BROADWAY TRIANGLE SITE A

KINGS COUNTY

BROOKLYN, NEW YORK

SITE MANAGEMENT PLAN

NYSDEC Site Number: C224333

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Prepared for:

Bartlett Crossing LLC
Bartlett Crossing Managers LLC
Bartlett Crossing UNP LLC
Bartlett Crossing Housing Development Fund Company, Inc.
2 Kingsland Avenue
Brooklyn, New York 11211

Prepared by:

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Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date

AUGUST 2026

CERTIFICATION STATEMENT

I, David Kaiser, P.E., certify that I am currently a NYS registered professional engineer as in defined in 6 NYCRR Part 375 and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and Green Remediation (DER-31).

David Kaiser, P.E.

DATE

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LIST OF ACRONYMS

AS	Air Sparging
ASP	Analytical Services Protocol
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
BMP	Best Management Practice
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CAMP	Community Air Monitoring Plan
C/D	Construction and Demolition
CFR	Code of Federal Regulation
CLP	Contract Laboratory Program
COC	Certificate of Completion
CO2	Carbon Dioxide
CP	Commissioner Policy
DER	Division of Environmental Remediation
DUSR	Data Usability Summary Report
EC	Engineering Control
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Approval Program
ERP	Environmental Restoration Program
EWP	Excavation Work Plan
GHG	Greenhouse Gas
GWE&T	Groundwater Extraction and Treatment
HASP	Health and Safety Plan
IC	Institutional Control
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules and Regulations
O&M	Operation and Maintenance
OM&M	Operation, Maintenance and Monitoring
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
P.E. or PE	Professional Engineer

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PFAS	Per- and Polyfluoroalkyl Substances
PID	Photoionization Detector
PRP	Potentially Responsible Party
PRR	Periodic Review Report
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QEP	Qualified Environmental Professional
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RP	Remedial Party
RSO	Remedial System Optimization
SAC	State Assistance Contract
SCG	Standards, Criteria and Guidelines
SCO	Soil Cleanup Objective
SMP	Site Management Plan
SOP	Standard Operating Procedures
SOW	Statement of Work
SPDES	State Pollutant Discharge Elimination System
SSD	Sub-slab Depressurization
SVE	Soil Vapor Extraction
SVI	Soil Vapor Intrusion
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leachate Procedure
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VCP	Voluntary Cleanup Program

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ES EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance and reporting activities required by this Site Management Plan:

Site Identification: C224333, Broadway Triangle Site A, Brooklyn, New York

Institutional Controls:	1. The property may be used for restricted residential and commercial use;
	2. All ECs must be operated and maintained as specified in this SMP;
	3. All ECs must be inspected at a frequency and in a manner defined in the SMP;
	4. ECs may not be discontinued without an amendment or extinguishment of the Environmental Easement;
	5. 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 (NYCDOHMH) 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;
	6. Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP;
	7. All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;
	8. 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 Environmental Easement; and
	9. Vegetable gardens and farming on the site are prohibited; with the exception of raised planters.
	10. All ECs must be inspected at a frequency and in a manner defined in the SMP.
Engineering Controls:	1. Site Cover System

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Inspections:	Frequency
1. Cover System and Site Wide Inspection	First inspection due sixteen (16) months after the Certificate of Completion is issued, then annually thereafter or as otherwise determined by the NYSDEC.
Maintenance:	
1. Cover System	As needed
Reporting:	
1. Periodic Review Report	First report is due sixteen (16) months after the Certificate of Completion is issued, then due annually thereafter or as otherwise determined by the NYSDEC

Further descriptions of the above requirements are provided in detail in the latter sections of this Site Management Plan.

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1.0 INTRODUCTION

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the Broadway Triangle Site A located in Brooklyn, New York (hereinafter referred to as the "Site"). See Figure 1. The Site is currently in the New York State (NYS) Brownfield Cleanup Program (BCP), Site No. C224333, which is administered by New York State Department of Environmental Conservation (NYSDEC or Department).

Bartlett Crossing LLC, Bartlett Crossing Managers LLC and Bartlett Crossing UNP LLC, entered a Brownfield Cleanup Agreement (BCA), on December 16, 2021, with the NYSDEC to remediate the site. Amendment No. 1 to the BCA to reflect the lot merger for the Site (Tax Block 2272, former lots 49, 51, 52, 53, and 108 merged into Tax Block 2272, Lot 49) was executed by NYSDEC on December 8, 2023. Amendment No. 2 to the BCA to reflect the City of New York's Department of Housing Preservation and Development conveying all right, title, and interest in Block 2272 Lot 49 and Block 2269 Lot 52 to Bartlett Crossing Housing Development Fund Company, Inc. and including this party as an additional applicant to the BCA was executed by NYSDEC on April 6, 2026. A figure showing the site location and boundaries of this site is provided in Figure 2. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement provided in Appendix A.

After completion of the remedial work, some contamination was left at this site, which is hereafter referred to as "remaining contamination". Institutional and Engineering Controls (ICs and ECs) have been incorporated into the Site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Kings County Clerk, requires compliance with this SMP and all ECs and ICs placed on the site.

This SMP was prepared to manage remaining contamination at the site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

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It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC); and
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6 NYCRR Part 375 and the BCA (Index #C224333-12-21; Site #C224333) for the site, and thereby subject to applicable penalties.

All 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 Roux Environmental Engineering and Geology, D.P.C., on behalf of Bartlett Crossing LLC, Bartlett Crossing Managers LLC, Bartlett Crossing UNP LLC, and Bartlett Crossing Housing Development Fund Company, Inc. in accordance with the requirements of the NYSDEC's DER-10 ("Technical Guidance for Site Investigation and Remediation"), revised April 2019, and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the site.

1.2 Revisions and Alterations

Revisions and alterations to this plan will be proposed in writing to the NYSDEC's project manager. The NYSDEC can also make changes to the SMP or request revisions from the remedial party. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shutdown of a remedial system, post-remedial removal of contaminated sediment or soil, 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 Environmental Easement for the site, the NYSDEC 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.

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1.3 Notifications

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

1. 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 Environmental Conservation Law.
2. 7-day advance notice of any field activity associated with the remedial program.
3. 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.
4. Notice within 48 hours of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.
5. Notice within 48 hours of any non-routine maintenance activities.
6. Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
7. Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

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

1. 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.
2. 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.

Table 1.3 on the following page 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.

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Table 1.3: Notifications*

Name	Contact Information	Required Notification**
Nour Haredy	(718) 482-6333 nour.haredy@dec.ny.gov	All Notifications
Jane H. O'Connell	(718) 482-4599 jane.oconnell@dec.ny.gov	All Notifications
NYSDEC Site Control	(518) 402-9543 DERSiteControl@dec.ny.gov	Notifications 1 and 8
Michele Dolan	(518) 402-7860 Michele.dolan@health.ny.gov	Notifications 4, 6, and 7

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

** Note: Numbers in this column reference the numbered bullets in the notification list in this section.

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2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The site is comprised of two discontinuous lots (A1 and A2) and is located in Brooklyn, Kings County, New York and is identified as Section 3 Block 2272 Lot 49 (Site A1) and Block 2269 Lot 52 (Site A2) on the New York City Tax Map sourced from the New York City Department of Information and Technology (see Figure 2). Site A1 and Site A2 encompass an approximately 0.33-acre area. Site A1 is bounded by residential buildings to the north, Flushing Ave to the south, a residential building to the east, and residential buildings to the west. Site A2 is bounded by a residential buildings to the north (including BCP Site #C224396 adjoining the A2), Bartlett Street to the south, a commercial building to the east, and residential and mixed-use buildings to the west. (see Figure 2 – Site Layout Map). The boundaries of the site are more fully described in Appendix A – Environmental Easement. The owner(s) of the site parcel(s) at the time of issuance of this SMP is/are:

Bartlett Crossing LLC
Bartlett Crossing Managers LLC
Bartlett Crossing UNP LLC
Bartlett Crossing Housing Development Fund Company, Inc.
2 Kingsland Avenue
Brooklyn, NY 11211

2.2 Physical Setting

2.2.1 Land Use

Overall development is expected to be complete in 2027. The Site consists of the following: active construction of a 9-story mixed-use commercial and residential building with recreational space and an outdoor courtyard at A1 and a 9-story residential building with recreational space and an outdoor courtyard at A2. The Site is zoned residential and commercial.

The properties adjoining the Site and in the neighborhood surrounding the Site primarily include commercial and multi-family residential properties and vacant land. Around Site A1, the properties immediately south of the Site past Flushing Avenue include commercial and residential mixed-use properties; the properties immediately north of the Site include residential properties; the properties immediately east of the Site include a residential building and a park/playground; and the properties to the west of the Site include residential properties. Around Site A2, the

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properties immediately south of the Site past Bartlett Street with the same residential properties adjacent to Site A1; the properties immediately north of the Site include residential properties; the properties immediately east of the Site include commercial properties followed by vacant land; and the properties immediately west of the Site include residential and mixed-use buildings.

2.2.2 Geology

Based on the environmental reports and investigations by Roux and other consultants, subsurface materials throughout the Site generally contained urban fill (e.g., unsorted sand, brick, concrete, and glass) to depths ranging from 4-8 feet below land surface (ft bls) at Site A1 and 7-8 ft bls at Site A2. Urban fill materials overlay native brown sand with some clay around 8 ft bls at the northernmost side of Site A1 and native brown sand with some silt and trace clay was observed at the southern extent of Site A2. Bedrock was not encountered during investigations at the Site but based on Roux's experience with other projects in the vicinity of the Site, the depth to bedrock is estimated to range from 160 to 200 ft bls. Site-specific boring logs from Roux's Remedial Investigation (RI) are provided in Appendix C.

2.2.3 Hydrogeology

Based on the environmental soil borings completed during the previous environmental investigations for the Site, the elevation of the water table surface at the Site ranges from approximately 4.66 ft based on the North American Vertical Datum of 1988 (NAVD 88) at the eastern portion of Site A2 to approximately 4.37 ft NAVD 88 on Site A1 and groundwater depth ranges from 8.45 ft bls to 10.18 ft bls. Groundwater flows generally to the north from Site A1 to A2. Groundwater elevation data from Roux's RI is provided in Table 1. Groundwater monitoring well construction logs are provided in Appendix C. All monitoring wells installed during the previous investigations for the Site were removed during construction.

2.3 Investigation and Remedial History

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 8.0 – References.

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The following environmental reports are available for review:

- Phase I Environmental Site Assessment (ESA) prepared by Environmental Business Consultants (EBC), dated November 19, 2019;
- Site A1 Remedial Investigation Report (RIR) and Site A2 RIR prepared by Gallagher Bassett Technical Services (GBTS), each dated June 2020;
- BCP Eligibility Soil Sampling Summary, prepared by Roux, dated March 8, 2021;
- RIR, prepared by Roux, dated February 23, 2023; and
- Remedial Action Work Plan (RAWP), prepared by Roux, dated December 13, 2023.

2019 Phase I ESA prepared by EBC

Based on review of the 2019 EBC Phase I ESA, the Site was first developed by 1887 with residential and commercial structures including retail stores, a fur dresser, a bakery, and a sausage factory that later was developed into a carpenter shop by 1904. The former buildings on Site A1 were demolished by 1980 and the Site has remained vacant since. The former buildings on Site A2 were demolished sometime after 2006 and the Site has remained vacant since. One historic REC was identified in connection with the 29-31 Bartlett Street (A1 - Block 2269 Lot 52) being listed on the Petroleum Bulk Storage-Aboveground Storage Tank (PBS-AST) database. Records show that Site A1 property was connected to a 3,000-gallon AST that was installed in 1990 and closed/removed in 2012 and that Site A2 contained one closed spill incident involving the release of approximately 40 gallons of fuel oil to a residence in 1995. Several environmental concerns (ASTM Non-Scope issues and Business Environmental Risks [BERs]) were identified in connection with the potential presence of urban fill at the Site and E-Designations for noise and air restrictions.

2020 RIR prepared by GBTS

During the June 2020 GBTS remedial investigation at A1, 12 soil samples were collected from six soil borings, groundwater samples were collected from three temporary groundwater monitoring wells, and soil vapor samples were collected from four temporary soil vapor points. At A2, 13 soil samples were collected from three soil borings, one groundwater sample was collected from a temporary groundwater monitoring well, and soil vapor samples were collected from three temporary soil vapor points. Results were similar for both A1 and A2. Soil conditions at the Site were representative of impacted fill resulting from historic Site activities. Soil samples

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contained semivolatile organic compounds (SVOCs), metals, and a pesticide in exceedance of NYSDEC Restricted Residential Soil Cleanup Objectives (RRSCOs) and Unrestricted Use (UU) SCOs. Groundwater beneath the Site exceeded NYSDEC Ambient Water Quality Standards and Guidance Values (AWQSGVs) for several metals. Soil vapor samples throughout the Site contained multiple petroleum-related volatile organic compounds (VOCs) and chlorinated volatile organic compounds (CVOCs).

2021 BCP Eligibility Soil Sampling Summary prepared by Roux

Roux conducted soil sampling in December 2020 on behalf of UNP Site A Developer LLC (former entity) to further characterize shallow soil conditions at the Site. Two soil borings were advanced to five ft bls to collect shallow soil samples for analysis of SVOCs and metals. Results showed that multiple SVOCs and metals were detected at concentrations exceeding their respective RRSCOs, which is characteristic of impacted urban fill. No groundwater or soil vapor samples were collected at the Site during the BCP eligibility investigation.

2023 RIR and RAWP Prepared by Roux

The scope of work for the RI included the following:

- The performance of Site reconnaissance and a geophysical survey using ground penetrating radar (GPR) to confirm proposed sampling locations and identify utilities or anomalies;
- The advancement of 11 soil borings, five permanent groundwater monitoring wells, and seven temporary soil vapor points; and
- The collection of 20 soil samples, five groundwater samples, and seven soil vapor samples (excluding QA/QC samples) to define the nature and extent of impacted media and current Site conditions.

The following sections summarize the soil, groundwater, and soil vapor quality data collected during the RI completed by Roux:

- Contaminants identified in soil were consistent with contaminated historical fill based on the Site-wide detections and exceedances of NYSDEC SCOs (and/or guidance values for perfluorooctane sulfonate [PFOS] and perfluorooctanoic acid [PFOA]), soil at the Site was impacted with SVOCs (exclusively polyaromatic hydrocarbons [PAHs]), metals, pesticides, and per- and polyfluoroalkyl substances (PFAS), likely due to historical fill materials across the Site. Only SVOCs and metals were present in exceedance of RRSCOs.

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- Groundwater did not appear to be significantly contaminated by the historical fill present at the Site. Two VOCs, cis-1,2-dichloroethylene and vinyl chloride, were detected in groundwater above the NYSDEC AWQSGVs at one monitoring well location. There were no VOC exceedances of NYSDEC UUSCOs in soil samples except acetone; therefore, no on-Site source of VOCs was identified. Only naturally occurring metals were present in dissolved groundwater samples above AWQSGVs.
- Soil vapor analysis indicated that soil vapor at the Site was impacted with VOCs. CVOCs (NYS Department of Health [DOH] matrix compounds) were present at low concentrations and did not appear to significantly impact conditions at the Site. The presence of CVOCs in groundwater above AWQSGVs on Site A2 did not appear to be impacting soil vapor concentrations, as the two compounds present in groundwater were not detected in soil vapor samples.

Based on the findings from the RI, Roux prepared a RAWP to support the redevelopment plans. The RAWP proposed a Track 4 remedy. The proposed remedy included excavation of the upper two feet of soil (approximately 1,100 cubic yards) and a Site cover system comprised of either two feet of clean fill over a demarcation layer and concrete building foundation. The RAWP proposed a remedy that included ICs and ECs which were implemented as described in Section 3.3.1.

2.4 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site as listed in the Decision Document dated January 12, 2024 are as follows:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater containing contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of, volatiles emanating from contaminated groundwater.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

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Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

2.5 Remaining Contamination

2.5.1 Soil

Remedial soil excavation and off-Site disposal activities occurred concurrently with mass excavation activities necessary to achieve the design of the new building construction. At A1, soil was generally excavated to approximately five ft bls across the site with localized excavations of up to ten ft bls for deeper foundation elements such as pits and the detention tank. At A2, soil was generally excavated to approximately seven ft bls across the site with localized excavations of up to 11 ft bls for deeper foundation elements such as pits and the detention tank.

After mass excavation activities were completed, 17 documentation endpoint soil samples (not including associated QA/QC samples) were collected from the bottom of the Site-wide excavation at various depths to document any remaining contamination. Tables 2 through 7 and Figure 3 summarize the results of all soil samples collected that exceed the Unrestricted Use SCOs and the Restricted Residential Use SCOs at the Site after completion of remedial action. In general, soil remaining after completion of the Track 4 cleanup contained SVOCs and metals at concentrations in exceedance of one or more of the above SCOs at depths ranging from # to # ft bls.

The engineered Site cover system installed at the Site as described below in Section 3.3.1 precludes the potential for future exposure to residual impacted soil. The EWP provided in Appendix D will govern any future ground-intrusive activities that may occur beneath the engineered cover system during the SMP phase to mitigate the potential for exposure to residual impacted soil.

2.5.2 Groundwater

As part of the RI, five groundwater samples (not including associated QA/QC samples) were collected from five monitoring wells and submitted for laboratory analysis. No additional groundwater samples were collected during remediation activities. RI data was compared to

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NYSDEC AWQSGVs to evaluate groundwater quality and to determine the contamination in groundwater. Tables 8 through 13 and Figure 4 summarize the results of all samples of groundwater that exceed the SCGs after completion of the remedial action. Compounds that were detected above their respective AWQSGVs were two VOCs (cis-1,2-dichloroethylene, vinyl chloride), one SVOC (1,4-dioxane), PFOS, and PFOA. The total and dissolved metals that were detected above AWQSGVs are naturally occurring (iron, magnesium, manganese, sodium).

Groundwater at the Site is not intended for potable or non-potable use which precludes the potential for future exposure to residual impacted groundwater.

2.5.3 Soil Vapor

Seven soil vapor samples (not included the associated QA/QC samples) were collected from seven soil vapor points and submitted for laboratory analysis as part of the RI. No additional soil vapor samples were collected during remediation activities. Table 14 and Figure 5 summarize the results of all samples of soil vapor that exceed the SCGs after completion of the remedial action. RI data for soil vapor indicated there were detections of 36 different VOCs across the Site consisting primarily of low-level CVOCs and petroleum-related VOCs. The remedial elements, including excavation, addressed soil and groundwater contamination. This was expected to improve on-Site soil vapor quality by reducing or eliminating potential source material.

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3.0 INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 General

Since remaining contamination exists at the site, Institutional Controls (ICs) and Engineering Controls (ECs) are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC project manager.

This plan provides:

- A description of all IC/ECs on the site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of IC/ECs, 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 IC/ECs required by the site remedy, as determined by the NYSDEC project manager.

3.2 Institutional Controls

A series of ICs is required by the RAWP to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination; and, (3) limit the use and development of the site to restricted residential use (which also allows for commercial use and industrial uses). Adherence to these ICs on the site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The IC boundaries are shown on Figure 6. These ICs are:

1 The property may be used for: restricted residential use (and less restrictive uses defined in 6 NYCRR Part 375) only, provided the long-term ECs and ICs included in the SMP are employed;

2 All ECs must be operated and maintained as specified in this SMP;

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3 All ECs must be inspected at a frequency and in a manner defined in the SMP;

4 ECs may not be discontinued without an amendment or extinguishment of the Environmental Easement;

5 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 (NYCDOHMH) 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;

6 Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP;

7 All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;

8 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 Environmental Easement; and

9 Vegetable gardens and farming on the site are prohibited; with the exception of raised planters.

3.3 Engineering Controls

3.3.1 Cover System

Exposure to remaining contamination at the site is prevented by a cover system placed over the site. The permanent cover system is comprised of a minimum of 10-inch thick concrete building foundation slab and outdoor areas covered in concrete or paver walkways or exposed planting soil in landscaped areas. Where a soil cover is to be used it will be a minimum of two feet of clean fill placed over a demarcation layer with the upper six inches of soil sufficient quality to maintain a vegetative layer. A temporary cover of a minimum of two feet of clean stone above a demarcation layer will be utilized in the outdoor areas during the remainder of the building construction at the Site until the area is ready for landscaping installation (anticipated in 2027). The temporary cover was approved by NYSDEC via email on July 9, 2026. The permanent cover system in the outdoor areas will be installed prior to building occupancy and will be installed in accordance with the requirements of this SMP and EWP.

Figure 6 presents the location of the cover system and applicable demarcation layers. The EWP provided in Appendix D outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed. Procedures for the inspection of this cover are provided in the Monitoring Plan included in Section 4.0 of this SMP. Any work

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conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and associated Community Air Monitoring Plan (CAMP) prepared for the site and provided in Appendix E. Any breach of the site's cover system must be overseen by 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.

3.3.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10. Unless waived by the NYSDEC, confirmation samples of applicable environmental media are required before terminating any remedial actions at the site. Confirmation samples require Category B deliverables and a Data Usability Summary Report (DUSR).

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.

3.3.2.1 Cover System

The composite cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in accordance with this SMP in perpetuity.

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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 provided in Appendix [x].

This 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; and
- Monitoring well decommissioning procedures.

Reporting requirements are provided in Section 7.0 of this SMP.

4.2 Site – Wide Inspection

Site-wide inspections will be performed at a minimum of once per year. 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 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.

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Modification to the frequency or duration of the inspections will require approval from the NYSDEC project manager. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in Appendix F – Site Management Forms. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General site conditions at the time of the inspection;
- Whether stormwater management systems, such as basins and outfalls, are working as designed;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm that site records are up to date.

Inspections of all remedial components installed at the site will be conducted. A comprehensive site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether ECs continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria; and
- If site records are complete and up to date.

Reporting requirements are outlined in Section 7.0 of this plan.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the site, verbal notice to the NYSDEC project manager must be given by noon of the following day. In addition, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the site by a qualified environmental professional, as defined in 6 NYCCR 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

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the public. The remedial party will submit follow-up status reports to the NYSDEC within 45 days of the event on actions taken to respond to any emergency event requiring ongoing responsive action, describing and documenting actions taken to restore the effectiveness of the ECs.

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5.0 OPERATION AND MAINTENANCE PLAN

5.1 General

The site remedy does not rely on any mechanical systems, such as groundwater treatment systems, sub-slab depressurization systems or air sparge/soil vapor extraction systems to protect public health and the environment. Therefore, the operation and maintenance of such components is not included in this SMP.

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6.0 PERIODIC ASSESSMENTS/EVALUATIONS

6.1 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 performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

This section provides a current vulnerability assessment that evaluates the vulnerability of the site and/or engineering controls to severe storms/weather events and associated flooding. This section also identifies vulnerability assessment updates that will be conducted for the site in Periodic Review Reports.

- Flood Plain: The Site is not located within the 100-year or 500-year flood zones and therefore is not at any significant risk of experiencing flooding events.
- Sea Level Rise: The Site is located approximately 0.95 miles from the nearest natural surface water body (English Kills) and therefore is not at any significant level of risk of sea level rise or storm surges.
- Site Drainage and Storm Water Management: During construction, adequate storm management systems were constructed for the building and Site; therefore, flooding is not anticipated.
- Erosion: The Site will be entirely covered by the building footprint, walkways, and landscaping, therefore, erosion at the Site is not anticipated during periods of severe rain events.
- High Wind: No areas of the Site have been identified which may be susceptible to damage from the wind itself or falling objects, such as trees or utility structures during high wind.
- Drought: The majority of the Site is covered by hardscape, concrete, or the buildings which are not susceptible to drought. Landscaped areas will be regularly maintained to ensure they are provided with adequate plantings that can withstand the weather and these areas will be maintained by building maintenance personnel.
- Electricity: The Site is potentially susceptible to power loss and/or dips/surges in voltage during severe weather events, including lightning strikes, and the associated impact on Site equipment and operations. However, the surrounding area is highly developed, and power outages will be rectified as soon as possible by the electricity

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provider. Due to the variability in annual weather patterns, it is assumed that emergency weather situations will be infrequent, and damages rectified by the appropriate relief agency.

- Spill/Contaminant Release: No areas of the Site have been identified that may be susceptible to a spill or other contaminant release due to storm-related damage caused by flooding, erosion, high winds, loss of power, etc.
- Wildfires: The immediate area surrounding the Site is not wooded and therefore there is no wildfire risk.

6.2 Green Remediation Evaluation

NYSDEC's DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. A Track 4 cleanup was chosen for the Site which is the most energy, waste and water efficient remedy option. At the time when the RAWP was prepared, no environmental footprint analysis was required or completed prior to the implementation of the remedial action. As part of the FER, SiteWise will be used to calculate the carbon footprint of the Remedial Action that was implemented. This section provides an environmental footprint analysis of the remedy, as implemented at the time of this SMP. This section of the SMP also provides a summary of green remediation evaluations to be completed for the site during site management and reported in Periodic Review Reports (PRRs).

6.2.1 Timing of Green Remediation Evaluations

For major remedial system components, green remediation evaluations and corresponding modifications will be undertaken as part of a formal Remedial System Optimization (RSO), or at any time that the NYSDEC project manager feels appropriate, (e.g. during significant maintenance events or in conjunction with storm recovery activities).

Modifications resulting from green remediation evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities after approval from the DER project manager. Reporting of these modifications will be presented in the PRR.

6.2.2 Building Operations

Structures will be operated and maintained to provide for the most efficient operation of the remedy, while minimizing energy, waste generation and water consumption.

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6.2.3 Frequency of System Checks, Sampling and Other Periodic Activities

Transportation to and from the Site, use of consumables in relation to visiting the Site in order to conduct system checks and/or collect samples, and shipping samples to a laboratory for analyses have direct and/or inherent energy costs. The schedule and/or means of these periodic activities have been prepared so that these tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces expenditure of energy or resources.

6.2.4 Metrics and Reporting

As discussed in Section 7.0 and as shown in Appendix F – Site Management Forms, information on energy usage, solid waste generation, transportation and shipping, water usage and land use and ecosystems will be recorded to facilitate and document consistent implementation of green remediation during site management and to identify corresponding benefits. A set of metrics has been developed and will be evaluated over time to ensure that green remediation actions are achieving the desired results.

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7.0 REPORTING REQUIREMENTS

7.1 Site Management Reports

All site management inspection events will be recorded on the appropriate site management forms provided in Appendix F. These forms are subject to NYSDEC revision. All site management inspection events will be conducted by a qualified environmental professional 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.

All applicable inspection forms and other records, including system maintenance reports, generated for the site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of Table 7.1 and summarized in the Periodic Review Report.

Table 7.1: Schedule of Interim Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Periodic Review Report	First report 16 months after Certificate of Completion (COC) is awarded, then annually thereafter.

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

All interim monitoring/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);
- Copies of all field forms completed (e.g., inspection or maintenance forms);
- Any observations, conclusions, or recommendations; and
- A determination as to whether contaminant conditions have changed since the last reporting event.

Routine maintenance event reporting forms will include, at a minimum:

- Date of event;

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- Name, company, and position of person(s) conducting maintenance activities;
- Description of maintenance activities performed;
- Any modifications to the system;
- 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); and
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance 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;
- 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); and
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

If needed, data will be reported in digital format as determined by the NYSDEC. Currently, data is to be 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.

7.2 Periodic Review Report

A Periodic Review Report (PRR) will be submitted to the NYSDEC project manager beginning sixteen (16) months after the Certificate of Completion is issued. After submittal of the initial Periodic Review Report, the next PRR shall be submitted annually to the NYSDEC project manager or at another frequency as may be required by the NYSDEC project manager. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in Appendix A - Environmental Easement. 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 ECs/ICs required by the remedy for the site.

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- Results of the required annual site inspections, fire inspections and severe condition inspections, if applicable.
- Description of any change of use, import of materials, or excavation that occurred during the certifying period.
- All 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.
- Identification of any wastes generated during the reporting period, along with waste characterization data, manifests, and disposal documentation.
- A site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the site-specific Remedial Action Work Plan (RAWP) and Decision Document;
  - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan;
  - An update to the climate change vulnerability assessment if site or external conditions have changed since the previous assessment, and recommendations to address vulnerabilities;
  - A summary of the Green Remediation evaluation, including a quantitative and qualitative overview of a site's environmental impacts and recommendations to improve the remedy's environmental footprint. The PRR will include the completed Summary of Green Remediation Metrics form provided in Appendix F;
  - An evaluation of trends in contaminant levels in the affected media to determine if the remedy continues to be effective in achieving remedial goals as specified by the RAWP and Decision Document; and
  - The overall performance and effectiveness of the remedy.

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a Professional Engineer licensed to practice and registered in New York State will prepare, and include in the Periodic Review Report, the following certification as per the requirements of NYSDEC DER-10:

"*For each institutional or engineering control identified for the site, I certify that all of the following statements are true:*

- *The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*

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- *The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;*
- *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 Department 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;*
- *The engineering control systems are performing as designed and are effective;*
- *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*
- *The information presented in this report is accurate and complete.*

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, [name], of [business address], am certifying as [Owner/Remedial Party or Owner's/Remedial Party's Designated Site Representative]. I have been authorized and designated by all site owners/remedial parties to sign this certification for the site."

"I certify that the New York State Education Department has granted a Certificate of Authorization to provide Professional Engineering services to the firm that prepared this Periodic Review Report."

For BCP projects, every five years the following certification will be added:

- *"The assumptions made in the qualitative exposure assessment remain valid."*

The signed certification will be included in the Periodic Review Report.

The Periodic Review Report will be submitted, in electronic format, to the NYSDEC project manager and the NYSDOH project manager. The Periodic Review Report may also need to be submitted in hard-copy format if requested by the NYSDEC project manager.

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7.3 Corrective Measures Work Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control or failure to conduct site management activities, a Corrective Measures Work Plan will be submitted to the NYSDEC 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 Corrective Measures Work Plan until it has been approved by the NYSDEC project manager.

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8.0 REFERENCES

- Environmental Business Consultants (EBC), Phase I ESA. November 19, 2019.
- Gallagher Bassett Technical Services (GBTS), Site A1 RIR and Site A2 RIR. June 2020.
- Roux, BCP Eligibility Soil Sampling Summary. March 8, 2021.
- Roux, Remedial Investigation Work Plan. March 18, 2022.
- Roux, Remedial Investigation Report. February 23, 2023.
- Roux, Remedial Action Work Plan. December 13, 2023.
- NYCRR Part 375, Environmental Remediation Programs. December 14, 2006. NYSDEC.
- DER-10 – "Technical Guidance for Site Investigation and Remediation".
- NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June 1998 (April 2000 addendum).

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TABLES

1. Groundwater Elevation Measurements
2. Summary of Volatile Organic Compounds in Remaining Soil
3. Summary of Semivolatile Organic Compounds in Remaining Soil
4. Summary of Metals in Remaining Soil
5. Summary of Polychlorinated Biphenyls in Remaining Soil
6. Summary of Pesticides and Herbicides in Remaining Soil
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8. Summary of Volatile Organic Compounds in Groundwater
9. Summary of Semivolatile Organic Compounds in Groundwater
10. Summary of Metals in Groundwater
11. Summary of Polychlorinated Biphenyls in Groundwater
12. Summary of Pesticides and Herbicides in Groundwater
13. Summary of Per- and Polyfluoroalkyl Substances in Groundwater
14. Summary of Volatile Organic Compounds in Soil Vapor

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Table 1. Groundwater Elevation Measurements, Broadway Triangle Site A, Brooklyn, New York

Monitoring Well Identification	Gauging Date	Land Surface Elevation (ft NAVD 88)	Top of Casing Stickup Elevation (ft NAVD 88)	Depth to Water (ft bls)	Depth to Water (ft btoc)	Water Table Elevation (ft NAVD 88)
RXA-4901	9/21/2022	14.73	18.66	10.18	14.11	4.55
RXA-4902	9/21/2022	13.07	16.83	8.45	12.21	4.62
RXA-5302	9/21/2022	14.12	17.63	9.46	12.97	4.66
RXA2-02	9/21/2022	13.83	16.80	9.46	12.43	4.37
RXA2-03	9/21/2022	13.76	15.65	9.39	11.28	4.37

Notes:
ft = feet
NAVD 88 = North American Vertical Datum of 1988
TOC = top of casing
btoc = below top of casing
bls = below land surface

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Notes Utilized Throughout Tables	
Soil Tables	
J -	Estimated value
U -	Indicates that the compound was analyzed for but not detected
D -	A secondary analysis after dilution due to exceedance of the calibration range in the original sample.
T -	Indicates that a quality control parameter has exceeded laboratory limits
UJ -	Analyte was not detected. The associated reported quantitation limit is an estimate
NJ -	Detection is tentative in identification and estimated in value
J+ -	Estimated value, high bias
ft bls -	Feet below land surface
FD -	Duplicate sample
µg/kg -	Micrograms per kilogram
mg/kg -	Milligrams per kilogram
ng/L -	Nanogram per liter
NYSDEC -	New York State Department of Environmental Conservation
UUSCO -	Unrestricted Use Soil Cleanup Objective
RRSCO -	Restricted Residential Soil Cleanup Objective
PGWSCO -	Protection of Groundwater Soil Cleanup Objective
SCO -	Soil Cleanup Objectives
--	No SCO available
Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use SCO	
Shaded data indicates that parameter was detected above the NYSDEC Part 375 Restricted Residential SCO	
Red data indicates that parameter was detected above the NYSDEC Part 375 Protection of Groundwater SCO	
Per- and Polyfluoroalkyl Substances	
GV -	Guidance Values
EMPC -	The results do not meet all criteria for a confirmed identification. The quantitative value represents the Estimated Maximum Possible Concentration of the analyte in the sample
Bold data indicates that parameter exceeded the NYSDEC Unrestricted Use Guidance Values	
Shaded data indicates that parameter exceeded the NYSDEC Restricted Residential Guidance Values	
Red data indicates that parameter exceeded the NYSDEC Protection of Groundwater Guidance Values	
Groundwater Tables	
J -	Estimated Value
U -	Compound was analyzed for but not detected
B -	The analyte was found in an associated blank as well as in the sample
T -	Indicates that a quality control parameter has exceeded laboratory limits
R -	Sample results rejected by validator
UJ -	Analyte was not detected. The associated reported quantitation limit is an estimate
J- -	Estimated value, low bias
FD -	Duplicate
µg/L -	Micrograms per liter

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Notes Utilized Throughout Tables	
NYSDEC -	New York State Department of Environmental Conservation
AWQSGVs -	Ambient Water-Quality Standards and Guidance Values
--	No NYSDEC AWQSGV available
Bold data indicates that parameter was detected above the NYSDEC AWQSGVs	
Groundwater Tables, continued	
Per- and Polyfluoroalkyl Substances	
PFAS -	Per- and Polyfluoroalkyl Substances
GV -	Guidance Values
EMPC -	The results do not meet all criteria for a confirmed identification. The quantitative value represents the Estimated Maximum Possible Concentration of the analyte in the sample
ng/L -	Nanograms per liter
Bold data indicates that parameter exceeded the proposed NYSDEC October 2021 PFAS GV	
Soil Vapor/Ambient Air	
J -	Estimated value
U -	Indicates that the compound was analyzed for but not detected
D -	A secondary analysis after dilution due to exceedance of the calibration range in the original sample.
T -	Indicates that a quality control parameter has exceeded laboratory limits
FD -	Duplicate sample
$\mu g/m^3$ -	Micrograms per cubic meter
Bold data indicates that parameter was detected	

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Table 2. Summary of Volatile Organic Compounds in Remaining Soil, Broadway Triangle Site A, Brooklyn, New York

Parameter	NYSDEC UUSCO	NYSDEC RRSCO	NYSDEC PGWSCO	Units	RXA2-01	RXA2-02	RXA-4901	RXA-4901	RXA-4902	RXA-5102	RXA-5302
Sample Date:					04/26/2022	04/26/2022	04/27/2022	04/27/2022	04/27/2022	04/27/2022	04/27/2022
Sample Depth (ft bls):					6 - 8	6 - 8	5 - 7	5 - 7	6 - 8	6 - 8	6 - 8
Normal Sample or Field Duplicate:					N	N	N	FD	N	N	N
1,1,1-Trichloroethane (TCA)	0.68	100	0.68	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
1,1,2,2-Tetrachloroethane	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
1,1,2-Trichloroethane	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
1,1-Dichloroethane	0.27	26	0.27	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
1,1-Dichloroethene	0.33	100	0.33	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
1,2,3-Trichlorobenzene	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 UT	0.0013 UT	0.0014 UT
1,2,4-Trichlorobenzene	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
1,2,4-Trimethylbenzene	3.6	52	3.6	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
1,2-Dibromo-3-Chloropropane	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
1,2-Dibromoethane (Ethylene Dibromide)	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
1,2-Dichlorobenzene	1.1	100	1.1	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
1,2-Dichloroethane	0.02	3.1	0.02	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
1,2-Dichloropropane	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
1,3,5-Trimethylbenzene (Mesitylene)	8.4	52	8.4	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
1,3-Dichlorobenzene	2.4	49	2.4	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
1,4-Dichlorobenzene	1.8	13	1.8	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
2-Hexanone	--	--	--	mg/kg	0.0056 U	0.0073 U	0.0052 U	0.0057 U	0.0061 U	0.0063 U	0.0068 U
Acetone	**0.05**	100	0.05	mg/kg	0.0067 U	0.0087 U	0.0062 U	0.0068 U	0.0073 U	0.0076 U	**0.06**
Benzene	0.06	4.8	0.06	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Bromochloromethane	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Bromodichloromethane	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Bromoform	--	--	--	mg/kg	0.0011 UJ	0.0015 UJ	0.001 UJ	0.0011 UJ	0.0012 U	0.0013 U	0.0014 U
Bromomethane	--	--	--	mg/kg	0.0022 U	0.0029 U	0.0021 UT	0.0023 UT	0.0024 UT	0.0025 UT	0.0027 UT
Carbon Disulfide	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0017
Carbon Tetrachloride	0.76	2.4	0.76	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Chlorobenzene	1.1	100	1.1	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Chloroethane	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Chloroform	0.37	49	0.37	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Chloromethane	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Cis-1,2-Dichloroethylene	0.25	100	0.25	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Cis-1,3-Dichloropropene	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Cyclohexane	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Dibromochloromethane	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Dichlorodifluoromethane	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Ethylbenzene	1	41	1	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Isopropylbenzene (Cumene)	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
m,p-Xylene	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Methyl Acetate	--	--	--	mg/kg	0.0056 U	0.0073 U	0.0052 U	0.0057 U	0.0061 U	0.0063 U	0.0068 U
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.12	mg/kg	0.0056 U	0.0073 U	0.0052 U	0.0057 U	0.0061 U	0.0063 U	0.012
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	--	--	--	mg/kg	0.0056 U	0.0073 U	0.0052 U	0.0057 U	0.0061 U	0.0063 U	0.0068 U
Methylcyclohexane	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Methylene Chloride	0.05	100	0.05	mg/kg	0.0022 U	0.0029 U	0.0024 U	0.0036 U	0.0026 U	0.0031 U	0.0055 U
N-Butylbenzene	12	100	12	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
N-Propylbenzene	3.9	100	3.9	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
O-Xylene (1,2-Dimethylbenzene)	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Sec-Butylbenzene	11	100	11	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Styrene	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
T-Butylbenzene	5.9	100	5.9	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U

Table 2. Summary of Volatile Organic Compounds in Remaining Soil, Broadway Triangle Site A, Brooklyn, New York

			Sample Designation:		RXA2-01	RXA2-02	RXA-4901	RXA-4901	RXA-4902	RXA-5102	RXA-5302
			Sample Date:		04/26/2022	04/26/2022	04/27/2022	04/27/2022	04/27/2022	04/27/2022	04/27/2022
			Sample Depth (ft bls):		6 - 8	6 - 8	5 - 7	5 - 7	6 - 8	6 - 8	6 - 8
			Normal Sample or Field Duplicate:		N	N	N	FD	N	N	N
Parameter	NYSDEC UUSCO	NYSDEC RRSCO	NYSDEC PGWSCO	Units							
Tert-Butyl Methyl Ether	0.93	100	0.93	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Tetrachloroethylene (PCE)	1.3	19	1.3	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0013 J
Toluene	0.7	100	0.7	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Trans-1,2-Dichloroethene	0.19	100	0.19	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Trans-1,3-Dichloropropene	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Trichloroethylene (TCE)	0.47	21	0.47	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Trichlorofluoromethane	--	--	--	mg/kg	0.0011 U	0.0015 U	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Vinyl Chloride	0.02	0.9	0.02	mg/kg	0.0011 UJ	0.0015 UJ	0.001 U	0.0011 U	0.0012 U	0.0013 U	0.0014 U
Xylenes	0.26	100	1.6	mg/kg	0.0022 U	0.0029 U	0.0021 U	0.0023 U	0.0024 U	0.0025 U	0.0027 U

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Table 3. Summary of Semivolatile Organic Compounds in Remaining Soil, Broadway Triangle Site A, Brooklyn, New York

				Sample Designation:	RXA2-01	RXA2-02	RXA-4901	RXA-4901	RXA-4902	RXA-5102	RXA-5302
				Sample Date:	04/26/2022	04/26/2022	04/27/2022	04/27/2022	04/27/2022	04/27/2022	04/27/2022
				Sample Depth (ft bls):	6 - 8	6 - 8	5 - 7	5 - 7	6 - 8	6 - 8	6 - 8
				Normal Sample or Field Duplicate:	N	N	N	FD	N	N	N
Parameter	NYSDEC UUSCO	NYSDEC RRSCO	NYSDEC PGWSCO	Units							
1,2,4,5-Tetrachlorobenzene	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
1,4-Dioxane (P-Dioxane)	0.1	13	0.1	mg/kg	0.033 U	0.038 U	0.034 U	0.034 U	0.19 U	0.036 U	0.037 U
2,3,4,6-Tetrachlorophenol	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
2,4,5-Trichlorophenol	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
2,4,6-Trichlorophenol	--	--	--	mg/kg	0.13 U	0.15 U	0.14 U	0.14 U	0.77 U	0.15 U	0.15 U
2,4-Dichlorophenol	--	--	--	mg/kg	0.13 U	0.15 U	0.14 U	0.14 U	0.77 U	0.15 U	0.15 U
2,4-Dimethylphenol	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	0.5 J	0.36 U	0.37 U
2,4-Dinitrophenol	--	--	--	mg/kg	0.27 U	0.31 U	0.27 U	0.27 U	1.5 U	0.29 U	0.3 U
2,4-Dinitrotoluene	--	--	--	mg/kg	0.068 U	0.077 U	0.069 U	0.069 U	0.39 U	0.074 U	0.075 U
2,6-Dinitrotoluene	--	--	--	mg/kg	0.068 U	0.077 U	0.069 U	0.069 U	0.39 U	0.074 U	0.075 U
2-Chloronaphthalene	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
2-Chlorophenol	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
2-Methylnaphthalene	--	--	--	mg/kg	0.027 J	0.38 U	0.34 U	0.34 U	5.5	0.023 J	0.37 U
2-Methylphenol (O-Cresol)	0.33	100	0.33	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	0.23 J	0.36 U	0.37 U
2-Nitroaniline	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
2-Nitrophenol	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
3,3'-Dichlorobenzidine	--	--	--	mg/kg	0.13 U	0.15 U	0.14 U	0.14 U	0.77 U	0.15 U	0.15 U
3-Nitroaniline	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
4,6-Dinitro-2-Methylphenol	--	--	--	mg/kg	0.27 U	0.31 U	0.27 U	0.27 U	1.5 U	0.29 U	0.3 U
4-Bromophenyl Phenyl Ether	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
4-Chloro-3-Methylphenol	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
4-Chloroaniline	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
4-Chlorophenyl Phenyl Ether	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
4-Methylphenol (P-Cresol)	**0.33**	100	0.33	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	**0.51 J**	0.36 U	0.37 U
4-Nitroaniline	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
4-Nitrophenol	--	--	--	mg/kg	0.68 U	0.77 U	0.69 U	0.69 U	3.9 U	0.74 U	0.75 U
Acenaphthene	**20**	100	98	mg/kg	0.064 J	0.013 J	0.047 J	0.059 J	5.5	0.074 J	0.37 U
Acenaphthylene	100	100	107	mg/kg	0.058 J	0.015 J	0.028 J	0.017 J	7.2	0.094 J	0.37 U
Acetophenone	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
Anthracene	100	100	1000	mg/kg	0.17 J	0.033 J	0.12 J	0.16 J	15	0.27 J	0.37 U
Atrazine	--	--	--	mg/kg	0.13 U	0.15 U	0.14 U	0.14 U	0.77 U	0.15 U	0.15 U
Benzaldehyde	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
Benzo(A)Anthracene	**1**	1	1	mg/kg	0.58	0.13	0.52	0.8	**25**	1	0.037 U
Benzo(A)Pyrene	**1**	1	22	mg/kg	0.5	0.1	0.48	0.77	**22**	0.83	0.037 U
Benzo(B)Fluoranthene	**1**	1	1.7	mg/kg	0.73	0.15	0.64	1	**28**	**1.3**	0.037 U
Benzo(G,H,I)Perylene	100	100	1000	mg/kg	0.28 J	0.059 J	0.29 J	0.34	8.5	0.63	0.37 U
Benzo(K)Fluoranthene	**0.8**	3.9	1.7	mg/kg	0.28	0.059	0.21 J	0.42 J	**10**	0.5	0.037 U
Benzyl Butyl Phthalate	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
Biphenyl (Diphenyl)	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.1 J	0.36 U	0.37 U
Bis(2-Chloroethoxy) Methane	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	--	--	--	mg/kg	0.033 U	0.038 U	0.034 U	0.034 U	0.19 U	0.036 U	0.037 U
Bis(2-Chloroisopropyl) Ether	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
Bis(2-Ethylhexyl) Phthalate	--	--	--	mg/kg	0.045 J	0.021 J	0.34 U	0.34 U	1.9 U	0.042 J	0.37 U
Caprolactam	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
Carbazole	--	--	--	mg/kg	0.072 J	0.019 J	0.061 J	0.075 J	8.4	0.19 J	0.37 U
Chrysene	**1**	3.9	1	mg/kg	0.61	0.13 J	0.53	0.79	**23**	1	0.37 U
Cresols, M & P	**0.33**	100	0.33	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	**0.51 J**	0.36 U	0.37 U
Dibenz(A,H)Anthracene	**0.33**	0.33	1000	mg/kg	0.073	0.038 U	0.087	0.087	**2.7**	0.14	0.037 U
Dibenzofuran	**7**	59	210	mg/kg	0.06 J	0.38 U	0.022 J	0.023 J	**9.1**	0.09 J	0.37 U

Table 3. Summary of Semivolatile Organic Compounds in Remaining Soil, Broadway Triangle Site A, Brooklyn, New York

				Sample Designation:	RXA2-01	RXA2-02	RXA-4901	RXA-4901	RXA-4902	RXA-5102	RXA-5302
				Sample Date:	04/26/2022	04/26/2022	04/27/2022	04/27/2022	04/27/2022	04/27/2022	04/27/2022
				Sample Depth (ft bls):	6 - 8	6 - 8	5 - 7	5 - 7	6 - 8	6 - 8	6 - 8
				Normal Sample or Field Duplicate:	N	N	N	FD	N	N	N
Parameter	NYSDEC UUSCO	NYSDEC RRSCO	NYSDEC PGWSCO	Units							
Diethyl Phthalate	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
Dimethyl Phthalate	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
Di-N-Butyl Phthalate	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
Di-N-Octylphthalate	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
Fluoranthene	**100**	100	1000	mg/kg	1.3	0.26 J	1	1.6	69 D	2.4	0.37 U
Fluorene	**30**	100	386	mg/kg	0.07 J	0.012 J	0.036 J	0.047 J	14	0.097 J	0.37 U
Hexachlorobenzene	0.33	1.2	3.2	mg/kg	0.033 U	0.038 U	0.034 U	0.034 U	0.19 U	0.036 U	0.037 U
Hexachlorobutadiene	--	--	--	mg/kg	0.068 U	0.077 U	0.069 U	0.069 U	0.39 U	0.074 U	0.075 U
Hexachlorocyclopentadiene	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
Hexachloroethane	--	--	--	mg/kg	0.033 U	0.038 U	0.034 U	0.034 U	0.19 U	0.036 U	0.037 U
Indeno(1,2,3-C,D)Pyrene	**0.5**	0.5	8.2	mg/kg	0.35	0.065	0.35	**0.59**	12	**0.89**	0.037 U
Isophorone	--	--	--	mg/kg	0.13 U	0.15 U	0.14 U	0.14 U	0.77 U	0.15 U	0.15 U
Naphthalene	**12**	100	12	mg/kg	0.076 J	0.011 J	0.015 J	0.016 J	13	0.058 J	0.37 U
Nitrobenzene	--	--	--	mg/kg	0.033 U	0.038 U	0.034 U	0.034 U	0.19 U	0.036 U	0.037 U
N-Nitrosodi-N-Propylamine	--	--	--	mg/kg	0.033 U	0.038 U	0.034 U	0.034 U	0.19 U	0.036 U	0.037 U
N-Nitrosodiphenylamine	--	--	--	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
Pentachlorophenol	0.8	6.7	0.8	mg/kg	0.27 U	0.31 U	0.27 U	0.27 U	1.5 U	0.29 U	0.3 U
Phenanthrene	**100**	100	1000	mg/kg	1.1	0.16 J	0.59	0.75	82 D	1.8	0.37 U
Phenol	0.33	100	0.33	mg/kg	0.33 U	0.38 U	0.34 U	0.34 U	1.9 U	0.36 U	0.37 U
Pyrene	**100**	100	1000	mg/kg	1.2	0.22 J	0.94	1.3	51 D	1.8	0.37 U

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Table 4. Summary of Metals in Remaining Soil, Broadway Triangle Site A, Brooklyn, New York

