25			
Chloromethane	74-87-3	0.2	0.0576	ppbV	70-130			25	25			
cis-1,2-Dichloroethene	156-59-2	0.2	0.0595	ppbV	70-130			25	25			
cis-1,3-Dichloropropene	10061-01-5	0.2	0.0674	ppbV	70-130			25	25			
Cyclohexane	110-82-7	0.2	0.0728	ppbV	70-130			25	25			

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Langan Engineering & Environmental

Volatile Organics in Air: TO-15 (AIR)

Holding Time: 30 days
Container/Sample Preservation: 1 - Canister - 2.7 Liter

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Dibromochloromethane	124-48-1	0.2	0.0566	ppbV	70-130			25	25			
Dichlorodifluoromethane	75-71-8	0.2	0.0757	ppbV	70-130			25	25			
Ethyl Alcohol	64-17-5	5	1.74	ppbV	40-160			25	25			
Ethyl Acetate	141-78-6	0.5	0.297	ppbV	70-130			25	25			
Ethylbenzene	100-41-4	0.2	0.0575	ppbV	70-130			25	25			
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	0.2	0.0506	ppbV	70-130			25	25			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	76-14-2	0.2	0.0504	ppbV	70-130			25	25			
Hexachlorobutadiene	87-68-3	0.2	0.0607	ppbV	70-130			25	25			
iso-Propyl Alcohol	67-63-0	0.5	0.272	ppbV	40-160			25	25			
Methylene chloride	75-09-2	0.5	0.125	ppbV	70-130			25	25			
4-Methyl-2-pentanone	108-10-1	0.5	0.19	ppbV	70-130			25	25			
Methyl tert butyl ether	1634-04-4	0.2	0.045	ppbV	70-130			25	25			
Methyl Methacrylate	80-62-6	0.5	0.226	ppbV	40-160			25	25			
p/m-Xylene	179601-23-1	0.4	0.125	ppbV	70-130			25	25			
o-Xylene	95-47-6	0.2	0.0621	ppbV	70-130			25	25			
Xylene (Total)	1330-20-7	0.2	0.0621	ppbV				25	25			
Heptane	142-82-5	0.2	0.0828	ppbV	70-130			25	25			
n-Heptane	142-82-5	0.2	0.0828	ppbV	70-130			25	25			
n-Hexane	110-54-3	0.2	0.0743	ppbV	70-130			25	25			
Propylene	115-07-1	0.5	0.135	ppbV	70-130			25	25			
Styrene	100-42-5	0.2	0.0596	ppbV	70-130			25	25			
Tetrachloroethene	127-18-4	0.2	0.0627	ppbV	70-130			25	25			
Thiophene	110-02-1	0.2	0.052	ppbV	70-130			25	25			
Tetrahydrofuran	109-99-9	0.5	0.117	ppbV	70-130			25	25			
Toluene	108-88-3	0.2	0.0867	ppbV	70-130			25	25			
trans-1,2-Dichloroethene	156-60-5	0.2	0.0755	ppbV	70-130			25	25			
1,2-Dichloroethene (total)	540-59-0	0.2	0.0595	ppbV				25	25			
trans-1,3-Dichloropropene	10061-02-6	0.2	0.0783	ppbV	70-130			25	25			
1,3-Dichloropropene, Total	542-75-6	0.2	0.0674	ppbV				25	25			
Trichloroethene	79-01-6	0.2	0.0548	ppbV	70-130			25	25			
Trichlorofluoromethane	75-69-4	0.2	0.0787	ppbV	70-130			25	25			
Vinyl acetate	108-05-4	1	0.323	ppbV	70-130			25	25			
Vinyl bromide	593-60-2	0.2	0.0722	ppbV	70-130			25	25			
Vinyl chloride	75-01-4	0.2	0.0582	ppbV	70-130			25	25			
Naphthalene	91-20-3	0.2	0.078	ppbV	70-130			25	25			
Total HC As Hexane	NONE	10	0.0743	ppbV	70-130			25	25			
Total VOCs As Toluene	NONE	10	0.0867	ppbV	70-130			25	25			
Propane	74-98-6	0.5	0.152	ppbV	70-130			25	25			
Acrylonitrile	107-13-1	0.5	0.0894	ppbV	70-130			25	25			
Acrolein	107-02-8	0.5	0.149	ppbV	60-113			25	25			
1,1,1,2-Tetrachloroethane	630-20-6	0.2	0.0508	ppbV	70-130			25	25			
Isopropylbenzene	98-82-8	0.2	0.0621	ppbV	70-130			25	25			

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Langan Engineering & Environmental

Volatile Organics in Air: TO-15 (AIR)

Holding Time: 30 days
Container/Sample Preservation: 1 - Canister - 2.7 Liter

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
1,2,3-Trichloropropane	96-18-4	0.2	0.0575	ppbV	70-130			25	25			
Acetonitrile	75-05-8	0.2	0.101	ppbV	70-130			25	25			
Bromobenzene	108-86-1	0.2	0.0579	ppbV	70-130			25	25			
Chlorodifluoromethane	75-45-6	0.2	0.0463	ppbV	70-130			25	25			
Dichlorofluoromethane	75-43-4	0.2	0.112	ppbV	70-130			25	25			
Dibromomethane	74-95-3	0.2	0.0598	ppbV	70-130			25	25			
Pentane	109-66-0	0.2	0.113	ppbV	70-130			25	25			
Octane	111-65-9	0.2	0.0676	ppbV	70-130			25	25			
Tertiary-Amyl Methyl Ether	994-05-8	0.2	0.0672	ppbV	70-130			25	25			
o-Chlorotoluene	95-49-8	0.2	0.0761	ppbV	70-130			25	25			
p-Chlorotoluene	106-43-4	0.2	0.0765	ppbV	70-130			25	25			
2,2-Dichloropropane	594-20-7	0.2	0.0429	ppbV	70-130			25	25			
1,1-Dichloropropene	563-58-6	0.2	0.0593	ppbV	70-130			25	25			
Isopropyl Ether	108-20-3	0.2	0.0631	ppbV	70-130			25	25			
Ethyl-Tert-Butyl-Ether	637-92-3	0.2	0.0731	ppbV	70-130			25	25			
1,2,3-Trichlorobenzene	87-61-6	0.2	0.0738	ppbV	70-130			25	25			
Ethyl ether	60-29-7	0.2	0.0853	ppbV	70-130			25	25			
n-Butylbenzene	104-51-8	0.2	0.0536	ppbV	70-130			25	25			
sec-Butylbenzene	135-98-8	0.2	0.0547	ppbV	70-130			25	25			
tert-Butylbenzene	98-06-6	0.2	0.0551	ppbV	70-130			25	25			
1,2-Dibromo-3-chloropropane	96-12-8	0.2	0.0624	ppbV	70-130			25	25			
p-Isopropyltoluene	99-87-6	0.2	0.0567	ppbV	70-130			25	25			
n-Propylbenzene	103-65-1	0.2	0.0633	ppbV	70-130			25	25			
1,3-Dichloropropane	142-28-9	0.2	0.0536	ppbV	70-130			25	25			
Methanol	67-56-1	5	3.029	ppbV	70-130			25	25			
Acetaldehyde	75-07-0	2.5	1.73	ppbV	70-130			25	25			
Butane	106-97-8	0.2	0.08	ppbV	70-130			25	25			
Nonane (C9)	111-84-2	0.2	0.0737	ppbV	70-130			25	25			
Decane (C10)	124-18-5	0.2	0.0697	ppbV	70-130			25	25			
Undecane	1120-21-4	0.2	0.0709	ppbV	70-130			25	25			
Indane	496-11-7	0.2	0.0591	ppbV	70-130			25	25			
Indene	95-13-6	0.2	0.0711	ppbV	70-130			25	25			
1-Methylnaphthalene	90-12-0	1	0.264	ppbV	70-130			25	25			
Dodecane (C12)	112-40-3	0.2	0.0891	ppbV	70-130			25	25			
Butyl Acetate	123-86-4	0.5	0.208	ppbV	70-130			25	25			
tert-Butyl Alcohol	75-65-0	0.5	0.132	ppbV	70-130			25	25			
2-Methylnaphthalene	91-57-6	1	0.259	ppbV	70-130			25	25			
1,2-Dichloroethane-d4	*17060-07-0*									*70-130*		
Toluene-d8	*2037-26-5*									*70-130*		
Bromofluorobenzene	*460-00-4*									*70-130*		

Please Note that the RL information provided in this table is calculated using a 100% Solids factor. (Soil/Solids only)
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Langan Engineering & Environmental

Volatile Organics in Air by TO-15 SIM (AIR)

Holding Time: 30 days
Container/Sample Preservation: 1 - Canister - 2.7 Liter

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
1,1,1-Trichloroethane	71-55-6	0.02	0.0059	ppbV	70-130	25		25	25			
1,1,1,2-Tetrachloroethane	630-20-6	0.02	0.01	ppbV	70-130	25		25	25			
1,1,2,2-Tetrachloroethane	79-34-5	0.02	0.0067	ppbV	70-130	25		25	25			
1,1,2-Trichloroethane	79-00-5	0.02	0.0097	ppbV	70-130	25		25	25			
1,1-Dichloroethane	75-34-3	0.02	0.0086	ppbV	70-130	25		25	25			
1,1-Dichloroethene	75-35-4	0.02	0.0077	ppbV	70-130	25		25	25			
1,2,4-Trimethylbenzene	95-63-6	0.02	0.0076	ppbV	70-130	25		25	25			
1,2-Dibromoethane	106-93-4	0.02	0.0091	ppbV	70-130	25		25	25			
1,2-Dichlorobenzene	95-50-1	0.02	0.0062	ppbV	70-130	25		25	25			
1,2-Dichloroethane	107-06-2	0.02	0.0083	ppbV	70-130	25		25	25			
1,2-Dichloropropane	78-87-5	0.02	0.0083	ppbV	70-130	25		25	25			
1,3,5-Trimethylbenzene	108-67-8	0.02	0.0096	ppbV	70-130	25		25	25			
1,3-Butadiene	106-99-0	0.02	0.0106	ppbV	70-130	25		25	25			
1,3-Dichlorobenzene	541-73-1	0.02	0.0077	ppbV	70-130	25		25	25			
1,4-Dichlorobenzene	106-46-7	0.02	0.0075	ppbV	70-130	25		25	25			
1,4-Dioxane	123-91-1	0.1	0.0344	ppbV	70-130	25		25	25			
2,2,4-Trimethylpentane	540-84-1	0.2	0.037	ppbV	70-130	25		25	25			
2-Hexanone	591-78-6	0.2	0.0354	ppbV	70-130	25		25	25			
3-Chloropropene	107-05-1	0.2	0.0327	ppbV	70-130	25		25	25			
4-Ethyltoluene	622-96-8	0.02	0.0099	ppbV	70-130	25		25	25			
Benzene	71-43-2	0.1	0.0298	ppbV	70-130	25		25	25			
Benzyl chloride	100-44-7	0.1	0.0332	ppbV	70-130	25		25	25			
Bromodichloromethane	75-27-4	0.02	0.0074	ppbV	70-130	25		25	25			
Bromoform	75-25-2	0.02	0.0111	ppbV	70-130	25		25	25			
Bromomethane	74-83-9	0.02	0.0094	ppbV	70-130	25		25	25			
Carbon disulfide	75-15-0	0.2	0.0316	ppbV	70-130	25		25	25			
Carbon tetrachloride	56-23-5	0.02	0.011	ppbV	70-130	25		25	25			
Chlorobenzene	108-90-7	0.1	0.0258	ppbV	70-130	25		25	25			
Chloroethane	75-00-3	0.1	0.0395	ppbV	70-130	25		25	25			
Chloroform	67-66-3	0.02	0.0071	ppbV	70-130	25		25	25			
Chloromethane	74-87-3	0.2	0.0756	ppbV	70-130	25		25	25			
cis-1,2-Dichloroethene	156-59-2	0.02	0.0102	ppbV	70-130	25		25	25			
trans-1,2-Dichloroethene	156-60-5	0.02	0.009	ppbV	70-130	25		25	25			
1,2-Dichloroethene (total)	540-59-0	0.02	0.009	ppbV				25	25			
cis-1,3-Dichloropropene	10061-01-5	0.02	0.0118	ppbV	70-130	25		25	25			
1,3-Dichloropropene, Total	542-75-6	0.02	0.0115	ppbV				25	25			
Cyclohexane	110-82-7	0.2	0.0313	ppbV	70-130	25		25	25			
Dibromochloromethane	124-48-1	0.02	0.008	ppbV	70-130	25		25	25			
Dichlorodifluoromethane	75-71-8	0.2	0.0499	ppbV	70-130	25		25	25			
Ethyl Alcohol	64-17-5	5	1.35	ppbV	40-160	25		25	25			
Ethyl Acetate	141-78-6	0.5	0.323	ppbV	70-130	25		25	25			
Ethylbenzene	100-41-4	0.02	0.0085	ppbV	70-130	25		25	25			