				Sample Designation:	RXA2-01	RXA2-02	RXA-4901	RXA-4901	RXA-4902	RXA-5102	RXA-5302
				Sample Date:	04/26/2022	04/26/2022	04/27/2022	04/27/2022	04/27/2022	04/27/2022	04/27/2022
				Sample Depth (ft bls):	6 - 8	6 - 8	5 - 7	5 - 7	6 - 8	6 - 8	6 - 8
				Normal Sample or Field Duplicate:	N	N	N	FD	N	N	N
Parameter	NYSDEC UUSCO	NYSDEC RRSCO	NYSDEC PGWSCO	Units							
Aluminum	--	--	--	mg/kg	5140	9900	7420	8090	8730	7600	6740
Antimony	--	--	--	mg/kg	0.3 J	0.46 J	0.98	0.19 J	1.1 U	0.46 J	1 U
Arsenic	**13**	16	16	mg/kg	4.8	8.5	9 J	4.2 J	2.5	6.4	0.75 J
Barium	**350**	400	820	mg/kg	140	154	**643 J**	113 J	87.6	309	17.6
Beryllium	7.2	72	47	mg/kg	0.24 J	0.49	0.39	0.4	0.34 J	0.39 J	0.26 J
Cadmium	**2.5**	4.3	7.5	mg/kg	0.18 J	1.8	**13.2 J**	2.4 J	1.1 U	0.81 J	1 U
Calcium	--	--	--	mg/kg	48200	40300	11700 J	1940 J	5160	22200	645
Chromium III	30	180	--	mg/kg	12.1	18	18.8	13.5	20 J+	24.4	13.1
Chromium, Hexavalent	**1**	110	19	mg/kg	2.2 U	2.3 U	2 U	2.1 U	2.3 UJ	2.2 U	**1.6 J**
Chromium, Total	**30**	180	--	mg/kg	12.1	18	18.8	13.5	20	24.4	14.7
Cobalt	--	--	--	mg/kg	3.8	7.5	5.7	5.1	4.3	6.7	2.8
Copper	**50**	270	1720	mg/kg	16.1	**142**	**86.9 J**	43.6 J	10.5	**50.6**	5.4
Cyanide	27	27	40	mg/kg	0.13 J	0.17 J	0.32	0.25 U	0.25 J	0.17 J	0.27 U
Iron	--	--	--	mg/kg	8810	30400	16800	12500	10000	15000	8020
Lead	**63**	400	450	mg/kg	**91.7**	**84.2**	**895 J**	**111 J**	**65.3**	**390**	4.5
Magnesium	--	--	--	mg/kg	6150	5240	1950	1450	2070	3050	1540
Manganese	1600	2000	2000	mg/kg	246	403	285	220	101	249	57.2
Mercury	**0.18**	0.81	0.73	mg/kg	**0.61**	**0.25**	**1.1 J**	**0.44 J**	**0.21**	**0.75**	0.018 U
Nickel	**30**	310	130	mg/kg	10.3	**37.8**	16.2	11.6	11.6	23	8.8
Potassium	--	--	--	mg/kg	832	914	620	514	590	776	448
Selenium	3.9	180	4	mg/kg	0.19 J	0.34 J	0.57 J	0.25 J	0.16 J	0.63 J	1.3 U
Silver	2	180	8.3	mg/kg	0.39 U	0.45 U	0.39	0.11 J	0.45 U	1.1	0.42 U
Sodium	--	--	--	mg/kg	146	888	129	67.1 J	312	186	57.3 J
Thallium	--	--	--	mg/kg	0.053 J	0.15 J	0.095 J	0.071 J	0.058 J	0.11 J	0.044 J
Vanadium	--	--	--	mg/kg	17.3	108	28	19.3	25.6	29.2	22.1
Zinc	**109**	10000	2480	mg/kg	**114**	**366**	**630 J**	**141 J**	**128**	**284**	18

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Table 5. Summary of Polychlorinated Biphenyls in Remaining Soil, Broadway Triangle Site A, Brooklyn, New York

			Sample Designation:		RXA2-01	RXA2-02	RXA-4901	RXA-4901	RXA-4902	RXA-5102	RXA-5302
			Sample Date:		04/26/2022	04/26/2022	04/27/2022	04/27/2022	04/27/2022	04/27/2022	04/27/2022
			Sample Depth (ft bls):		6 - 8	6 - 8	5 - 7	5 - 7	6 - 8	6 - 8	6 - 8
			Normal Sample or Field Duplicate:		N	N	N	FD	N	N	N
Parameter	NYSDEC UUSCO	NYSDEC RRSCO	NYSDEC PGWSCO	Units							
PCB-1016 (Aroclor 1016)	--	--	--	mg/kg	0.068 U	0.078 U	0.068 U	0.069 U	0.078 U	0.074 U	0.075 U
PCB-1221 (Aroclor 1221)	--	--	--	mg/kg	0.068 U	0.078 U	0.068 U	0.069 U	0.078 U	0.074 U	0.075 U
PCB-1232 (Aroclor 1232)	--	--	--	mg/kg	0.068 U	0.078 U	0.068 U	0.069 U	0.078 U	0.074 U	0.075 U
PCB-1242 (Aroclor 1242)	--	--	--	mg/kg	0.068 U	0.078 U	0.068 U	0.069 U	0.078 U	0.074 U	0.075 U
PCB-1248 (Aroclor 1248)	--	--	--	mg/kg	0.068 U	0.078 U	0.068 U	0.069 U	0.078 U	0.074 U	0.075 U
PCB-1254 (Aroclor 1254)	--	--	--	mg/kg	0.068 U	0.078 U	0.068 U	0.069 U	0.078 U	0.074 U	0.075 U
PCB-1260 (Aroclor 1260)	--	--	--	mg/kg	0.068 U	0.078 U	0.068 U	0.046 J	0.078 U	0.055 J	0.075 U
PCB-1262 (Aroclor 1262)	--	--	--	mg/kg	0.068 U	0.078 U	0.068 U	0.069 U	0.078 U	0.074 U	0.075 U
PCB-1268 (Aroclor 1268)	--	--	--	mg/kg	0.068 U	0.078 U	0.068 U	0.069 U	0.078 U	0.074 U	0.075 U
Polychlorinated Biphenyl (PCBs)	**0.1**	1	3.2	mg/kg	0.068 U	0.078 U	0.068 U	0.046 J	0.078 U	0.055 J	0.075 U

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Table 6. Summary of Pesticides and Herbicides in Remaining Soil, Broadway Triangle Site A, Brooklyn, New York

				Sample Designation:	RXA2-01	RXA2-02	RXA-4901	RXA-4901	RXA-4902	RXA-5102	RXA-5302
				Sample Date:	04/26/2022	04/26/2022	04/27/2022	04/27/2022	04/27/2022	04/27/2022	04/27/2022
				Sample Depth (ft bls):	6 - 8	6 - 8	5 - 7	5 - 7	6 - 8	6 - 8	6 - 8
				Normal Sample or Field Duplicate:	N	N	N	FD	N	N	N
Parameter	NYSDEC UUSCO	NYSDEC RRSCO	NYSDEC PGWSCO	Units							
2,4-D (Dichlorophenoxyacetic Acid)	--	--	--	mg/kg	0.034 U	0.039 U	0.034 U	0.034 U	0.039 U	0.037 U	0.037 U
Acetic acid, (2,4,5-trichlorophenoxy)-	--	--	--	mg/kg	0.034 U	0.039 U	0.034 U	0.034 U	0.039 U	0.037 U	0.037 U
Aldrin	0.005	0.097	0.19	mg/kg	0.0068 U	0.0078 U	0.0068 U	0.0069 U	0.0078 U	0.0074 U	0.0075 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.02	0.48	0.02	mg/kg	0.002 U	0.0023 U	0.002 U	0.0021 U	0.0023 U	0.0022 U	0.0022 U
Alpha Endosulfan	2.4	24	102	mg/kg	0.0068 U	0.0078 U	0.0068 U	0.0069 U	0.0078 U	0.0074 U	0.0075 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.36	0.09	mg/kg	0.002 U	0.0023 U	0.002 U	0.0021 U	0.0023 U	0.0022 U	0.0022 U
Beta Endosulfan	2.4	24	102	mg/kg	0.0068 U	0.0078 U	0.0068 U	0.0069 U	0.0078 U	0.0074 U	0.0075 U
Chlordane (Technical)	--	--	--	mg/kg	0.072 J	0.078 U	0.068 U	0.069 U	0.078 U	0.074 U	0.075 U
cis-Chlordane	0.094	4.2	2.9	mg/kg	0.0084 J	0.0064 NJ	0.0068 U	0.0069 U	0.0078 U	0.0074 U	0.0075 U
Delta BHC (Delta Hexachlorocyclohexane)	0.04	100	0.25	mg/kg	0.002 U	0.0023 U	0.002 U	0.0021 U	0.0023 U	0.0022 U	0.0022 U
Dieldrin	**0.005**	0.2	0.1	mg/kg	0.002 U	0.0023 U	0.002 U	0.0033	0.0038 J	**0.018**	0.0022 U
Endosulfan Sulfate	2.4	24	1000	mg/kg	0.0068 U	0.0078 U	0.0068 U	0.0069 U	0.0078 U	0.0074 U	0.0075 U
Endrin	0.014	11	0.06	mg/kg	0.0068 U	0.0078 U	0.0068 U	0.0069 U	0.0078 U	0.0074 U	0.0075 U
Endrin Aldehyde	--	--	--	mg/kg	0.0068 U	0.0078 U	0.0068 U	0.0069 U	0.0078 U	0.0074 U	0.0075 U
Endrin Ketone	--	--	--	mg/kg	0.0068 U	0.0078 U	0.0068 U	0.0069 U	0.0078 U	0.0074 U	0.0075 U
Gamma Bhc (Lindane)	0.1	1.3	0.1	mg/kg	0.002 U	0.0023 U	0.002 U	0.0021 U	0.0023 U	0.0022 U	0.0022 U
Heptachlor	0.042	2.1	0.38	mg/kg	0.0068 U	0.0078 U	0.0068 U	0.0069 U	0.0078 U	0.0074 U	0.0075 U
Heptachlor Epoxide	--	--	--	mg/kg	0.0068 U	0.0078 U	0.0068 U	0.0069 U	0.0078 U	0.0074 U	0.0075 U
Methoxychlor	--	--	--	mg/kg	0.0068 U	0.0078 U	0.0068 U	0.0069 U	0.0078 U	0.0074 U	0.0075 U
P,P'-DDD	**0.0033**	13	14	mg/kg	**0.0035 J**	0.0078 U	0.0068 U	0.0069 U	0.0078 U	0.0074 U	0.0075 U
P,P'-DDE	**0.0033**	8.9	17	mg/kg	**0.01 J**	0.0026 J	0.0068 U	**0.0048 J**	0.0078 U	**0.017**	0.0075 U
P,P'-DDT	**0.0033**	7.9	136	mg/kg	**0.049 J**	**0.018**	**0.0049 J**	**0.021**	0.0078 U	**0.058**	0.0075 U
Silvex (2,4,5-TP)	3.8	100	3.8	mg/kg	0.034 U	0.039 U	0.034 U	0.034 U	0.039 U	0.037 U	0.037 U
Toxaphene	--	--	--	mg/kg	0.068 U	0.078 U	0.068 U	0.069 U	0.078 U	0.074 U	0.075 U

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Table 7. Summary of Per- and Polyfluoroalkyl Substances in Remaining Soil, Broadway Triangle Site A, Brooklyn, New York

Parameter	NYSDEC Part 375 Unrestricted Use GV	NYSDEC Part 375 Restricted Residential GV	NYSDEC Part 375 Protection of Groundwater GV	Units	RXA2-01	RXA2-02	RXA-4901	RXA-4901	RXA-4902	RXA-5102	RXA-5302
Sample Designation:					RXA2-01	RXA2-02	RXA-4901	RXA-4901	RXA-4902	RXA-5102	RXA-5302
Sample Date:					04/26/2022	04/26/2022	04/27/2022	04/27/2022	04/27/2022	04/27/2022	04/27/2022
Sample Depth (ft bls):					6 - 8	6 - 8	5 - 7	5 - 7	6 - 8	6 - 8	6 - 8
Normal Sample or Field Duplicate:					N	N	N	FD	N	N	N
2-(N-methyl perfluorooctanesulfonamido) acetic acid	--	--	--	µg/kg	0.23 U	0.073 JT	0.23 U	0.22 U	0.23 U	0.26 U	0.23 U
N-ethyl perfluorooctanesulfonamidoacetic acid	--	--	--	µg/kg	0.031 EMPC	0.034 J	0.23 U	0.22 U	0.23 U	0.11 J	0.23 U
Perfluorobutanesulfonic acid (PFBS)	--	--	--	µg/kg	0.45 U	0.48 U	0.45 U	0.45 U	0.46 U	0.52 U	0.45 U
Perfluorobutanoic Acid	--	--	--	µg/kg	0.028 J	0.032 J	0.041 J	0.052 J	0.23 U	0.26 U	0.23 U
Perfluorodecane Sulfonic Acid	--	--	--	µg/kg	0.23 U	0.036 J	0.23 U	0.22 U	0.23 U	0.12 J	0.23 U
Perfluorodecanoic acid (PFDA)	--	--	--	µg/kg	0.055 J	0.071 J	0.23 U	0.22 U	0.23 U	3.72	0.23 U
Perfluorododecanoic acid (PFDoA)	--	--	--	µg/kg	0.043 J	0.07 J	0.23 U	0.22 U	0.23 U	0.36	0.23 U
Perfluoroheptane Sulfonate (PFHPS)	--	--	--	µg/kg	0.23 U	0.24 U	0.23 U	0.023 J	0.23 U	0.26 U	0.23 U
Perfluoroheptanoic acid (PFHpA)	--	--	--	µg/kg	0.23 U	0.24 U	0.23 U	0.22 U	0.23 U	0.42	0.23 U
Perfluorohexanesulfonic acid (PFHxS)	--	--	--	µg/kg	0.23 U	0.026 J	0.23 U	0.22 U	0.23 U	0.099 J	0.23 U
Perfluorohexanoic acid (PFHxA)	--	--	--	µg/kg	0.07 J	0.048 J	0.031 J	0.04 J	0.023 J	0.26	0.026 J
Perfluorononanoic acid (PFNA)	--	--	--	µg/kg	0.23 U	0.044 J	0.23 U	0.22 U	0.23 U	1.16	0.23 U
Perfluorooctane Sulfonamide (FOSA)	--	--	--	µg/kg	0.23 U	0.27	0.23 U	0.22 U	0.23 U	0.033 J	0.23 U
Perfluorooctanesulfonic acid (PFOS)	**0.88**	44	3.7	µg/kg	0.34 U	**1.31**	**2.06 J**	0.78 J	0.33	**4.31**	0.21 J
Perfluorooctanoic acid (PFOA)	**0.66**	33	1.1	µg/kg	0.1 J	0.4	0.35	0.3	0.079 J	**1.7**	0.16 J
Perfluoropentanoic Acid (PFPeA)	--	--	--	µg/kg	0.23 U	0.24 U	0.071 J	0.095 J	0.23 U	0.24 J	0.23 U
Perfluorotetradecanoic acid (PFTA)	--	--	--	µg/kg	0.23 U	0.24 U	0.23 U	0.22 U	0.23 U	0.11 J	0.23 U
Perfluorotridecanoic Acid (PFTriA)	--	--	--	µg/kg	0.23 U	0.028 J	0.23 U	0.22 U	0.23 U	0.13 J	0.23 U
Perfluoroundecanoic Acid (PFUnA)	--	--	--	µg/kg	0.23 U	0.076 J	0.23 U	0.22 U	0.23 U	0.59	0.23 U
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	--	--	--	µg/kg	0.23 U	0.24 U	0.23 U	0.22 U	0.23 U	0.26 U	0.23 U
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	--	--	--	µg/kg	0.059 J	0.24 U	0.23 U	0.22 U	0.23 U	0.26 U	0.23 U

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Table 8. Summary of Volatile Organic Compounds in Groundwater, Broadway Triangle Site A, Brooklyn, New York

Parameter	NYSDEC Ambient Water Quality Standards and Guidance Values	Units	Sample Designation: RXA2-02 Sample Date: 05/06/2022 Normal Sample or Field Duplicate: N	Sample Designation: RXA2-03 Sample Date: 05/06/2022 Normal Sample or Field Duplicate: N	Sample Designation: RXA-4901 Sample Date: 05/09/2022 Normal Sample or Field Duplicate: N	Sample Designation: RXA-4901 Sample Date: 05/09/2022 Normal Sample or Field Duplicate: FD	Sample Designation: RXA-4902 Sample Date: 05/06/2022 Normal Sample or Field Duplicate: N	Sample Designation: RXA-5302 Sample Date: 05/09/2022 Normal Sample or Field Duplicate: N
1,1,1-Trichloroethane (TCA)	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-Chloropropane	0.04	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane (Ethylene Dibromide)	0.0006	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	0.6	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene (Mesitylene)	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	3	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	50	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	50	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
Benzene	1	µg/L	1 U	0.35 J	1 U	1 U	1 U	1 U
Bromochloromethane	5	µg/L	1 U	1 U	1 UT	1 UT	1 U	1 UT
Bromodichloromethane	50	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	50	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Disulfide	60	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	7	µg/L	1 U	1 U	1 U	1 U	0.37 J	1 U
Chloromethane	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Cis-1,2-Dichloroethylene	**5**	µg/L	0.22 J	**6.1**	1 U	1 U	1 U	0.39 J
Cis-1,3-Dichloropropene	--	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane	--	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	50	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene (Cumene)	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Methyl Acetate	--	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
Methyl Ethyl Ketone (2-Butanone)	50	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	--	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
Methylcyclohexane	--	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
N-Butylbenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
N-Propylbenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
O-Xylene (1,2-Dimethylbenzene)	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Sec-Butylbenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U

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Table 8. Summary of Volatile Organic Compounds in Groundwater, Broadway Triangle Site A, Brooklyn, New York

	Sample Designation:		RXA2-02	RXA2-03	RXA-4901	RXA-4901	RXA-4902	RXA-5302
	Sample Date:		05/06/2022	05/06/2022	05/09/2022	05/09/2022	05/06/2022	05/09/2022
	Normal Sample or Field Duplicate:		N	N	N	FD	N	N
Parameter	NYSDEC Ambient Water Quality Standards and Guidance Values	Units						
T-Butylbenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Tert-Butyl Methyl Ether	10	µg/L	1 U	2.8	1 U	1 U	1 U	1 U
Tetrachloroethylene (PCE)	5	µg/L	1 U	0.64 J	1 U	1 U	0.92 J	2
Toluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Trans-1,2-Dichloroethene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Trans-1,3-Dichloropropene	--	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethylene (TCE)	5	µg/L	1 U	0.38 J	1 U	1 U	1 U	0.34 J
Trichlorofluoromethane	5	µg/L	1 U	1 U	1 U	1 U	0.56 J	1 U
Vinyl Chloride	**2**	µg/L	1 U	**3.9**	1 U	1 U	1 U	1 U
Xylenes	5	µg/L	2 U	2 U	2 U	2 U	2 U	2 U

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Table 9. Summary of Semivolatile Organic Compounds in Groundwater, Broadway Triangle Site A, Brooklyn, New York

Parameter	NYSDEC Ambient Water Quality Standards and Guidance Values	Units	Sample Designation: RXA2-02	RXA2-03	RXA-4901	RXA-4901	RXA-4902	RXA-5302
			Sample Date: 05/06/2022	05/06/2022	05/09/2022	05/09/2022	05/06/2022	05/09/2022
			Normal Sample or Field Duplicate: N	N	N	FD	N	N
1,2,4,5-Tetrachlorobenzene	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 UT
1,4-Dioxane (P-Dioxane)	**0.35**	µg/L	0.2 U	**0.47**	0.2 U	0.2 U	0.2 U	0.2 U
2,3,4,6-Tetrachlorophenol	--	µg/L	10 UJ	10 UJ	10 UT	10 UT	10 UJ	10 UT
2,4,5-Trichlorophenol	--	µg/L	10 U	10 U	10 UT	10 UT	10 U	10 U
2,4,6-Trichlorophenol	--	µg/L	10 U	10 U	10 UT	10 UT	10 U	10 U
2,4-Dichlorophenol	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	50	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	10	µg/L	20 U	20 U	20 U	20 U	20 U	20 U
2,4-Dinitrotoluene	5	µg/L	2 U	2 U	2 U	2 U	2 U	2 UT
2,6-Dinitrotoluene	5	µg/L	2 U	2 U	2 UT	2 UT	2 U	2 UT
2-Chloronaphthalene	10	µg/L	10 U	10 U	10 U	10 U	10 U	10 UT
2-Chlorophenol	--	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	--	µg/L	10 U	10 U	10 U	10 U	10 U	10 UT
2-Methylphenol (O-Cresol)	--	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 UT
2-Nitrophenol	--	µg/L	10 U	10 U	10 UT	10 UT	10 U	10 U
3,3'-Dichlorobenzidine	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 R
3-Nitroaniline	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
4,6-Dinitro-2-Methylphenol	--	µg/L	20 U	20 U	20 UT	20 UT	20 U	20 U
4-Bromophenyl Phenyl Ether	--	µg/L	10 U	10 U	10 UT	10 UT	10 U	10 U
4-Chloro-3-Methylphenol	--	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 UT
4-Chlorophenyl Phenyl Ether	--	µg/L	10 U	10 U	10 U	10 U	10 U	10 UT
4-Methylphenol (P-Cresol)	--	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitrophenol	--	µg/L	20 U	20 U	20 U	20 U	20 U	20 U
Acenaphthene	20	µg/L	10 U	10 U	10 U	10 U	10 U	10 UT
Acenaphthylene	20	µg/L	10 U	10 U	10 U	10 U	10 U	10 UT
Acetophenone	--	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	50	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Atrazine	7.5	µg/L	2 U	2 U	2 UT	2 UT	2 U	2 UT
Benzaldehyde	--	µg/L	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Benzo(A)Anthracene	0.002	µg/L	1 U	1 U	1 U	1 U	1 U	1 UT
Benzo(A)Pyrene	0	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Benzo(B)Fluoranthene	0.002	µg/L	2 U	2 U	2 U	2 U	2 U	2 UT
Benzo(G,H,I)Perylene	--	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(K)Fluoranthene	0.002	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Benzyl Butyl Phthalate	50	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Biphenyl (Diphenyl)	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 UT
Bis(2-Chloroethoxy) Methane	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
Bis(2-Chloroisopropyl) Ether	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 UT
Bis(2-Ethylhexyl) Phthalate	5	µg/L	1.8 J	2 U	2 U	2 U	2 U	2 UT
Caprolactam	--	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole	--	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	0.002	µg/L	2 U	2 U	2 U	2 U	2 U	2 U
Cresols, M & P	--	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Dibenz(A,H)Anthracene	--	µg/L	1 U	1 U	1 U	1 U	1 U	1 U

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Table 9. Summary of Semivolatile Organic Compounds in Groundwater, Broadway Triangle Site A, Brooklyn, New York

		Sample Designation:	RXA2-02	RXA2-03	RXA-4901	RXA-4901	RXA-4902	RXA-5302
		Sample Date:	05/06/2022	05/06/2022	05/09/2022	05/09/2022	05/06/2022	05/09/2022
		Normal Sample or Field Duplicate:	N	N	N	FD	N	N
Parameter	NYSDEC Ambient Water Quality Standards and Guidance Values	Units						
Dibenzofuran	--	µg/L	10 U	10 U	10 U	10 U	10 U	10 UT
Diethyl Phthalate	50	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Dimethyl Phthalate	50	µg/L	10 U	10 U	10 U	10 U	10 U	10 UT
Di-N-Butyl Phthalate	50	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Di-N-Octylphthalate	--	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	50	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	50	µg/L	10 U	10 U	10 U	10 U	10 U	10 UT
Hexachlorobenzene	0.04	µg/L	1 UJ	1 UJ	1 U	1 U	1 UJ	1 U
Hexachlorobutadiene	0.5	µg/L	1 U	1 U	1 U	1 U	1 U	1 UT
Hexachlorocyclopentadiene	5	µg/L	10 U	10 U	10 U	10 U	10 U	10 UT
Hexachloroethane	5	µg/L	2 U	2 U	2 U	2 U	2 U	2 UT
Indeno(1,2,3-C,D)Pyrene	0.002	µg/L	2 U	2 U	2 U	2 U	2 U	2 U
Isophorone	50	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	10	µg/L	2 U	2 U	2 U	2 U	2 U	2 UJ
Nitrobenzene	0.4	µg/L	1 U	1 U	1 U	1 U	1 U	1 UT
N-Nitrosodi-N-Propylamine	--	µg/L	1 U	1 U	1 U	1 U	1 U	1 UT
N-Nitrosodiphenylamine	50	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	1	µg/L	20 UJ	20 UJ	20 U	20 U	20 UJ	20 U
Phenanthrene	50	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Phenol	1	µg/L	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	50	µg/L	10 U	10 U	10 U	10 U	10 U	10 U

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Table 10. Summary of Metals in Groundwater, Broadway Triangle Site A, Brooklyn, New York

Parameter	NYSDEC Ambient Water Quality Standards and Guidance Values	Units	Sample Designation:	RXA2-02	RXA2-03	RXA2-03	RXA-4901	RXA-4901	RXA-4901	RXA-4901	RXA-4902	RXA-4902	RXA-5302	RXA-5302
			Sample Date:	05/06/2022	05/06/2022	05/06/2022	05/06/2022	05/09/2022	05/09/2022	05/09/2022	05/09/2022	05/06/2022	05/06/2022	05/09/2022	05/09/2022
			Normal Sample or Field Duplicate:	N	N	N	N	N	N	FD	FD	N	N	N	N
			Total or Dissolved:	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Aluminum	--	µg/L		228	40 UJ	216	40 UJ	29 J	40 UJ	40 U	40 UJ	209	40 UJ	67.8	40 UJ
Antimony	3	µg/L		2.1	2.1 J-	2 U	2 UJ	2 U	2 UJ	2 U	2 UJ	2 U	2 UJ	2 U	2 UJ
Arsenic	25	µg/L		2.6	1.9 J-	0.98 J	1.1 J-	2 U	2 UJ	2 U	2 UJ	2 U	2 UJ	2 U	2 UJ
Barium	1000	µg/L		67.9	67.6 J-	52.6	54.5 J-	75.5	77.5 J-	78.9	78.2 J-	73.5	73.6 J-	81.4	78.1 J-
Beryllium	3	µg/L		0.8 U	0.8 UJ	0.8 U	0.8 UJ	0.8 U	0.8 UJ	0.8 U	0.8 UJ	0.8 U	0.8 UJ	0.8 U	0.8 UJ
Cadmium	5	µg/L		2 U	2 UJ	2 U	2 UJ	2 U	2 UJ	2 U	2 UJ	2 U	2 UJ	2 U	2 UJ
Calcium	--	µg/L		431000	428000 J-	174000	174000 J-	128000	134000 J-	127000	131000 J-	104000	126000 J-	289000	277000 J-
Chromium III	--	µg/L		10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
Chromium, Hexavalent	50	µg/L		10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
Chromium, Total	50	µg/L		4 U	4 UJ	4 U	4 UJ	4 U	4 UJ	4 U	4 UJ	4 U	4 UJ	4 U	4 UJ
Cobalt	--	µg/L		1.2 J	1.2 J-	4.7	4.1 J-	4 U	4 UJ	4 U	4 UJ	1.3 J	4 UJ	0.86 J	4 UJ
Copper	200	µg/L		8.8	6.4 J-	3.1 J	4 UJ	4 U	4 UJ	4 U	4 UJ	2.6 J	4 UJ	3.4 J	4 UJ
Cyanide	200	µg/L		12	NA	26	NA	10 U	NA	10 U	NA	10 U	NA	10 UT	NA
Iron	**300**	µg/L		**1020**	120 UJ	**480**	120 UJ	120 U	120 UJ	120 U	120 UJ	**437**	120 UJ	120	120 UJ
Lead	25	µg/L		2.8	1.2 UJ	1.4	1.2 UJ	1.2 U	1.2 UJ	1.2 U	1.2 UJ	1.2 U	1.2 UJ	1.2 U	1.2 UJ
Magnesium	**35000**	µg/L		**230000**	**233000 J-**	**77800**	**76300 J-**	12600	12800 J-	13200	12500 J-	10800	26300 J-	29000	26100 J-
Manganese	**300**	µg/L		**534**	**603 J-**	**2000**	**2030 J-**	**402**	**408 J-**	**441**	**415 J-**	133	58.1 J-	**559**	**494 J-**
Mercury	0.7	µg/L		0.2 U	0.2 UJ	0.16 J	0.2 UJ	0.2 U	0.2 UJ	0.2 U	0.2 UJ	0.2 U	0.2 UJ	0.2 U	0.2 UJ
Nickel	100	µg/L		7.5	6.5 J-	6.4	5.4 J-	2.2 J	1.2 J-	2.3 J	1.2 J-	2 J	1.5 J-	5.8	3.3 J-
Potassium	--	µg/L		47300	46900 J-	19400	19900 J-	13400	13800 J-	14100	13700 J-	13600	15900 J-	15600	14400 J-
Selenium	10	µg/L		2.9	3.3 J-	2.5 U	0.87 J-	8.3	7.9 J-	7.7	7.8 J-	2.5 U	0.92 J-	9.5	9.9 J-
Silver	50	µg/L		2 U	2 UJ	2 U	2 UJ	2 U	2 UJ	2 U	2 UJ	2 U	2 UJ	2 U	2 UJ
Sodium	**20000**	µg/L		**54400**	**54000 J-**	**67400**	**65800 J-**	9580	9800 J-	9290	9220 J-	**66900**	**63300 J-**	**27500**	**25600 J-**
Thallium	0.5	µg/L		0.8 U	0.8 UJ	0.8 U	0.8 UJ	0.8 U	0.8 UJ	0.8 U	0.8 UJ	0.8 U	0.8 UJ	0.8 U	0.8 UJ
Vanadium	--	µg/L		64.2	42.6 J-	4.2 U	4 U	1.1 J	4 UJ	1.1 J	4 UJ	4 U	5 U	1.5 J	4 UJ
Zinc	2000	µg/L		18.2	39.3 J-	16 U	98.4 J-	16 U	6.8 J-	16 U	16 UJ	16 U	15.7 J-	16 U	19.9 J-

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Table 11. Summary of Polychlorinated Biphenyls in Groundwater, Broadway Triangle Site A, Brooklyn, New York

		Sample Designation:	RXA2-02	RXA2-03	RXA-4901	RXA-4901	RXA-4902	RXA-5302
		Sample Date:	05/06/2022	05/06/2022	05/09/2022	05/09/2022	05/06/2022	05/09/2022
		Normal Sample or Field Duplicate:	N	N	N	FD	N	N
Parameter	NYSDEC Ambient Water Quality Standards and Guidance Values	Units						
PCB-1016 (Aroclor 1016)	--	µg/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
PCB-1221 (Aroclor 1221)	--	µg/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
PCB-1232 (Aroclor 1232)	--	µg/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
PCB-1242 (Aroclor 1242)	--	µg/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
PCB-1248 (Aroclor 1248)	--	µg/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
PCB-1254 (Aroclor 1254)	--	µg/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
PCB-1260 (Aroclor 1260)	--	µg/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
PCB-1262 (Aroclor 1262)	--	µg/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
PCB-1268 (Aroclor 1268)	--	µg/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Polychlorinated Biphenyl (PCBs)	0.09	µg/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U

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Table 12. Summary of Pesticides and Herbicides in Groundwater, Broadway Triangle Site A, Brooklyn, New York

		Sample Designation:	RXA2-02	RXA2-03	RXA-4901	RXA-4901	RXA-4902	RXA-5302
		Sample Date:	05/06/2022	05/06/2022	05/09/2022	05/09/2022	05/06/2022	05/09/2022
		Normal Sample or Field Duplicate:	N	N	N	FD	N	N
Parameter	NYSDEC Ambient Water Quality Standards and Guidance Values	Units						
2,4-D (Dichlorophenoxyacetic Acid)	50	µg/L	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Acetic acid, (2,4,5-trichlorophenoxy)-	35	µg/L	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Aldrin	0	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 UT
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.01	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Alpha Endosulfan	--	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.04	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Beta Endosulfan	--	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Chlordane (Technical)	--	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-Chlordane	--	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Delta BHC (Delta Hexachlorocyclohexane)	0.04	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Dieldrin	0.004	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Endosulfan Sulfate	--	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Endrin	0	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Endrin Aldehyde	5	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Endrin Ketone	5	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Gamma Bhc (Lindane)	0.05	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Heptachlor	0.04	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Heptachlor Epoxide	0.03	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Methoxychlor	35	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
P,P'-DDD	0.3	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
P,P'-DDE	0.2	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
P,P'-DDT	0.2	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Silvex (2,4,5-TP)	0.26	µg/L	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Toxaphene	0.06	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

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Table 13. Summary of Per- and Polyfluoroalkyl Substances in Groundwater, Broadway Triangle Site A, Brooklyn, New York

		Sample Designation:	RXA2-02	RXA2-03	RXA-4901	RXA-4901	RXA-4902	RXA-5302
		Sample Date:	05/06/2022	05/06/2022	05/09/2022	05/09/2022	05/06/2022	05/09/2022
		Normal Sample or Field Duplicate:	N	N	N	FD	N	N
Parameter	NYSDEC Proposed Guidance Values	Units						
2-(N-methyl perfluorooctanesulfonamido) acetic acid	--	ng/L	0.55 J	1.7 U	1.64 U	1.71 U	1.89 U	1.8 U
N-ethyl perfluorooctanesulfonamidoacetic acid	--	ng/L	2.62 U	2.54 U	2.46 U	2.57 U	2.83 U	2.7 U
Perfluorobutanesulfonic acid (PFBS)	--	ng/L	5.94 J	5.28	68.5	68.6	9.82	10.4 J
Perfluorobutanoic Acid	--	ng/L	25 J	20.1	18.3	17.9	13.4	17.4
Perfluorodecane Sulfonic Acid	--	ng/L	1.75 U	1.7 U	1.64 U	1.71 U	1.89 U	1.8 U
Perfluorodecanoic acid (PFDA)	--	ng/L	2.31	1.7 U	1.64 U	1.71 U	1.43 J	1.8 U
Perfluorododecanoic acid (PFDoA)	--	ng/L	1.75 U	1.7 U	1.64 U	1.71 U	1.89 U	1.8 U
Perfluoroheptane Sulfonate (PFHPS)	--	ng/L	1.31 J	1.8	1.3 J	1.31 J	1.89 U	2.36
Perfluoroheptanoic acid (PFHpA)	--	ng/L	40.1	17.5	9.76	9.45	7.69	22.2
Perfluorohexanesulfonic acid (PFHxS)	--	ng/L	11	9.09	9.07	9.02	1.75 J	17.5
Perfluorohexanoic acid (PFHxA)	--	ng/L	33.6	21.6	10.5	9.83	9.74	19.7
Perfluorononanoic acid (PFNA)	--	ng/L	5.45	2.71	1.63 J	1.62 J	2.45	4.76
Perfluorooctane Sulfonamide (FOSA)	--	ng/L	0.84 J	1.7 U	1.64 U	1.71 U	1.89 U	1.8 U
Perfluorooctanesulfonic acid (PFOS)	**2.7**	ng/L	**156 B**	**64.1 B**	**36.6 EMPC**	**35.9 EMPC**	**30.5 B**	**87.8 EMPC**
Perfluorooctanoic acid (PFOA)	**6.7**	ng/L	**227**	**98.9**	**103**	**105**	**21.2**	**138**
Perfluoropentanoic Acid (PFPeA)	--	ng/L	19.6	16.9	8.62	8.32	10.4	15.1
Perfluorotetradecanoic acid (PFTA)	--	ng/L	1.75 U	1.7 U	1.64 U	1.71 U	1.89 U	1.8 U
Perfluorotridecanoic Acid (PFTriA)	--	ng/L	1.75 U	1.7 U	1.64 U	1.71 U	1.89 U	1.8 U
Perfluoroundecanoic Acid (PFUnA)	--	ng/L	1.75 U	1.7 U	1.64 U	1.71 U	1.89 U	1.8 U
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	--	ng/L	2.62 U	2.54 U	2.46 U	2.57 U	2.83 U	2.7 U
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	--	ng/L	4.37 U	4.24 U	4.1 U	4.28 U	4.72 U	4.49 U

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Table 14. Summary of Volatile Organic Compounds in Soil Vapor, Broadway Triangle Site A, Brooklyn, New York

Sample Designation:		RXA2-01	RXA2-01	RXA2-02	RXA2-03	RXA-4901	RXA-4902	RXA-5102	RXA-5302
Sample Date:		04/26/2022	04/26/2022	04/26/2022	04/26/2022	04/27/2022	04/29/2022	04/27/2022	04/27/2022
Normal Sample or Field Duplicate:		N	FD	N	N	N	N	N	N
Parameter	Units								
1,1,1-Trichloroethane (TCA)	µg/m^3	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	**0.31 J**	1.1 U	**0.53 J**
1,1,2,2-Tetrachloroethane	µg/m^3	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/m^3	**0.43 J**	**0.44 J**	1.5 U	1.5 U	**0.45 J**	1.5 U	1.5 U	1.5 U
1,1,2-Trichloroethane	µg/m^3	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
1,1-Dichloroethane	µg/m^3	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U
1,1-Dichloroethene	µg/m^3	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trichlorobenzene	µg/m^3	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene	µg/m^3	**2.5 J**	**1.4 J**	**5.6**	**6.2**	0.98 U	**4.2**	**5.1**	**5.5**
1,2-Dibromoethane (Ethylene Dibromide)	µg/m^3	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
1,2-Dichlorobenzene	µg/m^3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2-Dichloroethane	µg/m^3	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U
1,2-Dichloropropane	µg/m^3	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U
1,2-Dichlorotetrafluoroethane	µg/m^3	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	**38**
1,3,5-Trimethylbenzene (Mesitylene)	µg/m^3	**1.1**	**0.7 J**	**2**	**2.2**	0.98 U	**1.7**	**2**	**2.1**
1,3-Butadiene	µg/m^3	0.44 U	0.44 U	**1.2**	**1.5**	**9.5**	**1.3**	**0.9**	**1.2**
1,3-Dichlorobenzene	µg/m^3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,4-Dichlorobenzene	µg/m^3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,4-Dioxane (P-Dioxane)	µg/m^3	18 UT	18 UT	18 UT	18 UT	18 UT	18 U	18 UT	18 UT
2,2,4-Trimethylpentane	µg/m^3	**1.7**	**1.8**	**2**	**2.1**	**0.4 J**	**3.2**	**2.1**	**2.9**
2-Chlorotoluene	µg/m^3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	µg/m^3	**1.4 J**	**1.1 J**	**3.5**	**3.7**	**0.96 J**	**77**	**28**	**34**
4-Ethyltoluene	µg/m^3	**0.89 J**	**0.51 J**	**2.4**	**2.5**	0.98 U	**1.9**	**2.2**	**2.4**
Acetone	µg/m^3	**20**	**22**	**24**	**13**	**170 D**	**250 D**	**63**	**79**
Allyl Chloride (3-Chloropropene)	µg/m^3	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Benzene	µg/m^3	**2.6**	**2.6**	**4.9**	**6.2**	**3**	**5.3**	**6.3**	**5.8**
Benzyl Chloride	µg/m^3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	µg/m^3	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Bromoform	µg/m^3	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Bromomethane	µg/m^3	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U
Butane	µg/m^3	**9.1**	**11**	**16**	**32**	**220 D**	**37**	**20**	**190 D**
Carbon Disulfide	µg/m^3	**0.54 J**	**0.51 J**	**0.94 J**	**2.6**	**3.4**	**3.5**	**19**	**9.9**
Carbon Tetrachloride	µg/m^3	**0.31**	**0.35**	**0.23**	**0.31**	**0.35**	0.22 U	0.22 U	0.22 U

DRAFT

Table 14. Summary of Volatile Organic Compounds in Soil Vapor, Broadway Triangle Site A, Brooklyn, New York

Sample Designation:		RXA2-01	RXA2-01	RXA2-02	RXA2-03	RXA-4901	RXA-4902	RXA-5102	RXA-5302
Sample Date:		04/26/2022	04/26/2022	04/26/2022	04/26/2022	04/27/2022	04/29/2022	04/27/2022	04/27/2022
Normal Sample or Field Duplicate:		N	FD	N	N	N	N	N	N
Parameter	Units								
Chlorobenzene	µg/m³	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U	0.92 U
Chlorodifluoromethane	µg/m³	**2.1 J**	**5 J**	1.8 U	**2.3**	**0.87 J**	1.8 U	**0.89 J**	**1.4 J**
Chloroethane	µg/m³	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Chloroform	µg/m³	**0.63 J**	**0.52 J**	**1.7**	**0.95 J**	**0.25 J**	**5.1**	**1.2**	**4.5**
Chloromethane	µg/m³	**0.54 J**	**0.57 J**	**0.57 J**	1 U	**1**	1 U	1 U	1 U
Cis-1,2-Dichloroethylene	µg/m³	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Cis-1,3-Dichloropropene	µg/m³	0.91 U	0.91 U	0.91 U	0.91 U	0.91 U	0.91 U	0.91 U	0.91 U
Cyclohexane	µg/m³	**1.1**	**1.3**	**1.5**	**1.8**	**0.7**	**4.9**	**1.6**	**2.5**
Cymene	µg/m³	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	**0.27 J**	1.1 U
Dibromochloromethane	µg/m³	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Dichlorodifluoromethane	µg/m³	**2 J**	**2.1 J**	**2 J**	**2.2 J**	**2.3 J**	**7.4**	**2 J**	**2.3 J**
Ethylbenzene	µg/m³	**7.2 J**	**4.9 J**	**11**	**12**	**0.69 J**	**12**	**16**	**15**
Hexachlorobutadiene	µg/m³	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Isopropanol	µg/m³	12 U	12 U	12 U	12 U	12 U	12 U	12 U	**2.9 J**
Isopropylbenzene (Cumene)	µg/m³	0.98 U	0.98 U	**0.88 J**	0.98 U	0.98 U	0.98 U	0.98 U	0.98 U
m,p-Xylene	µg/m³	**30 J**	**19 J**	**48**	**54**	**1.9 J**	**50**	**68**	**62**
Methyl Ethyl Ketone (2-Butanone)	µg/m³	**23**	**20**	**48**	**36**	**76**	**980 D**	**250 D**	**280 D**
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	µg/m³	2 U	2 U	2 U	2 U	2 U	2 U	**1.4 J**	**2.4**
Methyl Methacrylate	µg/m³	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Methylene Chloride	µg/m³	**1.1 J**	**1.3 J**	**0.59 J**	**0.99 J**	**0.63 J**	**1 J**	1.7 U	1.7 U
Naphthalene	µg/m³	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
N-Butylbenzene	µg/m³	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
N-Heptane	µg/m³	**4.1**	**3.9**	**6.7**	**15**	**1.8**	**11**	**10**	**26**
N-Hexane	µg/m³	**3.8**	**4.3**	**7.2**	**25**	**4.9**	**14**	**9.5**	**57**
N-Propylbenzene	µg/m³	**0.83 J**	**0.53 J**	**1.9**	**2**	0.98 U	**1.7**	**2**	**2.1**
O-Xylene (1,2-Dimethylbenzene)	µg/m³	**8.6 J**	**5.4 J**	**14**	**15**	**0.45 J**	**15**	**19**	**18**
Sec-Butylbenzene	µg/m³	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Styrene	µg/m³	0.85 U	0.85 U	0.85 U	0.85 U	0.85 U	0.85 U	0.85 U	0.85 U
T-Butylbenzene	µg/m³	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Tert-Butyl Alcohol	µg/m³	15 U	15 U	15 U	15 U	15 U	**3.9 J**	**4.3 J**	**3.9 J**
Tert-Butyl Methyl Ether	µg/m³	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U
Tetrachloroethylene (PCE)	µg/m³	**1.4**	**1.3 J**	**10**	**0.94 J**	**0.3 J**	**98**	**90**	**15**

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Table 14. Summary of Volatile Organic Compounds in Soil Vapor, Broadway Triangle Site A, Brooklyn, New York

Sample Designation:		RXA2-01	RXA2-01	RXA2-02	RXA2-03	RXA-4901	RXA-4902	RXA-5102	RXA-5302
Sample Date:		04/26/2022	04/26/2022	04/26/2022	04/26/2022	04/27/2022	04/29/2022	04/27/2022	04/27/2022
Normal Sample or Field Duplicate:		N	FD	N	N	N	N	N	N
Parameter	Units								
Tetrahydrofuran	µg/m^3	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Toluene	µg/m^3	**31**	**27**	**54**	**60**	**7.1**	**63**	**69**	**70**
Trans-1,2-Dichloroethene	µg/m^3	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U
Trans-1,3-Dichloropropene	µg/m^3	0.91 U	0.91 U	0.91 U	0.91 U	0.91 U	0.91 U	0.91 U	0.91 U
Trichloroethylene (TCE)	µg/m^3	0.2 U	0.2 U	**7.6**	0.2 U	0.2 U	0.2 U	**0.56**	**0.17 J**
Trichlorofluoromethane	µg/m^3	**1.5**	**1.4**	**5.9**	**4.9**	**2.1**	**97**	**6.6**	**33**
Vinyl Bromide	µg/m^3	0.87 U	0.87 U	0.87 U	0.87 U	0.87 U	0.87 U	0.87 U	0.87 U
Vinyl Chloride	µg/m^3	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

DRAFT

FIGURES

1. Site Location Map
2. Site Layout Map (Sample Locations, Boundaries, Tax Parcels, etc.)
3. Remaining Soil Sample Exceedances
4. Remaining Groundwater Sample Exceedances
5. Remaining Soil Vapor Sample Detections

6A. Institutional Control Boundaries and Engineering Control Locations – Site A1

6B. Institutional Control Boundaries and Engineering Control Locations – Site A2

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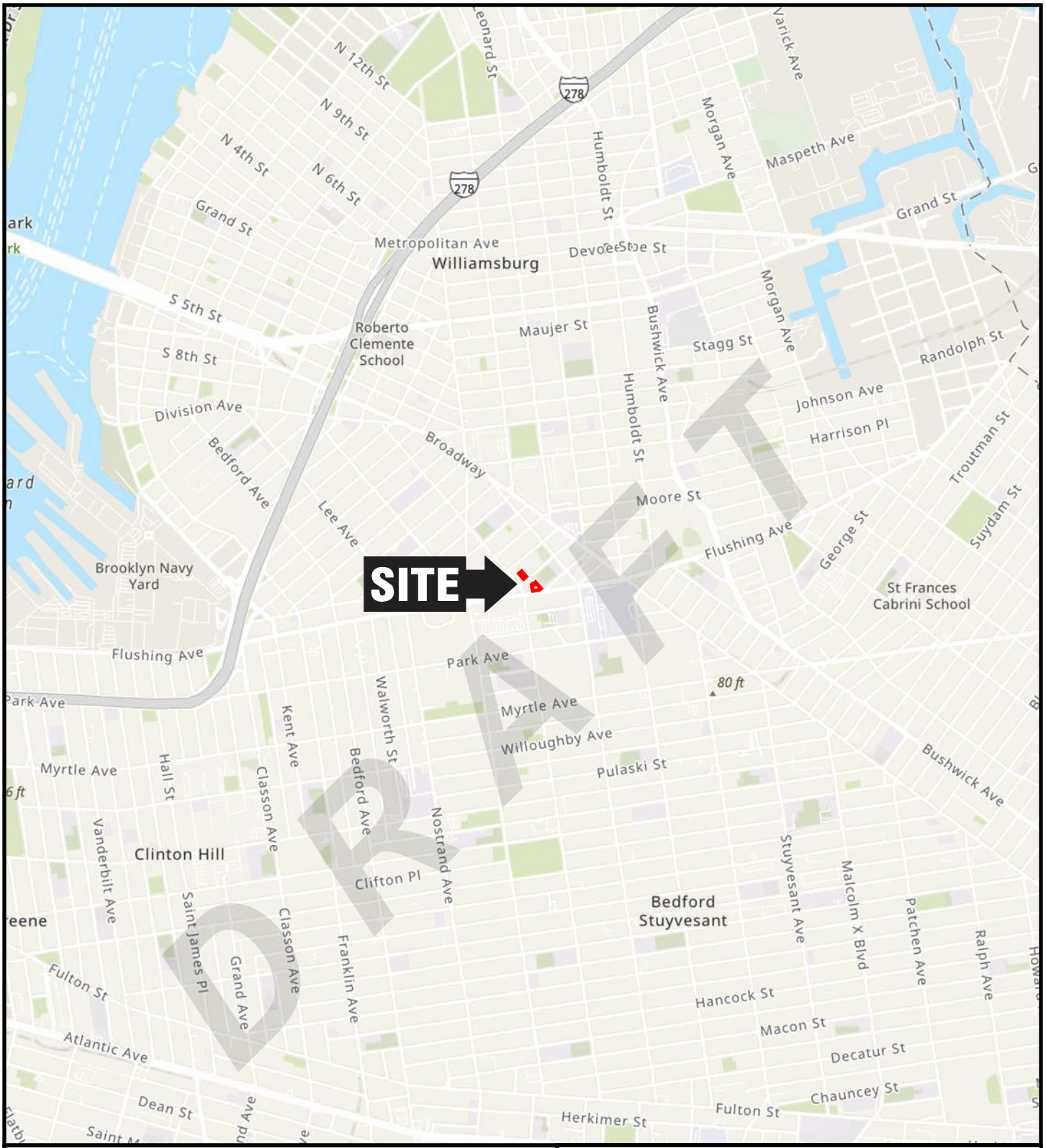

QUADRANGLE LOCATION

NOTES

Basemap: ESRI Topographic Map.

Easting (X): -73.875
Northing (Y): 40.625

N

2,000 0 2,000'

Title:

SITE LOCATION MAP

BROADWAY TRIANGLE SITE A
667 FLUSHING AVE AND 31 BARTLETT STREET
BROOKLYN, NY

Prepared for:
BARTLETT CROSSING LLC,
BARTLETT CROSSING MANAGERS LLC, BARTLETT CROSSING UNP LLC,
BARTLETT CROSSING HOUSING DEVELOPMENT FUND COMPANY, INC.

ROUX

Compiled by: L.C.	Date: 07/31/26
Prepared by: M.S.R.	Scale: AS SHOWN
Project Mgr: L.C.	Project: 4194.0002Y000
File: 3605.0001Y188.01	

FIGURE 1

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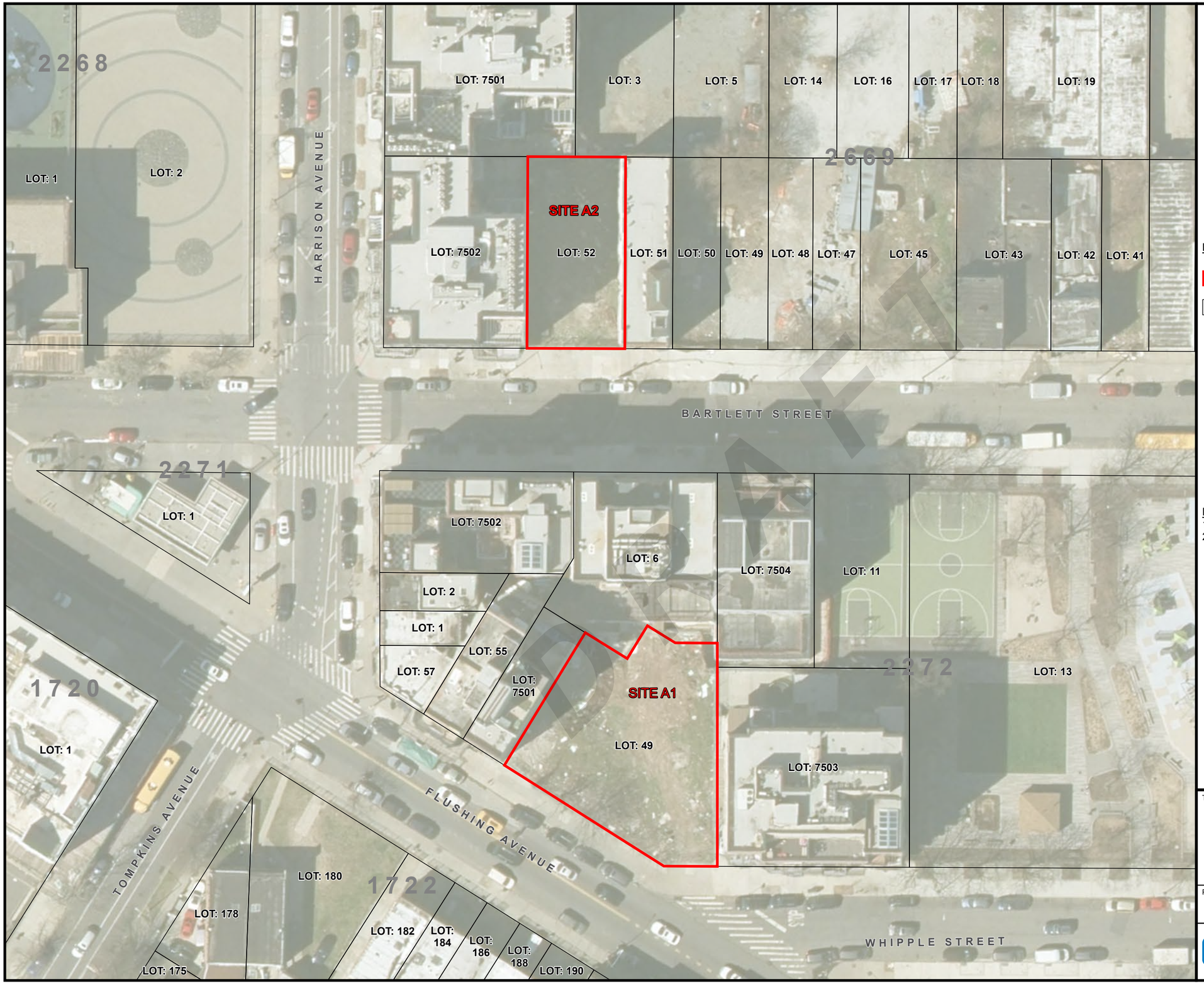

DRAFT

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Title:

SITE LAYOUT MAP

BROADWAY TRIANGLE SITE A
667 FLUSHING AVE AND 31 BARTLETT STREET
BROOKLYN, NY

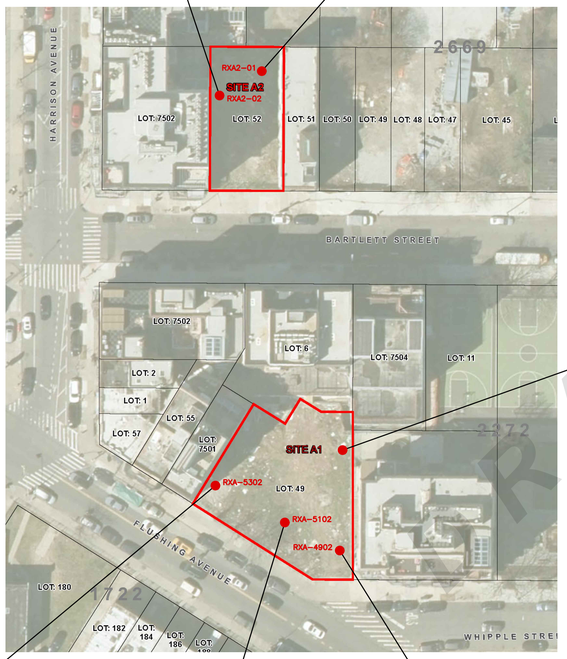
Prepared for:
BARTLETT CROSSING LLC,
BARTLETT CROSSING MANAGERS LLC, BARTLETT CROSSING UNP LLC,
BARTLETT CROSSING HOUSING DEVELOPMENT FUND COMPANY, INC.

ROUX

Compiled by: L.C.	Date: 07/31/26	FIGURE
Prepared by: M.S.R.	Scale: AS SHOWN	2
Project Mgr: L.C.	Project: 4194.0002Y000	
File: 3605.0001Y188.02		

RXA2-02	04/26/2022
Depth (ft bls)	6 - 8
Metals	
Copper	**142**
Lead	**84.2**
Mercury	**0.25**
Nickel	**37.8**
Zinc	**366**
Pesticides	
Dieldrin	ND
P,P'-DDE	NE
P,P'-DDT	**0.018**
PFAS	
Perfluorooctanesulfonic acid (PFOS)	**1.31**

RXA2-01	04/25/2022	04/26/2022
Depth (ft bls)		6 - 8
SVOCs		
Benzo(A)Anthracene		NE
Benzo(B)Fluoranthene		NE
Indeno(1,2,3-C,D)Pyrene		NE
Metals		
Lead		**91.7**
Mercury		**0.61**
Zinc		**114**
Pesticides		
Dieldrin		ND
P,P'-DDD		**0.0035 J**
P,P'-DDE		**0.01 J**
P,P'-DDT		**0.049 J**



RXA-4901	04/27/2022	04/27/2022
Depth (ft bls)	5 - 7	5 - 7 DUP
SVOCs		
Benzo(A)Anthracene	NE	NE
Benzo(A)Pyrene	NE	NE
Benzo(B)Fluoranthene	NE	NE
Benzo(K)Fluoranthene	NE	NE
Chrysene	NE	NE
Dibenz(A,H)Anthracene	NE	NE
Indeno(1,2,3-C,D)Pyrene	NE	**0.59**
Metals		
Barium	**643 J**	NE
Cadmium	**13.2 J**	NE
Copper	**86.9 J**	NE
Lead	**895 J**	**111 J**
Mercury	**1.1 J**	**0.44 J**
Zinc	**630 J**	**141 J**
PCBs		
Polychlorinated Biphenyl (PCBs)	ND	NE
Pesticides		
Dieldrin	ND	NE
P,P'-DDD	ND	ND
P,P'-DDE	ND	**0.0048 J**
P,P'-DDT	**0.0049 J**	**0.021**
PFAS		
Perfluorooctanesulfonic acid (PFOS)	**2.06 J**	NE

RXA-5302	04/27/2022
Depth (ft bls)	6 - 8
VOCs	
Acetone	**0.06**
Metals	
Chromium, Hexavalent	**1.6 J**
Lead	NE
Mercury	ND
Zinc	NE
PCBs	
Polychlorinated Biphenyl (PCBs)	ND
Pesticides	
Dieldrin	ND
P,P'-DDE	ND
P,P'-DDT	ND
PFAS	
Perfluorooctanesulfonic acid (PFOS)	NE

RXA-5102	04/27/2022
Depth (ft bls)	6 - 8
SVOCs	
Benzo(B)Fluoranthene	**1.3**
Indeno(1,2,3-C,D)Pyrene	**0.89**
Metals	
Barium	NE
Copper	**50.6**
Lead	**390**
Mercury	**0.75**
Zinc	**284**
Pesticides	
Dieldrin	**0.018**
P,P'-DDD	ND
P,P'-DDE	**0.017**
P,P'-DDT	**0.058**
PFAS	
Perfluorooctanesulfonic acid (PFOS)	**4.31**
Perfluorooctanoic acid (PFOA)	**1.7**

RXA-4902	04/27/2022
Depth (ft bls)	6 - 8
SVOCs	
4-Methylphenol (P-Cresol)	**0.51 J**
Benzo(A)Anthracene	**25**
Benzo(A)Pyrene	**22**
Benzo(B)Fluoranthene	**28**
Benzo(K)Fluoranthene	**10**
Chrysene	**23**
Cresols, M & P	**0.51 J**
Dibenz(A,H)Anthracene	**2.7**
Dibenzofuran	**9.1**
Indeno(1,2,3-C,D)Pyrene	**12**
Naphthalene	**13**
Metals	
Chromium, Hexavalent	ND
Lead	**65.3**
Mercury	**0.21**
Zinc	**128**
PCBs	
Polychlorinated Biphenyl (PCBs)	ND
Pesticides	
P,P'-DDE	ND

N

LEGEND

- LOCATION OF ROUX RI SOIL BORING COLLECTED 2022
- BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY

TYPICAL DATA BOX INFORMATION

SAMPLE ID# → RXA2-04	04/25/2022	04/26/2022	← SAMPLE DATE
Depth (ft bls)	0 - 2	5 - 7	← SAMPLE DEPTH (FT)
Metals			
Barium	NE	**1630**	
Lead	**186**	**768**	
Mercury	**0.52**	**0.64**	
Zinc	**241**	**564**	
Pesticides			
Dieldrin	**0.006**	ND	
P,P'-DDD	**0.0047 J**	**0.03**	
P,P'-DDE	**0.0075**	**0.019**	
P,P'-DDT	**0.051**	**0.053**	

ANALYTES → ← CONCENTRATION

Parameter	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives	NYSDEC Part 375 Restricted Residential Soil Cleanup Objectives	NYSDEC Part 375 Protection of Groundwater Soil Cleanup Objectives	Units
VOCs				
Acetone	**0.05**	100	0.05	mg/kg
SVOCs				
4-Methylphenol (P-Cresol)	**0.33**	100	0.33	mg/kg
Acenaphthene	**20**	100	98	mg/kg
Benzo(A)Anthracene	**1**	1	1	mg/kg
Benzo(A)Pyrene	**1**	1	22	mg/kg
Benzo(B)Fluoranthene	**1**	1	1.7	mg/kg
Benzo(K)Fluoranthene	**0.8**	3.9	1.7	mg/kg
Chrysene	**1**	3.9	1	mg/kg
Cresols, M & P	**0.33**	100	0.33	mg/kg
Dibenz(A,H)Anthracene	**0.33**	0.33	1000	mg/kg
Dibenzofuran	**7**	59	210	mg/kg
Fluoranthene	**100**	100	1000	mg/kg
Fluorene	**30**	100	386	mg/kg
Indeno(1,2,3-C,D)Pyrene	**0.5**	0.5	8.2	mg/kg
Naphthalene	**12**	100	12	mg/kg
Phenanthrene	**100**	100	1000	mg/kg
Pyrene	**100**	100	1000	mg/kg
Metals				
Arsenic	**13**	16	16	mg/kg
Barium	**350**	400	820	mg/kg
Cadmium	**2.5**	4.3	7.5	mg/kg
Chromium, Hexavalent	**1**	110	19	mg/kg
Chromium, Total	**30**	180	--	mg/kg
Copper	**50**	270	1720	mg/kg
Lead	**63**	400	450	mg/kg
Mercury	**0.18**	0.81	0.73	mg/kg
Nickel	**30**	310	130	mg/kg
Zinc	**109**	10000	2480	mg/kg
PCBs				
Polychlorinated Biphenyl (PCBs)	**0.1**	1	3.2	mg/kg
Pesticides				
Dieldrin	**0.005**	0.2	0.1	mg/kg
P,P'-DDD	**0.0033**	13	14	mg/kg
P,P'-DDE	**0.0033**	8.9	17	mg/kg
P,P'-DDT	**0.0033**	7.9	136	mg/kg
PFAS				
Perfluorooctanesulfonic acid (PFOS)	**0.88**	44	3.7	µg/kg
Perfluorooctanoic acid (PFOA)	**0.66**	33	1.1	µg/kg

mg/kg - Milligrams per kilogram
µg/kg - Micrograms per kilogram
NYSDEC - New York State Department of Environmental Conservation
-- - No NYSDEC Part 375 Soil Cleanup Objectives available
J - Estimated value
J+ - Estimated value, high bias
D - A secondary analysis after dilution due to exceedance of the calibration range in the original sample
T - Indicates that a quality control parameter has exceeded laboratory limits
EMPC - The results do not meet all criteria for a confirmed identification. The quantitative value represents the Estimated Maximum Possible Concentration of the analyte in the sample
DUP - Duplicate Sample
VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
PCBs - Polychlorinated Biphenyls
PFAS - Per- and Polyfluoroalkyl Substances
NE - No exceedance
ND - No detection
NA - Not analyzed for by laboratory
ft bls - Feet below land surface

50' 0 50'

DRAFT

Title:

REMAINING SOIL SAMPLES EXCEEDANCES

BROADWAY TRIANGLE SITE A
667 FLUSHING AVE. AND 31 BARTLETT ST.
BROOKLYN, NEW YORK

Prepared for: BARTLETT CROSSING LLC, BARTLETT CROSSING MANAGERS LLC, BARTLETT CROSSING UNP LLC, BARTLETT CROSSING HOUSING DEVELOPMENT FUND COMPANY, INC.

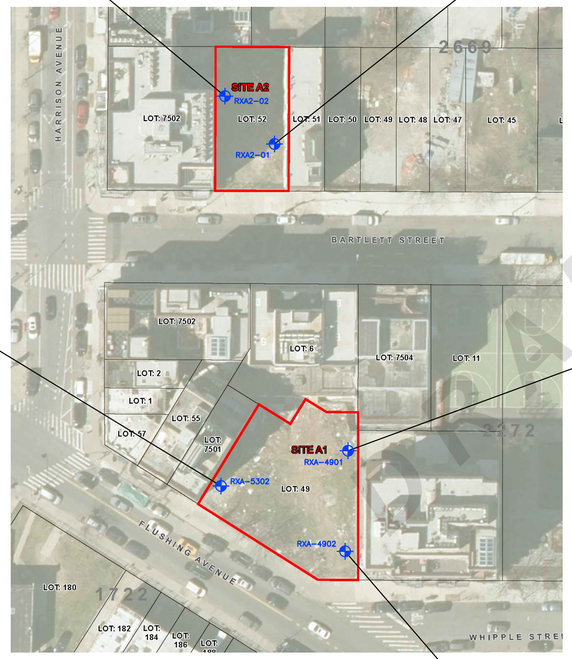
ROUX

Compiled by: S.S.	Date: 8/3/2026	FIGURE
Prepared by: B.H.C.	Scale: AS SHOWN	3
Project Mgr: J.T.	Project: 3605.0001Y004	
File: 3605.0001Y188.01.DWG		

V:\CAD\PROJECTS\3605\Y\0001Y\188\3605.0001Y188.01.DWG GAILTON

RXA2-02	05/06/2022
Metals, Total	
Iron	**1020**
Magnesium	**230000**
Manganese	**534**
Sodium	**54400**
Metals, Dissolved	
Magnesium	**233000 J-**
Manganese	**603 J-**
Sodium	**54000 J-**
PFAS	
Perfluorooctanesulfonic acid (PFOS)	**156 B**
Perfluorooctanoic acid (PFOA)	**227**

RXA2-03	05/06/2022
VOCs	
Cis-1,2-Dichloroethylene	**6.1**
Vinyl Chloride	**3.9**
SVOCs	
1,4-Dioxane (P-Dioxane)	**0.47**
Metals, Total	
Iron	**480**
Magnesium	**77800**
Manganese	**2000**
Sodium	**67400**
Metals, Dissolved	
Magnesium	**76300 J-**
Manganese	**2030 J-**
Sodium	**65800 J-**
PFAS	
Perfluorooctanesulfonic acid (PFOS)	**64.1 B**
Perfluorooctanoic acid (PFOA)	**98.9**



RXA-5302	05/09/2022
Metals, Total	
Manganese	**559**
Sodium	**27500**
Metals, Dissolved	
Manganese	**494 J-**
Sodium	**25600 J-**
PFAS	
Perfluorooctanesulfonic acid (PFOS)	**87.8 EMPC**
Perfluorooctanoic acid (PFOA)	**138**

RXA-4901	05/09/2022	05/09/2022 DUP
Metals, Total		
Manganese	**402**	**441**
Metals, Dissolved		
Manganese	**408 J-**	**415 J-**
PFAS		
Perfluorooctanesulfonic acid (PFOS)	**36.6 EMPC**	**35.9 EMPC**
Perfluorooctanoic acid (PFOA)	**103**	**105**

RXA-4902	05/06/2022
Metals, Total	
Iron	**437**
Sodium	**66900**
Metals, Dissolved	
Sodium	**63300 J-**
PFAS	
Perfluorooctanesulfonic acid (PFOS)	**30.5 B**
Perfluorooctanoic acid (PFOA)	**21.2**

N

LEGEND

LOCATION OF ROUX REMEDIAL INVESTIGATION MONITORING WELL 2022

BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY

TYPICAL DATA BOX INFORMATION

SAMPLE ID# → RXA-4901 | 05/09/2022 | 05/09/2022 DUP ← SAMPLE DATE

ANALYTES — CONCENTRATION

RXA-4901	05/09/2022	05/09/2022 DUP
Metals, Total		
Manganese	**402**	**441**
Metals, Dissolved		
Manganese	**408 J-**	**415 J-**
PFAS		
Perfluorooctanesulfonic acid (PFOS)	**36.6 EMPC**	**35.9 EMPC**
Perfluorooctanoic acid (PFOA)	**103**	**105**

Parameter	NYSDEC AWQSGV	Units
VOCs		
Cis-1,2-Dichloroethylene	**5**	µg/L
Vinyl Chloride	**2**	µg/L
SVOCs		
1,4-Dioxane (P-Dioxane)	**0.35**	µg/L
Metals		
Iron	**300**	µg/L
Magnesium	**35000**	µg/L
Manganese	**300**	µg/L
Sodium	**20000**	µg/L
PCBs	ND	µg/L
Pesticides	ND	µg/L
PFAS		
Perfluorooctanesulfonic acid (PFOS)	**2.7**	ng/L
Perfluorooctanoic acid (PFOA)	**6.7**	ng/L

µg/L - Micrograms per liter
ng/L - Nanograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
J- - Estimated value, low bias
B - Found in laboratory blank
EMPC - The results do not meet all criteria for a confirmed identification. The quantitative value represents the Estimated Maximum Possible Concentration of the analyte in the sample
DUP - Duplicate Sample
VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
PCBs - Polychlorinated Biphenyls
PFAS - Per- and Polyfluoroalkyl Substances
ND - No detection

50' 0 50'

DRAFT

Title:

REMAINING GROUNDWATER SAMPLE EXCEEDANCES

BROADWAY TRIANGLE SITE A
667 FLUSHING AVE. AND 31 BARTLETT ST.
BROOKLYN, NEW YORK

Prepared for: BARTLETT CROSSING LLC, BARTLETT CROSSING MANAGERS LLC, BARTLETT CROSSING UNP LLC, BARTLETT CROSSING HOUSING DEVELOPMENT FUND COMPANY, INC.

ROUX

Compiled by: S.S.	Date: 8/3/2026
Prepared by: B.H.C.	Scale: AS SHOWN
Project Mgr: J.T.	Project: 3605.0001Y004
File: 3605.0001Y188.01.DWG	

FIGURE 4

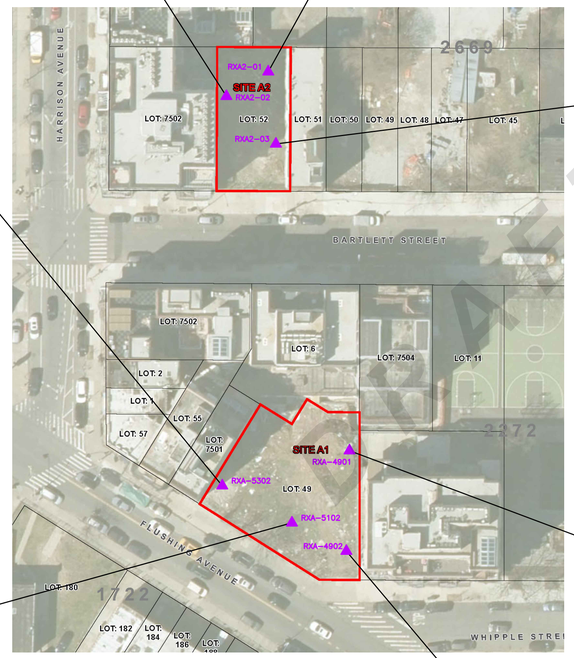
I:\CAD\PROJECTS\3605Y\0001Y\188\3605.0001Y188.01.DWG DMILTON

RXA2-02	04/26/2022
VOCs	
1,2,4-Trimethylbenzene	**5.6**
1,3,5-Trimethylbenzene (Mesitylene)	**2**
1,3-Butadiene	**1.2**
2,2,4-Trimethylpentane	**2**
2-Hexanone	**3.5**
4-Ethyltoluene	**2.4**
Acetone	**24**
Benzene	**4.9**
Butane	**16**
Carbon Disulfide	**0.94 J**
Carbon Tetrachloride	**0.23**
Chloroform	**1.7**
Chloromethane	**0.57 J**
Cyclohexane	**1.5**
Dichlorodifluoromethane	**2 J**
Ethylbenzene	**11**
Isopropylbenzene (Cumene)	**0.88 J**
m,p-Xylene	**48**
Methyl Ethyl Ketone (2-Butanone)	**48**
Methylene Chloride	**0.59 J**
N-Heptane	**6.7**
N-Hexane	**7.2**
N-Propylbenzene	**1.9**
O-Xylene (1,2-Dimethylbenzene)	**14**
Tetrachloroethylene (PCE)	**10**
Toluene	**54**
Trichloroethylene (TCE)	**7.6**
Trichlorofluoromethane	**5.9**

RXA2-01	04/26/2022	04/26/2022 DUP
VOCs		
1,1,2-Trichloro-1,2,2-Trifluoroethane	**0.43 J**	**0.44 J**
1,2,4-Trimethylbenzene	**2.5 J**	**1.4 J**
1,3,5-Trimethylbenzene (Mesitylene)	**1.1**	**0.7 J**
2,2,4-Trimethylpentane	**1.7**	**1.8**
2-Hexanone	**1.4 J**	**1.1 J**
4-Ethyltoluene	**0.89 J**	**0.51 J**
Acetone	**20**	**22**
Benzene	**2.6**	**2.6**
Butane	**9.1**	**11**
Carbon Disulfide	**0.54 J**	**0.51 J**
Carbon Tetrachloride	**0.31**	**0.35**
Chlorodifluoromethane	**2.1**	**5**
Chloroform	**0.63 J**	**0.52 J**
Chloromethane	**0.54 J**	**0.57 J**
Cyclohexane	**1.1**	**1.3**
Dichlorodifluoromethane	**2 J**	**2.1 J**
Ethylbenzene	**7.2**	**4.9**
m,p-Xylene	**30 J**	**19 J**
Methyl Ethyl Ketone (2-Butanone)	**23**	**20**
Methylene Chloride	**1.1 J**	**1.3 J**
N-Heptane	**4.1**	**3.9**
N-Hexane	**3.8**	**4.3**
N-Propylbenzene	**0.83 J**	**0.53 J**
O-Xylene (1,2-Dimethylbenzene)	**8.6 J**	**5.4 J**
Tetrachloroethylene (PCE)	**1.4**	**1.3 J**
Toluene	**31**	**27**
Trichlorofluoromethane	**1.5**	**1.4**

RXA2-03	04/26/2022
VOCs	
1,2,4-Trimethylbenzene	**6.2**
1,3,5-Trimethylbenzene (Mesitylene)	**2.2**
1,3-Butadiene	**1.5**
2,2,4-Trimethylpentane	**2.1**
2-Hexanone	**3.7**
4-Ethyltoluene	**2.5**
Acetone	**13**
Benzene	**6.2**
Butane	**32**
Carbon Disulfide	**2.6**
Carbon Tetrachloride	**0.31**
Chlorodifluoromethane	**2.3**
Chloroform	**0.95 J**
Cyclohexane	**1.8**
Dichlorodifluoromethane	**2.2 J**
Ethylbenzene	**12**
m,p-Xylene	**54**
Methyl Ethyl Ketone (2-Butanone)	**36**
Methylene Chloride	**0.99 J**
N-Heptane	**15**
N-Hexane	**25**
N-Propylbenzene	**2**
O-Xylene (1,2-Dimethylbenzene)	**15**
Tetrachloroethylene (PCE)	**0.94 J**
Toluene	**60**
Trichlorofluoromethane	**4.9**

RXA-5302	04/27/2022
VOCs	
1,1,1-Trichloroethane (TCA)	**0.53 J**
1,2,4-Trimethylbenzene	**5.5**
1,2-Dichlorotetrafluoroethane	**38**
1,3,5-Trimethylbenzene (Mesitylene)	**2.1**
1,3-Butadiene	**1.2**
2,2,4-Trimethylpentane	**2.9**
2-Hexanone	**34**
4-Ethyltoluene	**2.4**
Acetone	**79**
Benzene	**5.8**
Butane	**190 D**
Carbon Disulfide	**9.9**
Chlorodifluoromethane	**1.4 J**
Chloroform	**4.5**
Cyclohexane	**2.5**
Dichlorodifluoromethane	**2.3 J**
Ethylbenzene	**15**
Isopropanol	**2.9 J**
m,p-Xylene	**62**
Methyl Ethyl Ketone (2-Butanone)	**280 D**
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	**2.4**
N-Heptane	**26**
N-Hexane	**57**
N-Propylbenzene	**2.1**
O-Xylene (1,2-Dimethylbenzene)	**18**
Tert-Butyl Alcohol	**3.9 J**
Tetrachloroethylene (PCE)	**15**
Toluene	**70**
Trichloroethylene (TCE)	**0.17 J**
Trichlorofluoromethane	**33**



RXA-5102	04/27/2022
VOCs	
1,2,4-Trimethylbenzene	**5.1**
1,3,5-Trimethylbenzene (Mesitylene)	**2**
1,3-Butadiene	**0.9**
2,2,4-Trimethylpentane	**2.1**
2-Hexanone	**28**
4-Ethyltoluene	**2.2**
Acetone	**63**
Benzene	**6.3**
Butane	**20**
Carbon Disulfide	**19**
Chlorodifluoromethane	**0.89 J**
Chloroform	**1.2**
Cyclohexane	**1.6**
Cymene	**0.27 J**
Dichlorodifluoromethane	**2 J**
Ethylbenzene	**16**
m,p-Xylene	**68**
Methyl Ethyl Ketone (2-Butanone)	**250 D**
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	**1.4 J**
N-Heptane	**10**
N-Hexane	**9.5**
N-Propylbenzene	**2**
O-Xylene (1,2-Dimethylbenzene)	**19**
Tert-Butyl Alcohol	**4.3 J**
Tetrachloroethylene (PCE)	**90**
Toluene	**69**
Trichloroethylene (TCE)	**0.56**
Trichlorofluoromethane	**6.6**

RXA-4902	04/29/2022
VOCs	
1,1,1-Trichloroethane (TCA)	**0.31 J**
1,2,4-Trimethylbenzene	**4.2**
1,3,5-Trimethylbenzene (Mesitylene)	**1.7**
1,3-Butadiene	**1.3**
2,2,4-Trimethylpentane	**3.2**
2-Hexanone	**77**
4-Ethyltoluene	**1.9**
Acetone	**250 D**
Benzene	**5.3**
Butane	**37**
Carbon Disulfide	**3.5**
Chloroform	**5.1**
Cyclohexane	**4.9**
Dichlorodifluoromethane	**7.4**
Ethylbenzene	**12**
m,p-Xylene	**50**
Methyl Ethyl Ketone (2-Butanone)	**980 D**
Methylene Chloride	**1 J**
N-Heptane	**11**
N-Hexane	**14**
N-Propylbenzene	**1.7**
O-Xylene (1,2-Dimethylbenzene)	**15**
Tert-Butyl Alcohol	**3.9 J**
Tetrachloroethylene (PCE)	**98**
Toluene	**63**
Trichlorofluoromethane	**97**

RXA-4901	04/27/2022
VOCs	
1,1,2-Trichloro-1,2,2-Trifluoroethane	**0.45 J**
1,3-Butadiene	**9.5**
2,2,4-Trimethylpentane	**0.4 J**
2-Hexanone	**0.96 J**
Acetone	**170 D**
Benzene	**3**
Butane	**220 D**
Carbon Disulfide	**3.4**
Carbon Tetrachloride	**0.35**
Chlorodifluoromethane	**0.87 J**
Chloroform	**0.25 J**
Chloromethane	**1**
Cyclohexane	**0.7**
Dichlorodifluoromethane	**2.3 J**
Ethylbenzene	**0.69 J**
m,p-Xylene	**1.9 J**
Methyl Ethyl Ketone (2-Butanone)	**76**
Methylene Chloride	**0.63 J**
N-Heptane	**1.8**
N-Hexane	**4.9**
O-Xylene (1,2-Dimethylbenzene)	**0.45 J**
Tetrachloroethylene (PCE)	**0.3 J**
Toluene	**7.1**
Trichlorofluoromethane	**2.1**

N

LEGEND

- LOCATION OF ROUX TEMPORARY SOIL VAPOR POINT IN 2022
- BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY

TYPICAL DATA BOX INFORMATION

SAMPLE ID# → RXA2-01 | 04/26/2022 | 04/26/2022 DUP ← SAMPLE DATE

ANALYTES ↓ | CONCENTRATION →

RXA2-01	04/26/2022	04/26/2022 DUP
VOCs		
1,1,2-Trichloro-1,2,2-Trifluoroethane	**0.43 J**	**0.44 J**
1,2,4-Trimethylbenzene	**2.5 J**	**1.4 J**
1,3,5-Trimethylbenzene (Mesitylene)	**1.1**	**0.7 J**
2,2,4-Trimethylpentane	**1.7**	**1.8**
2-Hexanone	**1.4 J**	**1.1 J**
4-Ethyltoluene	**0.89 J**	**0.51 J**
Acetone	**20**	**22**
Benzene	**2.6**	**2.6**
Butane	**9.1**	**11**
Carbon Disulfide	**0.54 J**	**0.51 J**
Carbon Tetrachloride	**0.31**	**0.35**
Chlorodifluoromethane	**2.1**	**5**
Chloroform	**0.63 J**	**0.52 J**
Chloromethane	**0.54 J**	**0.57 J**
Cyclohexane	**1.1**	**1.3**
Dichlorodifluoromethane	**2 J**	**2.1 J**
Ethylbenzene	**7.2**	**4.9**
m,p-Xylene	**30 J**	**19 J**
Methyl Ethyl Ketone (2-Butanone)	**23**	**20**
Methylene Chloride	**1.1 J**	**1.3 J**
N-Heptane	**4.1**	**3.9**
N-Hexane	**3.8**	**4.3**
N-Propylbenzene	**0.83 J**	**0.53 J**
O-Xylene (1,2-Dimethylbenzene)	**8.6 J**	**5.4 J**
Tetrachloroethylene (PCE)	**1.4**	**1.3 J**
Toluene	**31**	**27**
Trichlorofluoromethane	**1.5**	**1.4**

Concentrations in µg/m^3

µg/m^3 - Micrograms per cubic meter
VOCs - Volatile Organic Compounds
J - Estimated value
D - A secondary analysis after dilution due to exceedance of the calibration range in the original sample

50' 0 50'

Title:

REMAINING SOIL VAPOR SAMPLE DETECTIONS

BROADWAY TRIANGLE SITE A
667 FLUSHING AVE. AND 31 BARTLETT ST.
BROOKLYN, NEW YORK

Prepared for: BARTLETT CROSSING LLC, BARTLETT CROSSING MANAGERS LLC, BARTLETT CROSSING UNP LLC, BARTLETT CROSSING HOUSING DEVELOPMENT FUND COMPANY, INC.

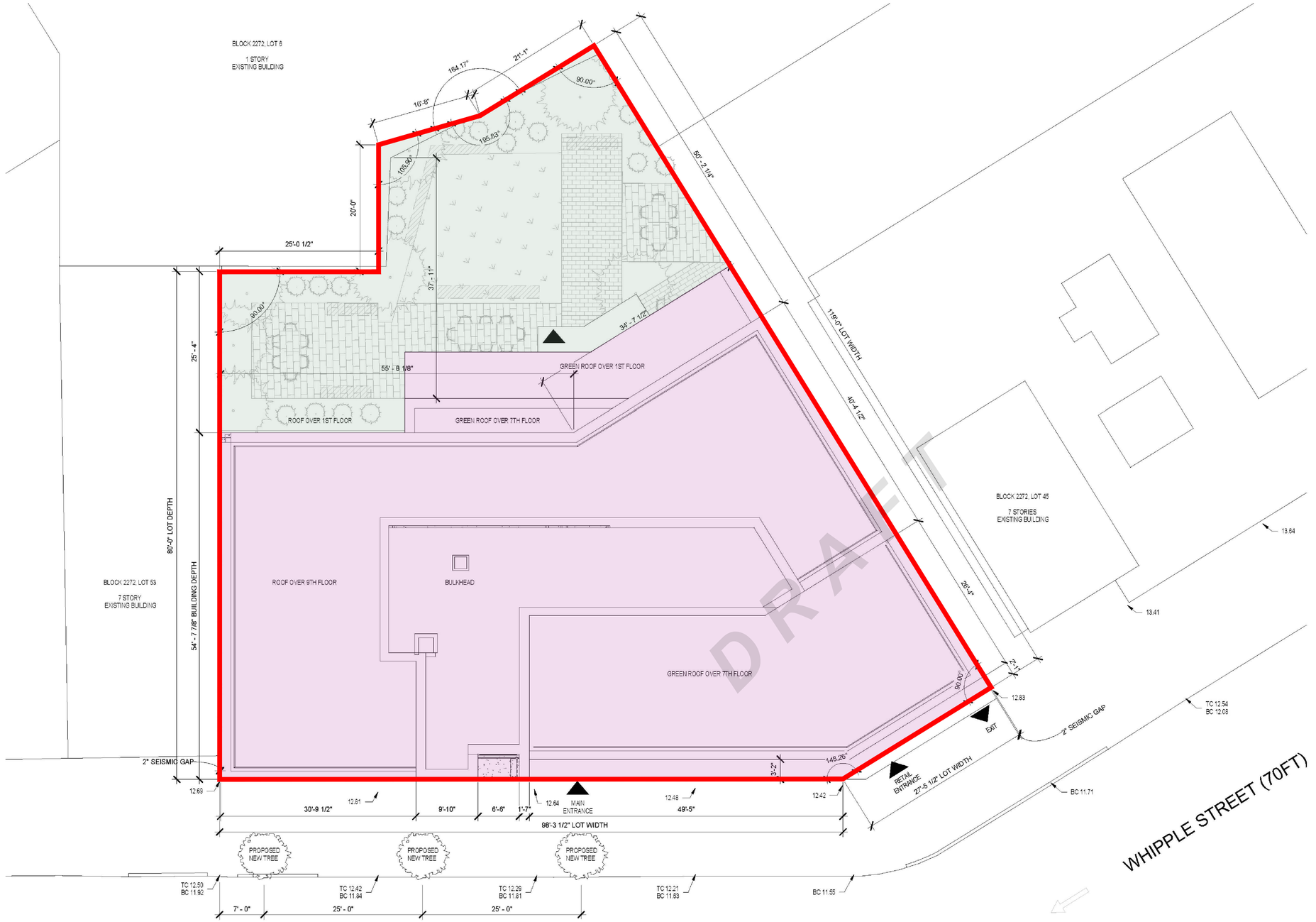
ROUX

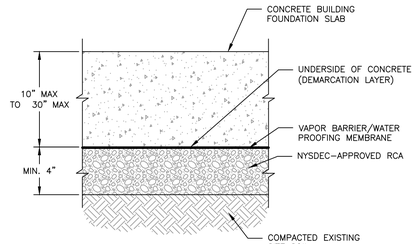
Compiled by: S.S.	Date: 8/3/2026
Prepared by: B.H.C.	Scale: AS SHOWN
Project Mgr: J.T.	Project: 3605.0001Y004
File: 3605.0001Y188.01.DWG	

FIGURE 5

DRAFT

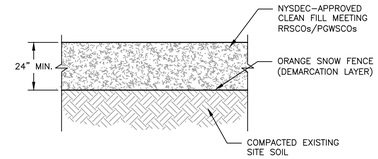
X:\CAD\PROJECTS\3605\Y\0001Y\188\3605.0001Y188.01.DWG GMILTON





1 SITE COVER SYSTEM: CONCRETE BUILDING FOUNDATION

SCALE: NOT TO SCALE



2 SITE COVER SYSTEM: EXTERIOR AREAS

SCALE: NOT TO SCALE

LEGEND

- CONCRETE BUILDING FOUNDATION UNDERLAIN BY VAPOR BARRIER (SEE DETAIL 1 AND NOTE 2)
- MINIMUM 2 FEET OF CLEAN FILL (SEE DETAIL 2)
- BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY AND INSTITUTIONAL CONTROL BOUNDARY

NYSDEC – NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PGWSCOs – PROTECTION OF GROUNDWATER SOIL CLEANUP OBJECTIVES

RCA – RECYCLED CONCRETE AGGREGATE

RRSCOs – RESTRICTED RESIDENTIAL SOIL CLEANUP OBJECTIVES

FT BLS – FEET BELOW LAND SURFACE

N

8' 0 8'

NOTES

1. BASE MAP ADAPTED FROM THE SITE PLAN PREPARED BY MAGNUSSON ARCHITECTURE & PLANNING PC.
2. BACKFILL FOR THE SITE'S TRACK 4 REMEDIAL ALTERNATIVE MET THE LOWER OF PART 375 RRSCOS OR PGWSCOS (WITH THE EXCEPTION OF VIRGIN GRANULAR FILL MATERIALS WITH LESS THAN 10 PERCENT PASSING THE NUMBER 80 SIEVE). FILL MATERIALS WITH LESS THAN 10 PERCENT PASSING THE NUMBER 80 SIEVE (I.E., STONE, GRAVEL, ET.) DO NOT REQUIRE SAMPLING. RCA WAS USED IN THE TRACK 4 AREA ABOVE THE NATURAL GROUNDWATER TABLE.

NO.	DATE	REVISION DESCRIPTION	INT.

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DESIGNED BY:	B.L.	CHECKED BY:	L.C.
DRAWING SCALE:	AS SHOWN	PLOT SCALE:	1:1
DRAWING DATE:	7/30/2026	PRINT TYPE:	COLOR
OFFICE:	NY	PAPER SIZE:	ARCH D
PROJECT NO.:	3605.0001Y004		
DRAWING FILE:	3605.0001Y188.02.DWG		

ROUX
Roux Environmental Engineering and Geology, D.P.C.
209 SHAFTER STREET ISLANDIA NEW YORK 11749
(631) 232-2600

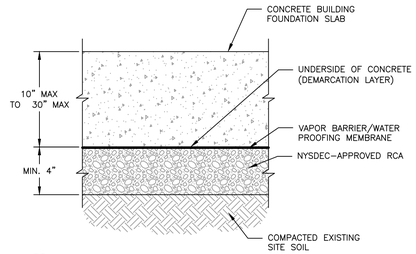
PROJECT NAME:
BROADWAY TRIANGLE SITE A1
BROOKLYN, NEW YORK

PROJECT FOR:
BARTLETT CROSSING LLC

TITLE:
INSTITUTIONAL CONTROL BOUNDARIES AND ENGINEERING CONTROL LOCATIONS
SITE A1

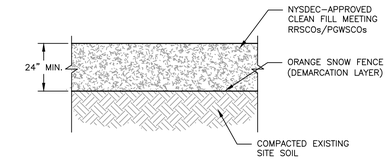
FIGURE
6A

V:\CAD\PROJECTS\3605Y\0001Y\188\3605.0001Y188.02.DWG GMILTON



1 SITE COVER SYSTEM: CONCRETE BUILDING FOUNDATION

SCALE: NOT TO SCALE



2 SITE COVER SYSTEM: EXTERIOR AREAS

SCALE: NOT TO SCALE

LEGEND

- CONCRETE BUILDING FOUNDATION UNDERLAIN BY VAPOR BARRIER (SEE DETAIL 1 AND NOTE 2)
- MINIMUM 2 FEET OF CLEAN FILL (SEE DETAIL 2)
- BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY AND INSTITUTIONAL CONTROL BOUNDARY

NYSDEC – NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PGWSCOs – PROTECTION OF GROUNDWATER SOIL CLEANUP OBJECTIVES

RCA – RECYCLED CONCRETE AGGREGATE

RRSCOs – RESTRICTED RESIDENTIAL SOIL CLEANUP OBJECTIVES

FT BLS – FEET BELOW LAND SURFACE

NOTES

1. BASE MAP ADAPTED FROM THE SITE PLAN PREPARED BY MAGNUSSON ARCHITECTURE & PLANNING PC DATED ____.
2. BACKFILL FOR THE SITE'S TRACK 4 REMEDIAL ALTERNATIVE WILL MEET THE LOWER OF PART 375 RRSCOS OR PGWSCOS (WITH THE EXCEPTION OF VIRGIN GRANULAR FILL MATERIALS WITH LESS THAN 10 PERCENT PASSING THE NUMBER 80 SIEVE). FILL MATERIALS WITH LESS THAN 10 PERCENT PASSING THE NUMBER 80 SIEVE (I.E., STONE, GRAVEL, ET.) DO NOT REQUIRE SAMPLING. RCA MAY ONLY BE USED IN THE TRACK 4 AREA ABOVE THE NATURAL GROUNDWATER TABLE AND AS FURTHER DEFINED IN THE RIR/RAWP WITH PRIOR APPROVAL OF NYSDEC AND ROUX.

8' 0 8'

NO.	DATE	REVISION DESCRIPTION	INT.

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DESIGNED BY:	B.L.	CHECKED BY:	L.C.
DRAWING SCALE:	AS SHOWN	PLOT SCALE:	1:1
DRAWING DATE:	7/30/2026	PRINT TYPE:	COLOR
OFFICE:	NY	PAPER SIZE:	ARCH D
PROJECT NO.:	3605.0001Y004		
DRAWING FILE:	3605.0001Y188.02.DWG		

ROUX
Roux Environmental Engineering and Geology, D.P.C.
209 SHAFTER STREET ISLANDIA NEW YORK 11749
(631) 232-2600

PROJECT NAME:
BROADWAY TRIANGLE SITE A2
BROOKLYN, NEW YORK

PROJECT FOR:
BARTLETT CROSSING LLC

TITLE:
INSTITUTIONAL CONTROL BOUNDARIES AND ENGINEERING CONTROL LOCATIONS
SITE A2

FIGURE
6B

V:\CAD\PROJECTS\3605Y\0001Y\188\3605.0001Y188.02.DWG GAILTON

APPENDICES

DRAFT

A. Environmental Easement
B. List of Site Contacts
C. Monitoring Well Boring and Construction Logs
D. Excavation Work Plan
E. Health and Safety Plan/Community Air Monitoring Plan
F. Site Management Forms

APPENDIX A

Environmental Easement

DRAFT

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.

2026011201036025001EBDA2

RECORDING AND ENDORSEMENT COVER PAGE **PAGE 1 OF 12**

Document ID: 2026011201036025 Document Date: 01-09-2026 Preparation Date: 01-13-2026
Document Type: AGREEMENT
Document Page Count: 10

PRESENTER:
FEDERATED NATIONAL LAND, LLC
39 BROADWAY, SUITE 1920
FNL-NY-201352-K
NEW YORK, NY 10006
212-796-4280
INFO@FEDERATEDNL.COM

RETURN TO:
DEPARTMENT OF HOUSING PRESERVATION AND DEVELOPMENT
100 GOLD STREET, ROOM 5-S2 (DF)
OFFICE OF LEGAL AFFAIRS
NEW YORK, NY 10038

PROPERTY DATA

Borough	Block	Lot	Unit	Address
BROOKLYN	2272	49	Entire Lot	667 FLUSHING AVENUE

Property Type: NON-RESIDENTIAL VACANT LAND

Borough	Block	Lot	Unit	Address
BROOKLYN	2269	52	Entire Lot	31 BARTLETT STREET

Property Type: NON-RESIDENTIAL VACANT LAND

CROSS REFERENCE DATA

Document ID: 2026011201036001
☒ Additional Cross References on Continuation Page

PARTIES

PARTY 1:
THE CITY OF NEW YORK
DEPARTMENT OF HOUSING PRESERVATION AND DEVELOPMENT, 100 GOLD STREET
NEW YORK, NY 10038

PARTY 2:
THE BANK OF NEW YORK MELLON
240 GREENWICH STREET, 13TH FLOOR
NEW YORK, NY 10286

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:	$	89.00
Affidavit Fee:	$	0.00

Filing Fee: $ 0.00
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 01-14-2026 16:11
City Register File No.(CRFN): **2026000015184**

City Register Official Signature

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NYC DEPARTMENT OF FINANCE
OFFICE OF THE CITY REGISTER

2026011201036025001CBF22

RECORDING AND ENDORSEMENT COVER PAGE (CONTINUATION) **PAGE 2 OF 12**

Document ID: 2026011201036025 Document Date: 01-09-2026 Preparation Date: 01-13-2026
Document Type: AGREEMENT

CROSS REFERENCE DATA
Document ID: 2026011201036003

DRAFT

SUBORDINATION
LDA AND DEED

SUBORDINATION AGREEMENT ("Agreement") dated as of January 9, 2026, by and among **THE CITY OF NEW YORK**, a municipal corporation (the "City"), acting by and through its **DEPARTMENT OF HOUSING PRESERVATION AND DEVELOPMENT**, having an office at 100 Gold Street, New York, New York 10038 ("HPD"), and **THE BANK OF NEW YORK MELLON**, having an address at 240 Greenwich Street, 13th Floor, New York, New York 10286, Attention: Clarence L. Burleigh II ("Senior Lender").

WITNESSETH:

WHEREAS, Bartlett Crossing Housing Development Fund Company, Inc., a New York not-for-profit corporation established pursuant to Article XI of the New York State Private Housing Finance Law and the Not-For-Profit Corporation Law ("Legal Owner"), has legal title to the real property designated on the tax map as Block 2272, Lot 49, and Block 2269, Lot 52, on the Tax Map of the City of New York, Kings County and more particularly described on Exhibit A annexed hereto (the "Premises") and **Bartlett Crossing LLC**, a limited liability company formed pursuant to the laws of the State of New York ("Beneficial Owner" or "Borrower" and, together with Legal Owner, the "Owner") has beneficial title to the Premises; and

WHEREAS, Owner intends to develop the Premises as low income housing (the "Project"); and

WHEREAS, Owner intends to develop the Premises as the project described in the LDA (as defined herein) (the "Project") and, in connection therewith, Owner has entered into the (i) Land Disposition Agreement of even date herewith between the City, as seller, and Owner, as sponsor (the "Land Disposition Agreement" or "LDA"); and (ii) Deed of even date herewith between the City, as grantor, and Legal Owner, as grantee (the "Deed") all to be recorded in the Office of the Register of the City of New York for Kings County prior to the recording of this Agreement; and

WHEREAS, Senior Lender is willing to make a permanent loan to Owner (the "Senior Loan") for the Project to be secured by one or more mortgages on the Premises, as more particularly described on Exhibit B, annexed hereto and made apart hereof (collectively, the "Senior Mortgage") and certain other instruments (collectively, the "Senior Loan Documents") provided that the City's rights under the LDA and Deed are subordinate to the Senior Mortgage; and

NOW, THEREFORE, in consideration of the above-stated premises and to induce Senior Lender to make the Senior Loan, HPD hereby covenants and agrees with Senior Lender as follows:

1. (a) If Senior Lender shall become entitled to initiate foreclosure or other proceedings for the sale or transfer of the Premises, whether by reason of a default under its Senior Loan Documents or otherwise, Senior Lender shall not commence such proceedings or otherwise sell or cause a sale of the Premises or accept a deed in lieu thereof unless it shall have first given notice to HPD of such circumstances and its intent so to do, whereupon HPD may, at its option, within sixty (60) days after receipt of such notice from Senior Lender, elect by notice to Senior Lender to purchase the Senior Mortgage from Senior Lender at a price equal to the then aggregate outstanding amount payable under its Senior Loan Documents, including accrued and unpaid interest on the Senior

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Loan and the reasonable costs and expenses incurred by Senior Lender to protect its collateral pending exercise by HPD of its right to purchase the Senior Mortgage hereunder, but excluding any yield maintenance or make-whole provisions (such right being the "Buy-Out Option"). Upon payment of such amount by HPD, Senior Lender shall assign to HPD the Senior Mortgage and other Senior Loan Documents. Such assignment shall not relieve Owner of any default under the Senior Loan Documents or liability with respect to the Senior Loan. If HPD shall not elect to purchase the Senior Mortgage within sixty (60) days after receipt of Senior Lender's notice to HPD or shall fail to make the payment required herein within one-hundred-fifty (150) days after such election, unless such failure is due to the actions, inactions or omissions of Senior Lender, Senior Lender may treat such failure as an election by HPD not to exercise its Buy-Out Option.

(b) If HPD shall elect not to exercise its Buy-Out Option in accordance herewith and the Premises shall thereafter be sold pursuant to Senior Lender's exercise of its remedies under the Senior Mortgage or other Senior Loan Documents or Senior Lender (or its nominee or designee) shall accept a deed in lieu thereof, then, immediately upon such conveyance and without the necessity of any further action (including, without limitation, execution or delivery of any further instrument, document, or agreement)

(i) the Senior Mortgage and the Premises shall cease to be subject or subordinate to the terms, covenants, provisions and/or conditions of the Deed and LDA (including the reverter provisions thereof) shall be of no further force or effect;

(ii) the retroactive terms, covenants, provisions and/or conditions of the Deed, including the reverter provisions thereof, shall cease to be applicable to Senior Lender, any successor, assignee, designee or nominee of Senior Lender, or any purchaser at a foreclosure sale or anyone taking title by a deed in lieu of foreclosure, or any successor in interest thereto or to the Premises, and shall no longer "run with the land" or be deemed to "run with the land"; and

(iii) Senior Lender shall have the right, but not the obligation, to complete construction of the Project at its sole discretion without regard to the provisions of the LDA or the Deed with respect to such construction,

except that

(A) the foregoing shall not release or discharge Senior Lender or any transferee of the Senior Mortgage or the Premises from compliance with, and the Premises shall remain subject to and bound by, (i) Section 4 of the Deed (Program Compliance and Non-Discrimination) and (ii) any laws, ordinances or regulations of the City or State of New York or the federal government which apply in the absence of the LDA or Deed.

(c) The City, whether acting by HPD or otherwise, shall not exercise any of its rights or remedies under the LDA or Deed with respect to the Premises, including any right of reverter therein, if (i) following a default thereunder and notice to Senior Lender ("Deed and/or LDA Default Notice"), Senior Lender gives notice to the City with five (5) business days of receipt of the Deed and/or Default Notice of its intent to cure such default or

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pursue its rights and/or remedies against Owner with respect to the circumstances giving rise to the default and thereafter diligently proceeds to cure such default within a reasonable time or (ii) Senior Lender shall theretofore have given notice to the City that it is entitled under the Senior Mortgage to initiate foreclosure or other proceedings for the sale of the Premises and intends to do so and thereafter (if HPD shall have waived the Buy-Out Option) commences and diligently prosecutes proceedings to foreclose the lien of the Senior Mortgage. Nothing contained herein shall restrict the City's rights to take any action arising under or pursuant to its governmental authority or police powers as a municipal corporation or governmental agency.