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Langan Engineering & Environmental

Volatile Organics in Air by TO-15 SIM (AIR)

Holding Time: 30 days
Container/Sample Preservation: 1 - Canister - 2.7 Liter

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	0.05	0.0083	ppbV	70-130	25		25	25			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	76-14-2	0.05	0.0064	ppbV	70-130	25		25	25			
Methylene chloride	75-09-2	0.5	0.11	ppbV	70-130	25		25	25			
Methyl tert butyl ether	1634-04-4	0.2	0.0261	ppbV	70-130	25		25	25			
Naphthalene	91-20-3	0.05	0.021	ppbV	70-130	25		25	25			
p/m-Xylene	179601-23-1	0.04	0.018	ppbV	70-130	25		25	25			
o-Xylene	95-47-6	0.02	0.0087	ppbV	70-130	25		25	25			
Heptane	142-82-5	0.2	0.0313	ppbV	70-130	25		25	25			
n-Hexane	110-54-3	0.2	0.0471	ppbV	70-130	25		25	25			
Propylene	115-07-1	0.5	0.167	ppbV	70-130	25		25	25			
Styrene	100-42-5	0.02	0.0079	ppbV	70-130	25		25	25			
Tetrachloroethene	127-18-4	0.02	0.0074	ppbV	70-130	25		25	25			
Tetrahydrofuran	109-99-9	0.5	0.142	ppbV	70-130	25		25	25			
Toluene	108-88-3	0.1	0.0166	ppbV	70-130	25		25	25			
trans-1,3-Dichloropropene	10061-02-6	0.02	0.0115	ppbV	70-130	25		25	25			
Trichloroethene	79-01-6	0.02	0.006	ppbV	70-130	25		25	25			
1,2,4-Trichlorobenzene	120-82-1	0.05	0.0146	ppbV	70-130	25		25	25			
Trichlorofluoromethane	75-69-4	0.05	0.0092	ppbV	70-130	25		25	25			
Vinyl acetate	108-05-4	1	0.286	ppbV	70-130	25		25	25			
Vinyl bromide	593-60-2	0.2	0.0431	ppbV	70-130	25		25	25			
Hexachlorobutadiene	87-68-3	0.05	0.011	ppbV	70-130	25		25	25			
iso-Propyl Alcohol	67-63-0	0.5	0.249	ppbV	40-160	25		25	25			
Vinyl chloride	75-01-4	0.02	0.0088	ppbV	70-130	25		25	25			
Acrylonitrile	107-13-1	0.5	0.162	ppbV	70-130	25		25	25			
n-Butylbenzene	104-51-8	0.2	0.0319	ppbV	70-130	25		25	25			
sec-Butylbenzene	135-98-8	0.2	0.0266	ppbV	70-130	25		25	25			
Isopropylbenzene	98-82-8	0.2	0.0299	ppbV	70-130	25		25	25			
Xylene (Total)	1330-20-7	0.02	0.0087	ppbV				25	25			
p-Isopropyltoluene	99-87-6	0.2	0.0366	ppbV	70-130	25		25	25			
Acetone	67-64-1	1	0.539	ppbV	40-160	25		25	25			
2-Butanone	78-93-3	0.5	0.132	ppbV	70-130	25		25	25			
4-Methyl-2-pentanone	108-10-1	0.5	0.191	ppbV	70-130	25		25	25			
1,2,3-Trichlorobenzene	87-61-6	0.05	0.0223	ppbV	70-130	25		25	25			
Acrolein	107-02-8	0.05	0.0387	ppbV	60-113	25		25	25			
1,2-Dichloroethane-d4	*17060-07-0*									*70-130*		
Toluene-d8	*2037-26-5*									*70-130*		
Bromofluorobenzene	*460-00-4*									*70-130*		

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PFAAs via LCMSMS-Isotope Dilution (SOIL)

Holding Time: 90 days
Container/Sample Preservation: 1 - Plastic 8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Perfluorobutanoic Acid (PFBA)	375-22-4	0.8	0.0504	ng/g	40-150	30	40-150	30	30			
Perfluoropentanoic Acid (PFPeA)	2706-90-3	0.4	0.056	ng/g	40-150	30	40-150	30	30			
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	0.2	0.0432	ng/g	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	0.8	0.0808	ng/g	40-150	30	40-150	30	30			
Perfluorohexanoic Acid (PFHxA)	307-24-4	0.2	0.0464	ng/g	40-150	30	40-150	30	30			
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	0.2	0.0232	ng/g	40-150	30	40-150	30	30			
Perfluoroheptanoic Acid (PFHpA)	375-85-9	0.2	0.0232	ng/g	40-150	30	40-150	30	30			
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	0.2	0.0592	ng/g	40-150	30	40-150	30	30			
Perfluorooctanoic Acid (PFOA)	335-67-1	0.2	0.052	ng/g	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	0.8	0.28	ng/g	40-150	30	40-150	30	30			
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	0.2	0.0368	ng/g	40-150	30	40-150	30	30			
Perfluorononanoic Acid (PFNA)	375-95-1	0.2	0.0784	ng/g	40-150	30	40-150	30	30			
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	0.2	0.0792	ng/g	40-150	30	40-150	30	30			
Perfluorodecanoic Acid (PFDA)	335-76-2	0.2	0.0752	ng/g	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	0.8	0.3872	ng/g	40-150	30	40-150	30	30			
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	0.2	0.0424	ng/g	40-150	30	40-150	30	30			
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSA	2355-31-9	0.2	0.1	ng/g	40-150	30	40-150	30	30			
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	0.2	0.0512	ng/g	40-150	30	40-150	30	30			
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	0.2	0.032	ng/g	40-150	30	40-150	30	30			
Perfluorooctanesulfonamide (FOSA)	754-91-6	0.2	0.0432	ng/g	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	0.2	0.0824	ng/g	40-150	30	40-150	30	30			
Perfluorododecanoic Acid (PFDoA)	307-55-1	0.2	0.0408	ng/g	40-150	30	40-150	30	30			
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	0.2	0.0528	ng/g	40-150	30	40-150	30	30			
Perfluorotetradecanoic Acid (PFTA)	376-06-7	0.2	0.1064	ng/g	40-150	30	40-150	30	30			
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Pr	13252-13-6	0.8	0.0984	ng/g	40-150	30	40-150	30	30			
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	919005-14-4	0.8	0.1464	ng/g	40-150	30	40-150	30	30			
Perfluorododecane Sulfonic Acid (PFDoDS)	79780-39-5	0.2	0.0384	ng/g	40-150	30	40-150	30	30			
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF	756426-58-1	0.8	0.196	ng/g	40-150	30	40-150	30	30			
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11C	763051-92-9	0.8	0.1672	ng/g	40-150	30	40-150	30	30			
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	31506-32-8	0.2	0.1	ng/g	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	4151-50-2	0.2	0.112	ng/g	40-150	30	40-150	30	30			
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	24448-09-7	2	0.2504	ng/g	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	1691-99-2	2	0.5104	ng/g	40-150	30	40-150	30	30			
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	377-73-1	0.4	0.0408	ng/g	40-150	30	40-150	30	30			
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	863090-89-5	0.4	0.0312	ng/g	40-150	30	40-150	30	30			
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	113507-82-7	0.4	0.0832	ng/g	40-150	30	40-150	30	30			
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	151772-58-6	0.4	0.0952	ng/g	40-150	30	40-150	30	30			
3-Perfluoropropyl Propanoic Acid (3:3FTCA)	356-02-5	1	0.144	ng/g	40-150	30	40-150	30	30			
2H,2H,3H,3H-Perfluorooctanoic Acid (5:3FTCA)	914637-49-3	5	0.5048	ng/g	40-150	30	40-150	30	30			
3-Perfluoroheptyl Propanoic Acid (7:3FTCA)	812-70-4	5	1.76	ng/g	40-150	30	40-150	30	30			
Perfluoro[13C4]Butanoic Acid (MPFBA)	*NONE*									*20-150*		
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	*NONE*									*20-150*		

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PFAAs via LCMSMS-Isotope Dilution (SOIL)

Holding Time: 90 days
Container/Sample Preservation: 1 - Plastic 8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-	*NONE*									*20-150*		
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	*NONE*									*20-150*		
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	*NONE*									*20-150*		
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	*NONE*									*20-150*		
Perfluoro[13C8]Octanoic Acid (M8PFOA)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-	*NONE*									*20-150*		
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	*NONE*									*20-150*		
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	*NONE*									*20-150*		
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-	*NONE*									*20-150*		
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid	*NONE*									*20-150*		
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	*NONE*									*20-150*		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	*NONE*									*20-150*		
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (	*NONE*									*20-150*		
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	*NONE*									*20-150*		
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	*NONE*									*20-150*		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-1	*NONE*									*20-150*		
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	*NONE*									*20-150*		
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	*NONE*									*20-150*		
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-o	*1265205-95-5*									*20-150*		
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (	*NONE*									*20-150*		