(d) The provisions of this Agreement are intended solely to define the relative rights of Senior Lender and any third party purchaser or transferee of the Premises upon or subsequent to a foreclosure or deed in lieu thereof, on the one hand, and HPD and the City, on the other hand, with respect to the LDA and Deed. This Agreement shall not limit or affect (i) the liability of Owner or any other person or entity under the LDA or Deed, (ii) any instrument or agreement other than the LDA or Deed, whether or not affecting the Premises, or (iii) the application of any law, ordinance or regulation of the City or State of New York or the federal government to the Premises or the owner thereof in the absence of the LDA or Deed. This Agreement shall not apply if Owner or any principal of Owner or their affiliates or family members, as the case may be, shall be the holder of the Senior Mortgage or the transferee of the Premises.

2. HPD shall promptly execute and deliver such documents, instruments, agreements and further assurances as may be reasonably required or desired by Senior Lender to evidence, confirm or effectuate any of the provisions of this Agreement upon the transfer of the Premises, including, but not limited to, an amendment to the Deed or termination of the LDA.

3. HPD shall give to the holder of the Senior Mortgage (a) simultaneous written notice of (i) any default under the LDA or Deed and (ii) the commencement by or on behalf of the City of any action, proceeding or other remedy, whether pursuant to the LDA or Deed or otherwise, arising out of or in connection with any default under the LDA or Deed and (b) true copies of all default notices given and all papers served or entered in any such action or proceeding.

4. HPD represents and warrants that it has not provided a notice of default under the Deed or LDA as of the date hereof.

5. This Agreement (a) shall be governed by and interpreted in accordance with the laws of the State of New York, (b) may not be changed or terminated orally and (c) shall bind and inure to the benefit of the parties hereto and their respective heirs, personal representatives, successors, assigns, designees and nominees. The word "party" shall be construed as if it read "parties" whenever the sense of this Agreement so requires.

6. In the event that any provision of this Agreement or the application thereof to the Deed or LDA or any circumstance in any jurisdiction governing this Agreement shall, to any extent, be invalid or unenforceable under any applicable statute, regulation or rule of law, such provision shall be deemed inoperative to the extent that it may conflict therewith and shall be deemed modified to conform to such statute, regulation or rule of law, and the remainder of this Agreement and the application of any such invalid or

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unenforceable provision to parties, jurisdictions, or circumstances other than to whom or to which it is held invalid or unenforceable, shall not be affected thereby nor shall same affect the validity or enforceability of any other provision of this Agreement.

7. Senior Lender shall not be prejudiced in its right to enforce the provisions of this Agreement by any act or failure to act on the part of the Owner.

8. The waiver of or acquiescence in or by Senior Lender of any breach by HPD or the failure of Senior Lender to insist upon strict performance by HPD of any terms, provisions, conditions, covenants or agreements in this Agreement shall not constitute a waiver of any subsequent or other breach of HPD and such failure shall not be deemed a waiver of such right.

9. The rights and remedies provided to Senior Lender under this Agreement shall be deemed cumulative and not exclusive and are in addition to and not in derogation, substitution or limitation of any other rights and remedies provided by general law and equity. In no event shall the Owner be deemed a beneficiary of any of the terms, covenants or conditions set forth in this Agreement.

10. This Agreement may not be changed or terminated orally, but only in a writing signed by HPD and Senior Lender.

11. Any notice or other communication required or permitted to be given under this Agreement will be deemed sufficient and effective only if in writing, sent by registered, certified or express mail, overnight courier or hand delivery, to the addresses set forth above (or such other addresses designated in a notice given as herein required) and as follows:

If to HPD, to the attention of: Assistant Commissioner, Special Needs Housing
With a copy to the attention of: General Counsel

If to Senior Lender, to the attention of: Clarence L. Burleigh II

With a copy to Senior Lender's counsel:

Emmet, Marvin & Martin, LLP
120 Broadway, 32nd Floor
New York, NY 10271
Attn: Julian McQuiston, Esq.

With a copy to Owner's counsel:

Goldstein Hall PLLC
80 Broad Street, Suite 303
New York, New York 10004
Attention: Jason Labate, Esq.

HPD's failure to send any copy of a notice to a non-party individual or entity to whom HPD has agreed in writing to provide such copies will not affect the effectiveness of the notice under this Agreement.

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12. This Agreement may be executed in any number of counterparts, each of which shall be an original, and all collectively shall constitute but one instrument.

[SIGNATURE PAGE FOLLOWS]

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IN WITNESS WHEREOF, the City, acting by and through its Department of Housing Preservation and Development, has caused this Subordination Agreement to be signed by its Assistant or Deputy Commissioner, and Senior Lender has caused this Subordination Agreement to be duly signed by an officer, as of the day and year written above.

THE CITY OF NEW YORK
By its DEPARTMENT OF HOUSING
PRESERVATION AND DEVELOPMENT

By: _____
Name: Daniel Moran
Title: Assistant Commissioner

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

On the 15th day of December in the year 2025 before me, the undersigned, a Notary Public in and for said State, personally appeared **Daniel Moran**, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her capacity, and that by his/her signature on the instrument, the individual, or the person on behalf of which the individual acted, executed the instrument.

_____
NOTARY PUBLIC

DONYELE FONTAINE
NOTARY PUBLIC, STATE OF NEW YORK
No. 02FO6324361
QUALIFIED IN NEW YORK COUNTY
COMMISSION EXPIRES MAY 4, 2027

APPROVED AS TO FORM
BY STANDARD TYPE OF CLASS
UNTIL ~~December 31, 2025~~
January 31, 2026
By: /s/ Isabel Galis-Menendez
(Acting) Corporation Counsel

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THE BANK OF NEW YORK MELLON,
a state-chartered bank under the laws of the
State of New York

By: _____
Name: Clarence L. Burleigh II
Title: Director

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

On the 10th day of December in the year 2025, before me, the undersigned, a notary public in and for said state, personally appeared **Clarence L. Burleigh II**, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument, and acknowledged to me that he/she executed the same in his/her capacity, 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

EDWIN F BASSETT
Notary Public, State of New York
No. 02BA6241177
Qualified in New York County
Commission Expires August 5, ~~2010~~ 2027

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EXHIBIT A

Description of the Premises

All those certain plots, pieces, and parcels of land, with the buildings and improvements thereon erected, situate, lying, and being in the City and State of New York, designated on the Tax Map of the City of New York as of November 18, 2025:

Block(s):	Lot(s):
2272	49
2269	52

Borough: Brooklyn
County: Kings

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EXHIBIT B
SENIOR MORTGAGE

1. Building Loan Mortgage and Security Agreement dated of even date herewith, made by Bartlett Crossing LLC, and Bartlett Crossing Housing Development Fund Company, Inc., to The Bank of New York Mellon, in the maximum principal amount of **$28,144,289.00.**

2. Project Loan Mortgage and Security Agreement dated of even date herewith, made by Bartlett Crossing LLC, and Bartlett Crossing Housing Development Fund Company, Inc., to The Bank of New York Mellon, in the maximum principal amount of **$5,527,835.00**.

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SUBORDINATION OF DEED AND LDA

among

THE CITY OF NEW YORK

and

THE BANK OF NEW YORK MELLON

Block(s):	Lot(s):
2272	49
2269	52

Borough: Brooklyn
County: Kings

RECORD AND RETURN TO:
NYC Department of Housing Preservation & Development
Office of Legal Affairs
100 Gold Street, Room 5S2 (DF)
New York, New York 10038

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Property Details

Find Another Property

Property Info | Building | Land | Assessments | Exemptions | Sales | Mortgages | Tax Map History | Neighborhood

Schedule Appointment | Update Property & Billing Info | Pay Online

Property Tax Account | Print | Request a Refund

667 FLUSHING AVENUE - BROOKLYN 11206

Borough: Brooklyn **Block:** 2272 **Lot:** 49

Property Information

Owner: BARTLETT CROSSING HOUSING DEVELOPMENT FU ND COMPANY

Type: V1 - ZONED COMMERCIAL OR MANHATTAN RESIDENTIAL

Tax class: 4

Building Information

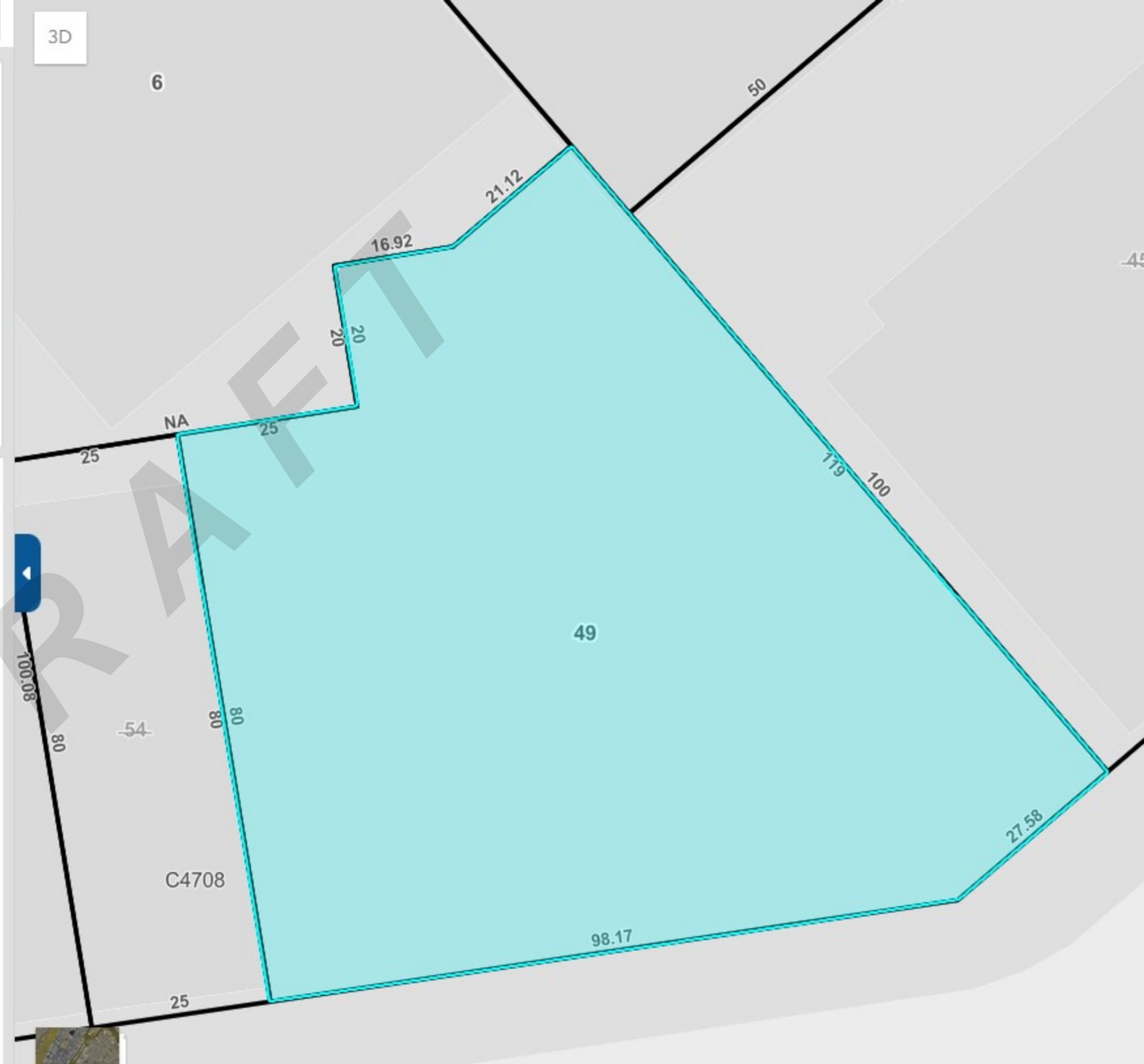
BISWEB

Number of Buildings	Year Built	Number of stories	Total Area	Total Units
-	-	-	-	-

Residential Area	Residential Units	Commercial Area	Commercial Units
-	0	-	0

Building Style	Building Frontage	Building Depth	Construction Type
-	-	-	-

External Wall	Exterior Condition	Proximity	Basements
-	-	-	-



Property Details

Find Another Property

Property Info | Building | Land | Assessments | Exemptions | Sales | Mortgages | Tax Map History | Neighborhood

Schedule Appointment | Update Property & Billing Info | Pay Online

Property Tax Account | Print | Request a Refund

31 BARTLETT STREET - BROOKLYN 11206

Borough: Brooklyn **Block:** 2269 **Lot:** 52

Property Information

Owner: BARTLETT CROSSING HOUSING DEVELOPMENT FU ND COMPANY

Type: V1 - ZONED COMMERCIAL OR MANHATTAN RESIDENTIAL

Tax class: 4

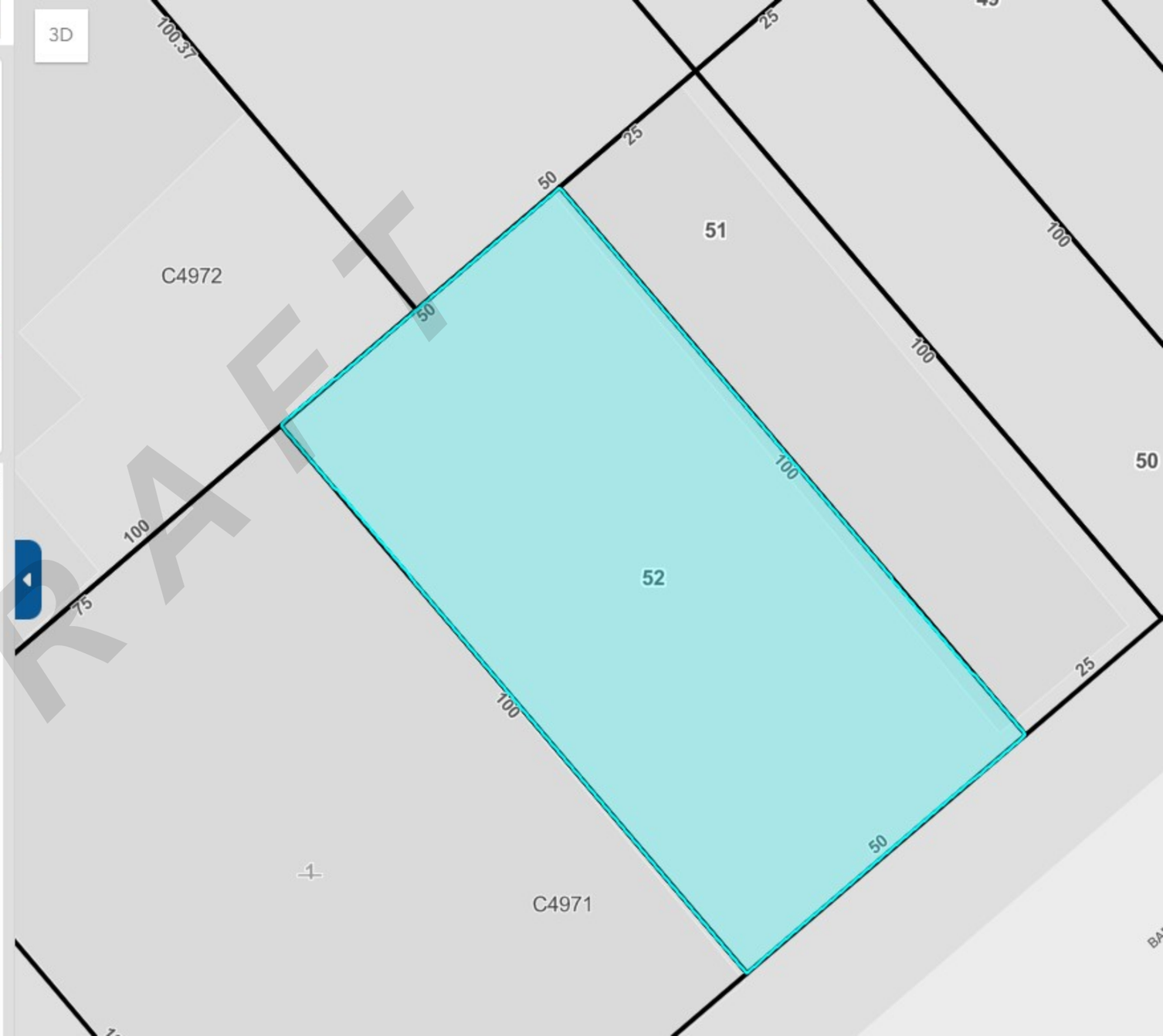
Building Information

BISWEB

Number of Buildings	Year Built	Number of stories	Total Area	Total Units
-	-	-	-	-

Residential Area	Residential Units	Commercial Area	Commercial Units
-	0	-	0

Building Style	Building Frontage	Building Depth	Construction Type
-	-	-	-



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apps.dos.ny.gov/publicInquiry/EntityDisplay

Division of Corporations

Entity Information

Return to Results | Return to Search

Entity Details

ENTITY NAME: BARTLETT CROSSING HOUSING DEVELOPMENT FUND COMPANY, INC.

DOS ID: 6624290

FOREIGN LEGAL NAME:

FICTITIOUS NAME:

ENTITY TYPE: DOMESTIC NOT-FOR-PROFIT CORPORATION (HOUSING DEVELOPMENT FUND COMPANY) (ARTICLE XI)

DURATION DATE/LATEST DATE OF DISSOLUTION:

SECTIONOF LAW: NOT-FOR-PROFIT CORPORATION (HOUSING DEVELOPMENT FUND COMPANY) (ARTICLE XI) - 402 NOT-FOR-PROFIT CORPORATION LAW AND 573 PRIVATE HOUSING FINANCE LAW - PRIVATE HOUSING FINANCE LAW

ENTITY STATUS: ACTIVE

DATE OF INITIAL DOS FILING: 10/25/2022

REASON FOR STATUS:

EFFECTIVE DATE INITIAL FILING: 10/25/2022

INACTIVE DATE:

FOREIGN FORMATION DATE:

STATEMENT STATUS: NOT REQUIRED

COUNTY: KINGS

NEXT STATEMENT DUE DATE:

JURISDICTION: NEW YORK, UNITED STATES

NFP CATEGORY: CHARITABLE

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BARTLETT CROSSING HOUSING DEVELOPMENT FUND COMPANY, INC.
AUTHORIZATION TO COMPLETE REMEDIAL REQUIREMENTS

The undersigned, being the members of Bartlett Crossing Housing Development Fund Company, Inc., a New York corporation (the "Company") hereby certify as of December 19, 2025, as follows and adopt the following resolutions and authorize the Company to authorize and direct Michael Rochford (the "Authorized Signatory") to take the following actions on behalf of the Company:

WHEREAS, the Company desires to authorize the Authorized Signatory, set forth below, to undertake actions necessary to redevelop 663-667 Flushing Avenue and 29-31 Bartlett Street, Brooklyn, NY 11206; Tax Map ID Nos. 2272-49 and 2269-52; BCP Site No. C224333 (the "Property" or the "Site").

WHEREAS, in connection with the redevelopment of the Property, the Company has or will prepare and submit an application to participate in the New York State Brownfield Cleanup Program ("BCP") and, if accepted into the BCP, file related documents with the New York State Department of Environmental Conservation ("DEC") pursuant to the BCP, including, but not limited to a Brownfield Cleanup Agreement ("BCA"), an environmental easement and notice of certificate of completion; and undertake environmental remediation work related thereto consistent with applicable laws, regulations and guidance under the BCP (collectively referred to as the "Remedial Program Requirements");

NOW THEREFORE, BE IT

RESOLVED, the Authorized Signatory be, and hereby is, authorized and directed, in the name of and on behalf of the Company, to execute and to deliver all applications, documents and instruments required to effectuate the BCA and/or subsequent amendments, and make any filings required to comply with the BCA, including recording environmental easements, consistent with the Remedial Program Requirements; and be it further;

RESOLVED, that this Authorization may be signed in any number of counterparts, including but not limited to electronic, and shall become effective as of the date herein below written when each person named below shall have signed a copy hereof; and

RESOLVED, the Authorized Signatory is authorized to bind the Company as an Authorized Signatory for the purposes set forth in this Authorization, the signature set forth opposite his name below is his actual signature:

Authorized Signatory	Signature
Michael Rochford	

DRAFT

IN WITNESS WHEREOF, the undersigned have signed and sealed this Authorization on December 19, 2025.

RISEBORO COMMUNITY PARTNERSHIP INC.,
a New York not-for-profit corporation

By: _____
Name: Emily Kurtz
Title: Chief Housing & Development Officer

ST. NICKS ALLIANCE CORP.,
a New York not-for-profit corporation

By: _____
Name: Michael Rochford
Title: Executive Director

SOUTHSIDE UNITED HOUSING DEVELOPMENT FUND CORPORATION,
a New York not-for-profit corporation

By: _____
Name: Juan Ramos
Title: Executive Director

UNITED JEWISH ORGANIZATIONS OF WILLIAMSBURG, INC.,
a New York not-for-profit corporation

By: _____
Name: David Niederman
Title: President and Executive Director

DRAFT

IN WITNESS WHEREOF, the undersigned have signed and sealed this Authorization on December 19, 2025.

RISEBORO COMMUNITY PARTNERSHIP INC.,
a New York not-for-profit corporation

By: _____
Name: Emily Kurtz
Title: Chief Housing & Development Officer

ST. NICKS ALLIANCE CORP.,
a New York not-for-profit corporation

By: _____
Name: Michael Rochford
Title: Executive Director

SOUTHSIDE UNITED HOUSING DEVELOPMENT FUND CORPORATION,
a New York not-for-profit corporation

By: _____
Name: Juan Ramos
Title: Executive Director

UNITED JEWISH ORGANIZATIONS OF WILLIAMSBURG, INC.,
a New York not-for-profit corporation

By: _____
Name: David Niederman
Title: President and Executive Director

DRAFT

IN WITNESS WHEREOF, the undersigned have signed and sealed this Authorization on December 19, 2025.

RISEBORO COMMUNITY PARTNERSHIP INC.,
a New York not-for-profit corporation

By: _____
Name: Emily Kurtz
Title: Chief Housing & Development Officer

ST. NICKS ALLIANCE CORP.,
a New York not-for-profit corporation

By: _____
Name: Michael Rochford
Title: Executive Director

SOUTHSIDE UNITED HOUSING DEVELOPMENT FUND CORPORATION,
a New York not-for-profit corporation

By: _____
Name: Juan Ramos
Title: Executive Director

UNITED JEWISH ORGANIZATIONS OF WILLIAMSBURG, INC.,
a New York not-for-profit corporation

By: _____
Name: David Niederman
Title: President and Executive Director

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DESCRIPTION OF EASEMENT AREA
BROOKLYN TAX BLOCK 2272 LOT 49

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

BEGINNING at a point on the northwesterly side of Flushing Avenue (70 feet wide), which point is distant 75 feet as measured in a southeasterly direction from the intersection of the northwesterly side of Flushing Avenue with the easterly side Harrison Avenue (70 feet wide);

THENCE northerly, at right angles to the northwesterly side of Flushing Avenue, 80.00 feet to a point;

THENCE easterly on a line forming a right angle with the last-mentioned line and parallel with Flushing Avenue, 25.00 feet to a point;

THENCE northerly on a line forming a right angle with the last-mentioned line, 20.00 feet to a point;

THENCE southeasterly on a line forming an interior angle of 105 degrees 57 minutes 40 seconds with the last-mentioned line, 16.67 feet (16.92 feet per tax map) to a point;

THENCE easterly on a line forming an interior angle of 195 degrees 47 minutes 46 seconds with the last-mentioned line, 21.12 feet to a point;

THENCE southerly on a line forming a right angle with the last-mentioned line, 119 feet to a point on the northerly side of Whipple Street (70 feet wide);

THENCE westerly along the northerly side of Whipple Street, 27.58 feet to the northwesterly side of Flushing Avenue;

THENCE northwesterly along the northwesterly side of Flushing Avenue, 98.17 feet to the point or place of BEGINNING.

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DESCRIPTION OF EASEMENT AREA
BROOKLYN TAX BLOCK 2269 LOT 52

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

BEGINNING at a point on the northerly side of Bartlett Street (70 feet wide), which point is distant 75 feet as measured in an easterly direction along the northerly side of Bartlett Street from its intersection with the easterly side of Harrison Avenue (70 feet wide);

RUNNING THENCE northerly, parallel with Throop Avenue, 100 feet to a point;

THENCE easterly, parallel with Bartlett Street, 50.00 feet to a point;

THENCE southerly, again parallel with Throop Avenue, 100 feet to a point on the northerly side of Bartlett Street;

THENCE westerly along the northerly side of Bartlett Street, 50 feet to the point or place of BEGINNING.

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LEGEND

Tree & Caliper 8"
Water Valve
Gas Valve
Traffic Sign T.S.
Siamese Connection
Overhead Wires
Iron Fence/Railing
Chain Link Fence
Steel Face Curb
Concrete or Stone Curb
Drop Curb
Point of Beginning P.O.B.

TABLE OF ENCROACHMENTS

NORTHERN PROPERTY LINE:
None

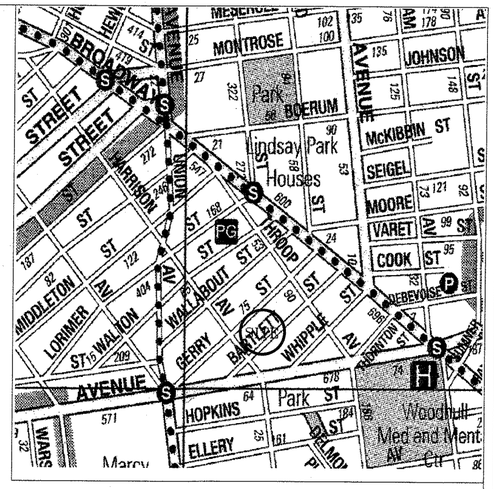
WESTERN PROPERTY LINE:
Window Cage 2'–0" East
Camera 0'–5" East

EASTERN PROPERTY LINE:
Camera 1'–5½" West
Roof Coping 0'–0½" West

SOUTHERN PROPERTY LINE:
Chain Link Fence 0'–5½"S

AS PER ZONING LETTER FROM MAGNUSSON ARCHITECTURE and PLANNING PC DATED 11/18/2025

1) Zoning District: R7-A with Partial Commercial Overlay C2-4
2) Setback Requirements: Front: None
   Side: 0' or 8'
   Rear: 30'
3) Height Restriction: 90'
4) Floor Space Area Restriction (FAR) : 4.6
5) Parking Requirements: None



Vicinity Map

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

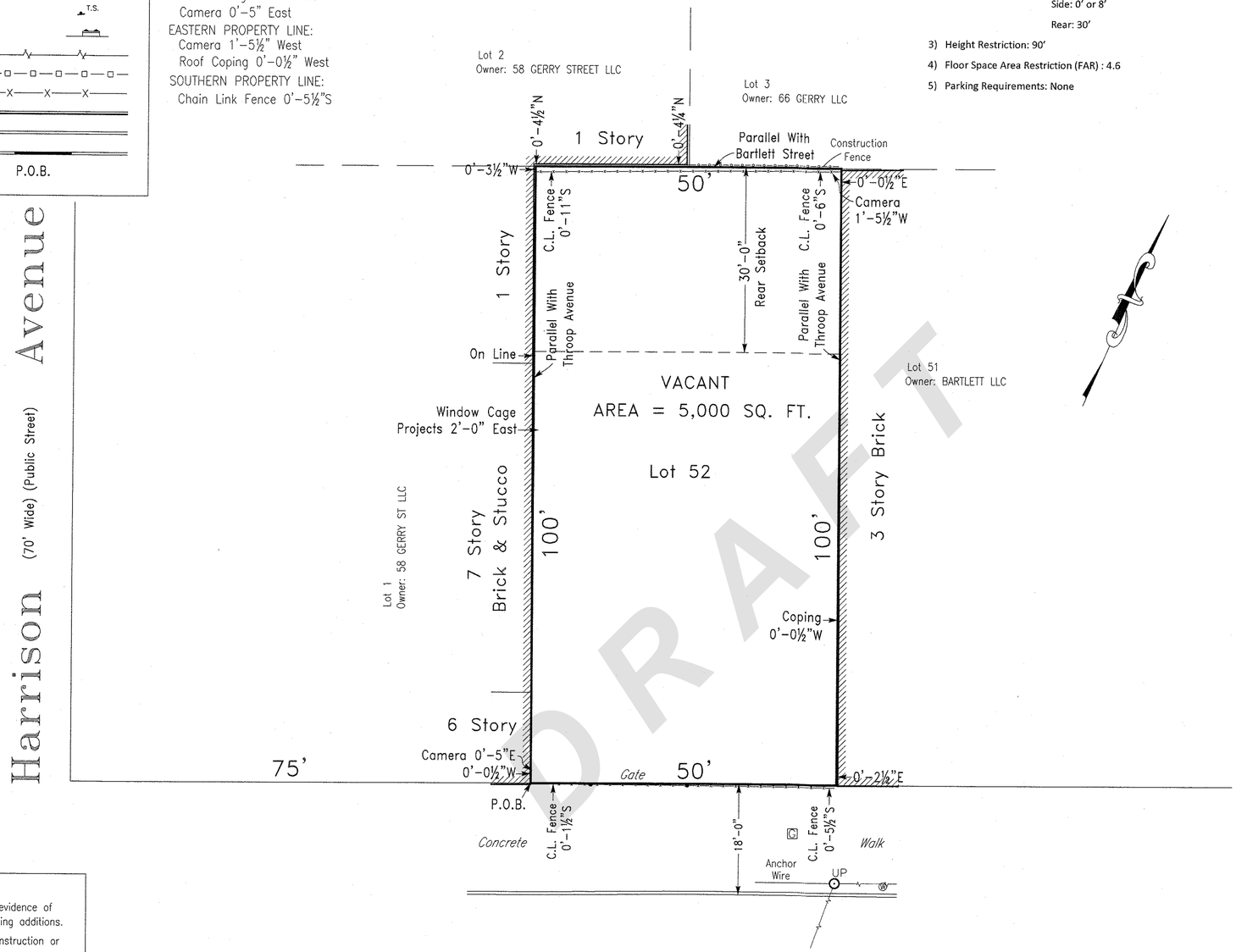
BEGINNING at a point on the northerly side of Bartlett Street (70 feet wide), which point is distant 75.00 feet as measured in an easterly direction along the northerly side of Bartlett Street from its intersection with the easterly side of Harrison Avenue (70 feet wide);

RUNNING THENCE northerly, parallel with Throop Avenue 100 feet to a point;

THENCE easterly, parallel with Bartlett Street 50.00 feet to a point;

THENCE southerly, again parallel with Throop Avenue, 100 feet to a point on the northerly side of Bartlett Street;

THENCE westerly along the northerly side of Bartlett Street, 50 feet to the point or place of BEGINNING.



NOTES

1) At the time of this survey there was no observable evidence of recent earth moving work, building construction, or building additions.
2) There is no evidence of recent street or sidewalk construction or any proposed changes in street right of way lines.
3) There are no wetland areas delineated on this property.
4) No portion of the property shown on the survey lies within a special hazard area, as described on the Flood Insurance Rate Map Number 3604970204F, dated September 5, 2007, for the community in which the subject property is located (Zone X)
5) There are no parking spaces on this property.
6) The land forms a mathematically closed figure without gaps, gores, or overlaps.
7) The land surveyed is the same property as described on the title commitment provided by Stewart Title Guaranty Company, Commitment No. FNL–NY–201352–K, effective date October 27, 2025.
8) The subject property has direct access to and from Bartlett Street, a duly dedicated and accepted public street.
9) There is no evidence of site being used as a solid waste dump, sump or sanitary landfill.
10) All observed encroachements are shown heron, and listed in the table of encroachments

There are no plottable Schedule B Exceptions

TITLE No. FNL–NY–201352–K
EFFECTIVE DATE: OCTOBER 27, 2025

PARCEL 2
ADDRESS: 29/31 BARTLETT STREET, BROOKLYN, NY (AKA 31 BARTLETT STREET)
TAX BLOCK 2269, LOT 52 AREA = 5,000 SQ. FT. or 0.11 ACRES
BOROUGH OF BROOKLYN, CITY OF NEW YORK

"ALTA/NSPS LAND TITLE SURVEY"

To: City of New York, its successors and/or assigns as their interests may appear; CPC Mortgage Company LLC, their successors and assigns; Federal Home Loan Mortgage Corporation (Freddie Mac), their successors and assigns; The Bank of New York Mellon, its successors and/or assigns as their interests may appear; Cedar Rapids Bank and Trust Company, an Iowa state-chartered banking corporation, their successors and/or assigns, as their interests may appear; CREA Corporate Tax Credit Fund 65, LLC, a Delaware limited liability company, its successors and assigns; CREA SLP, LLC, an Indiana limited liability company, its successors and assigns; Bartlett Crossing LLC, a New York limited liability company; Bartlett Crossing Housing Development Fund Company, Inc.; Stewart Title Guaranty Company; and Federated National Land, LLC.

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2021 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 1,2,3,4,6(a),6(b),7(a),8,9,10,11(a),13,16,17 and 18 of Table A thereof. The field work was completed on November 20, 2025.

STATE OF NEW YORK * DAVID A. SHAW * 050252 LICENSED LAND SURVEYOR

David A. Shaw
License Number: 50252
Date of Plat or Map: November 20, 2025
Date of Last Revision: December 19, 2025

ERLANDSEN-CROWELL & SHAW
FOUNDED IN 1852 BY E.W. CONKLIN
Civil Engineers & City Surveyors
241 JERICHO TPKE NEW HYDE PARK, NY 11040 516–326–4353 718–526–0339

Scale: 1"=16'

69895

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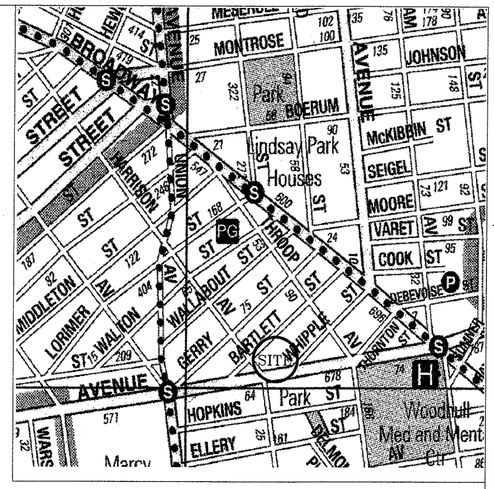
LEGEND

Tree & Caliper 8"
Water Valve W
Gas Valve G
Traffic Sign T.S.
Siamese Connection
Overhead Wires
Iron Fence/Railing
Chain Link Fence
Steel Face Curb
Concrete or Stone Curb
Drop Curb
Point of Beginning P.O.B.

TABLE OF ENCROACHMENTS

NORTHERN PROPERTY LINE:
Chain Link Fence 0'-1" South
WESTERN PROPERTY LINE:
Cameras up to 1'-0" East
EASTERN PROPERTY LINE:
Chain Link Fence 0'-0½" West
SOUTHERN PROPERTY LINE:
Chain Link Fence up to 1'-8" South



Vicinity Map

Harrison Avenue
(70' Wide) (Public Street)

Lot 6
Owner: ZBL BARTLETT LLC

Lot 54
Owner: 661F REALTY LLC

Lot 9
Owner: BARTLETT PLAZA LLC

Lot 45
Owner: WHIPPLE PROPERTIES LLC

VACANT
Lot 49

Flushing Avenue
(70' Wide) (Public Street)

Whipple Street
(70' Wide) (Public Street)

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

BEGINNING at a point on the northwesterly side of Flushing Avenue (70 feet wide), which point is distant 75 feet as measured in a southeasterly direction from the intersection of the northwesterly side of Flushing Avenue with the easterly side of Harrison Avenue (70 feet wide);

THENCE northerly, at right angles to the northwesterly side of Flushing Avenue, 80.00 feet to a point;

THENCE easterly on a line forming a right angle with the last-mentioned line and parallel with Flushing Avenue, 25.00 feet to a point;

THENCE northerly on a line forming a right angle with the last-mentioned line, 20.00 feet to a point;

THENCE southeasterly on a line forming an interior angle of 105 degrees 57 minutes 40 seconds with the last-mentioned line 16.67 feet (16.92 feet per tax map) to a point;

THENCE easterly on a line forming an interior angle of 195 degrees 47 minutes 46 seconds with the last-mentioned line, 21.12 feet to a point;

THENCE southerly on a line forming a right angle with the last-mentioned line, 119 feet to a point on the northerly side of Whipple Street (70 feet wide);

THENCE westerly along the northerly side of Whipple Street, 27.58 feet to the northwesterly side of Flushing Avenue;

THENCE northwesterly along the northwesterly side of Flushing Avenue, 98.17 feet to the point or place of BEGINNING.

NOTES

1) At the time of this survey there was no observable evidence of recent earth moving work, building construction, or building additions.
2) There is no evidence of recent street or sidewalk construction or any proposed changes in street right of way lines.
3) There are no wetland areas delineated on this property.
4) No portion of the property shown on the survey lies within a special hazard area, as described on the Flood Insurance Rate Map Number 3604970204F, dated September 5, 2007, for the community in which the subject property is located (Zone X)
5) There are no parking spaces on this property.
6) The land forms a mathematically closed figure without gaps, gores, or ovelaps.
7) The land surveyed is the same property as described on the title commitment provided by Stewart Title Guaranty Company, Commitment No. FNL-NY-201352-K, effective date October 25, 2025.
8) The subject property has direct access to and from Flushing Avenue and Whipple Street, both duly dedicated and accepted public streets.
9) There is no evidence of site being used as a solid waste dump, sump or sanitary landfill.
10) All observed encroachements are shown heron, and listed in the table of encroachments

AS PER ZONING LETTER FROM MAGNUSSON ARCHITECTURE and PLANNING PC DATED 11/18/2025

1) Zoning District: R7-A with Partial Commercial Overlay C2-4
2) Setback Requirements: Front: None
   Side: 0' or 8'
   Rear: 30'
3) Height Restriction: 95'
4) Floor Space Area Restriction (FAR) : 4.6
5) Parking Requirements: None

There are no plottable Schedule B Exceptions
TITLE No. FNL-NY-201352-K
EFFECTIVE DATE: OCTOBER 25, 2025

PARCEL 1
ADDRESS: 663/667 FLUSHING AVENUE, BROOKLYN, NY (AKA 665 FLUSHING AVENUE)
TAX BLOCK 2272, LOT 49 AREA = 9,526 SQ. FT. or 0.22 ACRES
BOROUGH OF BROOKLYN, CITY OF NEW YORK

"ALTA/NSPS LAND TITLE SURVEY"

To: City of New York, its successors and/or assigns as their interests may appear; CPC Mortgage Company LLC, their successors and assigns; Federal Home Loan Mortgage Corporation (Freddie Mac), their successors and assigns; The Bank of New York Mellon, its successors and/or assigns as their interests may appear; Cedar Rapids Bank and Trust Company, an Iowa state-chartered banking corporation, their successors and/or assigns, as their interests may appear; CREA Corporate Tax Credit Fund 65, LLC, a Delaware limited liability company, its successors and assigns; CREA SLP, LLC, an Indiana limited liability company, its successors and assigns; Bartlett Crossing LLC, a New York limited liability company; Bartlett Crossing Housing Development Fund Company, Inc.; Stewart Title Guaranty Company; and Federated National Land, LLC.

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2021 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 1,2,3,4,6(a),6(b),7(a),8,9,10,11(a),13,16,17 and 18 of Table A thereof. The field work was completed on November 20, 2025.

David A. Shaw
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Scale: 1"=16'

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Fox Rothschild

101 Park Avenue, 17th Floor
New York, NY 10178
212.878.7900 212.692.0940
www.foxrothschild.com

GEORGE C. D. DUKE
Direct No: 212.450.9847
Email: gduke@foxrothschild.com

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May 11, 2026

The City Clerk, Clerk of the Council
Executive Office
141 Worth Street,
New York, NY 10013

Re: Notice to Municipality of Recorded Environmental Easement ("Environmental Easement")
Site: Broadway Triangle Site A; 663-667 Flushing Avenue and 29-31 Barlett Street, Brooklyn, NY 11206; Block 2772, Lot 49, and Block 2269, Lot 52; Site No. C224333

Dear Sir or Madam:

Attached please find a copy of an Environmental Easement granted to the New York State Department of Environmental Conservation ("Department" or "DEC") on , by Bartlett Crossing Housing Development Fund Company, Inc. for property at 663-667 Flushing Avenue and 29-31 Barlett Street, Brooklyn, NY 11206; Block 2772, Lot 49, and Block 2269, Lot 52; Site No. C224333.

This Environmental Easement restricts future use of the above-referenced property to restricted residential, commercial and industrial uses. Any on-site activity must be done in accordance with the Environmental Easement and the Site Management Plan which is incorporated into the Environmental Easement. Department approval is also required prior to any groundwater use.

Article 71, Section 71-3607 of the New York State Environmental Conservation Law requires that:

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1. Whenever the department is granted an environmental easement, it shall provide each affected local government with a copy of such easement and shall also provide a copy of any documents modifying or terminating such environmental easement.

2. Whenever an affected local government receives an application for a building permit or any other application affecting land use or development of land that is subject to an environmental easement and that may relate to or impact such easement, the affected local government shall notify the department and refer such application to the department. The department shall evaluate whether the application is consistent with the environmental easement and shall notify the affected local government of its determination in a timely fashion, considering the time frame for the local government's review of the application. The affected local government shall not approve the application until it receives approval from the department.

An electronic version of every environmental easement that has been accepted by the Department is available to the public at: http://www.dec.ny.gov/chemical/36045.html. Please forward this notice to your building and/or planning departments, as applicable, to ensure your compliance with these provisions of New York State Environmental Conservation Law. If you have any questions or comments regarding this matter, please do not hesitate to contact me.

DRAFT

Sincerely,

George Duke

George C. D. Duke, Esq.

ENVIRONMENTAL EASEMENT
CHECKLIST/CERTIFICATION
SITE No. C224333

The following requirements and attachments must be included as part of the submission to the Department for an Environmental Easement. Upon completion of the review, an attorney must sign the checklist indicating that they have fully completed the checklist. The Department will not accept submissions which have not been signed as being accurate and complete by both the Remedial Party and Attorney. **Where the property owner is not the Remedial Party, the Department also requires the Owner to sign the checklist.**

1) **Special Circumstances**

The last owner search was completed and the deed transfer is by Quit Claim or other restricted transfer deed ☐ Yes ☑ No

The property in the Brownfield Cleanup Agreement includes lands under water ☐ Yes ☑ No

The property has multiple owners, Beneficial, or Long-term Lessee ☐ Yes ☑ No

If you answered "Yes" to any of these items, contact the Department's Environmental Easement contact person for a determination as to whether further title work is necessary.

2) **Verification of ownership of the property**

- ☑ Submit documentation (such as a corporate resolution) that the signatory on the easement has authority to sign the Easement
- ☑ Ownership of the property matches the current deed.
- ☑ Verification reviewed and included for authority to sign Easement.
- ☑ Updated copies of legal organizational documents have been reviewed and are included. Examples of the appropriate documentation will include, for:
  - corporations: articles of incorporation, organizational agreements, minutes of annual meetings, resolutions, authorities for signature;
  - partnerships: a copy of the partnership agreement; verification that necessary parties are participating in the Easement;
  - trusts: trust agreement, affidavit of no change in the trust; and
  - estates: estate letters, powers of attorney.

3) **Verification of Property Subject to Easement**

- ☑ Description of the property for the Easement and DEC Agreement/Order/SAC matches description of property in the deed (Separate submittal must be included to explain to the satisfaction of the Department why there is any discrepancy).
- ☑ The Tax Map identifier (SBL) matches on all documents.

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4) Survey Review

- ☑ Survey includes metes and bounds description.
- ☑ Survey includes a graphic scale.
- ☑ Survey includes Tax Map Section, Block and Lot.
- ☑ Survey includes physical address and is consistent with the DEC Agreement/Order/SAC.
- ☑ The survey must bear the name, address, telephone number, signature and certification of the professional land surveyor who performed the survey, his or her official seal and registration number, the date the survey was completed, the dates of all of the surveyor's revisions.
- ☑ The survey boundaries must be drawn to a convenient scale, with that scale clearly indicated. A graphic scale, shown in feet and meters, must be included.
- ☑ The symbols and abbreviations that are used on the survey must be identified by the use of a legend.
- ☑ Diagram must be oriented such that North is the top of the survey
- ☑ Diagrams must be accurately presented.
- ☑ The point of beginning of the legal description must be shown.
- ☑ The legal description must be correct and reflect the surveyor's actual surveyed measurements.
- ☑ The format of distance measurements must match between the legal description and the diagram (decimals or inches, not both)
- ☑ The legal description must state the acreage.
- ☑ If the deed(s) description differs from the measured bearings/angles/distances, both must be indicated on the survey.
- ☑ The survey must show the location of all buildings/monuments/overlaps/encroachments upon the surveyed property with their locations defined by measurement perpendicular to the nearest perimeter boundaries
- ☑ The survey must show any surrounding roadways and those referenced in the legal description
- ☑ The survey must show the location and legal descriptions of multiple Tracks on the site, if applicable
- ☑ The survey must depict the location of visible improvements within five feet of each side of boundary lines.
- ☑ The survey must show ponds, lakes, springs, rivers or a natural water boundary bordering on or running through the surveyed property; the survey must measure the location of the natural water boundary and note on the survey the date of the measurement.

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- ■ The survey must correctly depict the environmental easement area with corresponding metes & bounds description and acreage, and include the following sentence: "*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 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*". This reference must be located on the face of the survey and be in at least 15-point type.
- ■ If the survey consists of more than one sheet, sheets must be numbered and the total number of sheets must be indicated on each sheet.
- ☐ In addition to county-specific requirements, submittal of the approved survey to the Department must include the following:
  - A "D" sized copy (24" x 36") of the final signed, stamped map
  - A 600 DPI scan of the final signed, stamped map
  - An Autocad .dwg or exported .dxf file of the polyline (at a minimum) of the final survey

5) Submissions

- ■ The Environmental Easement Package being submitted to the Department includes the applicable documents set forth in Attachment A.

PLEASE READ THE FOLLOWING CAREFULLY

The Remedial Party/Owner and the Remedial Party's/Owner's attorney understand and acknowledge that the New York State Department of Environmental Conservation will rely on each and every answer in this statement: (1) to determine whether the Easement Package can be reviewed in a timely fashion; and (2) to determine whether the Easement Package should be approved. The Remedial Party/Owner and the Remedial Party's/Owner's attorney understand and acknowledge that any false statement or misrepresentation herein will constitute cause for the revocation of the Certificate of Completion issued in reliance on this checklist and accompanying documentation. The Remedial Party/Owner and the Remedial Party's/Owner's attorney further acknowledge that the failure to provide the Department with valid and enforceable Environmental Easement on the property may be grounds for the Department to revoke any Certificate of Completion for the site.

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Statement of Certification and Signatures

I have reviewed the information being submitted in relation to this Easement Package and this information, to the best of my knowledge and belief, is accurate and correct. I further acknowledge that the failure to provide the Department with valid and enforceable Environmental Easement on the property may be grounds for the Department to revoke any Certificate of Completion for the site.

1) By Remedial Party:
I hereby affirm that information provided on this form and its attachments is true and complete to the best of my knowledge and belief. I further acknowledge that the failure to provide the Department with valid and enforceable Environmental Easement on the property may be grounds for the Department to revoke any Certificate of Completion for the site.

Date: 6/1/26 Signature: _____

Print Name: Michael Rochford

2) By Remedial Party's Attorney:
I hereby affirm that I am the attorney for Bartlett Crossing Housing Development Fund Company, Inc. (entity); that I am authorized by that entity to make this certification; that this certification was prepared by me or under my supervision and direction; and that information provided on this form and its attachments is true and complete to the best of my knowledge and belief.

Date: June 1, 2026 Signature: _____

Print Name: Amy A. Perry

Attachment

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Statement of Certification and Signatures

I have reviewed the information being submitted in relation to this Easement Package and this information, to the best of my knowledge and belief, is accurate and correct. I further acknowledge that the failure to provide the Department with valid and enforceable Environmental Easement on the property may be grounds for the Department to revoke any Certificate of Completion for the site.

3) By Owner:
I hereby affirm that information provided on this form and its attachments is true and complete to the best of my knowledge and belief. I further acknowledge that the failure to provide the Department with valid and enforceable Environmental Easement on the property may be grounds for the Department to revoke any Certificate of Completion for the site.

Date: 6/1/26 Signature: _____

Print Name: Michael Rochford

4) By Owner's Attorney:
I hereby affirm that I am the attorney for Bartlett Crossing Housing Development Fund Company, Inc. (entity); that I am authorized by that entity to make this certification; that this certification was prepared by me or under my supervision and direction; and that information provided on this form and its attachments is true and complete to the best of my knowledge and belief.

Date: June 1, 2026 Signature: _____

Print Name: Amy A. Perry

Attachment

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Attachment A

Documents required to be sent in hard copy with electronic formats copied to the Project Manager and Project Attorney for a complete Environmental Easement package:

1) Copy(ies) of current deed(s) *and* supporting title documentation (see Department Title Requirements).

2) Copy of tax map.

3) Proof of authority to obligate owner of property as set forth in "Verification of ownership of property" on the Easement checklist.

4) Legal description of the easement area in an electronic text format (i.e., MS Word or Rich Text Format), **proofed and matching the legal description on survey**.

5) One full-sized, signed Survey and an electronic Survey submitted as a fully rendered PDF (not scanned) and .dwg file.

6) A draft Notice to Municipality, with appropriate site-specific provisions.

7) Easement Checklist with certification signed by Remedial Party/Owner and Remedial Party's/Owner's attorney.

8) Wet-ink signed transfer tax forms (TP-584 or ACRIS Forms).

Hard copy submission shall be sent to:

Cheryl Salem
New York State Department of Environmental Conservation
Office of General Counsel
625 Broadway
Albany, NY 12233-1500

Electronic Documents shall be sent to:

Cheryl.Salem@dec.ny.gov or uploaded at https://mysend.ny.gov:443/nys/send/to/dropbox/ogc-environmental-easements

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AFFIDAVIT OF COMPLIANCE
WITH SMOKE DETECTOR REQUIREMENT FOR ONE- AND TWO-FAMILY DWELLINGS

State of New York }
County of } **SS.:**

The undersigned, being duly sworn, depose and say under penalty of perjury that they are the grantor and grantee of the real property or of the cooperative shares in a cooperative corporation owning real property located at

29-31 BARTLETT STREET , ,
Street Address Unit/Apt.

BROOKLYN New York, 2269 52 (the "Premises");
Borough Block Lot

That the Premises is a one or two family dwelling, or a cooperative apartment or condominium unit in a one- or two-family dwelling, and that installed in the Premises is an approved and operational smoke detecting device in compliance with the provisions of Article 6 of Subchapter 17 of Chapter 1 of Title 27 of the Administrative Code of the City of New York concerning smoke detecting devices;

That they make affidavit in compliance with New York City Administrative Code Section 11-2105 (g). (The signatures of at least one grantor and one grantee are required, and must be notarized).

Name of Grantor (Type or Print)	Name of Grantee (Type or Print)
Michael Rochford Signature of Grantor	Signature of Grantee
Sworn to before me this 16 day of July 20 26 Karina G. Taveras Notary Public - State of New York NO. 01G06354249 Qualified in Kings County My Commission Expires 2/6/29	Sworn to before me this _____ day of _____ 20 _____

These statements are made with the knowledge that a willfully false representation is unlawful and is punishable as a crime of perjury under Article 210 of the Penal Law.

NEW YORK CITY REAL PROPERTY TRANSFER TAX RETURNS FILED ON OR AFTER FEBRUARY 6th, 1990, WITH RESPECT TO THE CONVEYANCE OF A ONE- OR TWO-FAMILY DWELLING, OR A COOPERATIVE APARTMENT OR A CONDOMINIUM UNIT IN A ONE- OR TWO-FAMILY DWELLING, WILL NOT BE ACCEPTED FOR FILING UNLESS ACCOMPANIED BY THIS AFFIDAVIT.

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The City of New York
Department of Environmental Protection
Bureau of Customer Services
59-17 Junction Boulevard
Flushing, NY 11373-5108

Customer Registration Form for Water and Sewer Billing

Property and Owner Information:

(1) **Property receiving service: BOROUGH: BROOKLYN** **BLOCK: 2269** **LOT: 52**

(2) **Property Address: 29-31 BARTLETT STREET, BROOKLYN, NY 11206**

(3) **Owner's Name:** **NYS DEPT. OF ENVIRONMENTAL CONSERVATION**

Additional Name:

Affirmation:

☑ Your water & sewer bills will be sent to the property address shown above.

Customer Billing Information:

Please Note:

A. Water and sewer charges are the legal responsibility of the owner of a property receiving water and/or sewer service. The owner's responsibility to pay such charges is not affected by any lease, license or other arrangement, or any assignment of responsibility for payment of such charges. Water and sewer charges constitute a lien on the property until paid. In addition to legal action against the owner, a failure to pay such charges when due may result in foreclosure of the lien by the City of New York, the property being placed in a lien sale by the City or Service Termination.

B. Original bills for water and/or sewer service will be mailed to the owner, **at the property address or to an alternate mailing address**. DEP will provide a duplicate copy of bills to one other party (such as a managing agent), however, any failure or delay by DEP in providing duplicate copies of bills shall in no way relieve the owner from his/her liability to pay all outstanding water and sewer charges. Contact DEP at (718) 595-7000 during business hours or visit www.nyc.gov/dep to provide us with the other party's information.

Owner's Approval:

The undersigned certifies that he/she/it is the owner of the property receiving service referenced above; that he/she/it has read and understands Paragraphs A & B under the section captioned "Customer Billing Information"; and that the information supplied by the undersigned on this form is true and complete to the best of his/her/its knowledge.

Print Name of Owner:

Signature: _____ Date (mm/dd/yyyy) 7/16/26

Name and Title of Person Signing for Owner, if applicable:

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2026061200165101

Department of Housing Preservation & Development
nyc.gov/hpd

THE CITY OF NEW YORK
DEPARTMENT OF HOUSING PRESERVATION AND DEVELOPMENT

AFFIDAVIT IN LIEU OF REGISTRATION STATEMENT

County of Kings) SS.:

State of New York)
BARTLETT CROSSING HOUSING DEVELOPMENT FUND COMPANY, being duly sworn, deposes and says:

1) I am personally familiar with the real property known by the street address of (insert street address): 29-31 BARTLETT STREET Block 2269, Lot 52, and make this Affidavit as (describe capacity in which affidavit is made) GRANTOR in connection with a deed~~/lease/memorandum of lease~~ (delete inapplicable description) which transfers an interest in the above real property, that is dated 6/1/2026, and is between BARTLETT CROSSING HOUSING DEVELOPMENT FUND COMPANY and NYS DEPT. OF ENVIRONMENTAL CONSERVATION.

2) The statements made in the Affidavit are true of my own knowledge, and I submit this Affidavit in order that this Instrument be accepted for recording without being accompanied by a registration statement, as such is defined by Article 2 of Subchapter 4 of Chapter 2 of Title 27 of the Administrative Code of the City of New York.

3) Exemption from registration is claimed because the Instrument affects neither (a) an entire multiple dwelling as such is defined by §27-2004(a)(7) of Article 1 of Subchapter 1, of Chapter 2 of Title 27 of the Administrative Code of the City of New York and New York State Multiple Dwelling Law §4(7) nor (b) a private dwelling as such is defined by §27-2004 (a) (4) of Article 1 of Subchapter 1 of Chapter 2 of Title 27 of the Administrative Code of the City of New York and of the New York State Multiple Dwelling Law §4(6) that is required to register pursuant to, Article 2 of Subchapter 4 of Chapter 2 of Title 27 of the Administrative Code of the City of New York. The Instrument does not affect a multiple dwelling because it affects the following (check applicable item):

- ☐ a commercial building
- ☐ a one-or two family dwelling whose owner or a family member resides in the dwelling
- ☐ a condominium unit in a multiple dwelling
- ☐ cooperative corporation shares relating to a single residential unit in a multiple dwelling
- ☐ mineral, gas, water, air or other similar rights not affecting a multiple dwelling
- ☐ lease of commercial space in a multiple dwelling
- ☑ vacant land

4) I am aware that this Affidavit is required by law to be submitted in order that the Instrument be recorded or accepted for recording without being accompanied by a registration statement. I am aware that any false statements made in this Affidavit may be punishable as a felony or misdemeanor under Penal Law Article 210 or as an offense under Administrative Code of the City of New York §10-154.

Sworn To Before Me This
16 Day of July, 2026
Karina G Taveras
Notary Public

Karina G. Taveras
Notary Public - State of New York
NO. 01G06354249
Qualified in Kings County
My Commission Expires 2/6/29

Signature

2 KINGSLAND AVENUE
FLOOR 1
Address BROOKLYN, NY 11211
Telephone # 212-450-9847

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Printed on paper containing 30% post-consumer material.

NEW YORK CITY DEPARTMENT OF FINANCE

NYC - RPT

Department of Finance

REAL PROPERTY TRANSFER TAX RETURN

(Pursuant to Title 11, Chapter 21, NYC Administrative Code)

▲ DO NOT WRITE IN THIS SPACE ▲
FOR OFFICE USE ONLY

GRANTOR

● Name BARTLETT CROSSING HOUSING DEVELOPMENT FUND COMPANY

● Grantor is a(n): (check one) ☐ individual ☐ partnership ☑ corporation ☐ single member LLC ☐ multiple member LLC (see instructions) ☐ other _____

Telephone Number

● Permanent mailing address after transfer (number and street) 2 KINGSLAND AVENUE FLOOR 1

● City and State BROOKLYN, NY

Zip Code 11211

● Single member's name if grantor is a single member LLC

SOCIAL SECURITY NUMBER

OR

EMPLOYER IDENTIFICATION NUMBER 92-0949408

SINGLE MEMBER EIN OR SSN

GRANTEE

● Name NYS DEPT. OF ENVIRONMENTAL CONSERVATION

● Grantee is a(n): (check one) ☐ individual ☐ partnership ☐ corporation ☐ single member LLC ☐ multiple member LLC (see instructions) ☑ other ADMINISTRATIVE AGENCY

Telephone Number

● Permanent mailing address after transfer (number and street) 625 BROADWAY

● City and State ALBANY, NY

Zip Code 12233

● Single member's name if grantee is a single member LLC

SOCIAL SECURITY NUMBER

OR

EMPLOYER IDENTIFICATION NUMBER 14-6013200

SINGLE MEMBER EIN OR SSN

PROPERTY LOCATION

LIST EACH LOT SEPARATELY. ATTACH A RIDER IF ADDITIONAL SPACE IS REQUIRED

● Address (number and street)	Apt. No.	Borough	Block	Lot	# of Floors	Square Feet	● Assessed Value of Property
29-31 BARTLETT STREET		BROOKLYN	2269	52	0	1	643,050.00

● DATE OF TRANSFER TO GRANTEE: 6/1/2026

● PERCENTAGE OF INTEREST TRANSFERRED: 100 %

CONDITION OF TRANSFER. See Instructions

● Check (✓) all of the conditions that apply and fill out the appropriate schedules of this return. Additionally, Schedules1 and 2 **must** be completed for all transfers.

a. ☐ ..... Arms length transfer
b. ☐ ..... Transfer in exercise of option to purchase
c. ☐ ..... Transfer from cooperative sponsor to cooperative corporation
d. ☐ ..... Transfer by referee or receiver (complete Schedule A)
e. ☐ ..... Transfer pursuant to marital settlement agreement or divorce decree (complete Schedule I)
f. ☐ ..... Deed in lieu of foreclosure (complete Schedule C)
g. ☐ ..... Transfer pursuant to liquidation of an entity (complete Schedule D)
h. ☐ ..... Transfer from principal to agent, dummy, strawman or conduit or vice-versa (complete Schedule E)
i. ☐ ..... Transfer pursuant to trust agreement or will (attach a copy of trust agreement or will)
j. ☐ ..... Gift transfer not subject to indebtedness
k. ☐ ..... Gift transfer subject to indebtedness
l. ☐ ..... Transfer to a business entity in exchange for an interest in the business entity (complete Schedule F)
m. ☐ ..... Transfer to a governmental body
n. ☐ ..... Correction deed
o. ☐ ..... Transfer by or to a tax exempt organization (complete Schedule G)
p. ☐ ..... Transfer of property partly within and partly without NYC
q. ☐ ..... Transfer of successful bid pursuant to foreclosure
r. ☐ ..... Transfer by borrower solely as security for a debt or a transfer by lender solely to return such security
s. ☐ ..... Transfer wholly or partly exempt as a mere change of identity or form of ownership. Complete Schedule M)
t. ☐ ..... Transfer to a REIT or to a corporation or partnership controlled by a REIT. (Complete Schedule R)
u. ☐ ..... Other transfer in connection with financing (describe): _____
v. ☐ .....A grant or assignment of a leasehold interest in a tax-free NY area
w. ☐ ..... Transfer to an HDFC or an entity controlled by an HDFC. (Complete Schedule L)
x. .....Reserved
y. .....Reserved
z. ☑ ..... Other (describe) ENVIRONMENTAL EASEMENT

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TYPE OF PROPERTY (✓)

a. ☐ ..... 1-3 family house
b. ☐ ..... Individual residential condominium unit
c. ☐ ..... Individual cooperative apartment
d. ☐ ..... Commercial condominium unit
e. ☐ ..... Commercial cooperative
f. ☐ ..... 4 family dwelling
g. ☐ ..... Apartment building
h. ☐ ..... Office building
i. ☐ ..... Industrial building
j. ☐ ..... Utility
k. ☑ ..... OTHER (describe): RESIDENTIAL VACANT LAND

TYPE OF INTEREST (✓)

Check box at LEFT if you intend to record a document related to this transfer. Check box at RIGHT if you do not intend to record a document related to this transfer.

	REC.		NON REC.
a.	☐	Fee	☐
b.	☐	Leasehold Grant	☐
c.	☐	Leasehold Assignment or Surrender	☐
d.	☐	Easement	☑
e.	☐	Subterranean Rights	☐
f.	☐	Development Rights	☐
g.	☐	Stock	☐
h.	☐	Partnership Interest	☐
i.	☐	OTHER. (describe):	☐

SCHEDULE 1 - DETAILS OF CONSIDERATION

COMPLETE THIS SCHEDULE FOR ALL TRANSFERS AFTER COMPLETING THE APPROPRIATE SCHEDULES ON PAGES **5** THROUGH **12.**
ENTER "ZERO" ON LINE **11** IF THE TRANSFER REPORTED WAS WITHOUT CONSIDERATION.

1. Cash	1.	0 00
2. Purchase money mortgage	2.	0 00
3. Unpaid principal of pre-existing mortgage(s)	3.	0 00
4. Accrued interest on pre-existing mortgage(s)	4.	0 00
5. Accrued real estate taxes	5.	0 00
6. Amounts of other liens on property	6.	0 00
7. Value of shares of stock or of partnership interest received	7.	0 00
8. Value of real or personal property received in exchange	8.	0 00
9. Amount of Real Property Transfer Tax and/or other taxes or expenses of the grantor which are paid by the grantee	9.	0 00
10. Other (describe): _____	10.	0 00
11. **TOTAL CONSIDERATION** (add lines 1 through 10 - must equal amount entered on line 1 of Schedule 2) (see instructions)	11.	$ 0 00

See instructions for special rules relating to transfers of cooperative units, liquidations, marital settlements and transfers of property to a business entity in return for an interest in the entity.

SCHEDULE 2 - COMPUTATION OF TAX

A. **Payment**	Pay amount shown on line 15 - *See Instructions*	Payment Enclosed

1. Total Consideration (from line 11, above)	1.	0 00	
2. Excludable liens (see instructions)	2.	0 00	
3. Consideration (line 1 less line 2)	3.	0 00	
4. Tax Rate (see instructions)	4.	0 %	
5. HDFC Exemption (see Schedule L, line 15)	5.	0 00	
6. Consideration less HDFC Exemption (line 3 less line 5)	6.	0 00	
7. Percentage change in beneficial ownership (see instructions)	7.	100 %	
8 Taxable consideration (multiply line 6 by line 7)	8.	0 00	
9. Tax (multiply line 8 by line 4)	9.	0 00	
10. Credit (see instructions)	10.	0 00	
11. Transfer tax previously paid (see Schedule L, line 18)	11.	0 00	
12. Tax due (line 9 less line 10 and 11) (if the result is negative, enter zero)	12.	0 00	
13. Interest (see instructions)	13.	0 00	
14. Penalty (see instructions)	14.	0 00	
15. **Total Tax Due** (add lines 12, 13 and 14)	15.	$ 0 00	

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GRANTOR'S ATTORNEY ▼

Name of Attorney: GEORGE DUKE, ESQ.			Telephone Number: (212) 878-7900
Address (number and street): FOX ROTHSCHILD LLP 101 PARK AVENUE		City and State: NEW YORK, NY	Zip Code: 10178
EMPLOYER IDENTIFICATION NUMBER: -	OR	SOCIAL SECURITY NUMBER: - -	

GRANTEE'S ATTORNEY ▼

Name of Attorney: BRIAN RASHKOW, ESQ.			Telephone Number: (518) 402-8393
Address (number and street): NYS DEPT. OF ENVIRONMENTAL CONSERVATION 625 BROADWAY		City and State: ALBANY, NY	Zip Code: 12233
EMPLOYER IDENTIFICATION NUMBER: -	OR	SOCIAL SECURITY NUMBER: - -	

CERTIFICATION ▼

I swear or affirm that this return, including any accompanying schedules, affidavits and attachments, has been examined by me and is, to the best of my knowledge, a true and complete return made in good faith, pursuant to Title 11, Chapter 21 of the Administrative Code and the regulations issued thereunder.

GRANTOR

Sworn to and subscribed to before me on this 16 day of July, 2026.

92-0949408
EMPLOYER IDENTIFICATION NUMBER OR SOCIAL SECURITY NUMBER

BARTLETT CROSSING HOUSING DEVELOPMENT FUND COMPANY
Name of Grantor

Karina G Taveras
Signature of Notary

Signature of Grantor

Notary's stamp or seal

Karina G. Taveras
Notary Public - State of New York
NO. 01G06354249
Qualified in Kings County
My Commission Expires 2/16/29

GRANTEE

Sworn to and subscribed to before me on this _____ day of _____, _____.

14-6013200
EMPLOYER IDENTIFICATION NUMBER OR SOCIAL SECURITY NUMBER

NYS DEPT. OF ENVIRONMENTAL CONSERVATION
Name of Grantee

Signature of Notary

Signature of Grantee

Notary's stamp or seal

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TP-584-NYC (6/25)

Department of Taxation and Finance

Combined Real Estate Transfer Tax Return, Credit Line Mortgage Certificate, and Certification of Exemption from the Payment of Estimated Personal Income Tax for the Conveyance of Real Property Located in New York City

Recording office time stamp

See Form TP-584-NYC-I, Instructions for Form TP-584-NYC, *before completing this form. Print or type.*

Schedule A – Information relating to conveyance

Grantor/Transferor

☐ Individual
☑ Corporation
☐ Partnership
☐ Estate/Trust
☐ Single member LLC
☐ Multi-member LLC
☐ Other

Name *(if individual, last, first, middle initial)* (☐ *mark an X if more than one grantor*): BARTLETT CROSSING HOUSING DEVELOPMENT FUND COMPANY

Social Security number (SSN):

Mailing address: 2 KINGSLAND AVENUE FLOOR 1

SSN:

City: BROOKLYN | State: NY | ZIP code: 11211

Employer identification number (EIN): 92 | 0949408

Single member's name if grantor is a single member LLC *(see instructions)*

Single member EIN or SSN:

Grantee/Transferee

☐ Individual
☐ Corporation
☐ Partnership
☐ Estate/Trust
☐ Single member LLC
☐ Multi-member LLC
☑ Other

Name *(if individual, last, first, middle initial)* (☐ *mark an X if more than one grantee*): NYS DEPT. OF ENVIRONMENTAL CONSERVATION

SSN:

Mailing address: 625 BROADWAY

SSN:

City: ALBANY | State: NY | ZIP code: 12233

EIN: 14 | 6013200

Single member's name if grantee is a single member LLC *(see instructions)*

Single member EIN or SSN:

Location and description of property conveyed

Tax map designation – Section, block & lot *(include dots and dashes)*	SWIS code (six digits)	Street address	City, town, or village	County
3 - 2269 - 52	650000	29-31 BARTLETT STREET	NEW YORK	BROOKLYN / KINGS

Type of property conveyed *(mark an X in applicable box)*

1 ☐ One- to three-family house
2 ☐ Residential cooperative
3 ☐ Residential condominium
4 ☑ Vacant land
5 ☐ Commercial/Industrial
6 ☐ Apartment building
7 ☐ Office building
8 ☐ Four-family dwelling
9 ☐ Other _____

Date of conveyance: 6 (month) | 1 (day) | 2026 (year)

☐ Contract executed on or before April 1, 2019 *(see instructions)*

Percentage of real property conveyed which is residential real property 0 % *(see instructions)*

Condition of conveyance *(mark all that apply)*

a. ☐ Conveyance of fee interest
b. ☐ Acquisition of a controlling interest (state percentage acquired _____ %)
c. ☐ Transfer of a controlling interest (state percentage transferred _____ %)
d. ☐ Conveyance to cooperative housing corporation
e. ☐ Conveyance pursuant to or in lieu of foreclosure or enforcement of security interest *(attach Form TP-584.1, Schedule E)*
f. ☐ Conveyance which consists of a mere change of identity or form of ownership or organization *(attach Form TP-584.1, Schedule F)*
g. ☐ Conveyance for which credit for tax previously paid will be claimed *(attach Form TP-584.1, Schedule G)*
h. ☐ Conveyance of cooperative apartment(s)
i. ☐ Syndication
j. ☐ Conveyance of air rights or development rights
k. ☐ Contract assignment
l. ☐ Option assignment or surrender
m. ☐ Leasehold assignment or surrender
n. ☐ Leasehold grant
o. ☑ Conveyance of an easement
p. ☐ Conveyance for which exemption from transfer tax claimed *(complete Schedule B, Part 4)*
q. ☐ Conveyance of property partly within and partly outside the state
r. ☐ Conveyance pursuant to divorce or separation
s. ☐ Other *(describe)* _____

For recording officer's use	Amount received	Date received	Transaction number
	Schedule B, Part 1 $		
	Schedule B, Part 2 $		
	Schedule B, Part 3 $		

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Schedule B – Real estate transfer tax return (Tax Law Article 31)

Part 1 – Computation of tax due *(in addition to the tax on line 4, you must compute the tax on lines 5a and 5b, if applicable)*

1	Enter amount of consideration for the conveyance *(if you are claiming a total exemption from tax, mark an **X** in the* Exemption claimed *box, enter consideration and proceed to Part 4)* ☐ **Exemption claimed**	**1.**	0 00
2	Continuing lien deduction *(see instructions if property is taken subject to mortgage or lien)*	**2.**	0 00
3	Taxable consideration *(subtract line 2 from line 1)*	**3.**	0 00
4	Tax: $2 for each $500, or fractional part thereof, of consideration on line 3	**4.**	0 00
5a	Tax: $1.25 for each $500, or fractional part thereof, of consideration for the conveyance of residential real property located in New York City if the amount on line 3 is $3 million or more *(see instructions)*	**5a.**	0 00
5b	Tax: $1.25 for each $500, or fractional part thereof, of consideration for the conveyance of property located in New York City other than residential real property, if the amount on line 1 is $2 million or more *(see instructions)*	**5b.**	0 00
6	Total before credit(s) claimed *(add lines 4, 5a, and 5b)*	**6.**	0 00
7	Amount of credit claimed for tax previously paid *(see instructions and attach Form TP-584.1, Schedule G)*	**7.**	0 00
8	Total tax due* *(subtract line 7 from line 6)*	**8.**	0 00

Part 2 – Computation of additional tax due on the conveyance of residential real property for $1 million or more

1	Enter amount of consideration for conveyance *(from Part 1, line 1; if you are claiming an exemption from additional tax, enter **0**, mark an **X** in the* Exemption claimed *box and proceed to Part 4, item l.)* ☐ **Exemption claimed**	**1.**	0 00
2	Taxable consideration *(multiply line 1 by the percentage of the premises which is residential real property, as shown in Schedule A)*	**2.**	0 00
3	Total additional transfer tax due* *(multiply line 2 by 1% (.01))*	**3.**	0 00

Part 3 – Computation of supplemental tax due on the conveyance of residential real property, or interest therein, located in New York City, for $2 million or more *(see instructions)*

1	Enter amount of consideration for conveyance *(from Part 1, line 1)*	**1.**	0 00
2	Taxable consideration *(multiply line 1 by the percentage of the premises which is residential real property, as shown in Schedule A)*	**2.**	0 00
3	Total supplemental transfer tax due* *(multiply line 2 by tax rate, see instruction for rates)*	**3.**	0 00

* **The total tax (from Part 1, line 8; Part 2, line 3; and Part 3, line 3 above) is due within 15 days from the date of conveyance.**

Part 4 – Explanation of exemption claimed *(mark an **X** in any boxes that apply)*

The conveyance of real property is exempt from the real estate transfer tax for the following reason:

a. Conveyance is to the United Nations, the United States of America, New York State, or any of their instrumentalities, agencies, or political subdivisions (or any public corporation, including a public corporation created pursuant to agreement or compact with another state or Canada) ..... a ☐

b. Conveyance is to secure a debt or other obligation ..... b ☐

c. Conveyance is without additional consideration to confirm, correct, modify, or supplement a prior conveyance ..... c ☐

d. Conveyance of real property is without consideration and not in connection with a sale, including conveyances conveying realty as bona fide gifts ..... d ☐

e. Conveyance is given in connection with a tax sale ..... e ☐

f. Conveyance is a mere change of identity or form of ownership or organization where there is no change in beneficial ownership. (This exemption cannot be claimed for a conveyance to a cooperative housing corporation of real property comprising the cooperative dwelling or dwellings.) Attach Form TP-584.1, Schedule F ..... f ☐

g. Conveyance consists of deed of partition ..... g ☐

h. Conveyance is given pursuant to the federal Bankruptcy Act ..... h ☐

i. Conveyance consists of the execution of a contract to sell real property, without the use or occupancy of such property, or the granting of an option to purchase real property, without the use or occupancy of such property ..... i ☐

j. Conveyance of an option or contract to purchase real property with the use or occupancy of such property where the consideration is less than $200,000 and such property was used solely by the grantor as the grantor's personal residence and consists of a one-, two-, or three-family house, an individual residential condominium unit, or the sale of stock in a cooperative housing corporation in connection with the grant or transfer of a proprietary leasehold covering an individual residential cooperative apartment ..... j ☐

k. Conveyance is not a conveyance within the meaning of Tax Law, Article 31, § 1401(e) *(attach documents supporting such claim)* ..... k ☐

l. Conveyance is for open space, parks, or historic preservation purposes to any not-for-profit tax-exempt corporation operated for conservation, environmental, parks, or historic preservation purposes (additional tax only) ..... l ☐

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Schedule C – Credit Line Mortgage Certificate (Tax Law, Article 11)

Complete the following only if the interest being transferred is a fee simple interest.
I (we) certify that: *(mark an **X** in the appropriate box)*

1. ☑ The real property being sold or transferred is not subject to an outstanding credit line mortgage.

2. ☐ The real property being sold or transferred is subject to an outstanding credit line mortgage. However, an exemption from the tax is claimed for the following reason:
   a ☐ The transfer of real property is a transfer of a fee simple interest to a person or persons who held a fee simple interest in the real property (whether as a joint tenant, a tenant in common or otherwise) immediately before the transfer.

   b ☐ The transfer of real property is (A) to a person or persons related by blood, marriage or adoption to the original obligor or to one or more of the original obligors or (B) to a person or entity where 50% or more of the beneficial interest in such real property after the transfer is held by the transferor or such related person or persons (as in the case of a transfer to a trustee for the benefit of a minor or the transfer to a trust for the benefit of the transferor).

   c ☐ The transfer of real property is a transfer to a trustee in bankruptcy, a receiver, assignee, or other officer of a court.

   d ☐ The maximum principal amount secured by the credit line mortgage is $3,000,000 or more, and the real property being sold or transferred is **not** principally improved nor will it be improved by a one- to six-family owner-occupied residence or dwelling.

   Note: for purposes of determining whether the maximum principal amount secured is $3,000,000 or more as described above, the amounts secured by two or more credit line mortgages may be aggregated under certain circumstances. See TSB-M-96(6)-R for more information regarding these aggregation requirements.

   e ☐ Other *(attach detailed explanation)*.

3. ☐ The real property being transferred is presently subject to an outstanding credit line mortgage. However, no tax is due for the following reason:
   a ☐ A certificate of discharge of the credit line mortgage is being offered at the time of recording the deed.

   b ☐ A check has been drawn payable for transmission to the credit line mortgagee or his agent for the balance due, and a satisfaction of such mortgage will be recorded as soon as it is available.

4. ☐ The real property being transferred is subject to an outstanding credit line mortgage recorded in _____ (insert liber and page or reel or other identification of the mortgage). The maximum principal amount of debt or obligation secured by the mortgage is _____. No exemption from tax is claimed and the tax of _____ is being paid herewith. *(Make check payable to county clerk where deed will be recorded or, if the recording is to take place in New York City but not in Richmond County, make check payable to the **NYC Department of Finance.**)*

Signature (both the grantor(s) and grantee(s) must sign)

The undersigned certify that the above information contained in schedules A, B, and C, including any return, certification, schedule, or attachment, is to the best of his/her knowledge, true and complete, and authorize the person(s) submitting such form on their behalf to receive a copy for purposes of recording the deed or other instrument effecting the conveyance.

Grantor signature	Title	Grantee signature	Title

Grantor signature	Title	Grantee signature	Title

Reminder: Did you complete all of the required information in Schedules A, B, and C? Are you required to complete Schedule D? If you marked *e*, *f*, or *g* in Schedule A, did you complete Form TP-584.1? If the contract was executed prior to April 1, 2019, did you attach the necessary verification? Have you attached your check(s) made payable to the county clerk where recording will take place or, if the recording is in the New York City boroughs of Manhattan, Bronx, Brooklyn, or Queens, to the ***NYC Department of Finance***? If no recording is required, send this return and your check(s), made payable to the ***NYS Department of Taxation and Finance***, directly to the NYS Tax Department, RETT Return Processing, PO Box 5045, Albany NY 12205-0045. If not using U.S. Mail, see Publication 55, *Designated Private Delivery Services*.

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Signature (both the grantor(s) and grantee(s) must sign)

The undersigned certify that the above information contained in schedules A, B, and C, including any return, certification, schedule, or attachment, is to the best of his/her knowledge, true and complete, and authorize the person(s) submitting such form on their behalf to receive a copy for purposes of recording the deed or other instrument effecting the conveyance.

Grantor signature	Title	Grantee signature	Title
Grantor signature	Title	Grantee signature	Title

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Schedule D – Certification of exemption from the payment of estimated personal income tax (Tax Law, Article 22, § 663)

Complete the following only if a fee simple interest or a cooperative unit is being transferred by an individual or estate or trust.

If the property is being conveyed by a referee pursuant to a foreclosure proceeding, proceed to Part 2, mark the second box under *Exemptions for nonresident transferor(s)/seller(s)*, and sign at bottom.

Part 1 – New York State residents

If you are a New York State resident transferor(s)/seller(s) listed in Form TP-584-NYC, Schedule A (or an attachment to Form TP-584-NYC), you must sign the certification below. If one or more transferors/sellers of the real property or cooperative unit is a resident of New York State, **each** resident transferor/seller must sign in the space provided. If more space is needed, photocopy this Schedule D and submit as many schedules as necessary to accommodate all resident transferors/sellers.

Certification of resident transferor(s)/seller(s)

This is to certify that at the time of the sale or transfer of the real property or cooperative unit, the transferor(s)/seller(s) as signed below was a resident of New York State, and therefore is not required to pay estimated personal income tax under Tax Law, § 663(a) upon the sale or transfer of this real property or cooperative unit.

Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date

Note: A resident of New York State may still be required to pay estimated tax under Tax Law, § 685(c), but not as a condition of recording a deed.

Part 2 – Nonresidents of New York State

If you are a nonresident of New York State listed as a transferor/seller in Form TP-584-NYC, Schedule A (or an attachment to Form TP-584-NYC) but are not required to pay estimated personal income tax because one of the exemptions below applies under Tax Law, § 663(c), mark the box of the appropriate exemption below. If any one of the exemptions below applies to the transferor(s)/seller(s), that transferor(s)/seller(s) is not required to pay estimated personal income tax to New York State under Tax Law, § 663. **Each** nonresident transferor/seller who qualifies under one of the exemptions below must sign in the space provided. If more space is needed, photocopy this Schedule D and submit as many schedules as necessary to accommodate all nonresident transferors/sellers.

If none of these exemption statements apply, you must complete Form IT-2663, *Nonresident Real Property Estimated Income Tax Payment Form*, or Form IT-2664, *Nonresident Cooperative Unit Estimated Income Tax Payment Form*. For more information, see *Payment of estimated personal income tax,* on Form TP-584-NYC-I, page 1.

Exemption for nonresident transferor(s)/seller(s)

This is to certify that at the time of the sale or transfer of the real property or cooperative unit, the transferor(s)/seller(s) (grantor) of this real property or cooperative unit was a nonresident of New York State, but is not required to pay estimated personal income tax under Tax Law, § 663 due to one of the following exemptions:

☐ The real property or cooperative unit being sold or transferred qualifies in total as the transferor's/seller's principal residence (within the meaning of Internal Revenue Code, section 121) from _____ (Date) to _____ (Date) *(see instructions)*.

☐ The transferor/seller is a mortgagor conveying the mortgaged property to a mortgagee in foreclosure, or in lieu of foreclosure with no additional consideration.

☐ The transferor or transferee is an agency or authority of the United States of America, an agency or authority of the state of New York, the Federal National Mortgage Association, the Federal Home Loan Mortgage Corporation, the Government National Mortgage Association, or a private mortgage insurance company.

Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date

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Certification of resident transferor(s)/seller(s)

This is to certify that at the time of the sale or transfer of the real property or cooperative unit, the transferor(s)/seller(s) as signed below was a resident of New York State, and therefore is not required to pay estimated personal income tax under Tax Law, section 663(a) upon the sale or transfer of this real property or cooperative unit.

Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date

Exemption for nonresident transferor(s)/seller(s)

This is to certify that at the time of the sale or transfer of the real property or cooperative unit, the transferor(s)/seller(s) (grantor) of this real property or cooperative unit was a nonresident of New York State, but is not required to pay estimated personal income tax under Tax Law, section 663 due to one of the following exemptions:

☐ The real property or cooperative unit being sold or transferred qualifies in total as the transferor's/seller's principal residence (within the meaning of Internal Revenue Code, section 121) from _____ (Date) to _____ (Date) *(see instructions)*.

☐ The transferor/seller is a mortgagor conveying the mortgaged property to a mortgagee in foreclosure, or in lieu of foreclosure with no additional consideration.

☐ The transferor or transferee is an agency or authority of the United States of America, an agency or authority of the state of New York, the Federal National Mortgage Association, the Federal Home Loan Mortgage Corporation, the Government National Mortgage Association, or a private mortgage insurance company.

Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date

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AFFIDAVIT OF COMPLIANCE
WITH SMOKE DETECTOR REQUIREMENT FOR ONE- AND TWO-FAMILY DWELLINGS

State of New York
County of Kings } **SS.:**

The undersigned, being duly sworn, depose and say under penalty of perjury that they are the grantor and grantee of the real property or of the cooperative shares in a cooperative corporation owning real property located at

633-667 FLUSHING AVENUE , ,
Street Address Unit/Apt.

BROOKLYN New York, 2268 1 (the "Premises");
Borough **Block** **Lot**

That the Premises is a one or two family dwelling, or a cooperative apartment or condominium unit in a one- or two-family dwelling, and that installed in the Premises is an approved and operational smoke detecting device in compliance with the provisions of Article 6 of Subchapter 17 of Chapter 1 of Title 27 of the Administrative Code of the City of New York concerning smoke detecting devices;

That they make affidavit in compliance with New York City Administrative Code Section 11-2105 (g). (The signatures of at least one grantor and one grantee are required, and must be notarized).

Michael Rochford
Name of Grantor (Type or Print)

Signature of Grantor

Sworn to before me
this 16 **day of** July **20** 26
Karina G. Taveras
Notary Public - State of New York
NO. 01G06354249
Qualified in Kings County
My Commission Expires 2/6/29
Karina G. Taveras

Name of Grantee (Type or Print)

Signature of Grantee

Sworn to before me
this _____ **day of** _____ **20** _____

These statements are made with the knowledge that a willfully false representation is unlawful and is punishable as a crime of perjury under Article 210 of the Penal Law.

NEW YORK CITY REAL PROPERTY TRANSFER TAX RETURNS FILED ON OR AFTER FEBRUARY 6th, 1990, WITH RESPECT TO THE CONVEYANCE OF A ONE- OR TWO-FAMILY DWELLING, OR A COOPERATIVE APARTMENT OR A CONDOMINIUM UNIT IN A ONE- OR TWO-FAMILY DWELLING, WILL NOT BE ACCEPTED FOR FILING UNLESS ACCOMPANIED BY THIS AFFIDAVIT.

DRAFT

The City of New York
Department of Environmental Protection
Bureau of Customer Services
59-17 Junction Boulevard
Flushing, NY 11373-5108

Customer Registration Form for Water and Sewer Billing

Property and Owner Information:

(1) **Property receiving service: BOROUGH: BROOKLYN** **BLOCK: 2268** **LOT: 1**

(2) **Property Address: 633-667 FLUSHING AVENUE, BROOKLYN, NY 11206**

(3) **Owner's Name:** **NYS DEPT. OF ENVIRONMENTAL CONSERVATION**

Additional Name:

Affirmation:

☑ Your water & sewer bills will be sent to the property address shown above.

Customer Billing Information:

Please Note:

A. Water and sewer charges are the legal responsibility of the owner of a property receiving water and/or sewer service. The owner's responsibility to pay such charges is not affected by any lease, license or other arrangement, or any assignment of responsibility for payment of such charges. Water and sewer charges constitute a lien on the property until paid. In addition to legal action against the owner, a failure to pay such charges when due may result in foreclosure of the lien by the City of New York, the property being placed in a lien sale by the City or Service Termination.

B. Original bills for water and/or sewer service will be mailed to the owner, **at the property address or to an alternate mailing address.** DEP will provide a duplicate copy of bills to one other party (such as a managing agent), however, any failure or delay by DEP in providing duplicate copies of bills shall in no way relieve the owner from his/her liability to pay all outstanding water and sewer charges. Contact DEP at (718) 595-7000 during business hours or visit www.nyc.gov/dep to provide us with the other party's information.

Owner's Approval:

The undersigned certifies that he/she/it is the owner of the property receiving service referenced above; that he/she/it has read and understands Paragraphs A & B under the section captioned "Customer Billing Information"; and that the information supplied by the undersigned on this form is true and complete to the best of his/her/its knowledge.

Print Name of Owner:

Signature: _____ Date (mm/dd/yyyy) 7/16/26

Name and Title of Person Signing for Owner, if applicable:

DRAFT

NEW YORK CITY DEPARTMENT OF FINANCE

NYC - RPT

Department of Finance

REAL PROPERTY TRANSFER TAX RETURN

(Pursuant to Title 11, Chapter 21, NYC Administrative Code)

▲ DO NOT WRITE IN THIS SPACE ▲
FOR OFFICE USE ONLY

GRANTOR

● Name BARTLETT CROSSING LLC

● Grantor is a(n): (check one) ☐ individual ☐ partnership ☐ corporation ☑ single member LLC ☐ multiple member LLC (see instructions) ☐ other

Telephone Number

● Permanent mailing address after transfer (number and street) 2 KINGSLAND AVENUE

● City and State BROOKLYN, NY

Zip Code 11211

● Single member's name if grantor is a single member LLC
BARTLETT CROSSING MANAGERS LLC

SOCIAL SECURITY NUMBER

OR

EMPLOYER IDENTIFICATION NUMBER 87-1681004

SINGLE MEMBER EIN OR SSN 87-1681004

GRANTEE

● Name NYS DEPT. OF ENVIRONMENTAL CONSERVATION

● Grantee is a(n): (check one) ☐ individual ☐ partnership ☐ corporation ☑ other ADMINISTRATIVE AGENCY ☐ single member LLC ☐ multiple member LLC (see instructions)

Telephone Number

● Permanent mailing address after transfer (number and street) 625 BROADWAY

● City and State ALBANY, NY

Zip Code 12233

● Single member's name if grantee is a single member LLC

SOCIAL SECURITY NUMBER

OR

EMPLOYER IDENTIFICATION NUMBER 14-6013200

SINGLE MEMBER EIN OR SSN

PROPERTY LOCATION

LIST EACH LOT SEPARATELY. ATTACH A RIDER IF ADDITIONAL SPACE IS REQUIRED

● Address (number and street)	Apt. No.	Borough	Block	Lot	# of Floors	Square Feet	● Assessed Value of Property
633-667 FLUSHING AVENUE		BROOKLYN	2268	1	4	37,499	1,134,000.00

● DATE OF TRANSFER TO GRANTEE: 6/1/2026

● PERCENTAGE OF INTEREST TRANSFERRED: 100 %

CONDITION OF TRANSFER. See Instructions

● Check (✓) all of the conditions that apply and fill out the appropriate schedules of this return. Additionally, Schedules1 and 2 **must** be completed for all transfers.

a. ☐ ..... Arms length transfer
b. ☐ ..... Transfer in exercise of option to purchase
c. ☐ ..... Transfer from cooperative sponsor to cooperative corporation
d. ☐ ..... Transfer by referee or receiver (complete Schedule A)
e. ☐ ..... Transfer pursuant to marital settlement agreement or divorce decree (complete Schedule I)
f. ☐ ..... Deed in lieu of foreclosure (complete Schedule C)
g. ☐ ..... Transfer pursuant to liquidation of an entity (complete Schedule D)
h. ☐ ..... Transfer from principal to agent, dummy, strawman or conduit or vice-versa (complete Schedule E)
i. ☐ ..... Transfer pursuant to trust agreement or will (attach a copy of trust agreement or will)
j. ☐ ..... Gift transfer not subject to indebtedness
k. ☐ ..... Gift transfer subject to indebtedness
l. ☐ ..... Transfer to a business entity in exchange for an interest in the business entity (complete Schedule F)
m. ☐ ..... Transfer to a governmental body
n. ☐ ..... Correction deed
o. ☐ ..... Transfer by or to a tax exempt organization (complete Schedule G)
p. ☐ ..... Transfer of property partly within and partly without NYC
q. ☐ ..... Transfer of successful bid pursuant to foreclosure
r. ☐ ..... Transfer by borrower solely as security for a debt or a transfer by lender solely to return such security
s. ☐ ..... Transfer wholly or partly exempt as a mere change of identity or form of ownership. Complete Schedule M)
t. ☐ ..... Transfer to a REIT or to a corporation or partnership controlled by a REIT. (Complete Schedule R)
u. ☐ ..... Other transfer in connection with financing (describe): _____
v. ☐ ..... A grant or assignment of a leasehold interest in a tax-free NY area
w. ☐ ..... Transfer to an HDFC or an entity controlled by an HDFC. (Complete Schedule L)
x. ..... Reserved
y. ..... Reserved
z. ☑ ..... Other (describe) ENVIRONMENTAL EASEMENT

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● TYPE OF PROPERTY (✓)	● TYPE OF INTEREST (✓)

a. ☐ ..... 1-3 family house
b. ☐ ..... Individual residential condominium unit
c. ☐ ..... Individual cooperative apartment
d. ☐ ..... Commercial condominium unit
e. ☐ ..... Commercial cooperative
f. ☐ ..... 4 family dwelling
g. ☐ ..... Apartment building
h. ☐ ..... Office building
i. ☐ ..... Industrial building
j. ☐ ..... Utility
k. ☑ ..... OTHER (describe): OTHER

Check box at LEFT if you intend to record a document related to this transfer. Check box at RIGHT if you do not intend to record a document related to this transfer.

	REC.		NON REC.
a.	☐	Fee	☐
b.	☐	Leasehold Grant	☐
c.	☐	Leasehold Assignment or Surrender	☐
d.	☐	Easement	☑
e.	☐	Subterranean Rights	☐
f.	☐	Development Rights	☐
g.	☐	Stock	☐
h.	☐	Partnership Interest	☐
i.	☐	OTHER. (describe):	☐

SCHEDULE 1 - DETAILS OF CONSIDERATION

COMPLETE THIS SCHEDULE FOR ALL TRANSFERS AFTER COMPLETING THE APPROPRIATE SCHEDULES ON PAGES 5 THROUGH 12. ENTER "ZERO" ON LINE 11 IF THE TRANSFER REPORTED WAS WITHOUT CONSIDERATION.

1. Cash	1.	0 00
2. Purchase money mortgage	2.	0 00
3. Unpaid principal of pre-existing mortgage(s)	3.	0 00
4. Accrued interest on pre-existing mortgage(s)	4.	0 00
5. Accrued real estate taxes	5.	0 00
6. Amounts of other liens on property	6.	0 00
7. Value of shares of stock or of partnership interest received	7.	0 00
8. Value of real or personal property received in exchange	8.	0 00
9. Amount of Real Property Transfer Tax and/or other taxes or expenses of the grantor which are paid by the grantee	9.	0 00
10. Other (describe): _____	10.	0 00
11. **TOTAL CONSIDERATION** (add lines 1 through 10 - must equal amount entered on line 1 of Schedule 2) (see instructions)	11.	$ 0 00

See instructions for special rules relating to transfers of cooperative units, liquidations, marital settlements and transfers of property to a business entity in return for an interest in the entity.

SCHEDULE 2 - COMPUTATION OF TAX

A. **Payment**	Pay amount shown on line 15 - *See Instructions*	Payment Enclosed

1.	Total Consideration (from line 11, above)	1.	0 00
2.	Excludable liens (see instructions)	2.	0 00
3.	Consideration (line 1 less line 2)	3.	0 00
4.	Tax Rate (see instructions)	4.	0 %
5.	HDFC Exemption (see Schedule L, line 15)	5.	0 00
6.	Consideration less HDFC Exemption (line 3 less line 5)	6.	0 00
7.	Percentage change in beneficial ownership (see instructions)	7.	100 %
8	Taxable consideration (multiply line 6 by line 7)	8.	0 00
9.	Tax (multiply line 8 by line 4)	9.	0 00
10.	Credit (see instructions)	10.	0 00
11.	Transfer tax previously paid (see Schedule L, line 18)	11.	0 00
12.	Tax due (line 9 less line 10 and 11) (if the result is negative, enter zero)	12.	0 00
13.	Interest (see instructions)	13.	0 00
14.	Penalty (see instructions)	14.	0 00
15.	**Total Tax Due** (add lines 12, 13 and 14)	15.	$ 0 00

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GRANTOR'S ATTORNEY ▼

Name of Attorney: GEORGE DUKE, ESQ.			Telephone Number: (212) 878-7900
Address (number and street): FOX ROTHSCHILD LLP 101 PARK AVENUE		City and State: NEW YORK, NY	Zip Code: 10178
EMPLOYER IDENTIFICATION NUMBER:	OR	SOCIAL SECURITY NUMBER:	

GRANTEE'S ATTORNEY ▼

Name of Attorney: BRIAN RASHKOW, ESQ.			Telephone Number: (518) 402-8393
Address (number and street): NYS DEPT. OF ENVIRONMENTAL CONSERVATION 625 BROADWAY		City and State: ALBANY, NY	Zip Code: 12233
EMPLOYER IDENTIFICATION NUMBER:	OR	SOCIAL SECURITY NUMBER:	

CERTIFICATION ▼

I swear or affirm that this return, including any accompanying schedules, affidavits and attachments, has been examined by me and is, to the best of my knowledge, a true and complete return made in good faith, pursuant to Title 11, Chapter 21 of the Administrative Code and the regulations issued thereunder.

GRANTOR

Sworn to and subscribed to before me on this 16 day of July, 2026.

87-1681004
EMPLOYER IDENTIFICATION NUMBER OR SOCIAL SECURITY NUMBER

BARTLETT CROSSING LLC
Name of Grantor

Karina G Taveras
Signature of Notary

Signature of Grantor

Notary's stamp or seal

Karina G. Taveras
Notary Public - State of New York
NO. 01G06354249
Qualified in Kings County
My Commission Expires 2/6/29

GRANTEE

Sworn to and subscribed to before me on this _____ day of _____, _____.