Please Note that the RL information provided in this table is calculated using a 100% Solids factor. ***(Soil/Solids only)***
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Date Created: 11/03/22
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PFAAs via LCMSMS-Isotope Dilution (WATER)

Holding Time: 28 days
Container/Sample Preservation: 3 - Plastic 500ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Perfluorobutanoic Acid (PFBA)	375-22-4	3.2	0.512	ng/l	40-150	30	40-150	30	30			
Perfluoropentanoic Acid (PFPeA)	2706-90-3	1.6	0.428	ng/l	40-150	30	40-150	30	30			
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	0.8	0.268	ng/l	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	3.2	0.836	ng/l	40-150	30	40-150	30	30			
Perfluorohexanoic Acid (PFHxA)	307-24-4	0.8	0.236	ng/l	40-150	30	40-150	30	30			
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	0.8	0.14	ng/l	40-150	30	40-150	30	30			
Perfluoroheptanoic Acid (PFHpA)	375-85-9	0.8	0.16	ng/l	40-150	30	40-150	30	30			
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	0.8	0.192	ng/l	40-150	30	40-150	30	30			
Perfluorooctanoic Acid (PFOA)	335-67-1	0.8	0.348	ng/l	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	3.2	1.08	ng/l	40-150	30	40-150	30	30			
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	0.8	0.216	ng/l	40-150	30	40-150	30	30			
Perfluorononanoic Acid (PFNA)	375-95-1	0.8	0.252	ng/l	40-150	30	40-150	30	30			
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	0.8	0.364	ng/l	40-150	30	40-150	30	30			
Perfluorodecanoic Acid (PFDA)	335-76-2	0.8	0.324	ng/l	40-150	30	40-150	30	30			
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	3.2	1.244	ng/l	40-150	30	40-150	30	30			
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	0.8	0.248	ng/l	40-150	30	40-150	30	30			
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSA	2355-31-9	0.8	0.436	ng/l	40-150	30	40-150	30	30			
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	0.8	0.348	ng/l	40-150	30	40-150	30	30			
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	0.8	0.184	ng/l	40-150	30	40-150	30	30			
Perfluorooctanesulfonamide (FOSA)	754-91-6	0.8	0.216	ng/l	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	0.8	0.432	ng/l	40-150	30	40-150	30	30			
Perfluorododecanoic Acid (PFDoA)	307-55-1	0.8	0.368	ng/l	40-150	30	40-150	30	30			
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	0.8	0.3	ng/l	40-150	30	40-150	30	30			
Perfluorotetradecanoic Acid (PFTA)	376-06-7	0.8	0.212	ng/l	40-150	30	40-150	30	30			
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Pr	13252-13-6	3.2	0.448	ng/l	40-150	30	40-150	30	30			
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	919005-14-4	3.2	0.504	ng/l	40-150	30	40-150	30	30			
Perfluorododecane Sulfonic Acid (PFDoDS)	79780-39-5	0.8	0.304	ng/l	40-150	30	40-150	30	30			
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF	756426-58-1	3.2	0.66	ng/l	40-150	30	40-150	30	30			
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11C	763051-92-9	3.2	0.66	ng/l	40-150	30	40-150	30	30			
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	31506-32-8	0.8	0.348	ng/l	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	4151-50-2	0.8	0.368	ng/l	40-150	30	40-150	30	30			
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	24448-09-7	8	1.88	ng/l	40-150	30	40-150	30	30			
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	1691-99-2	8	0.98	ng/l	40-150	30	40-150	30	30			
Perfluoro-3-Methoxypropanoic Acid (PFMPA)	377-73-1	1.6	0.228	ng/l	40-150	30	40-150	30	30			
Perfluoro-4-Methoxybutanoic Acid (PFMBA)	863090-89-5	1.6	0.212	ng/l	40-150	30	40-150	30	30			
Perfluoro(2-Ethoxyethane)Sulfonic Acid (PFEESA)	113507-82-7	1.6	0.176	ng/l	40-150	30	40-150	30	30			
Nonafluoro-3,6-Dioxaheptanoic Acid (NFDHA)	151772-58-6	1.6	0.944	ng/l	40-150	30	40-150	30	30			
3-Perfluoropropyl Propanoic Acid (3:3FTCA)	356-02-5	4	1.32	ng/l	40-150	30	40-150	30	30			
2H,2H,3H,3H-Perfluorooctanoic Acid (5:3FTCA)	914637-49-3	20	4.68	ng/l	40-150	30	40-150	30	30			
3-Perfluoroheptyl Propanoic Acid (7:3FTCA)	812-70-4	20	3.156	ng/l	40-150	30	40-150	30	30			
Perfluoro[13C4]Butanoic Acid (MPFBA)	*NONE*									*20-150*		
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	*NONE*									*20-150*		

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PFAAs via LCMSMS-Isotope Dilution (WATER)

Holding Time: 28 days
Container/Sample Preservation: 3 - Plastic 500ml unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-	*NONE*									*20-150*		
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	*NONE*									*20-150*		
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	*NONE*									*20-150*		
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	*NONE*									*20-150*		
Perfluoro[13C8]Octanoic Acid (M8PFOA)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-	*NONE*									*20-150*		
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	*NONE*									*20-150*		
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	*NONE*									*20-150*		
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	*NONE*									*20-150*		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-	*NONE*									*20-150*		
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid	*NONE*									*20-150*		
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	*NONE*									*20-150*		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	*NONE*									*20-150*		
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (	*NONE*									*20-150*		
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	*NONE*									*20-150*		
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	*NONE*									*20-150*		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-1	*NONE*									*20-150*		
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	*NONE*									*20-150*		
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	*NONE*									*20-150*		
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-o	*1265205-95-5*									*20-150*		
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (	*NONE*									*20-150*		

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ATTACHMENT C

Analytical Methods/Quality Assurance Summary Table

ATTACHMENT C

ANALYTICAL METHODS/QUALITY ASSURANCE SUMMARY TABLE

Matrix Type	Field Parameters	Laboratory Parameters	Analytical Methods	Sample Preservation	Sample Container Volume and Type	Sample Hold Time	Field Duplicate Samples	Field Blank Samples	Media Blank Samples	Equipment Blank Samples	Trip Blank Samples	Ambient Air Samples	MS/MSD Samples
Soil	Total VOCs via PID	Part 375 + TCL VOCs	EPA 8260C	Cool to 4°C	Two 40-ml VOC vials with 5ml H_2O, one with MeOH or 3 En Core Samplers (separate container for % solids)	14 days	1 per 20 samples (minimum 1)	1 per 20 samples (minimum 1)	NA	NA	NA	NA	1 per 20 samples
		Part 375 + TCL SVOCs	EPA 8270D	Cool to 4°C	4 oz. amber glass jar	14 days extract, 40 days after extraction to analysis							
		Part 375 + TAL Metals + Cyanide	EPA 6010C, EPA 7470A, EPA 7196A, EPA 9014/9010C	Cool to 4°C	2 oz. amber glass jar	6 months, except mercury 28 days							
		Part 375 + TCL Pesticides	EPA 8081B	Cool to 4°C	4 oz. amber glass jar	14 days extract, 40 days after extraction to analysis							
		Part 375 + TCL PCBs	EPA 8082A	Cool to 4°C	4 oz. amber glass jar	14 days extract, 40 days after extraction to analysis							
		NYSDEC List PFAS	EPA 537 Modified	Cool to 4°C	8 oz. HDPE jar	14 days to extract, 28 days after extraction to analysis				1 per day			
		1,4-Dioxane	8270 SIM	Cool to 4°C	4 oz. amber glass jar	14 days extract, 40 days after extraction to analysis				NA			
Groundwater	Temperature, Turbidity, pH, ORP, Conductivity, DO	Part 375 + TCL VOCs	EPA 8260C	Cool to 4°C; HCl to pH <2;no headspace	Three 40-mL VOC vials with Teflon®-lined cap	Analyze within 14 days of collection	1 per 20 samples (minimum 1)	1 per 20 samples (minimum 1)	NA	NA	1 per shipment of VOC samples	NA	1 per 20 samples
		Part 375 + TCL SVOCs	EPA 8270D	Cool to 4°C	Two 1-Liter amber glass	7 days to extract, 40 days after extraction to analysis							
		Part 375 + TAL Metals	EPA 6010C, EPA 7470A	HNO_3	250 ml plastic	6 months, except Mercury 28 days							
		Hexavalent Chromium	EPA 7196A	Cool to 4°C	250 ml plastic	24 hours							
		Cyanide	SM 4500 C/E	NaOH plus 0.6g ascorbic acid	250 ml plastic	14 days							
		Part 375 + TCL Pesticides	EPA 8081B	Cool to 4°C	Two 1-Liter Amber Glass for Pesticides/PCB	7 days to extract, 40 days after extraction to analysis							
		PCBs	EPA 8082A	Cool to 4°C		7 days to extract, 40 days after extraction to analysis							
		PFAS	EPA 1633 Modified	Cool to 4°C	Two 250 mL HDPE	14 days to extract, 40 days after extraction to analysis				1 per day			
		1,4-dioxane	8270 SIM	Cool to 4°C	One 1 -Liter Amber Glass	7 days to extract, 40 days after extraction to analysis				NA			
Soil Vapor	Total VOCs, Oxygen, LEL, CO, and H_2S, with MultiGas Meter	TO-15 Listed VOCs	TO-15	Ambient Temperature	2.7-Liter Summa Canister	Analyze within 30 days of collection	1 per 20 samples (minimum 1)	NA	NA	NA	NA	1 per 10 samples (minimum 1)	NA
Ambient/Indoor Air	Total VOCs via PID				6-Liter Summa Canister		NA	NA	NA	NA			
Soil Vapor	Mercury Vapor via Jerome J405	Mercury Vapor	EPA 6009	Ambient Temperature	Glass Sorbent Tube containing one section of 200 mg Hopcalite	Analyze within 30 days of collection	1 per 20 samples (minimum 1)	NA	3 per set	NA	NA	1 per 10 samples (minimum 1)	NA

ATTACHMENT D

Sample Nomenclature

SOP #01 – Sample Nomenclature

INTRODUCTION

The Langan Environmental Group conducts an assortment of site investigations where samples (Vapor, Solids, and Aqueous) are collected and submitted to analytical laboratories for analysis. The results of which are then evaluated and entered into a data base allowing quick submittal to the state regulatory authority (New York State Division of Environmental Conservation [NYSDEC]). In addition, Langan is linking their data management system to graphic and analytical software to enable efficient evaluation of the data as well as creating client-ready presentational material.

SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) is applicable to the general framework for labeling vapor, solid (soil) and aqueous (groundwater) samples that will be submitted for laboratory analysis. The nomenclature being introduced is designed to meet the NYSDEC EQuIS standard and has been incorporated into Langan software scripts to assist project personnel in processing the data. While this SOP is applicable to all site investigation; unanticipated conditions may arise which may require considerable flexibility in complying with this SOP. Therefore, guidance provided in this SOP is presented in terms of general steps and strategies that should be applied; but deviation from this SOP must be reported to the Project Manager (PM) immediately.

GENERAL SAMPLE IDENTIFICATION CONSIDERATIONS

Sample Labels

All sample ware must have a label. Recall that when you are using the Encore™ samples (see below); they are delivered in plastic lined foil bags. You are to label the bags[1]:

All other samples containers including Terra Cores™ must be labeled with laboratory provided self-adhesive labels.

Quick Breakdown of Sample Format

The general format for sample nomenclature is:

[1]Both Alpha and York laboratories permit the combining of the three Encore™ into a single bag. This may not be appropriate for all laboratories so please confirm with the labs themselves

LLNN_ID

Where

LL is a grouping of two (2) to four (4) letters signifying the sample media source. In older nomenclature SOPs this portion of the sample identification is commonly referred to as the *Sample Investigation Code*

NN represents a two digit number identifying the specific sample location or sample sequence number

_ ***(underscore)*** is required between the sample lettering and numeric identification and additional modifying data that determines the date of sampling or the depth of the sample interval

ID is a modifier specific to the sample type media (depth of soil sample or date of groundwater sample)

LL – Sample Investigation Code

Langan has devised a list of two to four letters to insure a quick ability to identify the sample investigation.

Code	Investigation
AA	Ambient Air
DS	Drum
EPB	Endpoint Location - Bottom (Excavation)
EPSW	Endpoint Location - Sidewall (Excavation)
FP	Free Product
IA	Indoor Air
IDW	Investigation Derived Waste (Soil Pile)
MW	Monitoring Well (Permanent)
SB	Soil Boring
SG	Staff Gauge (Stream Gauging)
SL	Sludge
SV	Soil Vapor Point
SVE	Soil Vapor Extraction Well
SW	Surface Water
TMW	Temporary Monitoring Well
TP	Test Pit (Excavated Material from Test Pit Not Associated With Sidewall or Bottom Samples)
WC	Waste Characterization Boring
COMP	Composite Sample
TB	Trip Blank (QA/QC Sampling – All Investigations)
FB	Field Blank (QA/QC Sampling – All Investigations)
DUP	Duplicate (QA/QC Sampling – All Investigations)

NN – Numeric Identifier

The two digit number that follows the sample investigation code (LL) identifies the specific sample based on the soil boring, monitoring well, endpoint or other location identification. For a subset of samples

where there is no specific location identifier, the two digit number is the sequence number for the sample submitted. For example, an aqueous sample from a monitoring well identified as MW-1 would have the sample investigation code of MW and the numeric identifier as 01. Note there is no hyphen. The same can be done for soil borings, a soil sample collected from soil boring 9 (SB-9) would be have the LLNN identification of SB09 (again, no hyphen).

Note however that there is a subset of samples related to laboratory analytical quality assurance, among these includes TB, FB, and DUP. On many investigations, the Scope will require multiple collections of these types of samples, therefore the numerical number represents the sequence sample count where the first sample is 01, the second sample is 02, and the third sample is 03 and so on.

_ Underscore
The underscore is required. It separates the investigation code and numeric identifier from the modifier specific to the sample itself. Note that every effort should be made to insure that the underscore is clear on the sample label and chain of custody (COC).

ID – Modifier Specific to Type Media
Each sample investigation code and numeric identifier is further modified by an ID specific to the sample type media. In general, soil samples (soil borings or endpoint samples) use an ID that indicates the depth at which the sample was taken. Aqueous samples (groundwater or surface water samples) are identified by the date the sample was collected. Other types of samples including quality control (TB, FB, and DUP), Vapor samples (AA, IA, SV or SVE), other soil type samples (IDW, sludge, free product, drum, and others) are also identified by a date. The following rules apply to the ID when using sample depth or sample date.

Sample Depth
The sample depth must be whole numbers (no fractions) separated by a hyphen. Thus for a soil sample collected from the soil boring SB-1 from a depth of 6 feet to 8 feet, the sample would be identified as:

SB01_6-8

Unfortunately, the NYSDEC EQuIS system does not accept fractions. Therefore, if your sample interval is a fraction of a foot (6.5-7.5), round up to the larger interval (6-8).

Sample Date
The sample date is always in the format of MMDDYY. Note that the year is two digits. Thus for a groundwater sample collected on July 1, 2015 from the monitoring well MW-1, the sample would be identified as:

MW01_070115

Special Cases
There are a couple of specific sample types that require further explanation.

Endpoint Sampling
End point sidewall samples are sometimes modified by magnetic direction (N, S, E, and W). For example, the first sidewall endpoint sample from the north wall of an excavation at a depth of 5 feet would be written as:

EPSW01_N_5

Again, note that the N in the identification refers to north and is separated from the prefix investigation code/numeric identifier and ID modifier suffix by underscores.

Vapor Extraction Well Sample
As with the sidewall endpoint samples, the sample name is altered by inserting a middle modifier between the prefix and suffix of the sample name. The middle modifier is used to identify the source of the sample (inlet sample port, midpoint sample port or outlet sample port). For example the midpoint port of the vapor extraction well number 1 sampled on July 1, 2015 would be written as;

SVE01_MID_070115

Matrix Spike and Matrix Spike Duplicate
On occasion, a Langan investigation will collect a sample to be used to provide the lab with a site specific medium to spike to determine the quality of the analytical method. This special case of sampling requires additional information to be used in the sample name, specifically, a suffix specifying whether the sample is the matrix spike (MS) or the matrix spike duplicate (MSD). In the following example, the sample is collected from soil boring number 1 at a depth of 2-4 feet. For the matrix spike sample:

SB01_2-4_MS

and for the matrix spike duplicate sample:

SB01_2-4_MSD

Multiple Interval Groundwater Sampling
Although not currently a common practice, low flow sampling facilitates stratigraphic sampling of a monitoring well. If the scope requires stratigraphic sampling then groundwater samples will be labeled with a lower case letter following the well number. For example, placing the pump or sampling tube at 10 feet below surface in MW01 on July 1, 2015 would require the sample to be labeled as:

MW01a_070115

While a second sample where the pump or tubing intake is placed at 20 feet would be labeled as:

MW01b_070115

Note that it is important that you record what depth the intake for each sample represents in your field notes; as this information is going to be critical to interpreting the results.

ATTACHMENT E

PFAS Sampling Protocol

NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

SAMPLING, ANALYSIS, AND ASSESSMENT OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Under NYSDEC's Part 375 Remedial Programs

November 2022

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ERRATA SHEET for

SAMPLING, ANALYSIS, AND ASSESSMENT OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) Under NYSDEC's Part 375 Remedial Programs Issued January 17, 2020

Citation and Page Number	Current Text	Corrected Text	Date
Title of Appendix I, page 32	Appendix H	Appendix I	2/25/2020
Document Cover, page 1	Guidelines for Sampling and Analysis of PFAS	Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs	9/15/2020
Routine Analysis, page 9	"However, laboratories analyzing environmental samples…PFOA and PFOS in drinking water by EPA Method 537, 537.1 or ISO 25101."	"However, laboratories analyzing environmental samples…PFOA and PFOS in drinking water by EPA Method 537, 537.1, ISO 25101, or Method 533."	9/15/2020
Additional Analysis, page 9, new paragraph regarding soil parameters	None	"In cases where site-specific cleanup objectives for PFOA and PFOS are to be assessed, soil parameters, such as Total Organic Carbon (EPA Method 9060), soil pH (EPA Method 9045), clay content (percent), and cation exchange capacity (EPA Method 9081), should be included in the analysis to help evaluate factors affecting the leachability of PFAS in site soils."	9/15/2020
Data Assessment and Application to Site Cleanup Page 10	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFAS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Target levels for cleanup of PFAS in other media, including biota and sediment, have not yet been established by the DEC.	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Preliminary target levels for cleanup of PFOA and PFOS in other media, including biota and sediment, have not yet been established by the DEC.	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Water Sample Results Page 10	PFAS should be further assessed and considered as a potential contaminant of concern in groundwater or surface water (…) If PFAS are identified as a contaminant of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.	PFOA and PFOS should be further assessed and considered as potential contaminants of concern in groundwater or surface water (…) If PFOA and/or PFOS are identified as contaminants of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.	9/15/2020
Soil Sample Results, page 10	"The extent of soil contamination for purposes of delineation and remedy selection should be determined by having certain soil samples tested by Synthetic Precipitation Leaching Procedure (SPLP) and the leachate analyzed for PFAS. Soil exhibiting SPLP results above 70 ppt for either PFOA or PFOS (individually or combined) are to be evaluated during the cleanup phase."	"Soil cleanup objectives for PFOA and PFOS will be proposed in an upcoming revision to 6 NYCRR Part 375-6. Until SCOs are in effect, the following are to be used as guidance values. " [Interim SCO Table] "PFOA and PFOS results for soil are to be compared against the guidance values listed above. These guidance values are to be used in determining whether PFOA and PFOS are contaminants of concern for the site and for determining remedial action objectives and cleanup requirements. Site-specific remedial objectives for protection of groundwater can also be presented for evaluation by DEC. Development of site-specific remedial objectives for protection of groundwater will require analysis of additional soil parameters relating to leachability. These additional analyses can include any or all the parameters listed above (soil pH, cation exchange capacity, etc.) and/or use of SPLP. As the understanding of PFAS transport improves, DEC welcomes proposals for site-specific remedial objectives for protection of groundwater. DEC will expect that those may be dependent on additional factors including soil pH, aqueous pH, % organic carbon, % Sand/Silt/Clay, soil cations: K, Ca, Mg, Na, Fe, Al, cation exchange capacity, and anion exchange capacity. Site-specific remedial objectives should also consider the dilution attenuation factor (DAF). The NJDEP publication on DAF can be used as a reference: https://www.nj.gov/dep/srp/guidance/rs/daf.pdf. "	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Testing for Imported Soil Page 11	Soil imported to a site for use in a soil cap, soil cover, or as backfill is to be tested for PFAS in general conformance with DER-10, Section 5.4(e) for the PFAS Analyte List (Appendix F) using the analytical procedures discussed below and the criteria in DER-10 associated with SVOCs. If PFOA or PFOS is detected in any sample at or above 1 µg/kg, then soil should be tested by SPLP and the leachate analyzed for PFAS. If the SPLP results exceed 10 ppt for either PFOA or PFOS (individually) then the source of backfill should be rejected, unless a site-specific exemption is provided by DER. SPLP leachate criteria is based on the Maximum Contaminant Levels proposed for drinking water by New York State's Department of Health, this value may be updated based on future Federal or State promulgated regulatory standards. Remedial parties have the option of analyzing samples concurrently for both PFAS in soil and in the SPLP leachate to minimize project delays. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.	Testing for PFAS should be included any time a full TAL/TCL analyte list is required. Results for PFOA and PFOS should be compared to the applicable guidance values. If PFOA or PFOS is detected in any sample at or above the guidance values then the source of backfill should be rejected, unless a site-specific exemption is provided by DER based on SPLP testing, for example. If the concentrations of PFOA and PFOS in leachate are at or above 10 ppt (the Maximum Contaminant Levels established for drinking water by the New York State Department of Health), then the soil is not acceptable. PFOA, PFOS and 1,4-dioxane are all considered semi-volatile compounds, so composite samples are appropriate for these compounds when sampling in accordance with DER-10, Table 5.4(e)10. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Footnotes	None	[1] TOP Assay analysis of highly contaminated samples, such as those from an AFFF (aqueous film-forming foam) site, can result in incomplete oxidation of the samples and an underestimation of the total perfluoroalkyl substances. [2] The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the soil cleanup objective for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	9/15/2020
Additional Analysis, page 9	In cases… soil parameters, such as Total Organic Carbon (EPA Method 9060), soil…	In cases… soil parameters, such as Total Organic Carbon (Lloyd Kahn), soil…	1/8/2021
Appendix A, General Guidelines, fourth bullet	List the ELAP-approved lab(s) to be used for analysis of samples	List the ELAP- certified lab(s) to be used for analysis of samples	1/8/2021
Appendix E, Laboratory Analysis and Containers	Drinking water samples collected using this protocol are intended to be analyzed for PFAS by ISO Method 25101.	Drinking water samples collected using this protocol are intended to be analyzed for PFAS by EPA Method 537, 537.1, 533, or ISO Method 25101	1/8/2021
Water Sample Results Page 9	"In addition, further assessment of water may be warranted if either of the following screening levels are met: a. any other individual PFAS (not PFOA or PFOS) is detected in water at or above 100 ng/L; or b. total concentration of PFAS (including PFOA and PFOS) is detected in water at or above 500 ng/L"	Deleted	6/15/2021