14-6013200
EMPLOYER IDENTIFICATION NUMBER OR SOCIAL SECURITY NUMBER

NYS DEPT. OF ENVIRONMENTAL CONSERVATION
Name of Grantee

Signature of Notary

Signature of Grantee

Notary's stamp or seal

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TP-584-NYC (6/25)

Department of Taxation and Finance

Combined Real Estate Transfer Tax Return, Credit Line Mortgage Certificate, and Certification of Exemption from the Payment of Estimated Personal Income Tax for the Conveyance of Real Property Located in New York City

Recording office time stamp

See Form TP-584-NYC-I, Instructions for Form TP-584-NYC, *before completing this form. Print or type.*

Schedule A – Information relating to conveyance

Grantor/Transferor

☐ Individual
☐ Corporation
☐ Partnership
☐ Estate/Trust
☑ Single member LLC
☐ Multi-member LLC
☐ Other

Name *(if individual, last, first, middle initial)* (☐ *mark an X if more than one grantor*): BARTLETT CROSSING LLC

Social Security number (SSN):

Mailing address: 2 KINGSLAND AVENUE

SSN:

City	State	ZIP code
BROOKLYN	NY	11211

Employer identification number (EIN): 87 | 1681004

Single member's name if grantor is a single member LLC *(see instructions)*: BARTLETT CROSSING MANAGERS LLC

Single member EIN or SSN: 87-1681004

Grantee/Transferee

☐ Individual
☐ Corporation
☐ Partnership
☐ Estate/Trust
☐ Single member LLC
☐ Multi-member LLC
☑ Other

Name *(if individual, last, first, middle initial)* (☐ *mark an X if more than one grantee*): NYS DEPT. OF ENVIRONMENTAL CONSERVATION

SSN:

Mailing address: 625 BROADWAY

SSN:

City	State	ZIP code
ALBANY	NY	12233

EIN: 14 | 6013200

Single member's name if grantee is a single member LLC *(see instructions)*:

Single member EIN or SSN:

Location and description of property conveyed

Tax map designation – Section, block & lot *(include dots and dashes)*	SWIS code (six digits)	Street address	City, town, or village	County
3 - 2268 - 1	650000	633-667 FLUSHING AVENUE	NEW YORK	BROOKLYN / KINGS

Type of property conveyed *(mark an X in applicable box)*

1 ☐ One- to three-family house
2 ☐ Residential cooperative
3 ☐ Residential condominium
4 ☐ Vacant land
5 ☐ Commercial/Industrial
6 ☐ Apartment building
7 ☐ Office building
8 ☐ Four-family dwelling
9 ☑ Other OTHER

Date of conveyance: 6 (month) | 1 (day) | 2026 (year)

☐ Contract executed on or before April 1, 2019 *(see instructions)*

Percentage of real property conveyed which is residential real property 0 % *(see instructions)*

Condition of conveyance *(mark all that apply)*

a. ☐ Conveyance of fee interest
b. ☐ Acquisition of a controlling interest (state percentage acquired _____ %)
c. ☐ Transfer of a controlling interest (state percentage transferred _____ %)
d. ☐ Conveyance to cooperative housing corporation
e. ☐ Conveyance pursuant to or in lieu of foreclosure or enforcement of security interest *(attach Form TP-584.1, Schedule E)*
f. ☐ Conveyance which consists of a mere change of identity or form of ownership or organization *(attach Form TP-584.1, Schedule F)*
g. ☐ Conveyance for which credit for tax previously paid will be claimed *(attach Form TP-584.1, Schedule G)*
h. ☐ Conveyance of cooperative apartment(s)
i. ☐ Syndication
j. ☐ Conveyance of air rights or development rights
k. ☐ Contract assignment
l. ☐ Option assignment or surrender
m. ☐ Leasehold assignment or surrender
n. ☐ Leasehold grant
o. ☑ Conveyance of an easement
p. ☐ Conveyance for which exemption from transfer tax claimed *(complete Schedule B, Part 4)*
q. ☐ Conveyance of property partly within and partly outside the state
r. ☐ Conveyance pursuant to divorce or separation
s. ☐ Other *(describe)* _____

For recording officer's use	Amount received	Date received	Transaction number
	Schedule B, Part 1 $		
	Schedule B, Part 2 $		
	Schedule B, Part 3 $		

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Schedule B – Real estate transfer tax return (Tax Law Article 31)

Part 1 – Computation of tax due *(in addition to the tax on line 4, you must compute the tax on lines 5a and 5b, if applicable)*

1	Enter amount of consideration for the conveyance *(if you are claiming a total exemption from tax, mark an **X** in the* Exemption claimed *box, enter consideration and proceed to Part 4)* ☐ **Exemption claimed**	1.	0 00
2	Continuing lien deduction *(see instructions if property is taken subject to mortgage or lien)*	2.	0 00
3	Taxable consideration *(subtract line 2 from line 1)*	3.	0 00
4	Tax: $2 for each $500, or fractional part thereof, of consideration on line 3	4.	0 00
5a	Tax: $1.25 for each $500, or fractional part thereof, of consideration for the conveyance of residential real property located in New York City if the amount on line 3 is $3 million or more *(see instructions)*	5a.	0 00
5b	Tax: $1.25 for each $500, or fractional part thereof, of consideration for the conveyance of property located in New York City other than residential real property, if the amount on line 1 is $2 million or more *(see instructions)*	5b.	0 00
6	Total before credit(s) claimed *(add lines 4, 5a, and 5b)*	6.	0 00
7	Amount of credit claimed for tax previously paid *(see instructions and attach Form TP-584.1, Schedule G)*	7.	0 00
8	Total tax due* *(subtract line 7 from line 6)*	8.	0 00

Part 2 – Computation of additional tax due on the conveyance of residential real property for $1 million or more

1	Enter amount of consideration for conveyance *(from Part 1, line 1; if you are claiming an exemption from additional tax, enter **0**, mark an **X** in the* Exemption claimed *box and proceed to Part 4, item l.)* ☐ **Exemption claimed**	1.	0 00
2	Taxable consideration *(multiply line 1 by the percentage of the premises which is residential real property, as shown in Schedule A)*	2.	0 00
3	Total additional transfer tax due* *(multiply line 2 by 1% (.01))*	3.	0 00

Part 3 – Computation of supplemental tax due on the conveyance of residential real property, or interest therein, located in New York City, for $2 million or more *(see instructions)*

1	Enter amount of consideration for conveyance *(from Part 1, line 1)*	1.	0 00
2	Taxable consideration *(multiply line 1 by the percentage of the premises which is residential real property, as shown in Schedule A)*	2.	0 00
3	Total supplemental transfer tax due* *(multiply line 2 by tax rate, see instruction for rates)*	3.	0 00

*** The total tax (from Part 1, line 8; Part 2, line 3; and Part 3, line 3 above) is due within 15 days from the date of conveyance.**

Part 4 – Explanation of exemption claimed *(mark an **X** in any boxes that apply)*

The conveyance of real property is exempt from the real estate transfer tax for the following reason:

a. Conveyance is to the United States of America, New York State, or any of their instrumentalities, agencies, or political subdivisions (or any public corporation, including a public corporation created pursuant to agreement or compact with another state or Canada) ..... a ☐

b. Conveyance is to secure a debt or other obligation ..... b ☐

c. Conveyance is without additional consideration to confirm, correct, modify, or supplement a prior conveyance ..... c ☐

d. Conveyance of real property is without consideration and not in connection with a sale, including conveyances conveying realty as bona fide gifts ..... d ☐

e. Conveyance is given in connection with a tax sale ..... e ☐

f. Conveyance is a mere change of identity or form of ownership or organization where there is no change in beneficial ownership. (This exemption cannot be claimed for a conveyance to a cooperative housing corporation of real property comprising the cooperative dwelling or dwellings.) Attach Form TP-584.1, Schedule F ..... f ☐

g. Conveyance consists of deed of partition ..... g ☐

h. Conveyance is given pursuant to the federal Bankruptcy Act ..... h ☐

i. Conveyance consists of the execution of a contract to sell real property, without the use or occupancy of such property, or the granting of an option to purchase real property, without the use or occupancy of such property ..... i ☐

j. Conveyance of an option or contract to purchase real property with the use or occupancy of such property where the consideration is less than $200,000 and such property was used solely by the grantor as the grantor's personal residence and consists of a one-, two-, or three-family house, an individual residential condominium unit, or the sale of stock in a cooperative housing corporation in connection with the grant or transfer of a proprietary leasehold covering an individual residential cooperative apartment ..... j ☐

k. Conveyance is not a conveyance within the meaning of Tax Law, Article 31, § 1401(e) *(attach documents supporting such claim)* ..... k ☐

l. Conveyance is for open space, parks, or historic preservation purposes to any not-for-profit tax-exempt corporation operated for conservation, environmental, parks, or historic preservation purposes (additional tax only) ..... l ☐

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Schedule C – Credit Line Mortgage Certificate (Tax Law, Article 11)

Complete the following only if the interest being transferred is a fee simple interest.
I (we) certify that: *(mark an **X** in the appropriate box)*

1. ☑ The real property being sold or transferred is not subject to an outstanding credit line mortgage.

2. ☐ The real property being sold or transferred is subject to an outstanding credit line mortgage. However, an exemption from the tax is claimed for the following reason:
   a ☐ The transfer of real property is a transfer of a fee simple interest to a person or persons who held a fee simple interest in the real property (whether as a joint tenant, a tenant in common or otherwise) immediately before the transfer.

   b ☐ The transfer of real property is (A) to a person or persons related by blood, marriage or adoption to the original obligor or to one or more of the original obligors or (B) to a person or entity where 50% or more of the beneficial interest in such real property after the transfer is held by the transferor or such related person or persons (as in the case of a transfer to a trustee for the benefit of a minor or the transfer to a trust for the benefit of the transferor).

   c ☐ The transfer of real property is a transfer to a trustee in bankruptcy, a receiver, assignee, or other officer of a court.

   d ☐ The maximum principal amount secured by the credit line mortgage is $3,000,000 or more, and the real property being sold or transferred is **not** principally improved nor will it be improved by a one- to six-family owner-occupied residence or dwelling.

   Note: for purposes of determining whether the maximum principal amount secured is $3,000,000 or more as described above, the amounts secured by two or more credit line mortgages may be aggregated under certain circumstances. See TSB-M-96(6)-R for more information regarding these aggregation requirements.

   e ☐ Other *(attach detailed explanation)*.

3. ☐ The real property being transferred is presently subject to an outstanding credit line mortgage. However, no tax is due for the following reason:
   a ☐ A certificate of discharge of the credit line mortgage is being offered at the time of recording the deed.

   b ☐ A check has been drawn payable for transmission to the credit line mortgagee or his agent for the balance due, and a satisfaction of such mortgage will be recorded as soon as it is available.

4. ☐ The real property being transferred is subject to an outstanding credit line mortgage recorded in _____ (insert liber and page or reel or other identification of the mortgage). The maximum principal amount of debt or obligation secured by the mortgage is _____. No exemption from tax is claimed and the tax of _____ is being paid herewith. *(Make check payable to county clerk where deed will be recorded or, if the recording is to take place in New York City but not in Richmond County, make check payable to the **NYC Department of Finance.**)*

Signature (both the grantor(s) and grantee(s) must sign)

The undersigned certify that the above information contained in schedules A, B, and C, including any return, certification, schedule, or attachment, is to the best of his/her knowledge, true and complete, and authorize the person(s) submitting such form on their behalf to receive a copy for purposes of recording the deed or other instrument effecting the conveyance.

Grantor signature	Title	Grantee signature	Title
Grantor signature	Title	Grantee signature	Title

Reminder: Did you complete all of the required information in Schedules A, B, and C? Are you required to complete Schedule D? If you marked *e*, *f*, or *g* in Schedule A, did you complete Form TP-584.1? If the contract was executed prior to April 1, 2019, did you attach the necessary verification? Have you attached your check(s) made payable to the county clerk where recording will take place or, if the recording is in the New York City boroughs of Manhattan, Bronx, Brooklyn, or Queens, to the ***NYC Department of Finance***? If no recording is required, send this return and your check(s), made payable to the ***NYS Department of Taxation and Finance***, directly to the NYS Tax Department, RETT Return Processing, PO Box 5045, Albany NY 12205-0045. If not using U.S. Mail, see Publication 55, *Designated Private Delivery Services*.

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Signature (both the grantor(s) and grantee(s) must sign)

The undersigned certify that the above information contained in schedules A, B, and C, including any return, certification, schedule, or attachment, is to the best of his/her knowledge, true and complete, and authorize the person(s) submitting such form on their behalf to receive a copy for purposes of recording the deed or other instrument effecting the conveyance.

Grantor signature	Title	Grantee signature	Title
Grantor signature	Title	Grantee signature	Title

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Schedule D – Certification of exemption from the payment of estimated personal income tax (Tax Law, Article 22, § 663)

Complete the following only if a fee simple interest or a cooperative unit is being transferred by an individual or estate or trust.

If the property is being conveyed by a referee pursuant to a foreclosure proceeding, proceed to Part 2, mark the second box under *Exemptions for nonresident transferor(s)/seller(s)*, and sign at bottom.

Part 1 – New York State residents

If you are a New York State resident transferor(s)/seller(s) listed in Form TP-584-NYC, Schedule A (or an attachment to Form TP-584-NYC), you must sign the certification below. If one or more transferors/sellers of the real property or cooperative unit is a resident of New York State, **each** resident transferor/seller must sign in the space provided. If more space is needed, photocopy this Schedule D and submit as many schedules as necessary to accommodate all resident transferors/sellers.

Certification of resident transferor(s)/seller(s)

This is to certify that at the time of the sale or transfer of the real property or cooperative unit, the transferor(s)/seller(s) as signed below was a resident of New York State, and therefore is not required to pay estimated personal income tax under Tax Law, § 663(a) upon the sale or transfer of this real property or cooperative unit.

Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date

Note: A resident of New York State may still be required to pay estimated tax under Tax Law, § 685(c), but not as a condition of recording a deed.

Part 2 – Nonresidents of New York State

If you are a nonresident of New York State listed as a transferor/seller in Form TP-584-NYC, Schedule A (or an attachment to Form TP-584-NYC) but are not required to pay estimated personal income tax because one of the exemptions below applies under Tax Law, § 663(c), mark the box of the appropriate exemption below. If any one of the exemptions below applies to the transferor(s)/seller(s), that transferor(s)/seller(s) is not required to pay estimated personal income tax to New York State under Tax Law, § 663. **Each** nonresident transferor/seller who qualifies under one of the exemptions below must sign in the space provided. If more space is needed, photocopy this Schedule D and submit as many schedules as necessary to accommodate all nonresident transferors/sellers.

If none of these exemption statements apply, you must complete Form IT-2663, *Nonresident Real Property Estimated Income Tax Payment Form*, or Form IT-2664, *Nonresident Cooperative Unit Estimated Income Tax Payment Form.* For more information, see *Payment of estimated personal income tax,* on Form TP-584-NYC-I, page 1.

Exemption for nonresident transferor(s)/seller(s)

This is to certify that at the time of the sale or transfer of the real property or cooperative unit, the transferor(s)/seller(s) (grantor) of this real property or cooperative unit was a nonresident of New York State, but is not required to pay estimated personal income tax under Tax Law, § 663 due to one of the following exemptions:

☐ The real property or cooperative unit being sold or transferred qualifies in total as the transferor's/seller's principal residence (within the meaning of Internal Revenue Code, section 121) from _____ (Date) to _____ (Date) *(see instructions)*.

☐ The transferor/seller is a mortgagor conveying the mortgaged property to a mortgagee in foreclosure, or in lieu of foreclosure with no additional consideration.

☐ The transferor or transferee is an agency or authority of the United States of America, an agency or authority of the state of New York, the Federal National Mortgage Association, the Federal Home Loan Mortgage Corporation, the Government National Mortgage Association, or a private mortgage insurance company.

Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date

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Certification of resident transferor(s)/seller(s)

This is to certify that at the time of the sale or transfer of the real property or cooperative unit, the transferor(s)/seller(s) as signed below was a resident of New York State, and therefore is not required to pay estimated personal income tax under Tax Law, section 663(a) upon the sale or transfer of this real property or cooperative unit.

Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date

Exemption for nonresident transferor(s)/seller(s)

This is to certify that at the time of the sale or transfer of the real property or cooperative unit, the transferor(s)/seller(s) (grantor) of this real property or cooperative unit was a nonresident of New York State, but is not required to pay estimated personal income tax under Tax Law, section 663 due to one of the following exemptions:

☐ The real property or cooperative unit being sold or transferred qualifies in total as the transferor's/seller's principal residence (within the meaning of Internal Revenue Code, section 121) from _____ (Date) to _____ (Date) *(see instructions)*.

☐ The transferor/seller is a mortgagor conveying the mortgaged property to a mortgagee in foreclosure, or in lieu of foreclosure with no additional consideration.

☐ The transferor or transferee is an agency or authority of the United States of America, an agency or authority of the state of New York, the Federal National Mortgage Association, the Federal Home Loan Mortgage Corporation, the Government National Mortgage Association, or a private mortgage insurance company.

Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date

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APPENDIX B

List of Site Contacts

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APPENDIX B – LIST OF SITE CONTACTS

Name	Phone/Email Address
Site Owner: Bartlett Crossing LLC, Bartlett Crossing Managers LLC, Bartlett Crossing UNP LLC, and Bartlett Crossing Development Fund Company, Inc.	(718) 388-5454 ebrathwaite@stnicksalliance.org
Remedial Party: Bartlett Crossing LLC, Bartlett Crossing Managers LLC, Bartlett Crossing UNP LLC, and Bartlett Crossing Development Fund Company, Inc.	(718) 388-5454 ebrathwaite@stnicksalliance.org
Qualified Environmental Professional: Jessica Taylor, P.G.	(631) 232-2600 jtaylor@rouxinc.com
Remedial Engineer: David Kaiser, P.E.	(631) 232-2600 dkaiser@rouxinc.com
NYSDEC DER Project Manager: Nour Haredy	(718) 482-6333 nour.haredy@dec.ny.gov
NYSDEC DER Project Manager's Supervisor: Jane H. O'Connell	(718) 482-4599 jane.oconnell@dec.ny.gov
NYSDEC Site Control	(518) 402-9543 DERSiteControl@dec.ny.gov
NYSDOH Project Manager: Michele Dolan	(518) 402-7860 Michele.dolan@health.ny.gov
Remedial Party Attorney: George Duke	(212) 450-9847 gduke@foxrothschild.com

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APPENDIX C

Monitoring Well Boring and Construction Logs

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RXA2-01

Client: Bartlett Crossing LLC	Site: Broadway Triangle Site A	Project Number: 3605.0001Y004	
Address: 663-667 Flushig Avenue & 29-31 Bartlett St	City/State: Brooklyn, New York	Logged By: Lauren Jenkins	
Start to Finish Date: 4/25/2022 - 4/26/2022	Contractor: Trinity Environmental Corp.	Drill Type: Geoprobe	Sampler Type/Method: 2" Macro-Core
Borehole Depth: 10 feet	Backfill: Soil Cuttings	Borehole Diameter: 2-inches	DTW:
Area: Parcel A2	Elevation: 14.14 ft	Northing: 194663.1	Easting: 998844.9

Depth (ft)	USCS	USCS Graphic	Visual Description	Sample Interval	Recovery (ft)	PID	Notes
	MIXD		Brown, fine to coarse SAND, some Silt, little medium to coarse Gravel, trace brick and organics (FILL); moist.			0.0	Precleared to 5 ft bls. Collected soil sample RXA2-01 (0-2) for TCL+30/TAL and emerging contaminants.
	MIXD		Brown, fine to coarse SAND, some Silt, trace medium to coarse gravel and brick (FILL); moist.	G	5	0.0	
5	MIXD		Brown, fine to coarse SAND, some fine to medium Gravel, little Silt, trace brick and concrete (FILL); moist.		2	0.0	
	SW		Grayish brown, fine to coarse SAND, little Cobble, trace fine gravel and silt; wet.			0.0	Groundwater encountered at 8 ft bls. Collect soil sample RXA2-01 (8-10) for TCL+30/TAL and emerging contaminants.
			Bottom of borehole at 10 feet				

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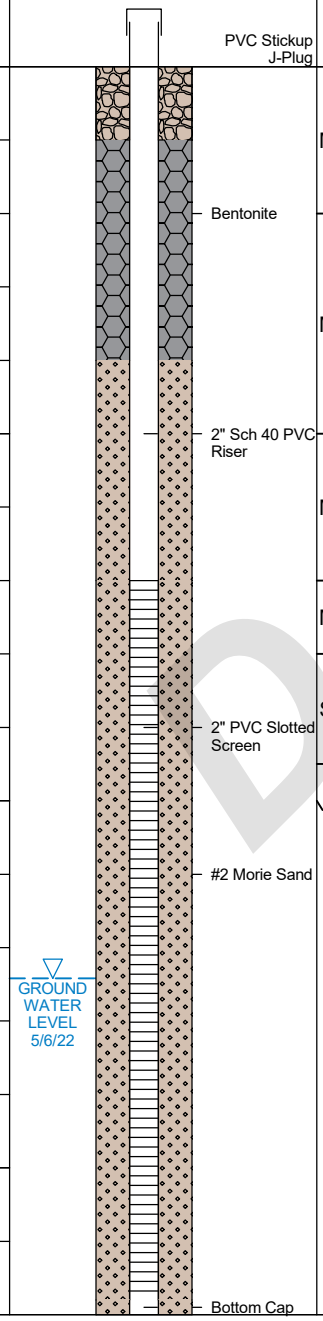
RXA2-02

Client:	Site:	Project Number:
Bartlett Crossing LLC	Broadway Triangle Site A	3605.0001Y004
Address:	**City/State:**	**Logged By:**
663-667 Flushig Avenue & 29-31 Bartlett St	Brooklyn, New York	Lauren Jenkins

Start to Finish Date:	Contractor:	Drill Type:	Sampler Type/Method:
4/25/2022 - 4/26/2022	Trinity Environmental Corp.	Geoprobe	2" Macro-Core
Borehole Depth:	**Backfill:**	**Borehole Diameter:**	**DTW:**
17 feet	Soil Cuttings	2-inches	12.42 feet
Area:	**Elevation:**	**Northing:**	**Easting:**
Parcel A2	TOC 16.80 ft; Surface 13.83 ft	194630.2	998834.5

Well Depth:	Well Dia./Materials:	Screen Interval:	Screen Slot Size:	Sand/Filter Pack Size:	Annular Seal:
17 feet	2-inch SCH 40 PVC	7-17 feet	20-Slot	Morie #2	Bentonite



Depth (ft)	USCS	USCS Graphic	Visual Description	Sample Interval	Recovery (ft)	PID	Notes
	MIXD		Brown, fine to coarse SAND, some Silt and fine to medium Gravel, little Brick, trace cobble (FILL); moist.			0.0	Precleared to 5 ft bls.
							Collected soil sample RXA2-02 (0-2) for TCL+30/TAL and emerging contaminants.
	MIXD		Brown, fine to coarse SAND, some Silt, little fine to medium Gravel, trace brick (FILL); moist.	G	5	0.0	
5	MIXD		Reddish brown, fine to coarse SAND, some fine to medium Gravel, little Silt, trace brick (FILL); moist.			0.0	Collected soil sample RXA2-02 (6-8) for TCL+30/TAL and emerging contaminants.
	MIXD		Grayish brown, fine to coarse SAND, some fine to medium Gravel, little Silt, trace brick and asphalt (FILL); moist.		4.5	1.1	
	SWG		Brown, fine to coarse Sand, some fine to coarse Cobble, little Silt; wet.			0.0	Groundwater encountered at 8 ft bls.
10	SP-SM		Gray, fine to medium SAND, some Silt, trace cobble; wet.			0.1	
			No Lithology Recorded.				

Bottom of borehole at 17 feet

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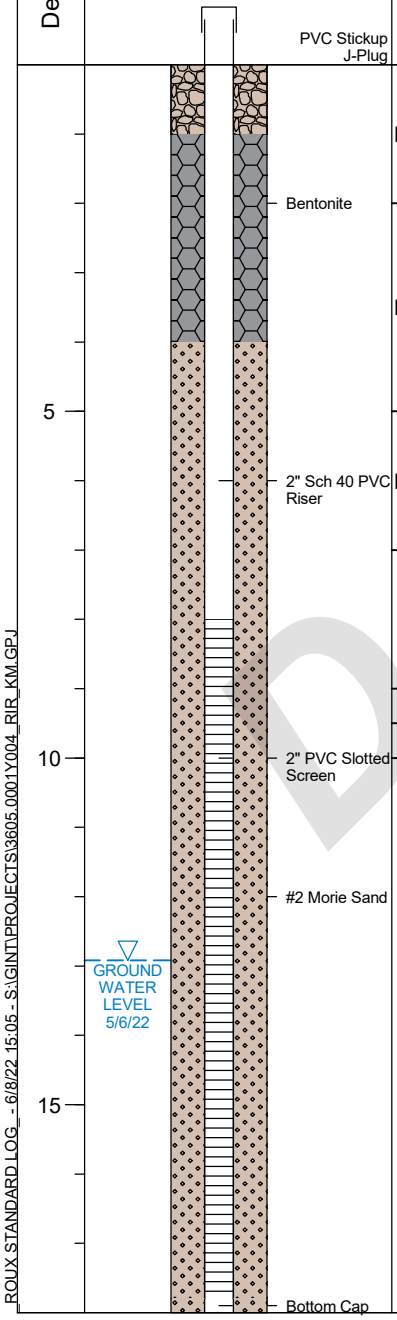
RXA2-03

Client: Bartlett Crossing LLC	Site: Broadway Triangle Site A	Project Number: 3605.0001Y004
Address: 663-667 Flushig Avenue & 29-31 Bartlett St	City/State: Brooklyn, New York	Logged By: Lauren Jenkins

Start to Finish Date: 4/25/2022 - 4/26/2022	Contractor: Trinity Environmental Corp.	Drill Type: Geoprobe	Sampler Type/Method: 2" Macro-Core
Borehole Depth: 18 feet	Backfill: Soil Cuttings	Borehole Diameter: 2-inches	DTW: 12.92 feet
Area: Parcel A2	Elevation: TOC 15.65 ft; Surface 13.76 ft	Northing: 194627.3	Easting: 998882.4

Well Depth: 18 feet	Well Dia./Materials: 2-inch SCH 40 PVC	Screen Interval: 8-18 feet	Screen Slot Size: 20-Slot	Sand/Filter Pack Size: Morie #2	Annular Seal: Bentonite



Depth (ft)	USCS	USCS Graphic	Visual Description	Sample Interval	Recovery (ft)	PID	Notes
0	MIXD		Brown, fine to coarse SAND, some Silt, little fine to medium Gravel, trace brick and organics (FILL); moist.			0.0	Precleared to 5 ft bls.
	MIXD		Brown, fine to coarse SAND, some Silt, little fine to medium Gravel, trace brick (FILL); moist.	G	5	0.0	Collected soil sample RXA2-03 (0-2) for TCL+30/TAL and emerging contaminants.
5	MIXD		Brown, fine to coarse SAND, some fine to medium Gravel, little Brick, trace silt and cobble (FILL); moist.			0.0	Collect soil sample RXA2-03 (5-7) for TCL+30/TAL and emerging contaminants.
	SW		Brown, medium to coarse SAND, little fine Gravel, trace silt; wet.		4	0.0	Groundwater encountered at 7 ft bls.
	SW		Gray, fine to coarse SAND, little fine Gravel, trace silt; wet.			0.0	
10	ML		Dark gray, SILT, little fine Sand; wet.			0.0	
			No Lithology Recorded.				

Bottom of borehole at 18 feet

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RXA2-04

Client: Bartlett Crossing LLC	Site: Broadway Triangle Site A	Project Number: 3605.0001Y004
Address: 663-667 Flushig Avenue & 29-31 Bartlett St	City/State: Brooklyn, New York	Logged By: Lauren Jenkins

Start to Finish Date: 4/25/2022 - 4/26/2022	Contractor: Trinity Environmental Corp.	Drill Type: Geoprobe	Sampler Type/Method: 2" Macro-Core
Borehole Depth: 10 feet	Backfill: Soil Cuttings	Borehole Diameter: 2-inches	DTW:
Area: Parcel A2	Elevation: 13.17 ft	Northing: 194588	Easting: 998873.5

Depth (ft)	USCS	USCS Graphic	Visual Description	Sample Interval	Recovery (ft)	PID	Notes
	MIXD		Brown, fine to coarse SAND, some Silt, little fine to medium Gravel, trace brick and organics (FILL); moist.			0.0	Precleared to 5 ft bls. Collected soil sample RXA2-04 (0-2) for TCL+30/TAL and emerging contaminants.
	MIXD		Brown, fine to coarse SAND, some Silt, little fine to medium Gravel, trace brick and organics (FILL); moist.	G	5	0.0	
5	MIXD		Brown, fine to coarse SAND, some fine to medium Gravel, little Silt, trace brick (FILL); moist.			0.0	Collected soil sample RXA2-04 (5-7) for TCL+30/TAL and emerging contaminants.
	SW		Brown, fine to coarse SAND, litte Silt, trace cobble; wet.		3.5	0.0	Groundwater encountered at 7 ft bls.
	SW		Gray, fine to coarse SAND, little Silt, trace cobble; wet.			0.0	
	ML		Black, SILT, little fine Sand; wet.			0.0	
			Bottom of borehole at 10 feet				

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RXA-4901

Client:	Site:	Project Number:
Bartlett Crossing LLC	Broadway Triangle Site A	3605.0001Y004
Address:	**City/State:**	**Logged By:**
663-667 Flushig Avenue & 29-31 Bartlett St	Brooklyn, New York	Lauren Jenkins

Start to Finish Date:	Contractor:	Drill Type:	Sampler Type/Method:
4/26/2022 - 4/27/2022	Trinity Environmental Corp.	Geoprobe	2" Macro-Core
Borehole Depth:	**Backfill:**	**Borehole Diameter:**	**DTW:**
16 feet	Soil Cuttings	2-inches	8.83 feet
Area:	**Elevation:**	**Northing:**	**Easting:**
Parcel A1	TOC 18.66 ft; Surface 14.73 ft	194497.8	999060.7

Well Depth:	Well Dia./Materials:	Screen Interval:	Screen Slot Size:	Sand/Filter Pack Size:	Annular Seal:
16 feet	2-inch SCH 40 PVC	6-16 feet	20-Slot	Morie #2	Bentonite

Depth (ft)	Well Diagram	USCS	USCS Graphic	Visual Description	Sample Interval	Recovery (ft)	PID	Notes
	PVC Stickup J-Plug			Brown, fine to coarse SAND, little Silt, trace brick, cobble, and organics (FILL); moist.			0.0	Precleared to 5 ft bls. Collected soil sample RXA-4901 (0-2) for TCL+30/TAL and emerging contaminants.
	Bentonite	MIXD		Brown, fine to coarse SAND, some Silt, little fine to medium Gravel, trace brick (FILL); moist.	G	5	0.0	
	2" Sch 40 PVC Riser	MIXD						
5		MIXD		Brown, fine to coarse SAND, some Silt, little gravel, trace brick and concrete (FILL); moist.			0.0	Collected soil sample RXA-4901 (5-7) for TCL+30/TAL and emerging contaminants.
	GROUND WATER LEVEL 5/9/22	MLS		Light brown, SILT, some fine Sand; wet.		4.5	0.0	Groundwater encountered at 7 ft bls.
	2" PVC Slotted Screen	SP-SM		Light brown, fine to medium SAND, some Silt; wet.			0.0	
10	#2 Morie Sand			No Lithology Recorded.				
15	Bottom Cap							

Bottom of borehole at 16 feet

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ROUX STANDARD LOG - 6/8/22 15:06 - S:\GINT\PROJECTS\3605.0001Y004_RIR_KM.GPJ

RXA-4902

Client:	Site:	Project Number:
Bartlett Crossing LLC	Broadway Triangle Site A	3605.0001Y004
Address:	**City/State:**	**Logged By:**
663-667 Flushig Avenue & 29-31 Bartlett St	Brooklyn, New York	Lauren Jenkins

Start to Finish Date:	Contractor:	Drill Type:	Sampler Type/Method:
4/26/2022 - 4/27/2022	Trinity Environmental Corp.	Geoprobe	2" Macro-Core
Borehole Depth:	**Backfill:**	**Borehole Diameter:**	**DTW:**
16 feet	Soil Cuttings	2-inches	7.50 feet
Area:	**Elevation:**	**Northing:**	**Easting:**
Parcel A1	TOC 16.83 ft; Surface 13.07 ft	194443	999104.7

Well Depth:	Well Dia./Materials:	Screen Interval:	Screen Slot Size:	Sand/Filter Pack Size:	Annular Seal:
16 feet	2-inch SCH 40 PVC	6-16 feet	20-Slot	Morie #2	Bentonite

Depth (ft)	Well Diagram	USCS	USCS Graphic	Visual Description	Sample Interval	Recovery (ft)	PID	Notes
	PVC Stickup J-Plug							
		MIXD		Brown, fine to coarse SAND, some Silt, little fine to medium Gravel, trace brick and organics (FILL); moist.			0.0	Precleared to 5 ft bls. Collected soil sample RXA-4902(0-2) for TCL+30/TAL and emerging contaminants.
	Bentonite							
		MIXD		Brown, fine to coarse SAND, some Silt, little fine to medium Gravel, trace brick (FILL); moist.	G	5	0.0	
	2" Sch 40 PVC Riser							
5		MIXD		Brown, fine to coarse SAND, little Silt, trace brick and gravel (FILL); moist.			0.0	Collect soil sample RXA-4902 (6-8) for TCL+30/TAL and emerging contaminants.
	GROUND WATER LEVEL 5/6/22	SW		Grayish brown, fine to coarse SAND, little Silt, trace gravel; moist.		4	0.0	
	2" PVC Slotted Screen			Light brown, medium to coarse SAND, trace silt and cobble; wet.				Groundwater encountered at 8 ft bls.
		SP					0.0	
10	#2 Morie Sand			No Lithology Recorded.				
15	Bottom Cap							

Bottom of borehole at 16 feet

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RXA-4903

Client:	Site:	Project Number:
Bartlett Crossing LLC	Broadway Triangle Site A	3605.0001Y004
Address:	**City/State:**	**Logged By:**
663-667 Flushig Avenue & 29-31 Bartlett St	Brooklyn, New York	Lauren Jenkins

Start to Finish Date:	Contractor:	Drill Type:	Sampler Type/Method:
4/25/2022 - 4/25/2022	Trinity Environmental Corp.	Hand Auger	2" Macro-Core
Borehole Depth:	**Backfill:**	**Borehole Diameter:**	**DTW:**
2 feet	Soil Cuttings	2-inches	
Area:	**Elevation:**	**Northing:**	**Easting:**
Parcel A1	14.08 ft	194477.9	999067.1

Depth (ft)	USCS	USCS Graphic	Visual Description	Sample Interval	Recovery (ft)	PID	Notes
1	MIXD		Brown, fine to coarse SAND, some Silt, little fine to medium Gravel, trace brick and organics (FILL); moist.	G	2	0.0	Precleared to 2 ft bls. Collected soil sample RXA-4903 (0-2) for TCL+30/TAL and emerging contaminants.

Bottom of borehole at 2 feet

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RXA-5102

Client:	Site:	Project Number:
Bartlett Crossing LLC	Broadway Triangle Site A	3605.0001Y004
Address:	**City/State:**	**Logged By:**
663-667 Flushig Avenue & 29-31 Bartlett St	Brooklyn, New York	Lauren Jenkins

Start to Finish Date:	Contractor:	Drill Type:	Sampler Type/Method:
4/26/2022 - 4/27/2022	Trinity Environmental Corp.	Geoprobe	2" Macro-Core
Borehole Depth:	**Backfill:**	**Borehole Diameter:**	**DTW:**
10 feet	Soil Cuttings	2-inches	
Area:	**Elevation:**	**Northing:**	**Easting:**
Parcel A1	13.17 ft	194433.9	999062.2

Depth (ft)	USCS	USCS Graphic	Visual Description	Sample Interval	Recovery (ft)	PID	Notes
	MIXD		Brown, fine to coarse SAND, some Silt, little fine to medium Gravel, trace brick and organics (FILL); moist.			0.0	Precleared to 5 ft bls. Collected soil sample RXA-5102 (0-2) for TCL+30/TAL and emerging contaminants.
	MIXD		Grayish brown, fine to coarse SAND, some fine to medium Gravel, little Silt, trace brick (FILL); moist.	G	5	0.0	
5	MIXD		Brown, fine to coarse SAND, some Silt, little fine Gravel, trace brick and wood (FILL); moist.			0.0	Collected soil sample RXA-5102 (6-8) for TCL+30/TAL and emerging contaminants.
	SW-SM		Brown, fine to coarse SAND, some Silt, trace cobble; moist.		3.5	0.0	
	SP		Light brown, fine to medium SAND, little Silt, trace fine gravel; wet.			0.0	Groundwater encountered at 8 ft bls.
			Bottom of borehole at 10 feet				

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RXA-5202

Client:	Site:	Project Number:
Bartlett Crossing LLC	Broadway Triangle Site A	3605.0001Y004
Address:	**City/State:**	**Logged By:**
663-667 Flushig Avenue & 29-31 Bartlett St	Brooklyn, New York	Lauren Jenkins

Start to Finish Date:	Contractor:	Drill Type:	Sampler Type/Method:
4/26/2022 - 4/27/2022	Trinity Environmental Corp.	Geoprobe	2" Macro-Core
Borehole Depth:	**Backfill:**	**Borehole Diameter:**	**DTW:**
10 feet	Soil Cuttings	2-inches	
Area:	**Elevation:**	**Northing:**	**Easting:**
Parcel A1	14.06 ft	194468.9	999033.3

Depth (ft)	USCS	USCS Graphic	Visual Description	Sample Interval	Recovery (ft)	PID	Notes
	MIXD		Brown, fine to coarse SAND, some Silt, trace fine to medium gravel, brick, and organics (FILL); moist.			0.0	Precleared to 5 ft bls. Collected soil sample RXA-5202 (0-2) for TCL+30/TAL and emerging contaminants.
	MIXD		Grayish brown, fine to medium SAND, some Silt, little fine to medium Gravel, trace brick (FILL); moist.	G	5	0.0	
5	MIXD		Brown, fine to coarse SAND, some Silt, little Brick, trace gravel (FILL); moist.			0.0	Collected soil sample RXA-5202 (6-8) for TCL+30/TAL and emerging contaminants.
	SP-SM		Brown, fine to medium SAND, some Silt, trace fine gravel; moist.		5	0.0	
	SP-SM		Brown, fine SAND, some Silt, wet.			0.0	Groundwater encountered at 8 ft bls.
	MLS		Black, SILT, some fine Sand; wet.			0.0	
	MLS		Grayish brown, SILT, some fine Sand; wet.			0.0	
			Bottom of borehole at 10 feet				

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RXA-5301

Client:	Site:	Project Number:
Bartlett Crossing LLC	Broadway Triangle Site A	3605.0001Y004
Address:	**City/State:**	**Logged By:**
663-667 Flushig Avenue & 29-31 Bartlett St	Brooklyn, New York	Lauren Jenkins

Start to Finish Date:	Contractor:	Drill Type:	Sampler Type/Method:
4/25/2022 - 4/25/2022	Trinity Environmental Corp.	Hand Auger	2" Macro-Core
Borehole Depth:	**Backfill:**	**Borehole Diameter:**	**DTW:**
2 feet	Soil Cuttings	2-inches	
Area:	**Elevation:**	**Northing:**	**Easting:**
Parcel A1	13.99 ft	194454.5	999004.1

Depth (ft)	USCS	USCS Graphic	Visual Description	Sample Interval	Recovery (ft)	PID	Notes
1	MIXD		Brown, fine to coarse SAND, some medium to coarse Gravel, little Silt, trace brick (FILL); moist.	G	2	0.0	Precleared to 2 ft bls. Collected soil sample RXA-5301 (0-2) for TCL+30/TAL and emerging contaminants.

Bottom of borehole at 2 feet

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RXA-5302

Client:	Site:	Project Number:
Bartlett Crossing LLC	Broadway Triangle Site A	3605.0001Y004
Address:	**City/State:**	**Logged By:**
663-667 Flushig Avenue & 29-31 Bartlett St	Brooklyn, New York	Lauren Jenkins

Start to Finish Date:	Contractor:	Drill Type:	Sampler Type/Method:
4/27/2022 - 4/27/2022	Trinity Environmental Corp.	Geoprobe	2" Macro-Core
Borehole Depth:	**Backfill:**	**Borehole Diameter:**	**DTW:**
16 feet	Soil Cuttings	2-inches	9.42 feet
Area:	**Elevation:**	**Northing:**	**Easting:**
Parcel A1	TOC 17.63 ft; Surface 14.12 ft	194421.4	999009.1

Well Depth:	Well Dia./Materials:	Screen Interval:	Screen Slot Size:	Sand/Filter Pack Size:	Annular Seal:
16 feet	2-inch SCH 40 PVC	6-16 feet	20-Slot	Morie #2	Bentonite

Depth (ft)	Well Diagram	USCS	USCS Graphic	Visual Description	Sample Interval	Recovery (ft)	PID	Notes
	PVC Stickup J-Plug	CONC		CONCRETE.				Precleared to 5 ft bls.
	Bentonite	MIXD		Brown, fine to coarse SAND, some fine to medium Gravel, little Silt, trace brick (FILL); moist.	G	5	0.0 0.0	Collected soil sample RXA-5302 (0-2) for TCL+30/TAL and emerging contaminants.
5	2" Sch 40 PVC Riser	MLS		Reddish brown to gray, SILT, some fine Sand; moist.			0.0 0.0	Collected soil sample RXA-5302 (6-8) for TCL+30/TAL and emerging contaminants.
	2" PVC Slotted Screen	MLS		Grayish brown, SILT, some fine Sand; moist.		4	0.0	
	GROUND WATER LEVEL 5/9/22	SP		Light brown, fine to medium SAND, little Silt, trace cobble; wet.			0.0	Groundwater encountered at 8.5 ft bls.
10	#2 Morie Sand			No Lithology Recorded.				
15	Bottom Cap							

Bottom of borehole at 16 feet

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APPENDIX D

Excavation Work Plan

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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 or breach or alter the site's cover system, the site owner or their representative will notify the NYSDEC contacts listed in the table below. Table D-1includes contact information for the above notification. 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 of the SMP.

Table D-1: Notifications*

NYSDEC Project Manager: Nour Haredy	(718) 482-6333, nour.haredy@dec.ny.gov
NYSDEC Project Manager's Supervisor: Jane H. O'Connell	(718) 482-4599, jane.oconnell@dec.ny.gov
NYSDEC Site Control	(518) 402-9543, DERSiteControl@dec.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 below the soil cover, estimated volumes of contaminated soil to be excavated, any modifications of truck routes, and any work that may impact an engineering control;
- 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, and submittals (e.g., reports) to the NYSDEC documenting the completed intrusive work;
- A summary of the applicable components of this EWP;

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- A statement that the work will be performed in compliance with this EWP, 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 E of this SMP;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with the required request to import form 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. The alteration, restoration and modification of engineering controls must conform with Article 145 Section 7209 of the Education Law regarding the application professional seals and alterations.

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) or a breach of the cover system. A qualified environmental professional 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 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 COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal and material that requires testing to determine if the material can be reused on-site as soil beneath a cover or if the material can be used as cover soil. Further discussion of off-site disposal of materials and on-site reuse is provided in Section D-4 through D-7 of this Appendix.

D-3 SOIL STAGING METHODS

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

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Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week 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 qualified environmental professional 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 Plan.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. 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 NYSDOT requirements (and all other applicable transportation requirements). Trucks

transporting contaminated soil must have either tight-fitting opaque covers that are secured on the sides and/or back, or opaque covers that are locked on all sides.

A truck wash will be operated on-site, as appropriate. The qualified environmental professional 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.

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Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional 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

All 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 trucks properly placarded.

Material transported by trucks exiting the site will be secured with either tight-fitting opaque covers that are secured on the sides and/or back, or opaque covers that are locked on all sides. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes are as follows and displayed on Figure 1:

The inbound truck route to the Site is:

- From the Brooklyn-Queens expressway, take exit 32B south to Union Avenue (left turn)
- Turn southeast on Harrison Avenue (left turn)
- For site A1, turn east on Flushing Avenue (left turn) and immediately turn on Whipple Street (left turn), For site A2, turn east on Bartlett Street (left turn)

The outbound truck route from the Site is:

- For Site A1, go east on Whipple Street and go north on Throop Avenue (left turn), for Site A2, go east on Bartlett Street and go north on Throop Avenue (left turn)
- Turn east on Lorimer Street (right turn)
- Turn northwest on Broadway (left turn)

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- Turn north on union Avenue (right turn)
- Turn east on the Brooklyn-Queens Expressway (right turn)

All trucks loaded with site materials will exit the vicinity of the site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site.

Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during site remediation and development.

Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

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, C&D debris recovery facility). Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include, but will not be limited to: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

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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 361-5 registered or permitted facility).

D-7 MATERIALS REUSE ON-SITE

The qualified environmental professional, 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 the demarcation layer or impervious surface, and will not be reused within the cover system or within landscaping berms. Contaminated on-site material may only be used beneath the site cover as backfill for subsurface utility lines with prior approval from the DEC project manager.

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 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-2 and 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 must be approved by the NYSDEC project manager.

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Any demolition material proposed for reuse on-site will be sampled for asbestos 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 may only be reused on-site with written approval from the NYSDEC project manager.

D-8 FLUIDS MANAGEMENT

All liquids to be removed from the site, including but not limited to, excavation dewatering, decontamination waters and groundwater monitoring well purge and development waters, will be handled, transported and disposed off-site at a permitted facility in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the site, and will be managed off-site, unless prior approval is obtained from NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit.

D-9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities the cover system will be restored in a manner that complies with the decision document.

The existing cover system is comprised of a minimum of 24 inches of clean fill, or at least a 10-inch-thick layer of concrete building slab. The demarcation layer, consisting of orange snow fencing material (beneath clean fill areas only) will be replaced to provide a visual reference to the top of the remaining contamination zone, the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this SMP. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), as shown on Figures 6A and 6B of the SMP, this will constitute a modification of the cover element of the remedy and the upper surface of the remaining contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in an updated SMP. The alteration, restoration and modification of engineering controls must conform with Article 145 Section 7209 of the Education Law regarding the application professional seals and alterations.

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D-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional, as defined in 6 NYCRR Part 375, and will be in compliance with provisions in 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. A copy of the form is presented in Appendix [x].

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. Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in Table 1. 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-11 STORMWATER POLLUTION PREVENTION

Barriers and hay bale checks will be installed and inspected once a week 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. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

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All 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 damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. 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.

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

D-12 EXCAVATION CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition. The NYSDEC project manager will be promptly notified of the discovery.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes [TAL metals, TCL volatiles and semi-volatiles (including 1,4-dioxane), TCL pesticides and PCBs, and PFAS], unless the site history and previous sampling results provide sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC project manager for approval prior to sampling. Any tanks will be closed as per NYSDEC regulations and guidance.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone within two hours to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the Periodic Review Report.

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D-13 COMMUNITY AIR MONITORING PLAN

Air monitoring around the Site perimeter and within the community is described in the Community Air Monitoring Plan (CAMP) included in the HASP located in Appendix E of the SMP. The location of air sampling stations will be based on generally prevailing wind conditions.

All CAMP reports will be submitted to NYSDEC and NYSDOH Project Managers on a daily basis. Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers as soon as possible. All data is to be reported in the final report for the excavation activity.

D-13A: 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 weekends or evening hours in non-residential settings.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 part-per-million, 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 micrograms per cubic meter, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 micrograms per cubic meter or less at the monitoring point.
- Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be

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monitored. Response levels and actions should be pre-determined, as necessary, for each site.

D-13B: Special Requirements for Indoor Work with Co-Located Residences or Facilities

Unless a self-contained, negative-pressure enclosure with proper emission controls will encompass the work area, all individuals not directly involved with the planned work must be absent from the room in which the work will occur. Monitoring requirements shall be as stated above under "Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures" except that in this instance "nearby/occupied structures" would be adjacent occupied rooms. Additionally, the location of all exhaust vents in the room and their discharge points, as well as potential vapor pathways (openings, conduits, etc.) relative to adjoining rooms, should be understood and the monitoring locations established accordingly. In these situations, it is strongly recommended that exhaust fans or other engineering controls be used to create negative air pressure within the work area during remedial activities. Additionally, it is strongly recommended that the planned work be implemented during hours (e.g. weekends or evenings) when building occupancy is at a minimum.

D-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site and on-site. Specific odor control methods to be used on a routine basis will include limiting open excavation areas and covering excavated soil with polyethylene sheeting. 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 Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor

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nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) 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-15 DUST CONTROL PLAN

Particulate monitoring must be conducted according to the Community Air Monitoring Plan (CAMP) provided in Section D-13. 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 using a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles;
- Spraying water in vulnerable areas, in conjunction with water conservation and runoff management techniques;
- Use of properly anchored tarps to cover stockpiles; and
- Exercising extra care during dry and high-wind periods.

D-16 OTHER NUISANCES

A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

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Table 1. Backfill/On-Site Soil Reuse Soil Cleanup Objectives
Broadway Triangle Site A, Brooklyn, New York

Parameter	Track 4 Backfill/Soil Reuse Soil Cleanup Objectives*
Volatile Organic Compounds (Concentrations in µg/kg)	
1,1,1-Trichloroethane	680
1,1-Dichloroethane	270
1,1-Dichloroethene	330
1,2,4-Trimethylbenzene	3600
1,3,5-Trimethylbenzene	8400
1,2-Dichlorobenzene	1100
1,2-Dichloroethane	20
1,3-Dichlorobenzene	2400
1,4-Dichlorobenzene	1800
1,4-Dioxane	100
2-Butanone (MEK)	120
Acetone	50
Benzene	60
n-Butylbenzene	12000
Carbon tetrachloride	760
Chlorobenzene	1100
Chloroform	370
cis-1,2-Dichloroethene	250
Ethylbenzene	1000
Methylene chloride	50
MTBE	930
n-Propylbenzene	3900
sec-Butylbenzene	11000
tert-Butylbenzene	5900
Tetrachloroethene	1300
Toluene	700
trans-1,2-Dichloroethene	190
Trichloroethene	470
Vinyl chloride	20
Xylenes (total)	260
Semivolatile Organic Compounds (Concentrations in µg/kg)	
1,4-Dioxane	100
2-Methylphenol	330
3&4-Methylphenol	330
Acenaphthene	20000
Acenaphthylene	100000
Anthracene	100000
Benzo[a]anthracene	1000
Benzo[a]pyrene	1000
Benzo[b]fluoranthene	1000
Benzo[g,h,i]perylene	100000
Benzo[k]fluoranthene	800
Chrysene	1000
Dibenzo[a,h]anthracene	330
Dibenzofuran	7000
Fluoranthene	100000
Fluorene	3000
Hexachlorobenzene	330
Indeno[1,2,3-cd]pyrene	500
Naphthalene	12000
Pentachlorophenol	800
Phenanthrene	100000
Phenol	330
Pyrene	100000

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Table 1. Backfill/On-Site Soil Reuse Soil Cleanup Objectives
Broadway Triangle Site A, Brooklyn, New York

Parameter	Track 4 Backfill/Soil Reuse Soil Cleanup Objectives*
Metals (Concentrations in mg/kg)	
Arsenic	13
Barium	350
Beryllium	7.2
Cadmium	2.5
Chromium, Hexavalent	1
Chromium	30
Copper	50
Cyanide, Total	27
Lead	63
Manganese	1600
Mercury	0.18
Nickel	30
Selenium	3.9
Silver	2
Zinc	109
Pesticides (Concentrations in µg/kg)	
2,4,5-TP	3800
4,4'-DDD	3.3
4,4'-DDE	3.3
4,4'-DDT	3.3
Aldrin	5
alpha-BHC	20
alpha-Chlordane	94
beta-BHC	36
delta-BHC	40
Dieldrin	5
Endosulfan I	2400
Endosulfan II	2400
Endosulfan sulfate	2400
Endrin	14
gamma-BHC (Lindane)	100
Heptachlor	42
Pentachlorophenol	800
Total Polychlorinated Biphenyls (Concentrations in µg/kg)	
Total Polychlorinated Biphenyls	100
Perfluorinated Alkyl Acids (Concentrations in µg/kg)	
1H,1H,2H,2H-PERFLUORODECANESULFONIC ACID (8:2FTS)	--
1H,1H,2H,2H-PERFLUOROOCTANESULFONIC ACID (6:2FTS)	--
N-ETHYL PERFLUOROOCTANESULFONAMIDOACETIC ACID (NETFOSAA)	--
N-METHYL PERFLUOROOCTANESULFONAMIDOACETIC ACID (NMEFOSA	--
PERFLUOROBUTANESULFONIC ACID (PFBS)	--
PERFLUOROBUTANOIC ACID (PFBA)	--
PERFLUORODECANESULFONIC ACID (PFDS)	--
PERFLUORODECANOIC ACID (PFDA)	--
PERFLUORODODECANOIC ACID (PFDOA)	--
PERFLUOROHEPTANESULFONIC ACID (PFHPS)	--
PERFLUOROHEPTANOIC ACID (PFHPA)	--
PERFLUOROHEXANESULFONIC ACID (PFHXS)	--
PERFLUOROHEXANOIC ACID (PFHXA)	--
PERFLUORONONANOIC ACID (PFNA)	--

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Table 1. Backfill/On-Site Soil Reuse Soil Cleanup Objectives
Broadway Triangle Site A, Brooklyn, New York

Parameter	Track 4 Backfill/Soil Reuse Soil Cleanup Objectives*
PERFLUOROOCTANESULFONAMIDE (FOSA)	--
PERFLUOROOCTANESULFONIC ACID (PFOS)	--
PERFLUOROOCTANOIC ACID (PFOA)	--
PERFLUOROPENTANOIC ACID (PFPEA)	--
PERFLUOROTETRADECANOIC ACID (PFTA)	--
PERFLUOROTRIDECANOIC ACID (PFTRDA)	--
PERFLUOROUNDECANOIC ACID (PFUNA)	--
PFOA/PFOS, TOTAL	--

** Backfill soil cleanup objectives are the lower of the NYSDEC Part 375 Protection of Groundwater or Restricted Residential Use SCOs.
µg/kg - Micrograms per kilogram
mg/kg - Milligrams per kilogram
NYSDEC - New York State Department of Environmental Conservation
SCOs - Soil Cleanup Objectives
-- Standards not yet determined. The following guidance values are to be used until SCOs are in e

Anticipated Site Use:	Track 4: Restricted Residential
PFOA (Concentrations in µg/kg)	33
PFOS (Concentrations in µg/kg)	44

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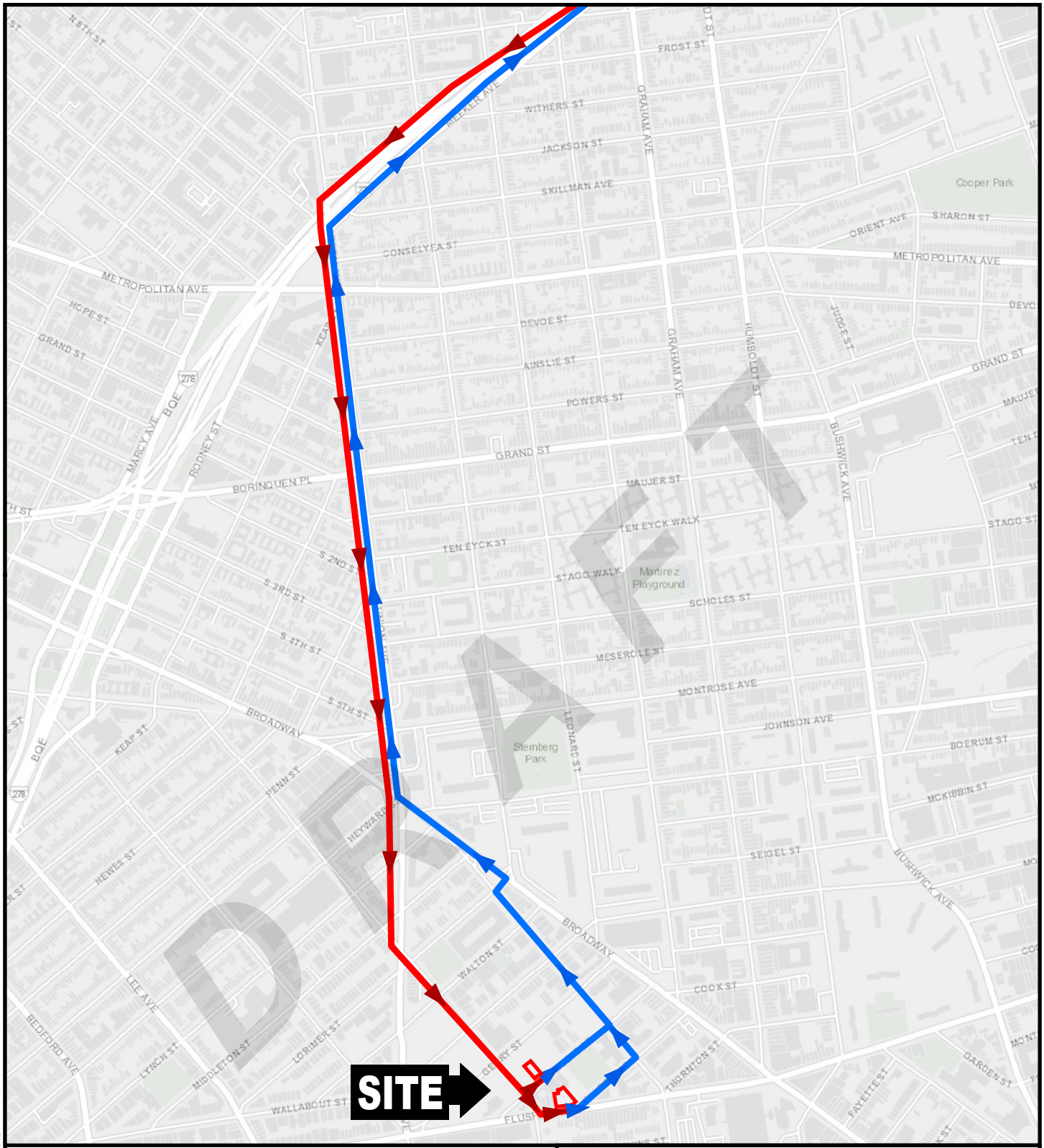

Title:

TRUCK ROUTE MAP

BROADWAY TRIANGLE SITE A,
663 - 667 FLUSHING AVENUE AND
29 -31 BARTLETT STREET,
BROOKLYN, NY

Prepared for:
BARTLETT CROSSING LLC,
BARTLETT CROSSING MANAGERS LLC,
BARTLETT CROSSING UNP LLC

ROUX

Compiled by: B.V.	Date: 06/02/23
Prepared by: M.S.R.	Scale: AS SHOWN
Project Mgr: B.V.	Project: 3805.0001Y000
File: 3605.0001Y147.11.mxd	

FIGURE 11

V:\GIS\PROJECTS\3605\0001Y147\3605.0001Y147.11.MXD

APPENDIX E

Health and Safety Plan/Community Air Monitoring Plan

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Site-Specific Health and Safety Plan

667 Flushing Avenue and
31 Bartlett Street
Brooklyn, New York 11206

March 3, 2026

Prepared for:

Bartlett Crossing LLC, Bartlett Crossing Managers LLC, Bartlett Crossing UNP LLC, Bartlett Crossing Housing Development Fund Company, Inc.
2 Kingsland Avenue
Brooklyn, New York 11211

Prepared by:

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& Management
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Site-Specific Emergency Information

Emergency Phone Numbers

Most emergency services can be obtained by calling 911. Where 911 service is not available, use the telephone numbers provided in the below table. The following is a master emergency phone list for use by the project management personnel. A more condensed version of the emergency numbers listed below will be posted throughout project work areas. Emergencies encountered on the site will be responded to by a combination of off-site emergency services and on-site personnel.

Emergency Contact Information			
Site Personnel			
Title	**Contact**		**Telephone**
Operations Manager (OM)	Jeffery Wills		(516) 637-0213
Project Principal (PP)	Jessica Taylor, P.G.		(631) 766-0607
Project Manager (PM)	Levi Curnutte		(727) 743-0304
Site Supervisor (SS)	TBD		TBD
Site Health and Site Safety Officer (SHSO)	TBD		TBD
Office Health and Safety Manager (OHSM)	Nevin Pahlad		(347) 885-6930
Corporate Health and Safety Director (CHSD)	Brian Hobbs, CIH, CSP		(631) 807-0193
WorkCare, Inc.	Occupational Health Care Management Provider		(800) 350-4511
Client Emergency Contact	Ezra Brathwaite		Business Office: (718) 388-5454 Ext. 685
Outside Assistance			
Agency	**Contact**	**Telephone**	**Address/Location**
Ambulance/emergency medical services (EMS)	ModernMD Urgent Care – S.E. Williamsburg NYC Health + Hospitals/Woodhull	(646) 604-8120 (718) 963-8000	68 Graham Avenue Brooklyn, NY 11206 760 Broadway Brooklyn, NY 11206
Police	New York City Police Department 88th Precinct	(718) 636-6511	298 Classon Avenue Brooklyn, NY 11206
Fire	FDNY Engine 237	(805) 458-1207	43 Morgan Avenue Brooklyn, NY 11237
Site Address	667 Flushing Avenue & 31 Bartlett Street, Brooklyn, NY 11206		

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ModernMD Urgent Care – S.E. Williamsburg:

- Head south toward Flushing Avenue and turn onto Flushing Avenue heading east
- Turn left onto Broadway then quick right onto Graham Avenue/Avenue of Puerto Rico heading north
- Destination will be on your right

NYC Health + Hospitals/Woodhull:

- Head south toward Flushing Avenue and turn onto Flushing Avenue heading west
- From Flushing Avenue turn onto Tomkins Avenue heading south
- Turn left onto Park Avenue heading east
- Destination will be on your left

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1. Introduction

This Site-specific Health and Safety Plan (HASP) has been prepared by Environmental Engineering and Geology, D.P.C. (Roux) for use during the soil waste characterization sampling and oversight activities being performed by Roux at the Broadway Triangle Parcels A1 and A2 on behalf of Bartlett Crossing LLC, Bartlett Crossing Managers LLC, Bartlett Crossing UNP LLC (Client), located at 667 Flushing Avenue (Block 2272, Lot 49) and 31 Bartlett Street (Block 2269, Lot 52), in Brooklyn, New York(Site; **Figure 1**). This HASP was prepared in general accordance with the requirements of the Occupational Safety and Health Administration (OSHA) standards promulgated at 29 CFR 1910.120 and 29 CFR 1926.65, both commonly referred to as the Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard. In accordance with the HAZWOPER Standard, this Site-specific HASP was prepared to address the safety and health hazards associated with the drilling and sampling activities being performed at the Site by Roux and to provide requirements and procedures for the protection of Roux employees, subcontractor personnel, government oversight personnel, Site personnel, and the general public. It also addresses client- and Site-specific requirements for health and safety. Additionally, subcontractors may be required to submit their own HASP as it relates to their specific work activities and will be kept onsite during such work.

Implementation of this HASP is the joint responsibility of the Project Manager (PM), the Site Health and Safety Officer (SHSO), and all field staff, with assistance from the Project Principal (PP), Office Health and Safety Manager (OHSM), and Corporate Health and Safety Director (CHSD). The PM for this project is Levi Curnutte. The Site Supervisor (SS) is TBD and Site Health and Safety Officer (SHSO) is TBD.

This HASP will be introduced to, reviewed, and signed off on by all Roux personnel through a formal training session prior to commencing work. A copy of the HASP will be kept at the Site at all times. The Roux SHSO or PM will be responsible for posting any changes, amendments, memos, etc. to the HASP. Any revisions to this HASP will be signed by appropriate personnel, which can include Roux's PP, CHSD, and SS. Any changes will be announced to all workers at the next safety meeting.

1.1 Roles and Responsibilities

Overall Roles and Responsibilities (R&Rs) of Roux personnel are provided in Roux's Policies and Procedures Manual. Only those R&Rs specific to HASP requirements are listed below.

Project Manager (PM)

The PM has responsibility and authority to direct all work operations. The PM coordinates safety and health functions with the Site Health and Safety Officer (SHSO), has the authority to oversee and monitor the performance of the SHSO, and bears ultimate responsibility for the proper implementation of this HASP. The specific duties of the PM are:

- Preparing and coordinating the Site work plan;
- Providing Site supervisor(s) with work assignments and overseeing their performance; Coordinating safety and health efforts with the SSHO;
- Ensuring effective emergency response through coordination with the Emergency Response Coordinator (ERC); and
- Serving as primary Site liaison with public agencies and officials and Site contractors.

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Site Health and Safety Officer (SHSO)

The SHSO has the full responsibility and authority to develop and implement this HASP and to verify compliance. The SHSO reports to the Project Manager. The SHSO is on Site or readily accessible to the Site during all work operations and has the authority to halt Site work if unsafe conditions are detected. The specific responsibilities of the SHSO include:

- Managing the safety and health functions on this Site;
- Serving as the Site's point of contact for safety and health matters;
- Ensuring Site monitoring, worker training, and effective selection and use of PPE;
- Assessing Site conditions for unsafe acts and conditions and providing corrective action;
- Assisting the preparation and review of this HASP;
- Maintaining effective safety and health records as described in this HASP; and
- Coordinating with the SS and others as necessary for safety and health efforts.

Site Supervisor (SS)

The Site Supervisor (SS) is responsible for field operations and reports to the Project Manager (PM). The SS ensures the implementation of the HASP requirements and procedures in the field. The specific responsibilities of the Site Supervisor include:

- Executing the work plan and schedule as detailed by the PM;
- Coordination with the SHSO on safety and health; and
- Ensuring Site work compliance with the requirements of this HASP.

Employees

All Roux employees are responsible for reading and following all provisions of the Corporate Health and Safety Manual, including this HASP. Employees report to the SS at the project Site. Each employee is also responsible for the following:

- Wearing all appropriate PPE as outlined within this HASP;
- Attending all safety meetings;
- Inspecting tools and equipment prior to use, and taking any defective tools or equipment out of service;
- Appropriately documenting field events as they occur within a logbook or equivalent;
- Properly operating machinery and/or equipment only if trained to do so;
- Stopping work operations if unsafe conditions exist;
- Identifying and mitigating hazards when observed;
- Reporting all incidents and near misses to the Roux SHSO and SS immediately; and
- Knowing where emergency equipment is located (e.g., first aid kit, fire extinguisher).

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Subcontractors and Visitors

Subcontractors and visitors are responsible for complying with the same health and safety requirements. It is the responsibility of all to make sure subcontractors and visitors comply and uphold the HASP. Subcontractors and visitors have the following additional responsibilities:

- Designating a qualified safety representative for the project that can make the necessary changes in work practices, as necessary;
- Attending all safety meetings while participating in Roux Site work activities;
- Reporting all incidents and near misses to Roux SHSO and SS immediately;
- Conducting initial and periodic equipment inspections in accordance with manufacturer and regulatory guidelines; and
- Providing copies of all Safety Data Sheets (SDS) to Roux SHSO for materials brought to the Site.

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2. Background

Relevant background information is provided below, including a general description of the Site; a brief review of the Site's history with respect to hazardous material use, handling, and/or storage; and a review of known and potential releases of hazardous substances at the Site.

2.1 Site Description

The Sites consist of vacant land with overgrowth and building demolition debris. The planned redevelopment of the Sites entails the construction of affordable housing, retail, and community spaces. The Client has enrolled the Site into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) as a Volunteer. Data from investigations to-date indicate that there is a shallow layer of fill across the Site with elevated levels of polycyclic aromatic hydrocarbons (PAHs) and metals in exceedance of the Part 375 Restricted Residential Soil Cleanup Objectives (RRSCOs), which is the anticipated soil cleanup standard given the proposed residential redevelopment plans.

2.2 Site History

This section of Brooklyn has an industrial past that has caused subsurface impacts in the surrounding area, including a former chemical plant that operated in this area for approximately 150 years. Based on a review of Historic Sanborn fire insurance maps, aerial photographs, city directories, and New York City Assessor's and Building Department records, the following Site history was established. The Site was developed as early as 1887 with several commercial and residential structures (including several outbuildings). Commercial uses have included retail stores, bakery, fur dresser, carpenter's shop, and sausage factory. The Site was occupied by mixed-use buildings (residential, retail, manufacturing) by 1965. From at least 1965 to 1980; no other significant on-Site commercial uses were noted. The Site has been vacant since circa 1980 when the last of the present buildings were demolished.

2.3 Known and Potential Releases of Hazardous Substances at the Site

The results of previous investigations show the presence of a shallow fill layer across the parcels containing predominantly elevated levels of PAHs and metals in exceedance of the Part 375 RRSCOs. Groundwater data indicates metals were identified in concentrations above the applicable standards. Soil vapor data contains a limited number of elevated concentrations of CVOCs. A surficial release of fuel oil to a residence was noted in 1995 but the spill was closed and there are no additional documented spills or releases associated with the Site.

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3. Scope of Work

Based on information gathered as a result of previous ESAs and as part of the BCP, the purpose of the Remedial Investigation Work Plan (RIWP) is to investigate current site conditions, in preparation for redevelopment and associated remedial activities that will be covered by the Remedial Action Work Plan (e.g., source excavation). The proposed RIWP scope of work includes the following:

- Collection of in situ soil waste characterization sampling from test pitting via mini excavator;
- Subsurface utility clearance using soft dig methods (hand auger, air knife) to 5 ft bls prior to excavation; and
- Test pile program oversight and CAMP.

Non-routine activities that may be performed by Roux personnel include the following:

- Limited site inspections;
- Oversight of Roux subcontractor personnel during horizontal/vertical datum and geophysical surveying activities; and
- Oversight of Roux subcontractor personnel during disposal of investigation-derived waste.

Additional work at the Site that is likely to occur as per the RAWP for the Site are also included. The majority of work during these scopes will occur during the proposed development at the Site and the associated subsurface work. Once investigation activities are complete and development activities commence, Roux will provide support services to assist with environmental items related to the excavation and construction for the building foundations. The remedial scope of work will likely include some or all of the following:

- Delineation of hazardous lead in soil hotspot;
- Oversight of support or excavation (SOE) installation;
- Oversight of excavations and backfilling;
- Oversight of soil disposal via live-loading into trucks;
- Community Air Monitoring Program implementation; and
- Collection of post-excavation samples.

If there are any changes with the scope a revision of the HASP will be required to address any new hazards.

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4. Site Control

This Site control program is designed to reduce the spread of hazardous substances from contaminated areas to clean areas, to identify and isolate contaminated areas of the Site, to facilitate emergency evacuation and medical care, to prevent unauthorized entry to the Site, and to deter vandalism and theft.

4.1 Site Map

A map of this Site, showing Site boundaries, designated work zones, and points of entry and exit is provided in Figure 2.

4.2 Site Access

Access to the work areas at the Site is restricted to reduce the potential for exposure to its safety and health hazards. During hours of Site operation, Site entry and exit is authorized only at the points identified in Figure 2. Entry and exit at these points is controlled by the following: construction gates. When the Site is not operating, access to the Site is controlled by the following: locked construction gates.

4.3 Buddy System

This section is not applicable for all components of the SOW described in Section 3. Some Site inspections, soil sampling and oversight are completed by a single Roux employee. However, when completing these tasks, the single Roux employee is accompanied either by Roux subcontractors or the Site caretaker/other representatives from St. Nicks Alliance. Any time Roux is on-site, St. Nicks Alliance is made aware and communications with St. Nicks Alliance and the Roux PM is maintained via cellular phone.

While working in the Exclusion Zone, Site workers use the buddy system. The buddy system means that personnel work in pairs and stay in close visual contact to be able to observe one another and summon rapid assistance in case of an emergency. The responsibilities of workers using the buddy system include:

- Remaining in close visual contact with partner;
- Providing partner with assistance as needed or requested;
- Observing partner for signs of heat stress, chemical overexposure or other difficulties;
- Periodically checking the integrity of partner's PPE; and
- Notifying the SS or other Site personnel if emergency assistance is needed.

4.4 Site Communications

The following communication equipment is used to support on-site communication cell phones and visual hand signals].

As applicable, hand signals will be used according to the following:

Hand Signals

SIGNAL	MEANING
Hand gripping throat	Out of air; I cannot breathe

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Hand Signals

SIGNAL	MEANING
Grip partner's wrist	Leave area immediately
Hands on top of head	Need assistance
Thumbs up	I am all right; okay
Thumbs down	No; negative

A current list of emergency contact numbers is included in the Site-Specific Emergency Information at the beginning of this HASP.

4.5 Site Work Zones

This Site is divided into three (3) major zones, described below. These zones are characterized by the likely presence or absence of biological, chemical, or physical hazards and the activities performed within them. Zone boundaries are clearly marked at all times and the flow of personnel among the zones is controlled. The Site is monitored for changing conditions that may warrant adjustment of zone boundaries. Zone boundaries are adjusted as necessary to protect personnel and clean areas. Whenever boundaries are adjusted, zone markings are also changed and workers are immediately notified of the change.

Exclusion Zone

The area where contamination exists is the Exclusion Zone (EZ). All areas where excavation and handling of contaminated materials take place are considered part of the EZ. This zone will be clearly delineated by chain link fencing, caution tape, cones or other effective barriers, as necessary. Safety tape may be used as a secondary delineation within the EZ. The zone delineation markings may be opened in areas for varying lengths of time to accommodate equipment operation or specific construction activities. The SHSO may establish more than one EZ where different levels of protection may be employed or where different hazards exist. Personnel are not allowed in the EZ without:

- A buddy (co-worker);
- Required minimum level PPE;
- Medical authorization;
- Training certification; and
- Requirement to be in the zone.

Contamination Reduction Zone

A Contamination Reduction Zone (CRZ) is established between the exclusion zone and the support zone. The CRZ contains the Contamination Reduction Corridor (CRC) and provides an area for decontamination of personnel and equipment. The CRZ will be used for general Site entry and egress in addition to access for heavy equipment and emergency support services. Personnel are not allowed in the CRZ without:

- A buddy (co-worker);
- Appropriate PPE;
- Medical authorization;

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- Training certification; and
- Requirement to be in the zone.

Support Zone

The Support Zone (SZ) is an uncontaminated area that will be the field support area for the Site operations. The SZ will contain the if required, temporary project trailers and provisions for field team communications and staging for emergency response. Appropriate sanitary facilities and safety equipment will be located in this zone. Potentially contaminated personnel or materials are not allowed in this zone. The only exception will be appropriately packaged/decontaminated and labeled samples.

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5. Job Hazard Evaluation

Roux's work at the Site is expected to entail a variety of physical, chemical, and biological hazards, all of which must be sufficiently managed to allow the work to be performed safely. Some of the hazards are Site-specific (i.e., they are associated with the nature, physical characteristics, and/or routine operation of the Site itself), while others are activity-specific (i.e., they are associated with [or arise from] the particular activity being performed). The various hazards can be grouped into the following categories:

- **Caught/Crushed** – the potential to become caught in, under, between, or by an object or parts of an object, such as equipment with parts that open and close or move up and down ("pinch points") or equipment that rotates, and the accompanying potential to have body parts cut, mangled, or crushed thereby.
- **Contact** – the potential to be struck by or against moving or stationary objects that can cause physical injury, such as heavy machinery, overhead piping, moving vehicles, falling objects, and equipment (including tools and hand-held equipment) or infrastructure with the ability to cut or impale.
- **Energy Sources** – the potential for bodily harm associated with energy sources, most notably electricity, but also including latent energy sources such as compressed air and equipment under tension (which when released could cause injurious contact or a fall).
- **Ergonomics** – the potential for musculoskeletal injury associated with lifting/carrying, pushing/pulling, bending, reaching, and other physical activity attributable to poor body position/mechanics, repetitive motion, and/or vibration.
- **Exposure** – the potential for injury/illness due to physical, chemical, or biological exposures in the work environment, including, but not limited to, temperature extremes, solar radiation, and noise (physical), chemical splashes and hazardous atmospheres (chemical), and animal/insect bites and poisonous plants (biological).
- **Falls** – the potential to slip or trip and thus fall or drop a load, resulting in bodily injury to oneself or others.

The foregoing is intended to provide Roux employees with a general awareness of the hazards involved with Site work. A more detailed review of the potential hazards associated with each specific activity planned for the Site (or on-going activity, as the case may be) is provided in the activity-specific Job Safety Analysis (JSA) forms in **Appendix A**. As can be seen in the JSA forms, the hazards are identified by category per the above, and specific measures designed to mitigate/manage those hazards are also identified. In preparing the JSA forms, all categories of hazards were considered, and all anticipated potential hazards were identified to the extent possible based on the experience of the personnel preparing and reviewing the JSA forms. However, there is always the possibility for an unanticipated hazard to arise, potentially as condition change over the course of the workday. Roux personnel must maintain a continual awareness of potential hazards in the work zone, regardless of whether the hazard is identified in the JSA form. Particular attention should be paid to hazards associated with exposure to hazardous substances (see **Table 1** for a listing of the hazardous substances most likely to be encountered in environmental media at the Site) and to Site personnel being located "in the line of fire" with respect to moving equipment, pinch points, and latent energy (e.g., being located or having body parts located within the swing radius of an excavator, between two sections of pipe being connected, below a piece of suspended equipment, or adjacent to a compressed air line).

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5.1 Hazard Communication and Overall Site Information Program

The information in the JSAs and SDSs is made available to all employees and subcontractors who could be affected by it prior to the time they begin their work activities.

Modifications to JSAs are communicated during routine pre-work briefings, and periodically updated as needed in the HASP. SDSs will be maintained by the SHSO/SS for new chemicals brought on-site as needed. Copies of SDSs can be found in **Appendix B**.

5.2 Noise

Noise is associated with the operation of heavy equipment, power tools, pumps, and generators. Noise is also a potential hazard when working near operating equipment such as excavators, drill rigs or pole drivers. High noise (i.e., < 85 dBA) operations may be evaluated by the SHSO utilizing a type 2 handheld sound level meter (SLM) operating on the "A"-weighted scale with slow response because this scale most closely resembles human response to noise and complies with OSHA 29 CFR 1910.95. Hearing protection is required in areas with noise exposure greater than 85 dBA. Double hearing protection (ear plugs and earmuffs) should be donned in areas where the noise exposure is more than 95 dBA. Noise exposure will be controlled by hearing protection as described above or by maintaining set-backs from high-noise equipment, as warranted. Personnel handling heavy equipment and using power tools that produce noise levels exceeding those described levels above are required by OSHA 29 CFR 1910.95 to wear the appropriate Noise Reduction Rating (NRR) level of hearing protection. Appropriate hearing protection will be evaluated by the SHSO as necessary in consultation with the OHSM and CHSD.

5.3 Slip, Trip, and Fall Hazards

Slip, trip, and fall hazards may include, but are not limited to, general slip and trip hazards associated with uneven ground, possible debris, wet grass, and equipment. Prior to work, walking paths will be assessed for solid footings, any ground penetrations that may cause a tripping hazard will be appropriately marked, and other areas will be noted and discussed with the field team.

Personnel shall be aware of their surroundings and footings at all time, and all accommodations should be made for proper housekeeping and organized equipment placement at the Site, where possible, to help prevent any slip, trip, and fall-related incidents. All tools and materials should be appropriately stored when not in use and placed in appropriate storage containers.

5.4 Biological Hazards

Biological hazards that may potentially be present at a Site, include poisonous plants, insects (ticks, spiders, bees), animals (snakes, dogs), etc. Information on biological hazards can be found within Roux's Biological Hazard Awareness Management Program located within Roux's Corporate Health and Safety Manual. There is also potential for transmission and/or exposure to SARS-CoV-2, the virus that causes COVID-19. Prior to beginning work, on-Site protocols shall be established by the project team, including subcontractors, in accordance with federal, state, county, city, and/or other guidance, as applicable.

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6. Emergency Response Plan

This emergency response plan details actions to be taken in the event of Site emergencies. The PM and SHSO is responsible for the implementation of emergency response procedures onsite. The SHSO/PM provides specific direction for emergency action based upon information available regarding the incident and response capabilities and initiates emergency procedures and notification of appropriate authorities. In the event of an emergency, Site personnel are evacuated and do not participate in emergency response activities, response is facilitated through external emergency services.

6.1 Emergency Response

The SHSO, after investigating the incident and relevant information, shall determine the level of response required for containment, rescue and medical care. Limited on-site emergency response activities could occur therefore the SHSO is responsible for notifying external emergency response agencies. The SHSO provides relevant information to the responding organizations, including, but not limited to, the hazards associated with the emergency incident, potential containment problems, and missing Site personnel.

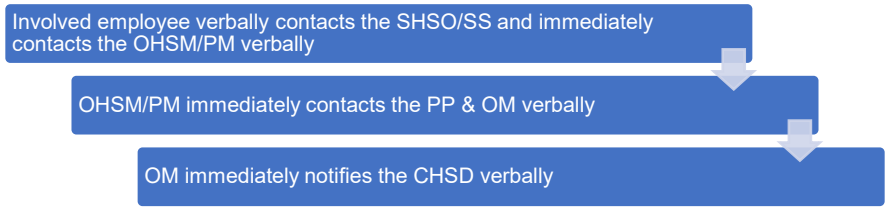
6.2 Emergency Alerting and Evacuation

If evacuation notice is given, Site workers leave the worksite, if possible, by way of the nearest exit. Appropriate primary and alternate evacuation routes and assembly areas have been identified and are shown on the Site Plan with Emergency Muster Area (**Figure 2**). The routes and assembly area will be determined by conditions at the time of the evacuation based on wind direction, the location of the hazard source, and other factors as determined by SHSO/PM.

Personnel exiting the Site gather at a designated assembly point. To determine that everyone has successfully exited the Site, personnel will be accounted for at the assembly point. If any worker cannot be accounted for, notification is given to the SHSO, PM, and any arriving response authorities so that appropriate action can be initiated. Subcontractors on this Site have coordinated their emergency response plans to ensure that these plans are compatible and potential emergencies are recognized, alarm systems are clearly understood, and evacuation routes are accessible to all personnel relying upon them.

6.3 Emergency Medical Treatment and First Aid

In the event of a work-related injury or illness, employees are required to follow the procedures outlined below. All work-place injury and illness situations require Roux's Project and Corporate Management Team to be notified when an injury/illness incident occurs, and communication with the contracted Occupational Health Care Management Provider, WorkCare, Inc., is initiated, as necessary. The Injury/Illness Notification Flowchart is provided below and within Roux's Incident Investigation and Reporting program included within Roux's Corporate Health and Safety Manual.



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If on-Site personnel require any medical treatment, the following steps will be taken:

a. Notify Roux's Project and Corporate Management Team for any work-related injury and/or illness occurrence, and communicate with the contracted Occupational Health Care Management Provider, WorkCare, immediately following the notifications provided above.

b. Based on discussions with the Project Team, Corporate Management and the WorkCare evaluation, if medical attention beyond onsite first aid is warranted, transport the injured / ill person (IP) to the Urgent Care Center, or notify the Fire Department or Ambulance Emergency service and request an ambulance or transport the victim to the hospital, and continue communications with Corporate Management Team. An Urgent Care/Hospital Route map with location to ModernMD Urgent Care- S.E. Williamsburg and NYC Health + Hospitals/Woodhull is included as **Figure 3**.

c. Decontaminate to the extent possible prior to administration of first aid or movement to medical or emergency facilities.

d. First aid medical support will be provided by onsite personnel trained and certified in First Aid, Cardio Pulmonary Resuscitation (CPR), Automatic External Defibrillation (AED), and Blood-Borne Pathogens (BBP) Awareness, until relieved by emergency medical services (EMS).

e. The SHSO and PM will perform a Loss Investigation (LI) and the Project Team will complete the final Loss Report. If a Roux employee is involved in a vehicular incident, the employee must also complete the Acord Automobile Loss Notice.

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7. Environmental Conditions and Response

7.1 Adverse Weather Conditions

In the event of adverse weather conditions, the SHSO or project principal will determine if work can continue without jeopardizing the health and safety of field workers. Some of the items related to adverse weather conditions to be considered prior to determining if work should continue include:

- Potential for heat stress and heat-related injuries;
- Potential for cold stress and cold-related injuries;
- Treacherous weather-related conditions. If wind speed is greater than 15 mph averaged over a 15-minute period or wind gusts over 25 mph, earthmoving operations will be ceased;
- Limited visibility; and
- Electrical storm potential.

Site activities will be limited to daylight hours and acceptable weather conditions. Inclement working conditions may include heavy rain, fog, high winds, and lightning. The SHSO and/or PM shall observe daily weather reports and evacuate, if necessary, in case of inclement weather conditions.

7.2 Electrical Storm Guidelines

In the event that lightning and/or thunder are observed while working onsite, all onsite activities shall stop and personnel shall seek proper shelter (e.g., substantial building, enclosed vehicle, etc.). Work shall not resume until the threat of lighting has subsided and no lightning or thunder has been observed for 30 minutes. If the possibility of lightning is forecast for the day, advise the onsite personnel on the risks and proper procedure at the pre-work safety briefing. Continuously monitor for changing weather conditions and allow enough time to properly stop work if lightning is forecast.

7.3 Environmental Stressors, Heat Stress, Heat Exhaustion, and Heat Stroke

It is the employer's responsibility to monitor weather forecasts and ambient air temperatures, both prior to the work shift and during the shift. The National Oceanic and Atmospheric Administration records average minimum/maximum temperatures of 28°F / 84°F during the year in Brooklyn, New York.

To prevent potential heat illness, the following strategies will be implemented:

- Adjusting personnel work/rest intervals;
- Monitoring for symptoms of heat illness;
- Providing shaded rest areas;
- Providing cool potable water so that each employee has access to at least one quart per hour for the entire shift, free of charge;
- Allowing for employees to acclimatize to the weather conditions and work demands;
- Observe workers during a heat wave (i.e., when the temperature is at least 80oF, and 10 degrees hotter than the average temperature of the five preceding days); and
- Implementing high heat procedures when the temperature reaches 95oF.

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Roux's Heat Illness Prevention Plan is implemented when the when ambient temperatures exceed 80oF. Roux's Heat Illness Prevention Program can be found within **Appendix C**. Additional information regarding heat illnesses is provided below. This can include, but is not limited to, access to shade that is sufficient in size to fit all workers who are on break; a car with air conditioning is acceptable, too. Preventative cool-down breaks shall be allowed at any time, and anyone taking such a break will be monitored for heat illness symptoms and not required to return to work until all symptoms (if present) of heat illness have disappeared. If necessary, first aid will be offered, but if symptoms are severe, emergency response procedures will be implemented per Section 6.3. Anyone who has shown symptoms of severe heat illness will not be sent home without being offered first aid or medical treatment.

High heat procedures must be implemented when temperatures reach 95oF. These procedures include:

- Ensuring that effective communication by voice, observation, or electronic means is maintained so that employees at the work site can contact a supervisor when necessary. An electronic device, such as a cell phone or text messaging device, may be used for this purpose only if the reception in the area is reliable.
- Observing employees for alertness and signs or symptoms of heat illness. The employer shall ensure effective employee observation/monitoring by implementing one or more of the following:
    - Supervisor or designee observation of 20 or fewer employees;
    - Mandatory buddy system; and
    - Regular communication with sole employee such as by radio or cellular phone, or other effective means of observation.
- Designating one or more employees on each worksite as authorized to call for emergency medical services and allowing other employees to call for emergency services when no designated employee is available.
- Encouraging employees throughout the work shift to drink plenty of water.
- A review of the high heat procedures during the daily tailgate meeting and remind employees of their right to take a cool-down rest when necessary.

7.3.1 Heat Stress

Heat stress is the body's response to excessive heat and can be a significant potential hazard. The risk of heat stress can be increased with heavy physical activity and/or the use of personal protective equipment in hot, humid weather environments. There are also personal risk factors that can contribute to the risk of suffering from heat stress, such as obesity, water intake, alcohol and caffeine consumption, pregnancy, age, medication, etc. Heat illness includes heat cramps, heat exhaustion, heat syncope, and heat stroke.

7.3.2 Heat Cramps

Heat cramps may be brought on by prolonged exposure to heat. As an individual sweats, water and salts are lost by the body resulting in painful muscle cramps, typically in the legs.

First aid treatment includes, but is not limited to, shade, rest, and fluid replacement. Typically, the individual should recover within one-half hour while being monitored constantly. If the individual has not improved substantially within 30 minutes and the body temperature has not decreased, the individual should be transported to a hospital for medical attention.

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Per Roux's Heat Illness Prevention Plan, employees shall have access to potable drinking water that is fresh, pure, suitably cool, free of charge and in sufficient quantities. Access to shade shall be present when temperatures exceed 80 degrees Fahrenheit and shall be available when temperatures do not exceed 80 degrees Fahrenheit.

7.3.3 Heat Exhaustion

Heat exhaustion may occur in an individual who has been exposed to excessive heat while working or exercising. The circulatory system of the individual fails as blood collects near the skin to rid the body of excess heat through transference. The signs and symptoms of heat exhaustion are as follows:

- Rapid and shallow breathing;
- Weak pulse;
- Cold and clammy skin with heavy perspiration;
- Skin appears pale;
- Fatigue and weakness;
- Dizziness; and
- Elevated body temperature.

First aid treatment includes, but is not limited to, cooling the victim, elevating the feet, and replacing fluids.

If the individual is not substantially improved within 30 minutes and the body temperature has not decreased, the individual should be transported to the hospital for medical attention.

7.3.4 Heat Stroke

Heat stroke occurs when an individual is exposed to excessive heat and stops sweating. This condition is classified as a MEDICAL EMERGENCY requiring immediate cooling of the victim and transport to a medical facility. The signs and symptoms of heat stroke are as follows:

- Dry, hot, red skin;
- Body temperature approaching or above 105oF;
- Confusion, altered mental state, slurred speech;
- Seizures;
- Large (dilated) pupils; and
- Loss of consciousness – the individual may go into a coma.

First aid treatment requires immediate cooling and transportation to a medical facility. Heat stress is a significant hazard if any type of protective equipment (semi-permeable or impermeable) that prevents evaporative cooling when worn in hot weather environments.

7.4 Cold Stress

Cold stress is a danger at low temperatures and when the wind-chill factor is low. Prevention of cold-related illnesses is a function of whole-body protection. Adequate insulating clothing must be used when the air temperature is below 60°F. A work/rest regimen will be initiated when ambient temperatures and protective

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clothing cause a stressful situation. In addition, reduced work periods followed by rest in a warm area may be necessary in extreme conditions. The signs and symptoms of cold stress include the following:

- Severe shivering;
- Abnormal behavior;
- Slowing;
- Weakness;
- Stumbling or repeated falling;
- Inability to walk;
- Collapse; and/or
- Unconsciousness.

First aid requires removing the victim from the cold environment and seeking medical attention immediately. Also, prevent further body heat loss by covering the victim lightly with blankets. Do not cover the victim's face. If the victim is still conscious, administer hot drinks and encourage activity such as walking, wrapped in a blanket.

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8. Safety Procedures

This section of the HASP presents the specific safety procedures to be implemented during Roux's activities at the Site in order to protect the health and safety of various on-site personnel. Minimum OSHA-mandated procedures are presented first, followed by client- and Site-specific procedures. Lastly, activity-specific procedures are discussed. These Site and activity-specific procedures supplement the general safety procedures included in Roux's Corporate Health and Safety Manual, which also must be followed in their entirely.

8.1 Training

At a minimum, Site personnel who will perform work in areas where there exists the potential for toxic exposure will be health and safety-trained prior to performing work onsite per OSHA 29 CFR 1910.120(e) and 29 CFR 1926.65(e). More specifically, all Roux, subcontractor, and other personnel engaged in sampling and remedial activities at the Site and who are exposed or potentially exposed to hazardous substances, health hazards, or safety hazards must have received at a minimum the 40 hour initial HAZWOPER training consistent with the requirements of 29CFR 1910.120(e)(3)(i) training and a minimum of 3 days' actual field experience under the direct supervision of a trained experienced supervisor, plus 8 hours of refresher training on an annual basis. Depending on tasks performed, less training may be permitted. Evidence of such training must be maintained at the Site at all times. Furthermore, all on-Site management and supervisory personnel directly responsible for or who supervise the employees engaged in Site remedial operations, must have received an additional 8 hours of specialized training at the time of job assignment on topics including, but not limited to, the employer's safety and health program and the associated employee training program, personal protective equipment program, spill containment program, and health hazard monitoring procedure and techniques, plus 8 hours of refresher training on an annual basis. Additionally, all workers who will be required to don a respirator will be properly trained on their employer's Respiratory Protection Program, which also includes being medically cleared to wear a respirator and passed a fit test, at least initially prior to use, and then annually thereafter in accordance with 29 CFR 1910.134, Respiratory Protection.

Roux personnel training records are maintained in a corporate database with records available upon request from either the OHSM/SHSO/CHSD or Human Resources Department.

8.2 Site-Specific Safety Briefings for Visitors

A site-specific briefing is provided to all site visitors who enter this site beyond the site entry point. For visitors, the site-specific briefing provides information about site hazards, the site lay-out including work zones and places of refuge, the emergency alarm system and emergency evacuation procedures, and other pertinent safety and health requirements as appropriate.

8.3 HASP Information and Site-Specific Briefings for Workers

Site personnel review this HASP and are provided a Site-specific tailgate briefing prior to the commencement of work to ensure employees are familiar with this HASP and the information and requirements it contains, as well as the relevant JSAs included in **Appendix A**. Additional briefings are provided as necessary to notify employees of any changes to this HASP as a result of information gathered during on-going Site characterization and analysis of changing conditions. Conditions for which we

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schedule additional briefings include, but are not limited to: changes in site conditions, changes in the work schedule/plan, newly discovered hazards, and incidents occurring during Site work.

8.4 Medical Surveillance

The medical surveillance section of the Health and Safety Plan describes how worker health status is monitored at this site. Medical surveillance is used when there is the potential for worker exposure to hazardous substance at levels above OSHA Permissible Exposure Limits (PEL) or other published limits. The purpose of a medical surveillance program is to medically monitor worker health to ensure that personnel are not adversely affected by site hazards. The provisions for medical surveillance at this site are based on the site characterization and job hazard analysis found in Section 4 of this HASP and are consistent with OSHA requirements in 29 CFR 1910.120(f) as applicable.

8.4.1 Site Medical Surveillance Program

Medical surveillance requirements are based on a worker's potential for exposure as determined by the site characterization and job hazard analysis documented in Section 4 and JSAs within **Appendix A** of this HASP and in compliance with the requirements of 29 CFR 1910.120(f)(2). Based on site information and use of direct reading instruments, limited use of respirators (less than 30 days per year), and the absence of an employee-staffed HAZMAT team, a limited medical surveillance program is required and implemented at this site. The medical surveillance program provides that:

1. Workers assigned to tasks requiring the use of respirators receive medical examinations in accordance with 29 CFR 1910.134(e) to ensure they are physically capable to perform the work and use the equipment, and
2. If a worker is injured, becomes ill, or develops signs or symptoms of possible over-exposure to hazardous substance or health hazards, medical examinations are provided to that worker as soon as possible after the occurrence and as required by the attending physician.
3. These medical examinations and procedures are performed by or under the supervision of a licensed physician and are provided to workers free of cost, without loss of pay, and at a reasonable time and place. In addition, the need to implement a more comprehensive medical surveillance program will be re-evaluated after any apparent over-exposure.

8.4.2 Medical Recordkeeping Procedures

Medical recordkeeping procedures are consistent with the requirements of 29 CFR 1910.1020 and are described in the company's overall safety and health program. A copy of that program is available at our Islandia, New York office.

The following items are maintained in worker medical records:

- Respirator fit test and selection;
- Physician's medical opinion of fitness for duty (pre-placement, periodic, termination);
- Physician's medical opinion of fitness for respirator protection (pre-placement, periodic); and
- Exposure monitoring results.

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8.4.3 Program Review

The medical program is reviewed to ensure its effectiveness. The Corporate Health and Safety Manager, in coordination with the Human Resources Director, is responsible for this review. At minimum, this review consists of:

- Review of accident and injury records and medical records to determine whether the causes of accidents and illness were promptly investigated and whether corrective measures were taken wherever possible;
- Evaluation of the appropriateness of required medical tests based on site exposures; and
- Review of emergency treatment procedures and emergency contacts list to ensure they were site specific, effective, and current.

8.5 Personnel Protection

Site safety and health hazards are eliminated or reduced to the greatest extent possible through engineering controls and work practices. Where hazards are still present, a combination of engineering controls, work practices and PPE are used to protect employees. Appropriate personal protective equipment (PPE) shall be worn by Site personnel when there is a potential exposure to chemical, biological or physical hazards (e.g., falling objects, flying particles, sharp edges, electricity, and noise), as determined by the SHSO. The level of personal protection, type and kind of equipment selected will depend on the hazardous conditions and in some cases cost, availability, compatibility with other equipment, and performance. An accurate assessment of all these factors will be made before work can be safely executed.

Roux maintains a comprehensive written PPE program that addresses proper PPE selection, use, maintenance, storage, fit and inspection. Roux's PPE program can be found within **Appendix D**. PPE to be used at the Site will meet the appropriate American National Standards Institute (ANSI) standards and the following OSHA (General/Construction Industry) standards for minimum PPE requirements.

The minimum level of PPE for entry onto the Site is Level D. The following equipment shall be worn:

- Work uniform (long pants, sleeved shirt);
- Hard hat;
- Steel or composite toe work boots (must comply with American Society for Testing and Materials [ASTM]) F 2412-05, Standard Test Methods for Foot Protection and ASTM F 2413-05, Standard Specification for Performance Requirements for Foot Protection);
- Safety Glasses (must comply with one of the following ANSI/ISEA Z87.1-2010, ANSI Z87.1-2003, ANSI Z87.1-2003);
- Boot Covers (as needed);
- Hearing protection (as needed);
- High visibility clothing (shirt/vest); and
- Hand protection (e.g., minimum cut resistance meeting ANSI 105-2000 Level 2).

Note that jewelry shall be removed or appropriately secured to prevent it from becoming caught in rotating equipment or unexpectedly snagged on a fixed object (e.g., wrist watches, bracelets, rings, chains and necklaces, open earrings). Do not wear loose clothing and all shoulder-length hair should be tied back.

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Site specific PPE ensembles and materials are identified within task specific JSAs located within **Appendix A**, and any upgrades or downgrades of the level of protection (i.e., not specified in the JSA) must be approved by the PP and immediately communicated to all Roux personnel and subcontractors as applicable. PPE is used in accordance with manufacturer's recommendations.

8.5.1 Hearing Conservation

Hearing protection is made available when noise exposures equal or exceed an 8-hour time-weighted average sound level of 85 dBA. Hearing protection is required when the 8-hour time weighted average sound level > 85 dBA, or when noise levels exceed 140 dBA at any point or exceeds 115 dBA for at least 15 minutes. Where noise exposure meets or exceeds this level, noise is listed as a physical hazard in the JSA for the tasks/operation, and hearing protection is included as one of the control measures (PPE).

8.6 Monitoring

An air monitoring program is important to the safety of on- and off-Site personnel, and the surrounding area. A preliminary survey, to establish background conditions in the immediate sampling area, may be made prior to the initiation of Site work including, but not limited to, monitoring wind direction (e.g., wind socks) and approximate temperature during all invasive Site activities. This survey will be conducted with the appropriate pre-calibrated air monitoring instrument(s), as warranted by the field activity. Once this survey has been complete, any changes in the type of PPE will be determined and relayed to those working on Site.

Work zone air monitoring will be performed to verify that the proper level of PPE is used, and to determine if increased protection or work stoppage is required. The following equipment shall be used to monitor conditions:

- A Photoionization Detector (PID) with a lamp energy of 10.6 eV will be used to provide direct readings of organic vapor concentrations during intrusive activities to determine that personnel protection is adequate. Concentrations shall be recorded during intrusive activities with the potential to encounter contaminant vapors.

Personal exposure monitoring utilizing activated charcoal tubes may be considered based on whether or not the area sample results are at or above half of the PEL. The decision to perform the monitoring will be made by, and under the control of, the CHSD.

Below are monitoring action levels for Site-specific chemicals of concern. In the event PID readings above the thresholds identified below are sustained for 5 minutes in the breathing zone, worker protection will require upgrading following notification to the OHSM and applicable parties.

8.6.1 Action Levels for Air Monitoring

PPE can remain at Level D if breathing zone VOC concentrations are less than 5 ppm and benzene is non detect. Personnel are required to evacuate the Site when breathing zone VOC readings exceed 25 ppm.

The following tables include summaries of the air monitoring, work practices, and action levels for the expected contaminants. The action levels to initiate testing with colorimetric tubes for airborne volatiles is 1 ppm (PID reading) and is based on the Permissible Exposure Limit (PEL) for benzene (1 ppm). The colorimetric tubes are used to confirm the presence or absence of specific constituents, and they do not provide a measured concentration.

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PPE can remain at Level D if breathing zone VOC concentrations are less than 5 ppm is non-detect. Personnel are required to evacuate the Site when breathing zone VOC readings exceed 25 ppm.

The following tables include summaries of the air monitoring, work practices, and action levels for the expected contaminants.

Air Monitoring Summary and Action Levels Organic Vapors	
PID Reading in Breathing Zone (ppm)	**Action**
0-1 ppm above background	Continue monitoring
>1-5 ppm sustained 60 seconds	Continue monitoring
<5 ppm	Continue Monitoring, ventilate space
≥ 5 ppm - ≤ 25 ppm	Ventilate space until PID reads < 5 ppm. If < 5 ppm cannot be achieved, upgrade to Level C[1].
≥ 25 ppm	Ventilate space and evacuate area. Consult with CHSD.

Background concentrations should be established at the beginning of each work day. It may be necessary to re-establish background concentrations and ambient conditions vary through the day.

1 Measured air concentrations of known organic vapors will be reduced by the respirator to one half of the PEL or lower, and the individual and combined compound concentrations shall be within the service limit of the respirator cartridge.

8.6.2 Explosive Hazard

Methane is a common gas constituent that is generated during the decomposition of organics. Methane, a non-toxic compound, does not have an OSHA PEL or other exposure limits based on toxicity; however, methane is explosive under certain conditions. The Lower Explosive Limit (LEL) for methane is 5% in air, or 50,000 parts per million by volume. At high concentrations, methane can also displace oxygen and cause asphyxiation. Since methane is lighter than air, it does not tend to accumulate in low-lying areas and will rapidly mix with atmospheric air if encountered during drilling activities. Methane concentrations will be continuously monitored using a pre-calibrated gas meter while excavation takes place.

8.6.3 Air Monitoring Equipment and Calibration

A PID calibrated to an appropriate calibration mixture will be used to detect organic vapors in and around the work areas. Monitoring will be conducted in and around all work areas and at the workers breathing zone before activities commence to establish a background level, then at 15-minute intervals throughout the day. All equipment will be calibrated according to the manufacturer's recommendation. A calibration log will be maintained and will include the name of the person who performed the calibration, the date and time calibrated, and the instrument reading at the time of calibration. A manual bellows pump or equivalent with colorimetric tubes for specific compounds will be utilized to determine the course of action related to upgrading or downgrading the level of respiratory protection, as applicable.

If air monitoring data indicate safe levels of potentially harmful constituents at consistent intervals (5-minute intervals), then monitoring can be conducted less frequently (every 30 minutes). This determination will be made by the onsite SHSO. Monitoring data, including background readings and calibration records, will be documented. Work to be performed on-Site will conform to Roux's Standard Operating Procedures (SOPs). Conformance with these guidelines as well as the guidelines described in this HASP will aid in mitigating the physical and chemical hazards mentioned throughout this HASP.

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8.7 Tailgate Safety Meetings

A designated Site worker will provide daily safety briefings (e.g., tailgate meetings) including, but not limited to, the following scenarios:

- When new operations are to be conducted;
- Whenever changes in work practices must be implemented; and
- When new conditions are identified and/or information becomes available.

Daily safety briefings shall be recorded on the Roux Daily Tailgate Health and Safety Meeting Log/Daily Site Safety Checklist, and all completed forms will become a part of the project file.

8.8 Spill Containment

Spill containment equipment and procedures should, at a minimum, meet the requirements of the facility's Spill Prevention, Control and Countermeasure Plan, if applicable. Otherwise, spill containment equipment and procedures must be considered depending on the task, including, but not limited to, chemical/product transfer points and handling.

8.8.1 Initial Spill Notification and Response

Any worker who discovers a hazardous substance spill will immediately notify the SHSO. The worker will, to his/her best ability, report the hazardous substance involved, the location of the spill, the estimated quantity of material spilled, the direction/flow of the spill material, related fire/explosion incidents, and any associated injuries without compromising their own safety.

8.8.2 Spill Evaluation and Response

The SHSO is responsible for evaluating spills and determining the appropriate response. When this evaluation is being made, the spill area will be isolated and demarcated to the extent possible. If necessary to protect nearby community members, notification of the appropriate authorities is made by the PM as appropriate. On-Site response is limited to small spills (e.g., <10 gallons); large spills require external emergency responders who will be contacted by the SHSO.

8.9 Decontamination

The decontamination section of the HASP describes how personnel and equipment are decontaminated when they leave the Exclusion Zone. This section also describes how residual waste from decontamination processes is disposed. The site decontamination procedures are designed to achieve an orderly, controlled removal or neutralization of contaminants that may accumulate on personnel or equipment. These procedures minimize worker contact with contaminants and protect against the transfer of contaminants to clean areas of the site and off-site. They also extend the useful life of PPE by reducing the amount of time that contaminants contact and can permeate PPE surfaces. Decontamination is facilitated within the CRZ at this site, if applicable.