Citation and Page Number	Current Text	Corrected Text	Date
Routine Analysis, Page XX	Currently, New York State Department of Health's Environmental Laboratory Approval Program (ELAP)… criteria set forth in the DER's laboratory guidelines for PFAS in non-potable water and solids (Appendix H - Laboratory Guidelines for Analysis of PFAS in Non-Potable Water and Solids).	Deleted	5/31/2022
Analysis and Reporting, Page XX	As of October 2020, the United States Environmental Protection Agency (EPA) does not have a validated method for analysis of PFAS for media commonly analyzed under DER remedial programs (non-potable waters, solids). DER has developed the following guidelines to ensure consistency in analysis and reporting of PFAS.	Deleted	5/31/2022
Routine Analysis, Page XX	LC-MS/MS analysis for PFAS using methodologies based on EPA Method 537.1 is the procedure to use for environmental samples. Isotope dilution techniques should be utilized for the analysis of PFAS in all media.	EPA Method 1633 is the procedure to use for environmental samples.	
Soil Sample Results, Page XX	Soil cleanup objectives for PFOA and PFOS will be proposed in an upcoming revision to 6 NYCRR Part 375-6	Soil cleanup objectives for PFOA and PFOS have been proposed in an upcoming revision to 6 NYCRR Part 375-6	
Appendix A	"Include in the text… LC-MS/MS for PFAS using methodologies based on EPA Method 537.1"	"Include in the text ….EPA Method 1633"	
Appendix A	"Laboratory should have ELAP certification for PFOA and PFOS in drinking water by EPA Method 537, 537.1, EPA Method 533, or ISO 25101"	Deleted	
Appendix B	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	

Citation and Page Number	Current Text	Corrected Text	Date
Appendix C	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	
Appendix D	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	
Appendix G		Updated to include all forty PFAS analytes in EPA Method 533	
Appendix H		Deleted	
Appendix I	Appendix I	Appendix H	
Appendix H	"These guidelines are intended to be used for the validation of PFAS analytical results for projects within the Division of Environmental Remediation (DER) as well as aid in the preparation of a data usability summary report."	"These guidelines are intended to be used for the validation of PFAS using EPA Method 1633 for projects within the Division of Environmental Remediation (DER)."	
Appendix H	"The holding time is 14 days…"	"The holding time is 28 days…"	
Appendix H, Initial Calibration	"The initial calibration should contain a minimum of five standards for linear fit…"	"The initial calibration should contain a minimum of six standards for linear fit…"	
Appendix H, Initial Calibration	Linear fit calibration curves should have an R^2 value greater than 0.990.	Deleted	
Appendix H, Initial Calibration Verification	Initial Calibration Verification Section	Deleted	
Appendix H	secondary Ion Monitoring Section	Deleted	
Appendix H	Branched and Linear Isomers Section	Deleted	

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

Objective

New York State Department of Environmental Conservation's Division of Environmental Remediation (DER) performs or oversees sampling of environmental media and subsequent analysis of PFAS as part of remedial programs implemented under 6 NYCRR Part 375. To ensure consistency in sampling, analysis, reporting, and assessment of PFAS, DER has developed this document which summarizes currently accepted procedures and updates previous DER technical guidance pertaining to PFAS.

Applicability

All work plans submitted to DEC pursuant to one of the remedial programs under Part 375 shall include PFAS sampling and analysis procedures that conform to the guidelines provided herein.

As part of a site investigation or remedial action compliance program, whenever samples of potentially affected media are collected and analyzed for the standard Target Analyte List/Target Compound List (TAL/TCL), PFAS analysis should also be performed. Potentially affected media can include soil, groundwater, surface water, and sediment. Based upon the potential for biota to be affected, biota sampling and analysis for PFAS may also be warranted as determined pursuant to a Fish and Wildlife Impact Analysis. Soil vapor sampling for PFAS is not required.

Field Sampling Procedures

DER-10 specifies technical guidance applicable to DER's remedial programs. Given the prevalence and use of PFAS, DER has developed "best management practices" specific to sampling for PFAS. As specified in DER-10 Chapter 2, quality assurance procedures are to be submitted with investigation work plans. Typically, these procedures are incorporated into a work plan, or submitted as a stand-alone document (e.g., a Quality Assurance Project Plan). Quality assurance guidelines for PFAS are listed in Appendix A - Quality Assurance Project Plan (QAPP) Guidelines for PFAS.

Field sampling for PFAS performed under DER remedial programs should follow the appropriate procedures outlined for soils, sediments, or other solids (Appendix B), non-potable groundwater (Appendix C), surface water (Appendix D), public or private water supply wells (Appendix E), and fish tissue (Appendix F).

QA/QC samples (e.g. duplicates, MS/MSD) should be collected as specified in DER-10, Section 2.3(c). For sampling equipment coming in contact with aqueous samples only, rinsate or equipment blanks should be collected. Equipment blanks should be collected at a minimum frequency of one per day per site or one per twenty samples, whichever is more frequent.

Analysis and Reporting

The investigation work plan should describe analysis and reporting procedures, including laboratory analytical procedures for the methods discussed below. As specified in DER-10 Section 2.2, laboratories should provide a full Category B deliverable. In addition, a Data Usability Summary Report (DUSR) should be prepared by an independent, third party data validator. Electronic data submissions should meet the requirements provided at: https://www.dec.ny.gov/chemical/62440.html.

DER has developed a *PFAS Analyte List* (Appendix G) for remedial programs to understand the nature of contamination at sites. It is expected that reported results for PFAS will include, at a minimum, all the compounds listed. If lab and/or matrix specific issues are encountered for any analytes, the DER project manager, in consultation with the DER chemist, will make case-by-case decisions as to whether certain analytes may be temporarily or permanently discontinued from analysis at each site. As with other contaminants that are analyzed for at a site, the *PFAS Analyte List* may be refined for future sampling events based on investigative findings.

Routine Analysis

EPA Method 1633 is the procedure to use for environmental samples. Reporting limits for PFOA and PFOS in aqueous samples should not exceed 2 ng/L. Reporting limits for PFOA and PFOS in solid samples should not exceed 0.5 µg/kg. Reporting limits for all other PFAS in aqueous and solid media should be as close to these limits as possible. If laboratories indicate that they are not able to achieve these reporting limits for the entire *PFAS Analyte List*, site-specific decisions regarding acceptance of elevated reporting limits for specific PFAS can be made by the DER project manager in consultation with the DER chemist. Data review guidelines were developed by DER to ensure data comparability and usability (Appendix H - Data Review Guidelines for Analysis of PFAS in Non-Potable Water and Solids).

Additional Analysis

Additional laboratory methods for analysis of PFAS may be warranted at a site, such as the Synthetic Precipitation Leaching Procedure (SPLP) and Total Oxidizable Precursor Assay (TOP Assay).

In cases where site-specific cleanup objectives for PFOA and PFOS are to be assessed, soil parameters, such as Total Organic Carbon (Lloyd Kahn), soil pH (EPA Method 9045), clay content (percent), and cation exchange capacity (EPA Method 9081), should be included in the analysis to help evaluate factors affecting the leachability of PFAS in site soils.

SPLP is a technique used to determine the mobility of chemicals in liquids, soils and wastes, and may be useful in determining the need for addressing PFAS-containing material as part of the remedy. SPLP by EPA Method 1312 should be used unless otherwise specified by the DER project manager in consultation with the DER chemist.

Impacted materials can be made up of PFAS that are not analyzable by routine analytical methodology. A TOP Assay can be utilized to conceptualize the amount and type of oxidizable PFAS which could be liberated in the environment, which approximates the maximum concentration of perfluoroalkyl substances that could be generated if all polyfluoroalkyl substances were oxidized. For example, some polyfluoroalkyl substances may degrade or transform to form perfluoroalkyl substances (such as PFOA or PFOS), resulting in an increase in perfluoroalkyl substance concentrations as contaminated groundwater moves away from a source. The TOP Assay converts, through oxidation, polyfluoroalkyl substances (precursors) into perfluoroalkyl substances that can be detected by routine analytical methodology.[1]

[1] TOP Assay analysis of highly contaminated samples, such as those from an AFFF (aqueous film-forming foam) site, can result in incomplete oxidation of the samples and an underestimation of the total perfluoroalkyl substances.

Commercial laboratories have adopted methods which allow for the quantification of targeted PFAS in air and biota. The EPA's Office of Research and Development (ORD) is currently developing methods which allow for air emissions characterization of PFAS, including both targeted and non-targeted analysis of PFAS. Consult with the DER project manager and the DER chemist for assistance on analyzing biota/tissue and air samples.

Data Assessment and Application to Site Cleanup

Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Preliminary target levels for cleanup of PFOA and PFOS in other media, including biota and sediment, have not yet been established by the DEC.

Water Sample Results

PFOA and PFOS should be further assessed and considered as potential contaminants of concern in groundwater or surface water if PFOA or PFOS is detected in any water sample at or above 10 ng/L (ppt) and is determined to be attributable to the site, either by a comparison of upgradient and downgradient levels, or the presence of soil source areas, as defined below.

If PFOA and/or PFOS are identified as contaminants of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.

Soil Sample Results

Soil cleanup objectives for PFOA and PFOS have been proposed in an upcoming revision to 6 NYCRR Part 375-6. Until SCOs are in effect, the following are to be used as guidance values:

Guidance Values for Anticipated Site Use	PFOA (ppb)	PFOS (ppb)
Unrestricted	0.66	0.88
Residential	6.6	8.8
Restricted Residential	33	44
Commercial	500	440
Industrial	600	440
Protection of Groundwater[2]	1.1	3.7

PFOA and PFOS results for soil are to be compared against the guidance values listed above. These guidance values are to be used in determining whether PFOA and PFOS are contaminants of concern for the site and for determining remedial action objectives and cleanup requirements. Site-specific remedial objectives for protection of groundwater can also be presented for evaluation by DEC. Development of site-specific remedial objectives for protection of groundwater will require analysis of additional soil parameters relating to leachability. These additional analyses can include any or all the parameters listed above (soil pH, cation exchange capacity, etc.) and/or use of SPLP.

As the understanding of PFAS transport improves, DEC welcomes proposals for site-specific remedial objectives for protection of groundwater. DEC will expect that those may be dependent on additional factors including soil pH, aqueous pH, % organic carbon, % Sand/Silt/Clay, soil cations: K, Ca, Mg, Na, Fe, Al, cation exchange

[2] The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).

capacity, and anion exchange capacity. Site-specific remedial objectives should also consider the dilution attenuation factor (DAF). The NJDEP publication on DAF can be used as a reference: https://www.nj.gov/dep/srp/guidance/rs/daf.pdf.

Testing for Imported Soil

Testing for PFAS should be included any time a full TAL/TCL analyte list is required. Results for PFOA and PFOS should be compared to the applicable guidance values. If PFOA or PFOS is detected in any sample at or above the guidance values then the source of backfill should be rejected, unless a site-specific exemption is provided by DER based on SPLP testing, for example. If the concentrations of PFOA and PFOS in leachate are at or above 10 ppt (the Maximum Contaminant Levels established for drinking water by the New York State Department of Health), then the soil is not acceptable.

PFOA, PFOS and 1,4-dioxane are all considered semi-volatile compounds, so composite samples are appropriate for these compounds when sampling in accordance with DER-10, Table 5.4(e)10. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.

Appendix A - Quality Assurance Project Plan (QAPP) Guidelines for PFAS

The following guidelines (general and PFAS-specific) can be used to assist with the development of a QAPP for projects within DER involving sampling and analysis of PFAS.

General Guidelines in Accordance with DER-10

- Document/work plan section title – Quality Assurance Project Plan
- Summarize project scope, goals, and objectives
- Provide project organization including names and resumes of the project manager, Quality Assurance Officer (QAO), field staff, and Data Validator
    - The QAO should not have another position on the project, such as project or task manager, that involves project productivity or profitability as a job performance criterion
- List the ELAP certified lab(s) to be used for analysis of samples
- Include a site map showing sample locations
- Provide detailed sampling procedures for each matrix
- Include Data Quality Usability Objectives
- List equipment decontamination procedures
- Include an "Analytical Methods/Quality Assurance Summary Table" specifying:
    - Matrix type
    - Number or frequency of samples to be collected per matrix
    - Number of field and trip blanks per matrix
    - Analytical parameters to be measured per matrix
    - Analytical methods to be used per matrix with minimum reporting limits
    - Number and type of matrix spike and matrix spike duplicate samples to be collected
    - Number and type of duplicate samples to be collected
    - Sample preservation to be used per analytical method and sample matrix
    - Sample container volume and type to be used per analytical method and sample matrix
    - Sample holding time to be used per analytical method and sample matrix
- Specify Category B laboratory data deliverables and preparation of a DUSR

Specific Guidelines for PFAS

- Include in the text that sampling for PFAS will take place
- Include in the text that PFAS will be analyzed by EPA Method 1633
- Include the list of PFAS compounds to be analyzed (*PFAS Analyte List*)
- Include the laboratory SOP for PFAS analysis
- List the minimum method-achievable Reporting Limits for PFAS
    - Reporting Limits should be less than or equal to:
        - Aqueous – 2 ng/L (ppt)
        - Solids – 0.5 µg/kg (ppb)
- Include the laboratory Method Detection Limits for the PFAS compounds to be analyzed
-
- Include detailed sampling procedures
    - Precautions to be taken
    - Pump and equipment types
    - Decontamination procedures
    - Approved materials only to be used
- Specify that regular ice only will be used for sample shipment
- Specify that equipment blanks should be collected at a minimum frequency of 1 per day per site for each matrix

Appendix B - Sampling Protocols for PFAS in Soils, Sediments and Solids

General

The objective of this protocol is to give general guidelines for the collection of soil, sediment and other solid samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Containers

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in to contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel spoon
- stainless steel bowl
- steel hand auger or shovel without any coatings

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Sampling is often conducted in areas where a vegetative turf has been established. In these cases, a pre-cleaned trowel or shovel should be used to carefully remove the turf so that it may be replaced at the conclusion of sampling. Surface soil samples (e.g. 0 to 6 inches below surface) should then be collected using a pre-cleaned, stainless steel spoon. Shallow subsurface soil samples (e.g. 6 to ~36 inches below surface) may be collected by digging a hole using a pre-cleaned hand auger or shovel. When the desired subsurface depth is reached, a pre-cleaned hand auger or spoon shall be used to obtain the sample.

When the sample is obtained, it should be deposited into a stainless steel bowl for mixing prior to filling the sample containers. The soil should be placed directly into the bowl and mixed thoroughly by rolling the material into the middle until the material is homogenized. At this point the material within the bowl can be placed into the laboratory provided container.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A soil log or sample log shall document the location of the sample/borehole, depth of the sample, sampling equipment, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix C - Sampling Protocols for PFAS in Monitoring Wells

General

The objective of this protocol is to give general guidelines for the collection of groundwater samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including plumbers tape and sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel inertia pump with HDPE tubing
- peristaltic pump equipped with HDPE tubing and silicone tubing
- stainless steel bailer with stainless steel ball
- bladder pump (identified as PFAS-free) with HDPE tubing

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Monitoring wells should be purged in accordance with the sampling procedure (standard/volume purge or low flow purge) identified in the site work plan, which will determine the appropriate time to collect the sample. If sampling using standard purge techniques, additional purging may be needed to reduce turbidity levels, so samples contain a limited amount of sediment within the sample containers. Sample containers that contain sediment may cause issues at the laboratory, which may result in elevated reporting limits and other issues during the sample preparation that can compromise data usability. Sampling personnel should don new nitrile gloves prior to sample collection due to the potential to contact PFAS containing items (not related to the sampling equipment) during the purging activities.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Collect one equipment blank per day per site and minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers
- Additional equipment blank samples may be collected to assess other equipment that is utilized at the monitoring well
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A purge log shall document the location of the sample, sampling equipment, groundwater parameters, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix D - Sampling Protocols for PFAS in Surface Water

General

The objective of this protocol is to give general guidelines for the collection of surface water samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel cup

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Where conditions permit, (e.g. creek or pond) sampling devices (e.g. stainless steel cup) should be rinsed with site medium to be sampled prior to collection of the sample. At this point the sample can be collected and poured into the sample container.

If site conditions permit, samples can be collected directly into the laboratory container.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Collect one equipment blank per day per site and minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A sample log shall document the location of the sample, sampling equipment, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix E - Sampling Protocols for PFAS in Private Water Supply Wells

General

The objective of this protocol is to give general guidelines for the collection of water samples from private water supply wells (with a functioning pump) for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Drinking water samples collected using this protocol are intended to be analyzed for PFAS by EPA Method 537, 537.1, 533, or ISO Method 25101. The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials (e.g. plumbers tape), including sample bottle cap liners with a PTFE layer.

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Locate and assess the pressure tank and determine if any filter units are present within the building. Establish the sample location as close to the well pump as possible, which is typically the spigot at the pressure tank. Ensure sampling equipment is kept clean during sampling as access to the pressure tank spigot, which is likely located close to the ground, may be obstructed and may hinder sample collection.

Prior to sampling, a faucet downstream of the pressure tank (e.g., washroom sink) should be run until the well pump comes on and a decrease in water temperature is noted which indicates that the water is coming from the well. If the homeowner is amenable, staff should run the water longer to purge the well (15+ minutes) to provide a sample representative of the water in the formation rather than standing water in the well and piping system including the pressure tank. At this point a new pair of nitrile gloves should be donned and the sample can be collected from the sample point at the pressure tank.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- If equipment was used, collect one equipment blank per day per site and a minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers.
- A field reagent blank (FRB) should be collected at a rate of one per 20 samples. The lab will provide a FRB bottle containing PFAS free water and one empty FRB bottle. In the field, pour the water from the one bottle into the empty FRB bottle and label appropriately.
- Request appropriate data deliverable (Category B) and an electronic data deliverable
- For sampling events where multiple private wells (homes or sites) are to be sampled per day, it is acceptable to collect QC samples at a rate of one per 20 across multiple sites or days.

Documentation

A sample log shall document the location of the private well, sample point location, owner contact information, sampling equipment, purge duration, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate and available (e.g. well construction, pump type and location, yield, installation date). Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appendix F - Sampling Protocols for PFAS in Fish

This appendix contains a copy of the latest guidelines developed by the Division of Fish and Wildlife (DFW) entitled "General Fish Handling Procedures for Contaminant Analysis" (Ver. 8).

Procedure Name: General Fish Handling Procedures for Contaminant Analysis

Number: FW-005

Purpose: This procedure describes data collection, fish processing and delivery of fish collected for contaminant monitoring. It contains the chain of custody and collection record forms that should be used for the collections.

Organization: Environmental Monitoring Section
Bureau of Ecosystem Health
Division of Fish and Wildlife (DFW)
New York State Department of Environmental Conservation (NYSDEC)
625 Broadway
Albany, New York 12233-4756

Version: 8

Previous Version Date: 21 March 2018

Summary of Changes to this Version: Updated bureau name to Bureau of Ecosystem Health. Added direction to list the names of all field crew on the collection record. Minor formatting changes on chain of custody and collection records.

Originator or Revised by: Wayne Richter, Jesse Becker

Date: 26 April 2019

Quality Assurance Officer and Approval Date: Jesse Becker, 26 April 2019

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

GENERAL FISH HANDLING PROCEDURES FOR CONTAMINANT ANALYSES

A. Original copies of all continuity of evidence (i.e., Chain of Custody) and collection record forms must accompany delivery of fish to the lab. A copy shall be directed to the Project Leader or as appropriate, Wayne Richter. All necessary forms will be supplied by the Bureau of Ecosystem Health. Because some samples may be used in legal cases, it is critical that each section is filled out completely. Each Chain of Custody form has three main sections:

   1. The top box is to be filled out **and signed** by the person responsible for the fish collection (e.g., crew leader, field biologist, researcher). This person is responsible for delivery of the samples to DEC facilities or personnel (e.g., regional office or biologist).

   2. The second section is to be filled out **and signed** by the person responsible for the collections while being stored at DEC, before delivery to the analytical lab. This may be the same person as in (1), but it is still required that they complete the section. Also important is the **range of identification numbers** (i.e., tag numbers) included in the sample batch.

   3. Finally, the bottom box is to record any transfers between DEC personnel and facilities. Each subsequent transfer should be **identified, signed, and dated**, until laboratory personnel take possession of the fish.

B. The following data are required on each **Fish Collection Record** form:

   1. Project and Site Name.

   2. DEC Region.

   3. All personnel (and affiliation) involved in the collection.

   4. Method of collection (gill net, hook and line, etc.)

   5. Preservation Method.

C. The following data are to be taken on each fish collected and recorded on the **Fish Collection Record** form:

   1. Tag number - Each specimen is to be individually jaw tagged at time of collection with a unique number. Make sure the tag is turned out so that the number can be read without opening the bag. Use tags in sequential order. For small fish or composite samples place the tag inside the bag with the samples. The Bureau of Ecosystem Health can supply the tags.

   2. Species identification (please be explicit enough to enable assigning genus and species). Group fish by species when processing.

   3. Date collected.

   4. Sample location (waterway and nearest prominent identifiable landmark).

   5. Total length (nearest mm or smallest sub-unit on measuring instrument) and weight (nearest g or

smallest sub-unit of weight on weighing instrument). Take all measures as soon as possible with calibrated, protected instruments (e.g. from wind and upsets) and prior to freezing.

6. Sex - fish may be cut enough to allow sexing or other internal investigation, but do not eviscerate. Make any incision on the right side of the belly flap or exactly down the midline so that a left-side fillet can be removed.

D. General data collection recommendations:

1. It is helpful to use an ID or tag number that will be unique. It is best to use metal striped bass or other uniquely numbered metal tags. If uniquely numbered tags are unavailable, values based on the region, water body and year are likely to be unique: for example, R7CAY11001 for Region 7, Cayuga Lake, 2011, fish 1. If the fish are just numbered 1 through 20, we have to give them new numbers for our database, making it more difficult to trace your fish to their analytical results and creating an additional possibility for errors.

2. Process and record fish of the same species sequentially. Recording mistakes are less likely when all fish from a species are processed together. Starting with the bigger fish species helps avoid missing an individual.

3. If using Bureau of Ecosystem Health supplied tags or other numbered tags, use tags in sequence so that fish are recorded with sequential Tag Numbers. This makes data entry and login at the lab and use of the data in the future easier and reduces keypunch errors.

4. Record length and weight as soon as possible after collection and before freezing. Other data are recorded in the field upon collection. An age determination of each fish is optional, but if done, it is recorded in the appropriate “Age” column.

5. For composite samples of small fish, record the number of fish in the composite in the Remarks column. Record the length and weight of each individual in a composite. All fish in a composite sample should be of the same species and members of a composite should be visually matched for size.

6. Please submit photocopies of topographic maps or good quality navigation charts indicating sampling locations. GPS coordinates can be entered in the Location column of the collection record form in addition to or instead for providing a map. These records are of immense help to us (and hopefully you) in providing documented location records which are not dependent on memory and/or the same collection crew. In addition, they may be helpful for contaminant source trackdown and remediation/control efforts of the Department.

7. When recording data on fish measurements, it will help to ensure correct data recording for the data recorder to call back the numbers to the person making the measurements.

E. Each fish is to be placed in its own individual plastic bag. For small fish to be analyzed as a composite, put all of the fish for one composite in the same bag but use a separate bag for each composite. It is important to individually bag the fish to avoid difficulties or cross contamination when processing the fish for chemical analysis. Be sure to include the fish’s tag number inside the bag, preferably attached to the fish with the tag number turned out so it can be read. Tie or otherwise secure the bag closed. **The Bureau of Ecosystem Health will supply the bags.** If necessary, food grade bags may be procured from a suitable vendor (e.g., grocery store). It is preferable to redundantly label each bag with a manila tag tied between the knot and the body of the bag. This tag should be labeled with the project name, collection location, tag number, collection date, and fish species. If scales are collected, the scale envelope should be labeled with

the same information.

F. Groups of fish, by species, are to be placed in one large plastic bag per sampling location. **The Bureau of Ecosystem Health will supply the larger bags.** Tie or otherwise secure the bag closed. Label the site bag with a manila tag tied between the knot and the body of the bag. The tag should contain: project, collection location, collection date, species and **tag number ranges**. Having this information on the manila tag enables lab staff to know what is in the bag without opening it.

G. Do not eviscerate, fillet or otherwise dissect the fish unless specifically asked to. If evisceration or dissection is specified, the fish must be cut along the exact midline or on the right side so that the left side fillet can be removed intact at the laboratory. If filleting is specified, the procedure for taking a standard fillet (SOP PREPLAB 4) must be followed, including removing scales.

H. Special procedures for PFAS: Unlike legacy contaminants such as PCBs, which are rarely found in day to day life, PFAS are widely used and frequently encountered. Practices that avoid sample contamination are therefore necessary. While no standard practices have been established for fish, procedures for water quality sampling can provide guidance. The following practices should be used for collections when fish are to be analyzed for PFAS:

No materials containing Teflon.
No Post-it notes.
No ice packs; only water ice or dry ice.
Any gloves worn must be powder free nitrile.
No Gore-Tex or similar materials (Gore-Tex is a PFC with PFOA used in its manufacture).
No stain repellent or waterproof treated clothing; these are likely to contain PFCs.
Avoid plastic materials, other than HDPE, including clipboards and waterproof notebooks.
Wash hands after handling any food containers or packages as these may contain PFCs.
Keep pre-wrapped food containers and wrappers isolated from fish handling.
Wear clothing washed at least six times since purchase.
Wear clothing washed without fabric softener.
Staff should avoid cosmetics, moisturizers, hand creams and similar products on the day of sampling as many of these products contain PFCs (Fujii et al. 2013). Sunscreen or insect repellent should not contain ingredients with “fluor” in their name. Apply any sunscreen or insect repellent well downwind from all materials. Hands must be washed after touching any of these products.

I. All fish must be kept at a temperature <45° F (<8° C) immediately following data processing. As soon as possible, freeze at -20° C ± 5° C. Due to occasional freezer failures, daily freezer temperature logs are required. The freezer should be locked or otherwise secured to maintain chain of custody.

J. In most cases, samples should be delivered to the Analytical Services Unit at the Hale Creek field station. Coordinate delivery with field station staff and send copies of the collection records, continuity of evidence forms and freezer temperature logs to the field station. For samples to be analyzed elsewhere, non-routine collections or other questions, contact Wayne Richter, Bureau of Ecosystem Health, NYSDEC, 625 Broadway, Albany, New York 12233-4756, 518-402-8974, or the project leader about sample transfer. Samples will then be directed to the analytical facility and personnel noted on specific project descriptions.

K. A recommended equipment list is at the end of this document.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF FISH AND WILDLIFE
FISH COLLECTION RECORD

Project and Site Name _____ DEC Region _____

Collections made by (include all crew) _____

Sampling Method: □Electrofishing □Gill netting □Trap netting □Trawling □Seining □Angling □Other _____

Preservation Method: □Freezing □Other _____ Notes (SWFDB survey number): _____

FOR LAB USE ONLY- LAB ENTRY NO.	COLLECTION OR TAG NO.	SPECIES	DATE TAKEN	LOCATION	AGE	SEX &/OR REPROD. CONDIT	LENGTH ( )	WEIGHT ( )	REMARKS

richter: revised 2011, 5/7/15, 10/4/16, 3/20/17; becker: 3/23/17, 4/26/19

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CHAIN OF CUSTODY

I, _____, of _____ collected the
(Print Name) (Print Business Address)

following on _____, 20____ from _____
(Date) (Water Body)

in the vicinity of _____
(Landmark, Village, Road, etc.)

Town of _____, in _____ County.

Item(s) _____

_____

Said sample(s) were in my possession and handled according to standard procedures provided to me prior to collection. The sample(s) were placed in the custody of a representative of the New York State Department of Environmental Conservation on _____, 20_____.

_____ _____
Signature Date

I, _____, received the above mentioned sample(s) on the date specified and assigned identification number(s) _____ to the sample(s). I have recorded pertinent data for the sample(s) on the attached collection records. The sample(s) remained in my custody until subsequently transferred, prepared or shipped at times and on dates as attested to below.

_____ _____
Signature Date

SECOND RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
THIRD RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
FOURTH RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
RECEIVED IN LABORATORY BY (Print Name)	TIME & DATE	REMARKS
SIGNATURE	UNIT	
LOGGED IN BY (Print Name)	TIME & DATE	ACCESSION NUMBERS
SIGNATURE	UNIT	

richter: revised 21 April 2014; becker: 23 March 2017, 26 April, 2019

NOTICE OF WARRANTY

By signature to the chain of custody (reverse), the signatory warrants that the information provided is truthful and accurate to the best of his/her ability. The signatory affirms that he/she is willing to testify to those facts provided and the circumstances surrounding the same. Nothing in this warranty or chain of custody negates responsibility nor liability of the signatories for the truthfulness and accuracy of the statements provided.

HANDLING INSTRUCTIONS

On day of collection, collector(s) name(s), address(es), date, geographic location of capture (attach a copy of topographic map or navigation chart), species, number kept of each species, and description of capture vicinity (proper noun, if possible) along with name of Town and County must be indicated on reverse.

Retain organisms in manila tagged plastic bags to avoid mixing capture locations. Note appropriate information on each bag tag.

Keep samples as cool as possible. Put on ice if fish cannot be frozen within 12 hours. If fish are held more than 24 hours without freezing, they will not be retained or analyzed.

Initial recipient (either DEC or designated agent) of samples from collector(s) is responsible for obtaining and recording information on the collection record forms which will accompany the chain of custody. This person will seal the container using packing tape and writing his signature, the time and the date across the tape onto the container with indelible marker. Any time a seal is broken, for whatever purpose, the incident must be recorded on the Chain of Custody (reason, time, and date) in the purpose of transfer block. Container then is resealed using new tape and rewriting signature, with time and date.

EQUIPMENT LIST

Scale or balance of appropriate capacity for the fish to be collected.

Fish measuring board.

Plastic bags of an appropriate size for the fish to be collected and for site bags.

Individually numbered metal tags for fish.

Manila tags to label bags.

Small envelops, approximately 2” x 3.5”, if fish scales are to be collected.

Knife for removing scales.

Chain of custody and fish collection forms.

Clipboard.

Pens or markers.

Paper towels.

Dish soap and brush.

Bucket.

Cooler.

Ice.

Duct tape.

Appendix G – PFAS Analyte List

Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonic acids	Perfluorobutanesulfonic acid	PFBS	375-73-5
	Perfluoropentanesulfonic acid	PFPeS	2706-91-4
	Perfluorohexanesulfonic acid	PFHxS	355-46-4
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	Perfluorooctanesulfonic acid	PFOS	1763-23-1
	Perfluorononanesulfonic acid	PFNS	68259-12-1
	Perfluorodecanesulfonic acid	PFDS	335-77-3
	Perfluorododecanesulfonic acid	PFDoS	79780-39-5
Perfluoroalkyl carboxylic acids	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	Perfluoroheptanoic acid	PFHpA	375-85-9
	Perfluorooctanoic acid	PFOA	335-67-1
	Perfluorononanoic acid	PFNA	375-95-1
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUnA	2058-94-8
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTrDA	72629-94-8
	Perfluorotetradecanoic acid	PFTeDA	376-06-7
Per- and Polyfluoroether carboxylic acids	Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6
	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4
	Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1
	Perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5
	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6
Fluorotelomer sulfonic acids	4:2 Fluorotelomer sulfonic acid	4:2-FTS	757124-72-4
	6:2 Fluorotelomer sulfonic acid	6:2-FTS	27619-97-2
	8:2 Fluorotelomer sulfonic acid	8:2-FTS	39108-34-4
Fluorotelomer carboxylic acids	3:3 Fluorotelomer carboxylic acid	3:3 FTCA	356-02-5
	5:3 Fluorotelomer carboxylic acid	5:3 FTCA	914637-49-3
	7:3 Fluorotelomer carboxylic acid	7:3 FTCA	812-70-4
Perfluorooctane sulfonamides	Perfluorooctane sulfonamide	PFOSA	754-91-6
	N-methylperfluorooctane sulfonamide	NMeFOSA	31506-32-8
	N-ethylperfluorooctane sulfonamide	NEtFOSA	4151-50-2
Perfluorooctane sulfonamidoacetic acids	N-methylperfluorooctane sulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethylperfluorooctane sulfonamidoacetic acid	N-EtFOSAA	2991-50-6
Perfluorooctane sulfonamide ethanols	N-methylperfluorooctane sulfonamidoethanol	MeFOSE	24448-09-7
	N-ethylperfluorooctane sulfonamidoethanol	EtFOSE	1691-99-2

Group	Chemical Name	Abbreviation	CAS Number
Ether sulfonic acids	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (F-53B Major)	9Cl-PF3ONS	756426-58-1
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (F-53B Minor)	11Cl-PF3OUdS	763051-92-9
	Perfluoro(2-ethoxyethane) sulfonic acid	PFEESA	113507-82-7

Appendix H - Data Review Guidelines for Analysis of PFAS in Non-Potable Water and Solids

General

These guidelines are intended to be used for the validation of PFAS using EPA Method 1633 for projects within the Division of Environmental Remediation (DER). Data reviewers should understand the methodology and techniques utilized in the analysis. Consultation with the end user of the data may be necessary to assist in determining data usability based on the data quality objectives in the Quality Assurance Project Plan. A familiarity with the laboratory's Standard Operating Procedure may also be needed to fully evaluate the data. If you have any questions, please contact DER's Quality Assurance Officer, Dana Barbarossa, at dana.barbarossa@dec.ny.gov.

Preservation and Holding Time

Samples should be preserved with ice to a temperature of less than 6°C upon arrival at the lab. The holding time is 28 days to extraction for aqueous and solid samples. The time from extraction to analysis for aqueous samples is 28 days and 40 days for solids.

Temperature greatly exceeds 6ºC upon arrival at the lab*	Use professional judgement to qualify detects and non-detects as estimated or rejected
Holding time exceeding 28 days to extraction	Use professional judgement to qualify detects and non-detects as estimated or rejected if holding time is grossly exceeded

*Samples that are delivered to the lab immediately after sampling may not meet the thermal preservation guidelines. Samples are considered acceptable if they arrive on ice or an attempt to chill the samples is observed.

Initial Calibration

The initial calibration should contain a minimum of six standards for linear fit and six standards for a quadratic fit. The relative standard deviation (RSD) for a quadratic fit calibration should be less than 20%.

The low-level calibration standard should be within 50% - 150% of the true value, and the mid-level calibration standard within 70% - 130% of the true value.

%RSD >20%	J flag detects and UJ non detects

Continuing Calibration Verification

Continuing calibration verification (CCV) checks should be analyzed at a frequency of one per ten field samples. If CCV recovery is very low, where detection of the analyte could be in question, ensure a low level CCV was analyzed and use to determine data quality.

CCV recovery <70 or >130%	J flag results

Blanks

There should be no detections in the method blanks above the reporting limits. Equipment blanks, field blanks, rinse blanks etc. should be evaluated in the same manner as method blanks. Use the most contaminated blank to evaluate the sample results.

Blank Result	Sample Result	Qualification
Any detection	<Reporting limit	Qualify as ND at reporting limit
Any detection	>Reporting Limit and >10x the blank result	No qualification
>Reporting limit	>Reporting limit and <10x blank result	J+ biased high

Field Duplicates

A blind field duplicate should be collected at rate of one per twenty samples. The relative percent difference (RPD) should be less than 30% for analyte concentrations greater than two times the reporting limit. Use the higher result for final reporting.

RPD >30%	Apply J qualifier to parent sample

Lab Control Spike

Lab control spikes should be analyzed with each extraction batch or one for every twenty samples. In the absence of lab derived criteria, use 70% - 130% recovery criteria to evaluate the data.

Recovery <70% or >130% (lab derived criteria can also be used)	Apply J qualifier to detects and UJ qualifier to non detects

Matrix Spike/Matrix Spike Duplicate

One matrix spike and matrix spike duplicate should be collected at a rate of one per twenty samples. Use professional judgement to reject results based on out of control MS/MSD recoveries.

Recovery <70% or >130% (lab derived criteria can also be used)	Apply J qualifier to detects and UJ qualifier to non detects of parent sample only
RPD >30%	Apply J qualifier to detects and UJ qualifier to non detects of parent sample only

Extracted Internal Standards (Isotope Dilution Analytes)

Problematic analytes (e.g. PFBA, PFPeA, fluorotelomer sulfonates) can have wider recoveries without qualification. Qualify corresponding native compounds with a J flag if outside of the range.

Recovery <50% or >150%	Apply J qualifier
Recovery <25% or >150% for poor responding analytes	Apply J qualifier
Isotope Dilution Analyte (IDA) Recovery <10%	Reject results

Signal to Noise Ratio

The signal to noise ratio for the quantifier ion should be at least 3:1. If the ratio is less than 3:1, the peak is discernable from the baseline noise and symmetrical, the result can be reported. If the peak appears to be baseline noise and/or the shape is irregular, qualify the result as tentatively identified.

Reporting Limits

If project-specific reporting limits were not met, please indicate that in the report along with the reason (e.g. over dilution, dilution for non-target analytes, high sediment in aqueous samples).

Peak Integrations

Target analyte peaks should be integrated properly and consistently when compared to standards. Ensure branched isomer peaks are included for PFAS where standards are available. Inconsistencies should be brought to the attention of the laboratory or identified in the data review summary report.

APPENDIX G

Site Management Forms

SITE INSPECTION CHECKLIST

Site Name: 250 Water Street Location: New York, NY Project Number: 170381202

Inspector Name: _____ Date: _____ Weather Conditions: _____

Reason for Inspection (i.e., routine, maintenance, severe condition, etc.): _____

Check one of the following: **Y:** Yes **N:** No **NA**: Not Applicable

		Y	N	NA	Normal Situation	Remarks
	General					
1	What are the current site conditions?	--	--	--	--	
2	Are all applicable site records (e.g., documentation of construction activity, most current easement, etc.) complete and up to date?				Y	
3	Has site use (restricted-residential) remained the same?				Y	
4	Does it appear that all environmental easement restrictions have been followed?				Y	
5	Is there any construciton activity, or indication of any construction activity within the past certification year (including any tenant improvements) that would require compliance with the SMP and Excavation Work Plan?				N	
6	If YES to number 5, is there documentation that the SMP, HASP, and CAMP for the site was/is being followed?				Y	
7	Are there any petroleum bulk storage tanks present at the site?				N	
8	For petroleum bulk storage tanks that are visible, are they in good condition and not leaking?				N/A	

*** If the answer to any of the above questions indicate non-compliance with any ICs for the site, additional remarks must be provided and, where applicable, documentation attached to this checklist detailing additional inspection and repair activities.**

Additional remarks _____

_____

_____

_____

_____

_____

_____

_____

Minimum Inspection Schedule: Site-wide inspections will be conducted annually, per certification year, at a minimum. Additional inspections will also be conducted at times of severe condition events. All inspection events will utilize this checklist.

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Request to Import/Reuse Fill or Soil

This form is based on the information required by DER-10, Section 5.4(e) and 6NYCRR Part 360.13. Use of this form is not a substitute for reading the applicable regulations and Technical Guidance document.

SECTION 1 – SITE BACKGROUND

The allowable site use is: Choose an item

Have Ecological Resources been identified? Choose an item

Is this soil originating from the site? Choose an item

How many cubic yards of soil will be imported/reused? Choose an item

If greater than 1000 cubic yards will be imported, enter volume to be imported:

SECTION 2 – MATERIAL OTHER THAN SOIL

Is the material to be imported gravel, rock or stone? Choose an item

Does it contain less than 10%, by weight, material that passes a size 100 sieve? Choose an item

Is this virgin material from a permitted mine or quarry? Choose an item

Is this material recycled concrete or brick from a DEC registered processing facility? Choose an item

SECTION 3 - SAMPLING

Provide a brief description of the number and type of samples collected in the space below:

Example Text: 5 discrete samples were collected and analyzed for VOCs. 2 composite samples were collected and analyzed for SVOCs, Inorganics & PCBs/Pesticides.

If the material meets requirements of DER-10 section 5.4(e)5 (other material), no chemical testing needed.

SECTION 3 CONT'D - SAMPLING

Provide a brief written summary of the sampling results or attach evaluation tables (compare to DER-10, Appendix 5):

Example Text: Arsenic was detected up to 17 ppm in 1 (of 5) samples; the allowable level is 16 ppm.

If Ecological Resources have been identified use the "If Ecological Resources are Present" column in Appendix 5.

SECTION 4 – SOURCE OF FILL

Name of person providing fill and relationship to the source:

Location where fill was obtained:

Identification of any state or local approvals as a fill source:

If no approvals are available, provide a brief history of the use of the property that is the fill source:

Provide a list of supporting documentation included with this request:

The information provided on this form is accurate and complete.

_____ _____

Signature Date

_____

Print Name

_____

Firm

Revised April 2023