8.9.1 Decontamination Procedures for Personnel and PPE

The following are general decontamination procedures established and implemented at this site.

1. Decontamination is required for all workers exiting a contaminated area. Personnel may re-enter the SZ only after undergoing the decontamination procedures described below in the next section.

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2. Protective clothing is decontaminated, cleaned, laundered, maintained and/or replaced as needed to ensure its effectiveness.
3. PPE used at this site that requires maintenance or parts replacement is decontaminated prior to repairs, or
4. PPE used at this site is decontaminated or prepared for disposal on the premises. Personnel who handle contaminated equipment have been trained in the proper means to do so to avoid hazardous exposure.
5. This site uses an off-site laundry for decontamination of PPE. The site has informed that facility of the hazards associated with contaminated PPE from this site.
6. The site requires and trains workers that if their permeable clothing is splashed or becomes wetted with a hazardous substance, they will immediately exit the work zone, perform applicable decontamination procedures, shower, and change into uncontaminated clothing.
7. Procedures for disposal of decontamination waste meet applicable local, State, and Federal regulations.

8.9.2 Decontamination Procedures for Equipment

All tools, equipment, and machinery from the EZ or CRZ are decontaminated in the CRZ prior to removal to the SZ. Equipment decontamination procedures are designed to minimize the potential for hazardous skin or inhalation exposure and to avoid cross-contamination and chemical incompatibilities.

General Equipment Decontamination Procedures:

1. Decontamination is required for all equipment exiting a contaminated area. Equipment may re-enter the SZ only after undergoing the equipment decontamination procedures.
2. Vehicles that travel regularly between the contaminated and clean areas of the site are carefully decontaminated each time they exit the EZ and the effectiveness of that decontamination is monitored to reduce the likelihood that contamination will be spread to other parts of the site.
3. Particular attention is given to decontaminating tires, scoops, and other parts of heavy equipment that are directly exposed to contaminants and contaminated soil.
4. Procedures for disposal of decontamination waste shall meet applicable local, State, and Federal regulations.

The following items may be used to decontaminate equipment:

- Fresh water rinse;
- Non-phosphorus detergent wash;
- Acetone rinse;
- Distilled water rinse; and
- A steam cleaner or pressure washer (heavy equipment only).

8.9.3 Monitoring the Effectiveness of Decontamination Procedures

Visual examination and sampling are used to evaluate the effectiveness of decontamination procedures. Visual examination is used to ensure that procedures are implemented as described and that they appear to control the spread of contaminants under changing site conditions. Visual examination is also used to inspect for signs of residual contamination or for contaminant permeation of PPE.

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Personnel who work in contaminated areas of the site, either the Contamination Reduction Zone (CRZ) or the Exclusion Zone, are trained in the principles and practices of decontamination described in this section of the HASP and in related SOPs. If site procedures are changed as a result of inspection and monitoring, all affected employees are notified of these changes.

8.10 Confined Space Entry

Confined space entry will not be performed by Roux personnel.

The following is a list of the safety requirements for confined space entry at the Site:

- **ROUX PERSONNEL ARE NOT AUTHORIZED TO ENTER AN OSHA PERMIT REQUIRED CONFINED SPACE;**
- Currently the scope of work **DOES NOT** require personnel to enter permitted confined space for this project; and
- Any changes to the field activities that may necessitate confined space entry will be reported to the Project Principal and OHSM.

Confined space is defined as any space, depression, or enclosure that:

- Has limited opening for entry and egress;
- Is large enough for and employee to enter and perform assigned work; and
- Is not intended for continuous occupancy.

A permit required confined space is one that meets the definition of a confined space and has one or more of the following characteristics:

- May contain or produce life-threatening atmospheres due to oxygen deficiency the presence of toxic, flammable, or corrosive contaminants;
- Contains a material that has the potential for engulfment;
- Has an internal configuration that may cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross-section; and
- Contains any other serious safety or health hazards.

Although Roux personnel will not perform confined space entry, it is expected that subcontractors performing cleaning and mitigation and/or remedial measures activities may be required to enter structures that are considered to be a permit required confined space. Permitting of the confined space as well as hazard mitigation for entry will be completed by the subcontractor in accordance with 29 CFR 1910.146 or 1926.1201-1213 and/or applicable local/client requirements.

8.11 Client and Site-Specific

In addition to the OSHA-specific procedures discussed above, there may be client and site-specific safety procedures that must be adhered to during the performance of remedial activities at the Site.

8.12 Unusual or Significant Risks

Field activities that appear to have unusual or significant risks that cannot be adequately managed with existing risk tools such as LPS, HASPs, traffic safety plans, work permits, design and O&M practices,

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equipment HAZOPS or other safety tools must be referred to the CHSD to help with the assessment and management of the associated potential safety risks. Examples include the use of explosives for demolition, use of firearms to control wildlife, rappelling, demolition over water, diving, etc.

8.13 Activity-Specific Hazards

In addition to the general hazards discussed above, there are activity-specific hazards associated with each work activity planned for the Site. An activity-specific JSA has been completed for each of the activities planned for the Site. JSAs are provided in **Appendix A**. In the event that new work activities or tasks are planned, JSAs will be developed and implemented prior to performing the new activities. In the absence of a JSA, the personnel performing work must prepare a field JSA and receive clearance from a designated competent safety official prior to performing any task with significant risk. In emergency situations where time is critical, Last Minute Risk Assessments (LMRAs) will be utilized to identify the task, associated hazards and mitigative actions to take. For lower risk activities (as deemed by the discretion of a Competent Person) where a JSA is determined to not be needed, the individual(s) conducting the activities must perform LMRAs prior to and during the work.

8.13.1 Electrical and Other Utility Assessment and Accommodations

Roux shall perform a site walk to identify any potential overhead electrical or utility lines. All applicable guidelines will be followed in the vicinity of overhead power and utility lines (see Section 8.13.3 below).

Roux has also reviewed all available Site maps showing buried utility lines to identify potential hazards; the review revealed no underground hazards are known to exist in the vicinity of the areas of the Site pertinent to this HASP.

8.13.2 Subsurface Work

Subsurface work activities will require adherence to Roux's Corporate Subsurface Utility Clearance Management program found within Appendix E.

8.13.2.1 Excavations and Trenching

Trenching and excavation work activities carried out by Roux and their subcontractors shall comply with applicable OSHA standards (i.e., 29 CFR 1926.650-652). Regional Notification Centers (i.e., Underground Services Alert) shall be notified at least two working days prior to the start of any digging or excavation work per state requirements (i.e., 811-One Call). Personnel responsible for excavation activities will be trained in their job responsibilities. Additionally, for trenches 4 feet or deeper, where employees will enter, the trench needs to have a stairway, ladder or other safe means of egress, and located so that employees do not have to travel farther than 25 feet horizontally. Where employees will enter trenches greater than 5 feet deep, the trench must have some type of protective system or sloped sidewalls appropriately to prevent cave-ins.

The SHSO or other responsible Roux personnel will be present on-Site during all Roux contracted excavation and backfill operations and will supplement health and safety monitoring conducted by Subcontractor air quality screening to ensure that appropriate levels of protection and safety procedures are utilized. The proximity of chemical, water, sewer, and electrical lines will be identified by Roux and/or their subcontractor before any subsurface activity or sampling is attempted. Prior to any excavation activities, trees, shrubbery, and other objects that can potentially pose as a hazard during excavation should

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be supported or removed from the excavation area. The following safe work practices will be implemented during this task.

- The proximity of chemical, water, sewer, and electrical lines will be identified by a facility representative prior to beginning any subsurface activity.
- At the start of every day, a competent person will inspect excavations to evaluate if the area is stable and safe to enter. Inspections will be conducted as needed throughout the excavation operations. If deemed necessary, a competent person may also conduct inspections after rainfall or any other event that can potentially affect the integrity of the excavation. Employees will not enter excavations where water has accumulated until protective measures have been implemented.
- Prior to entering excavations greater than 4 feet in depth, air monitoring for oxygen and hazardous atmospheres must be conducted to assure atmospheric conditions are within normal levels described in Section 8.6. Continuous air monitoring with a standard multi-gas detector (O2, LEL%, CO, H2S) shall be used during the course of work within an excavation; if action limits are reached workers shall safely exit the excavation. Upgrades to worker protection should be evaluated with the SHSO and PP in consultation with the CHSD. Emergency rescue equipment, such as breathing apparatuses and safety harnesses connected to an extraction device, will be readily available in the event of hazardous atmospheric conditions.
- While earthmoving, stay out of the excavator's delineated heavy equipment exclusion zone and away from the excavation sides where there is potential for cave in (within excavations that are 6 feet or more in depth, a delineated perimeter 6 feet away from the excavated edge is required).
- During loading and unloading operations, stand away from haul trucks and other vehicles to avoid contact with any falling loads.
- Traffic cones, caution tape, or other barriers will be set up around the perimeter of the excavation when employees are working along the excavation edge and for any excavation that will be left open overnight or unattended for more than two days.

Maximum Allowable Slopes

Soil or Rock Type	Maximum Allowable Slopes (H:V)[1] for Excavations Less Than 20 Feet Deep[3]
Stable Rock	Vertical (90°)
Type A[2]	3/4 : 1 (53°)
Type B	1 : 1 (45°)
Type C	1 1/2 : 1 (34°)

29 CFR 1926 Subpart P Appendix B Sloping and Benching Table B-1

Notes:

[1] Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.

[2] A short-term maximum allowable slope of 1/2H : 1V (63°) is allowed in excavations in Type A soil that are 12 feet (3.67 meters) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 meters) in depth shall be 3/4H : 1V (53°).

[3] Sloping or benching for excavations greater than 20 feet deep shall be designed and stamped by a registered professional engineer.

Proper stockpiling (i.e., 2 feet minimum distance from the excavation edge), containment, transport, storage, and disposal practices will be utilized and is dependent upon the potential type and amount of waste generated during operations. The location of safety equipment and evacuation procedures will be established prior to initiation of operations according to this HASP.

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8.13.3 Heavy Equipment

Use of heavy equipment at the Site will require adherence to Roux's Corporate Heavy Equipment Exclusion Zone Management Program found within Appendix F. Additionally, operation of the drill rig/other heavy equipment will maintain clearances from overhead power lines in accordance with 29 CFR 1926.1408 Table A Minimum Clearance Distances provided below.

Minimum Required Clearances for Energized Overhead Power Lines

Nominal System Voltage of Power Line (K V)	Minimum Required Clearance (feet)
0-50	10
51-100	12
101-200	15
201-300	20
301-500	25
501-750	35
751-1000	45

1 kilovolt (KV) = 1,000 volts

8.14 Traffic Control

If Site operations encroach upon public streets or highways and a hazard exists to Site personnel because of traffic conditions, a traffic control plan will be implemented in accordance with the United States Department of Transportation's (DOT's) "Manual on Uniform Traffic Control Devices."

8.15 Sanitation

Sanitation facilities will be provided in accordance with the sanitation standards (29 CFR 1910.141, 29 CFR 1926.51 and 29 CFR 1928.110). Sanitation facilities will be maintained and kept in good conditions at all times.

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9. Field Team Review

Each person performing work at or visiting this site shall sign this section after site-specific training is completed and before being permitted to access the CRZ or Exclusion Zone.

I have read and understand this Site-Specific Health and Safety Plan. I will comply with the provision contained therein.

Site/Project: Broadway Triangle Parcels A1 and A2

Name & Company	Signature	Date

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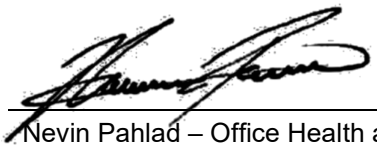
10. Approvals

By their signature, the undersigned certify that this HASP is approved and will be utilized at the Broadway Triangle Parcels A1 and A2 Site.

TBD – Site Health and Safety Officer	Date
 Nevin Pahlad – Office Health and Safety Manager	March 3, 2026 Date
Levi Curnutte – Project Manager	March 3, 2026 Date
Jessica L. Taylor, P.G. – Project Principal	March 3, 2026 Date

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TABLES

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1. Toxicological Properties of Hazardous Substances Present at the Site

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
ORGANOCHLORINE PESTICIDES (OCP)									
DDT	50-29-3	TWA 1 mg/m3	TWA 0.5 mg/m3	TWA 1 mg/m3	500 mg/m3	Inhalation, ingestion, skin and/or eye contact	Irritation 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]	Eyes, skin, central nervous system, kidneys, liver, peripheral nervous system	White, odorless and tasteless, very stable, water-insoluble, synthetic BP: 260°F Fl.Pt. = 162-171°F LEL: NA UEL: NA
Aldrin	309-00-2	TWA 0.1 mg/m3	TWA 0.25 mg/m3	TWA 0.25 mg/m3	25 mg/m3	Inhalation, ingestion, skin and/or eye contact	headache, dizziness; nausea, vomiting, malaise (vague feeling of discomfort); myoclonic jerks of limbs; clonic, tonic convulsions; coma; hematuria (blood in the urine), azotemia; [potential occupational carcinogen]	Developmemntal, Endocrine, Liver, Immune System, Nervous System,	Colorless to dark-brown crystalline solid with a mild chemical odor. BP: 293°F Fl.Pt. = 150°F LEL: NA UEL: NA
Lindane (gamma-BHC)	58-89-9	TWA 0.5 mg/m3	TWA 0.5 mg/m3	TWA 0.5 mg/m3	50 mg/m3	Inhalation, ingestion, skin and/or eye contact	irritation eyes, skin, nose, throat; headache; nausea; clonic convulsions; resp difficulty; cyanosis; aplastic anemia; muscle spasm; In Animals: liver, kidney damage	Eyes, skin, respiratory system, central nervous system, blood, liver, kidneys	White to yellow, crystalline powder with a slight, musty odor. BP: 614°F Fl.Pt. = 150°F LEL: NA UEL: NA
Dieldrin	860-57-1□	TWA 0.1 mg/m3	TWA 0.25 mg/m3	TWA 0.25 mg/m3	25 mg/m3	Inhalation, ingestion, skin and/or eye contact	headache, dizziness; nausea, vomiting, malaise (vague feeling of discomfort), sweating; myoclonic limb jerks; clonic, tonic convulsions; coma; ; In Animals: liver, kidney damage [potential occupational carcinogen]	Developmemntal, Endocrine, Liver, Immune System, Nervous System,	Colorless to light-tan crystals with a mild, chemical odor. BP: NA (Decomposes) Fl.Pt. = NA LEL: NA UEL: NA
VOLATILE ORGANIC COMPOUNDS (VOCs)									
1,1,1-Trichloroethane	71-55-6	TWA 350 ppm STEL 450 ppm	C 350 ppm (1900 mg/m^3) [15-minute]	TWA 350 ppm (1900 mg/m^3)	700 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression, poor equilibrium; dermatitis; cardiac arrhythmias; liver damage	Eyes, skin, central nervous system, cardiovascular system, liver	Colorless liquid with a mild, chloroform-like odor. BP: 165°F Fl.Pt. = NA LEL: 7.5% UEL: 12.5% Combustible Liquid, but burns with difficulty
1,1,2,2-Tetrachloroethane	79-34-5	TWA 1 ppm [skin]	Ca TWA 1 ppm (7 mg/m^3) [skin]	TWA 5 ppm (35 mg/m^3) [skin]	Ca [100 ppm]	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]	Skin, liver, kidneys, central nervous system, gastrointestinal tract	Colorless to pale-yellow liquid with a pungent, chloroform-like odor BP: 296°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Liquid
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	TWA 1000 ppm STEL 1250 ppm	TWA 1000 ppm (7600 mg/m3) ST 1250 ppm (9500 mg/m3)	TWA 1000 ppm (7600 mg/m3)	2000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation skin, throat, drowsiness, dermatitis; central nervous system depression; In Animals: cardiac arrhythmias, narcosis	Skin, heart, central nervous system, cardiovascular system	Colorless to water-white liquid with an odor like carbon tetrachloride at high concentrations. [Note: A gas above 118°F.] BP: 118°F Fl.Pt. = NA LEL: NA UEL: NA
1,1,2-Trichloroethane	79-00-5	TWA 10 ppm [skin]	Ca TWA 10 ppm (45 mg/m3) [skin]	TWA 10 ppm (45 mg/m3) [skin]	Ca [100 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; central nervous system depression; liver, kidney damage; dermatitis; [potential occupational carcinogen]	Eyes, respiratory system, central nervous system, liver, kidneys	Colorless liquid with a sweet, chloroform-like odor BP: 237°F Fl.Pt. = NA LEL: 6% UEL: 15.5% Combustible Liquid, forms dense soot
1,1-Dichloroethane	75-34-3	TWA 100 ppm	TWA 100 ppm (400 mg/m^3)	TWA 100 ppm (400 mg/m^3)	3,000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation skin; central nervous system depression; liver, kidney, lung damage	Skin, liver, kidneys, lungs, central nervous system	Colorless, oily liquid with a chloroform-like odor. BP: 135°F Fl.Pt. = 2°F LEL: 5.4% UEL: 11.4% Class IB Flammable Liquid Fl.P. below 73°F and BP at or above 100°F.

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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
1,1-Dichloroethene	75-35-4	TWA 5 ppm	Ca	None	Ca	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, throat; dizziness, headache, nausea, dyspnea (breathing difficulty); liver, kidney disturbance; pneumonitis; [potential occupational carcinogen]	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Colorless liquid or gas (above 89°F) with a mild, sweet, chloroform-like odor BP: 89°F Fl.Pt. = -2°F LEL: 6.5% UEL: 15.5% Class IA Flammable Liquid: Fl.P. below 73°F and BP below 100°F
1,2,3-Trichlorobenzene	87-61-6	Cameo Chemicals Source https://cameochemicals.noaa.gov/chemical/10051	NA	NA	NA	Inhalation, skin absorption, ingestion, skin and/or eye contact	Inhalation may cause irritation of respiratory tract. Irritating to the eyes. May redden skin on contact. Ingestion may cause liver damage.	Skin, eyes, respiratory tract, liver	A white solid with a sharp chlorobenzene odor. Insoluble in water and denser than water. Hence sinks in water Fl.Pt. = 234.9°F
1,2,4-Trichlorobenzene	120-82-1	C 5 ppm	C 5 ppm (40 mg/m3)	None	N.D.	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation eyes, skin, mucous membrane; In Animals: liver, kidney damage; possible teratogenic effects	Eyes, skin, respiratory system, liver, reproductive system	Colorless liquid or crystalline solid (below 63°F) with an aromatic odor BP: 416°F Fl.Pt. = 222°F LEL (302°F): 2.5% UEL (302°F): 6.6% Class IIIB Combustible Liquid: Fl.P. at or above 200°F. Combustible Solid
1,2-Dibromo-3-chloropropane	96-12-8	NA	Ca	TWA 0.001 ppm	Ca	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]	Eyes, skin, respiratory system, central nervous system, liver, kidneys, spleen, reproductive system, digestive system	Dense yellow or amber liquid with a pungent odor at high concentrations. [pesticide] [Note: A solid below 43°F.] BP: 384°F Fl.Pt. = (oc) 170°F LEL: NA UEL: NA Class IIIA Combustible Liquid: Fl.P. at or above 140°F and below 200°F.
1,2-Dibromoethane	106-93-4	None listed Skin	Ca TWA 0.045 ppm C 0.13 ppm [15-minute]	TWA 20 ppm C 30 ppm 50 ppm [5-minute maximum peak]	Ca [100 ppm]	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]	Eyes, skin, respiratory system, liver, kidneys, reproductive system	Colorless liquid or solid (below 50°F) with a sweet odor. [fumigant] BP: 268°F Fl.Pt. = 50°F LEL: NA UEL: NA Noncombustible Liquid
1,2-Dichlorobenzene	95-50-1	TWA 25 ppm STEL 50 ppm	C 50 ppm (300 mg/m3)	C 50 ppm (300 mg/m3)	200 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; liver, kidney damage; skin blisters	Eyes, skin, respiratory system, liver, kidneys	Colorless to pale-yellow liquid with a pleasant, aromatic odor. [herbicide] BP: 357°F Fl.Pt. = 1°F LEL: 2.2% UEL: 9.2% Class IIIA Combustible Liquid: Fl.P. at or above 140°F and below 200°F.
1,2-Dichloroethane	107-06-2	TWA 10 ppm	Ca TWA 1 ppm (4 mg/m3) ST 2 ppm (8 mg/m3)	TWA 50 ppm C 100 ppm 200 ppm [5-minute maximum peak in any 3 hours]	Ca [50 ppm]	Inhalation, ingestion, skin absorption, skin and/or eye contact	Irritation eyes, corneal opacity; central nervous system depression; nausea, vomiting; dermatitis; liver, kidney, cardiovascular system damage; [potential occupational carcinogen]	Eyes, skin, kidneys, liver, central nervous system, cardiovascular system	Colorless liquid with a pleasant, chloroform-like odor. [Note: Decomposes slowly, becomes acidic & darkens in color.] BP: 182°F Fl.Pt. = 56°F LEL: 6.2% UEL: 16% Class IB Flammable Liquid Fl.P. below 73°F and BP at or above 100°F.
1,2-Dichloropropane	78-87-5	TWA 10 ppm Dermal Sensitizer (DSEN)	Ca	TWA 75 ppm (350 mg/m3)	Ca [400 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory system; drowsiness, dizziness; liver, kidney damage; In Animals: central nervous system depression; [potential occupational carcinogen]	Eyes, skin, respiratory system, liver, kidneys, central nervous system	Colorless liquid with a chloroform-like odor. [pesticide] BP: 206°F Fl.Pt. = 60°F LEL: 3.4% UEL: 14.5% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
1,3-Dichlorobenzene	541-73-1	https://cameochemicals.noaa.gov/chemical/8514				Inhalation, skin absorption, ingestion, skin and/or eye contact	INHALATION: Causes headache, drousiness, unsteadiness. Irritating to mucous membranes. EYES: Severe irritation. SKIN: Severe irritation. INGESTION: Irritation of gastric mucosa, nausea, vomiting, diarrhea, abdominal cramps and cyanosis.		Colorless liquid. Sinks in water. BP: 343°F Fl.Pt. = 146°F LEL: 2.02% UEL: 9.2%
1,4-Dichlorobenzene	106-46-7	TWA 10 ppm	Ca	TWA 75 ppm (450 mg/m3)	Ca [150 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Eye irritation, swelling periorbital (situated around the eye); profuse rhinitis; headache, anorexia, nausea, vomiting; weight loss, jaundice, cirrhosis; In Animals: liver, kidney injury; [potential occupational carcinogen]	Liver, respiratory system, eyes, kidneys, skin	Colorless or white crystalline solid with a mothball-like odor. [insecticide] BP: 345°F Fl.Pt. = 150°F LEL: 2.5% UEL: NA Combustible Solid, but may take some effort to ignite.

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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
1,4-Dioxane	123-91-1	TWA 20 ppm [skin]	Ca C 1 ppm (3.6 mg/m3) [30-minute]	TWA 100 ppm (360 mg/m3) [skin]	Ca [500 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	irritation eyes, skin, nose, throat; drowsiness, headache; nausea, vomiting; liver damage; kidney failure; [potential occupational carcinogen]	Eyes, skin, respiratory system, liver, kidneys	Colorless liquid or solid (below 53°F) with a mild, ether-like odor. BP: 214°F Fl.Pt. = 55°F LEL: 2.0% UEL: 22% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F
2-Butanone	78-93-3	TWA 200 ppm STEL 300 ppm	TWA 200 ppm (590 mg/m3) ST 300 ppm (885 mg/m3)	TWA 200 ppm (590 mg/m3)	3000 ppm	inhalation, ingestion, skin and/or eye contact	irritation eyes, skin, nose; headache; dizziness; vomiting; dermatitis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a moderately sharp, fragrant, mint- or acetone-like odor BP: 175°F Fl.Pt. = 16°F LEL (200°F): 1.4% UEL (200°F): 11.4% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F
2-Hexanone	591-78-6	TWA 5 ppm STEL 10 ppm [skin]	TWA 1 ppm (4 mg/m3)	TWA 100 ppm (410 mg/m3)	1600 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; peripheral neuropathy: lassitude (weakness, exhaustion), paresthesia; dermatitis; headache, drowsiness	Eyes, skin, respiratory system, central nervous system, peripheral nervous system	Colorless liquid with an acetone-like odor BP: 262°F Fl.Pt. = 77°F LEL: NA UEL: 8.0% Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F
4-Methyl-2-pentanone	108-10-1	TWA 20 ppm STEL 75 ppm	TWA 50 ppm (205 mg/m3) ST 75 ppm (300 mg/m3)	TWA 100 ppm (410 mg/m3)	500 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; headache, narcosis, coma; dermatitis; In Animals: liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Colorless liquid with a pleasant odor BP: 242°F Fl.Pt. = 64°F LEL (200°F): 1.2% UEL (200°F): 8.0% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F
Acetone	67-64-1	TWA 250 ppm STEL 500 ppm	TWA 250 ppm (590 mg/m^3)	TWA 1000 ppm (2400 mg/m^3)	2500 ppm [10% LEL]	Inhalation, ingestion, skin and/or eye contact	irritation eyes, nose, throat; headache, dizziness, central nervous system depression; dermatitis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a fragrant, mint-like odor BP: 133°F Fl.Pt. = 0°F LEL: 12.8% UEL: 2.5% Class IB Flammable liquid: Fl.P. below 73°F and BP at or above 100°F.
Benzene	71-43-2	TWA 0.5 ppm STEL 2.5 ppm	Ca TWA 0.1 ppm ST 1 ppm	TWA 1 ppm ST 5 ppm	Ca [500 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]	Eyes, skin, respiratory system, blood, central nervous system, bone marrow	Colorless to light yellow liquid with an aromatic odor [Note: Solid below 42 °F] BP: 176°F Fl.Pt. = 12°F LEL: 1.2% UEL: 7.8% Class IB Flammable liquid. Fl.P. below 73°F and BP at or above 100°F.
Bromochloromethane	74-97-5	TWA 200 ppm	TWA 200 ppm (1050 mg/m3)	TWA 200 ppm (1050 mg/m3)	2000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, throat; confusion, dizziness, central nervous system depression; pulmonary edema	Eyes, skin, respiratory system, liver, kidneys, central nervous system	Colorless to pale-yellow liquid with a chloroform-like odor. [Note: May be used as a fire extinguishing agent.] BP: 155°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Liquid
Bromodichloromethane	75-27-4	https://cameochemicals.noaa.gov/chemical/16064				Inhalation, ingestion, skin and/or eye contact	Symptoms of exposure to this compound may include irritation of the skin, eyes, mucous membranes and respiratory tract. It may also cause narcosis. Other symptoms may include nausea, dizziness and headache.	Liver and kidney damage. Central nervous system effects may also occur.	Clear colorless liquid BP: 189°F Fl.Pt. = NA LEL: NA UEL: NA
Bromoform	75-25-2	TWA 0.5 ppm	TWA 0.5 ppm (5 mg/m3) [skin]	TWA 0.5 ppm (5 mg/m3) [skin]	850 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory system; central nervous system depression; liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Colorless to yellow liquid with a chloroform-like odor. [Note: A solid below 47°F.] BP: 301°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Liquid
Bromomethane	74-83-9	TWA 1 ppm [skin]	Ca	C 20 ppm (80 mg/m3) [skin]	Ca [250 ppm]	Inhalation, skin absorption (liquid), skin and/or eye contact (liquid)	Irritation 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]	Eyes, skin, respiratory system, central nervous system	Colorless gas with a chloroform-like odor at high concentrations. [Note: A liquid below 38°F. Shipped as a liquefied compressed gas.] BP: 38°F Fl.Pt. = NA (Gas) LEL: 10% UEL: 16.0% Flammable Gas, but only in presence of a high energy ignition source.

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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Carbon disulfide	75-15-0	TWA 1 ppm [skin]	TWA 1 ppm (3 mg/m3) ST 10 ppm (30 mg/m3) [skin]	TWA 20 ppm C 30 ppm 100 ppm (30-minute maximum peak)	500 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Dizziness, headache, poor sleep, lassitude (weakness, exhaustion), anxiety, anorexia, weight loss; psychosis; polyneuropathy; Parkinson-like syndrome; ocular changes; coronary heart disease; gastritis; kidney, liver injury; eye, skin burns; dermatitis; reproductive effects	Central nervous system, peripheral nervous system, cardiovascular system, eyes, kidneys, liver, skin, reproductive system	Colorless to faint-yellow liquid with a sweet ether-like odor. [Note: Reagent grades are foul smelling.] BP: 116°F Fl.Pt. = -22°F LEL: 1.3% UEL: 50.0% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
Carbon tetrachloride	56-23-5	TWA 5 ppm STEL 10 ppm [skin]	Ca ST 2 ppm (12.6 mg/m3) [60-minute]	TWA 10 ppm C 25 ppm 200 ppm (5-minute maximum peak in any 4 hours)	Ca [200 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; central nervous system depression; nausea, vomiting; liver, kidney injury; drowsiness, dizziness, incoordination; [potential occupational carcinogen]	Central nervous system, eyes, lungs, liver, kidneys, skin	Colorless liquid with a characteristic ether-like odor BP: 170°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Liquid
Chlorobenzene	108-90-7	TWA 10 ppm	NA	TWA 75 ppm (350 mg/m3)	1000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose; drowsiness, incoordination; central nervous system depression; In Animals: liver, lung, kidney injury	Eyes, skin, respiratory system, central nervous system, liver	Colorless liquid with an almond-like odor BP: 270°F Fl.Pt. = 82°F LEL: 1.3% UEL: 9.6% Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F.
Chloroethane	75-00-3	TWA 100 ppm [skin]	Handle with caution in the workplace	TWA 1000 ppm (2600 mg/m3)	3800 ppm [10%LEL]	Inhalation, skin absorption (liquid), ingestion (liquid), skin and/or eye contact	Incoordination, inebriation; abdominal cramps; cardiac arrhythmias, cardiac arrest; liver, kidney damage	Liver, kidneys, respiratory system, cardiovascular system, central nervous system	Colorless gas or liquid (below 54°F) with a pungent, ether-like odor. [Note: Shipped as a liquefied compressed gas.] BP: 54°F Fl.Pt. = NA (gas), -58°F (liquid) LEL: 3.8% UEL: 15.4% Flammable Gas
Chloroform	67-66-3	TWA 10 ppm	Ca ST 2 ppm (9.78 mg/m3) [60-minute]	C 50 ppm (240 mg/m3)	Ca [500 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; dizziness, mental dullness, nausea, confusion; headache, lassitude (weakness, exhaustion); anesthesia; enlarged liver; [potential occupational carcinogen]	Liver, kidneys, heart, eyes, skin, central nervous system	Colorless liquid with a pleasant odor BP: 143°F Fl.Pt. = -82°F LEL: NA UEL: NA Noncombustible Liquid
Chloromethane	74-87-3	TWA 50 ppm STEL 100 ppm	Ca	TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 3 hours)	Ca [2000 ppm]	Inhalation, skin and/or eye contact (liquid)	Dizziness, nausea, vomiting; visual disturbance, stagger, slurred speech, convulsions, coma; liver, kidney damage; liquid: frostbite; reproductive, teratogenic effects; [potential occupational carcinogen]	Central nervous system, liver, kidneys, reproductive system	Colorless gas with a faint, sweet odor which is not noticeable at dangerous concentrations. [Note: Shipped as a liquefied compressed gas.] BP: -12°F Fl.Pt. = NA (Gas) LEL: 8.1% UEL: 17.4% Flammable Gas
cis-1,2-Dichloroethene	156-59-2	TWA 200 ppm (All isomers)	TWA 200 ppm (790 mg/m3)	TWA 200 ppm (790 mg/m3)	1000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, respiratory system; central nervous system depression	Eyes, respiratory system, central nervous system	Colorless liquid (usually a mixture of the cis & trans isomers) with a slightly acrid, chloroform-like odor. BP: 118-140°F Fl.Pt. = 36-39°F LEL: 5.6% UEL: 12.8% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F
cis-1,3-Dichloropropene	10061-01-5	https://cameochemicals.noaa.gov/chemical/20168				Inhalation, ingestion, skin and/or eye contact	Symptoms of exposure to this compound may include local irritation of the eyes skin and respiratory tract; dermatitis, gasping, coughing, substernal pain, extreme respiratory distress, lacrimation, central nervous system depression, skin irritation, acute gastrointestinal distress with pulmonary congestion and edema. It also may cause injury to the liver, kidneys and heart.	Skin, eyes, mucous membranes, liver, kidney, heart	Colorless to amber liquid with a sweetish odor. BP: 219.7°F Fl.Pt. = NA LEL: NA UEL: NA
Cyclohexane	110-82-7	TWA 100 ppm	TWA 300 ppm (1050 mg/m3)	TWA 300 ppm (1050 mg/m3)	1300 ppm [10%LEL]	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory system; drowsiness; dermatitis; narcosis, coma	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a sweet, chloroform-like odor. [Note: A solid below 44°F.] BP: 177°F Fl.Pt. = 0°F LEL: 1.3% UEL: 8.0% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
Dibromochloromethane	124-48-1	https://cameochemicals.noaa.gov/chemical/16183				Inhalation, ingestion, skin and/or eye contact	Symptoms of exposure to this compound may include irritation of the skin, eyes, mucous membranes and upper respiratory tract. It may also cause fatigue. Other symptoms may include central nervous system effects, lung and cornea irritation and liver and kidney damage. Prolonged exposure can cause nausea, dizziness, headache and narcosis.	Skin, eyes, mucous membranes, upper respiratory tract	Clear colorless to yellow-orange liquid BP: 246-248°F Fl.Pt. = Greater than 200°F LEL: NA UEL: NA

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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Dichlorodifluoromethane	75-71-8	TWA 1000 ppm	TWA 1000 ppm (4950 mg/m3)	TWA 1000 ppm (4950 mg/m3)	15,000 ppm	Inhalation, skin and/or eye contact (liquid)	Dizziness, tremor, asphyxia, unconsciousness, cardiac arrhythmias, cardiac arrest; liquid: frostbite	Cardiovascular system, peripheral nervous system	Colorless gas with an ether-like odor at extremely high concentrations. [Note: Shipped as a liquefied compressed gas.] BP: -22°F Fl.Pt. = NA LEL: NA UEL: NA Nonflammable Gas
Ethyl benzene	100-41-4	TWA 20 ppm	TWA 100 ppm (435 mg/m^3) ST 125 ppm (545 mg/m^3)	TWA 100 ppm (435 mg/m^3)	800 ppm [10%LEL]	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma	Eyes, skin, respiratory system, central nervous system	Colorless liquid with an aromatic odor. BP: 277°F Fl.Pt. = 55°F LEL: 0.8% UEL: 6.7% Class IB Flammable Liquid below 73°F and BP at or above 100°F
Isopropyl benzene	98-82-8	TWA 5 ppm	TWA 50 ppm (245 mg/m3) [skin]	TWA 50 ppm (245 mg/m3) [skin]	900 ppm [10%LEL]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; dermatitis; headache, narcosis, coma	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a sharp, penetrating, aromatic odor BP: 306°F Fl.Pt. = 96°F LEL: 0.9% UEL: 6.5% Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F
Methyl Acetate	79-20-9	TWA 200 ppm STEL 250 ppm	TWA 200 ppm (610 mg/m3) ST 250 ppm (760 mg/m3)	TWA 200 ppm (610 mg/m3)	3100 ppm [10%LEL]	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; headache, drowsiness; optic nerve atrophy; chest tightness; In Animals: narcosis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a fragrant, fruity odor BP: 135°F Fl.Pt. = 14°F LEL: 3.1% UEL: 16% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
Methylcyclohexane	108-87-2	TWA 400 ppm	TWA 400 ppm (1600 mg/m3)	TWA 500 ppm (2000 mg/m3)	1200 ppm [LEL]	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; dizziness, drowsiness; In Animals: narcosis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a faint, benzene-like odor BP: 214°F Fl.Pt. = 25°F LEL: 1.2% UEL: 6.7% Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
Methylene chloride	75-09-2	TWA 50 ppm [skin] STEL 100 ppm	Ca	[1910.1052] TWA 25 ppm ST 125 ppm	Ca [2300 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; lassitude (weakness, exhaustion), drowsiness, dizziness; numb, tingle limbs; nausea; [potential occupational carcinogen]	Eyes, skin, cardiovascular system, central nervous system	Colorless liquid with a chloroform-like odor. [Note: A gas above 104°F.] BP: 104°F Fl.Pt. = NA LEL: 13% UEL: 23% Combustible Liquid
Methyl-t-butyl ether	1634-04-4	TWA 50 ppm	NA	NA	NA	Inhalation, skin absorption, ingestion, skin and/or eye contact	May cause dizziness or suffocation. Contact may irritate or burn eyes or skin. May be harmful if swallowed.	Eyes, skin	A colorless liquid with a distinctive anesthetic-like odor. BP: 131°F Fl.Pt. = -14°F LEL: NA UEL: NA
o-Xylene	95-47-6	TWA 20 ppm (All isomers)	TWA 100 ppm (435 mg/m3) ST 150 ppm (655 mg/m3)	TWA 100 ppm (435 mg/m3)	900 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis	Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys	Colorless liquid with an aromatic odor BP: 292°F Fl.Pt. = 90°F LEL: 0.9% UEL: 6.7% Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F
Styrene	100-42-5	TWA 10 ppm STEL 20 ppm OTO (ototoxicant)	TWA 50 ppm (215 mg/m3) ST 100 ppm (425 mg/m3)	TWA 100 ppm C 200 ppm 600 ppm (5-minute maximum peak in any 3 hours)	700 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose, respiratory system; headache, lassitude (weakness, exhaustion), dizziness, confusion, malaise (vague feeling of discomfort), drowsiness, unsteady gait; narcosis; defatting dermatitis; possible liver injury; reproductive effects	Eyes, skin, respiratory system, central nervous system, liver, reproductive system	Colorless to yellow, oily liquid with a sweet, floral odor BP: 293°F Fl.Pt. = 88°F LEL: 0.9% UEL: 6.8% Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F
Tetrachloroethene	127-18-4	TWA 25 ppm STEL 100 ppm	Ca Minimize workplace exposure concentrations	TWA 100 ppm C 200 ppm (for 5 minutes in any 3-hour period), with a maximum peak of 300 ppm	Ca [150 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]	Eyes, skin, respiratory system, liver, kidneys, central nervous system	Colorless liquid with a mild, chloroform-like odor BP: 250°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Liquid, but decomposes in a fire to hydrogen chloride and phosgene

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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Sodium Hydroxide	1310-73-2	Ceiling 2 mg/m^3	C 2 mg/m^3	TWA 2 mg/m^3	10 mg/m^3	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; pneumonitis; eye, skin burns; temporary loss of hair	Eyes, skin, respiratory system	Colorless to white, odorless solid (flakes, beads, granular form). BP: 2534°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid, but when in contact with water may generate sufficient heat to ignite combustible materials.
Sulfuric Acid	7664-93-9	TWA 0.2 mg/m^3 (as thoracic particulate mass)	TWA 1 mg/m^3	TWA 1 mg/m^3	15 mg/m^3	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; pulmonary edema, bronchitis; emphysema; conjunctivitis; stomatis; dental erosion; eye, skin burns; dermatitis	Eyes, skin, respiratory system, teeth	Colorless to dark-brown, oily, odorless liquid.[Note: Pure compound is a solid below 51°F. Often used in an aqueous solution.] BP = 554°F Fl.Pt. = NA LEL = NA UEL = NA Noncombustible Liquid, but capable of igniting finely divided combustible materials.
trans-1,2-Dichloroethene	156-60-5	200 ppm (All isomers)	TWA 200 ppm (790 mg/m3)	TWA 200 ppm (790 mg/m3)	1000 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, respiratory system; central nervous system depression	Eyes, respiratory system, central nervous system	Colorless liquid (usually a mixture of the cis & trans isomers) with a slightly acrid, chloroform-like odor. BP: 118-140°F Fl.P: 36-39°F LEL: 5.6% UEL: 12.8% Class IB Flammable Liquid Fl.P. below 73°F and BP at or above 100°F.
trans-1,3-Dichloropropene	10061-02-6	https://cameochemicals.noaa.gov/chemical/18110				Inhalation, ingestion, skin and/or eye contact	Symptoms of exposure to this compound may include local irritation of the eyes skin and respiratory tract, dermatitis, gasping, coughing, substernal pain, extreme respiratory distress, lacrimation, central nervous system depression, acute gastrointestinal distress with pulmonary congestion and edema. It may also cause injury to the liver, kidneys and heart	Skin, eyes, mucous membranes, liver, kidney, heart	A clear colorless liquid with chloroform odor BP: 234°F Fl.P: NA LEL: NA UEL: NA
Toluene	108-88-3	TWA 20 ppm (ototoxicant)	TWA 100 ppm (375 mg/m^3) ST 150 ppm (560 mg/m^3)	TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak)	500 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	irritation eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Colorless liquid with a sweet, pungent, benzene-like odor. BP: 232°F Fl.P: 40°F LEL: 1.1% UEL: 7.1% Class IB Flammable Liquid Fl.P. below 73°F and BP at or above 100°F.
Trichloroethene (TCE)	79-01-6	TWA 10 ppm STEL 25 ppm	Ca	TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours)	Ca [1000 ppm]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]	Eyes, skin, respiratory system, heart, liver, kidneys, central nervous system	Colorless liquid (unless dyed blue) with a chloroform-like odor. BP: 189°F Fl.Pt. = NA LEL(77°F): 8.0% UEL(77°F): 10.5% Combustible Liquid, but burns with difficulty.
Trichlorofluoromethane	75-69-4	STEL C 1000 ppm	C 1000 ppm (5600 mg/m3)	TWA 1000 ppm (5600 mg/m3)	2000 ppm	Inhalation, ingestion, skin and/or eye contact	Incoordination, tremor; dermatitis; cardiac arrhythmias, cardiac arrest; asphyxia; liquid: frostbite	Skin, respiratory system, cardiovascular system	Colorless to water-white, nearly odorless liquid or gas (above 75°F) BP: 75°F Fl.P: NA LEL: NA UEL: NA Noncombustible Liquid Nonflammable Gas
Vinyl Chloride (chloroethylene)	75-01-4	TWA 1 ppm	Ca	TWA 1 ppm C 5 ppm [15-minute]	Ca (ND)	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]	Liver, central nervous system, blood, respiratory system, lymphatic system	Colorless gas or liquid (below 7°F) with a pleasant odor at high concentrations.[Note: Shipped as a liquefied compressed gas.] BP: 7°F Fl.Pt. = NA (Gas) LEL: 3.6% UEL: 33.0% Flammable Gas
Xylene (m, o & p isomers)	108-38-3, 95-47-6, 106-42-3	TWA 20 ppm	NA	NA	NA	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis	Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys	Colorless liquid with an aromatic odor BP: 282°F, 292°F, 281°F Fl. Pt. 82°F, 90°F, 81°F LEL: 1.1%, 0.9%, 1.1% UEL: 7.0%, 6.7%, 7.0% Class IC Flammable Liquid at or above 73°F and below 100°F.
Zinc Oxide (dust)	7440-66-6	TWA 2 mg/m3 (repsirable) STEL 10 mg/m^3 (respirable)	TWA 5 mg/m^3 C 15 mg/m^3	TWA 15 mg/m^3 (total dust) TWA 5 mg/m^3 (resp dust) TWA 5 mg/m^3 (fume)	500 mg/m^3	Inhalation	Metal fume fever: 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	Respiratory system	White, odorless solid. BP: NA Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid

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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)									
2-Chloronaphthalene	91-58-7	https://cameochemicals.noaa.gov/chemical/16185				Inhalation, ingestion, skin and/or eye contact	Chloracne, cysts, headache, fatigue, vertigo, anorexia and jaundice		Monoclinic plates or off-white crystalline powder BP: NA Fl.Pt. = NA LEL: NA UEL: NA
2-Methylnaphthalene	91-57-6	TWA 0.5 ppm TLV-SL 3 mg/100 cm2 [skin]	https://cameochemicals.noaa.gov/chemical/20668			Inhalation, ingestion, skin and/or eye contact	Headaches, nausea, vomiting, diarrhea, anemia, jaundice, euphoria, dermatitis, visual disturbances, convulsions and comatose	Skin, eyes, mucous membranes and upper respiratory tract	White crystalline solid Combustible solid BP: 466-468 ° F Fl.Pt. = 208 ° F LEL: NA UEL: NA
Acenaphthene	83-32-9	https://cameochemicals.noaa.gov/chemical/10358				Inhalation, ingestion, skin and/or eye contact	Irritation of the skin, eyes, mucous membranes and upper respiratory tract, vomiting	Skin, eyes, mucous membranes and upper respiratory tract	White needles BP: 534 ° F Fl.Pt. = NA LEL: 0.6% UEL: NA
Acenaphthylene	208-96-8	https://cameochemicals.noaa.gov/chemical/16157				Inhalation, ingestion, skin and/or eye contact			Colorless crystalline solid BP: 509 to 527 ° F at 760 mm Hg Fl.Pt. = NA LEL: NA UEL: NA
Anthracene (as coal tar pitch volatiles)	120-12-7	TWA 0.2 mg/m3 (as Benzene solubles)	Ca TWA 0.1 mg/m3 (cyclohexane-extractable fraction)	TWA 0.2 mg/m3 (benzene-soluble fraction) [1910.1002]	Ca [80 mg/m3]	Inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	Respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue BP: NA Fl.Pt. = NA LEL: NA UEL: NA Combustible Solids
Benzo[a]anthracene	56-55-3	https://cameochemicals.noaa.gov/chemical/16171				Inhalation, injestion, skin and/or eye contact			Colorless leaflets or plates or coarse gold powder with a greenish-yellow fluorescence. May reasonably be expected to be a carcinogen. BP: 815° F at 760 mm Hg Fl.Pt. = NA LEL: NA UEL: NA
Benzo[a]pyrene (as coal tar pitch volatiles)	50-32-8	TWA 0.2 mg/m3 (as Benzene solubles)	Ca TWA 0.1 mg/m3 (cyclohexane-extractable fraction)	TWA 0.2 mg/m3 (benzene-soluble fraction) [1910.1002]	Ca [80 mg/m3]	Inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	Respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue BP: NA Fl.Pt. = NA LEL: NA UEL: NA Combustible Solids
Benzo[b]fluoranthene	205-99-2	None listed	https://cameochemicals.noaa.gov/chemical/16172			Inhalation, injestion, skin and/or eye contact			Needles or yellow fluffy powder BP: NA Fl.Pt. = NA LEL: NA UEL: NA
Benzo[g,h,i]perylene	191-24-2	https://cameochemicals.noaa.gov/chemical/16174				Inhalation, injestion, skin and/or eye contact	Inhalation of material may be harmful. Contact may cause burns to skin and eyes. Inhalation of Asbestos dust may have a damaging effect on the lungs. Fire may produce irritating, corrosive and/or toxic gases. Some liquids produce vapors that may cause dizziness or suffocation. Runoff from fire control may cause pollution.	Lungs, skin, eyes	Colorless to white crystalline solid. Water insoluble. BP: NA Fl.Pt. = NA LEL: NA UEL: NA
Benzo[k]fluoranthene	207-08-9	https://cameochemicals.noaa.gov/chemical/16173				Inhalation, injestion, skin and/or eye contact	When heated to decomposition this compound emits acrid smoke and irritating fumes.		Pale yellow needles or yellow crystalline solid BP: 896° F Fl.Pt. = NA LEL: NA UEL: NA
Chrysene (as coal tar pitch volatiles	218-01-9	TWA 0.2 mg/m3 (as Benzene solubles)	Ca TWA 0.1 mg/m3 (cyclohexane-extractable fraction)	TWA 0.2 mg/m3 (benzene-soluble fraction) [1910.1002]	Ca [80 mg/m3]	Inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	Respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue BP: NA Fl.Pt. = NA LEL: NA UEL: NA Combustible Solids
Dibenzo(a,h)anthracene	53-70-3	https://cameochemicals.noaa.gov/chemical/16192				Inhalation, injestion, skin and/or eye contact	Symptoms of exposure to this compound may include irritation. This compound is harmful if swallowed or inhaled. It may cause irritation. When heated to decomposition it emits acrid smoke, irritating fumes and toxic fumes of carbon monoxide and carbon dioxide.	Lungs	White crystals or pale yellow solid. Sublimes BP: 975° F Fl.Pt. = NA LEL: NA UEL: NA

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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Fluoranthene	206-44-0	https://cameochemicals.noaa.gov/chemical/16213				Inhalation, injestion, skin and/or eye contact	When heated to decomposition this compound emits acrid smoke and fumes.		Light yellow fine crystals BP: 482° F Fl.Pt. = NA LEL: NA UEL: NA
Fluorene	86-73-7	https://cameochemicals.noaa.gov/chemical/16214				Inhalation, injestion, skin and/or eye contact			White leaflets. Sublimes easily under a vacuum. Fluorescent when impure. BP: 563° F Fl.Pt. = NA LEL: NA UEL: NA
Indeno[1,2,3-cd]pyrene	193-39-5	https://cameochemicals.noaa.gov/chemical/16218				Inhalation, injestion, skin and/or eye contact			Yellow crystals BP: 997° F Fl.Pt. = NA LEL: NA UEL: NA
Naphthalene	91-20-3	TWA 10 ppm [skin]	TWA 10 ppm (50 mg/m3) ST 15 ppm (75 mg/m3)	TWA 10 ppm (50 mg/m3)	250 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage	Eyes, skin, blood, liver, kidneys, central nervous system	Colorless to brown solid with an odor of mothballs. [Note: Shipped as a molten solid.] BP: 424°F Fl.P: 174°F LEL: 0.9% UEL: 5.9% Combustible Solid, but will take some effort to ignite
Phenanthrene	85-01-8	https://cameochemicals.noaa.gov/chemical/16236				Inhalation, injestion, skin and/or eye contact	Symptoms following exposure to this compound may include skin sensitization, dermatitis, bronchitis, cough, dyspnea, respiratory neoplasm, kidney neoplasm, skin irritation, and respiratory irritation.	Skin, respiratory tract	Colorless monoclinic crystals with a faint aromatic odor. Solutions exhibit a blue fluorescence. BP: 642° F Fl.Pt. = 340° F LEL: NA UEL: NA
Pyrene (see coal tar pitch volatiles)	129-00-0	TWA 0.2 mg/m3 (as Benzene solubles)	Ca TWA 0.1 mg/m3 (cyclohexane-extractable fraction)	TWA 0.2 mg/m3 (benzene-soluble fraction) [1910.1002]	Ca [80 mg/m3]	Inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	Respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue BP: NA Fl.Pt. = NA LEL: NA UEL: NA Combustible Solids
METALS									
Aluminum	7429-90-5	TWA 1 mg/m3	TWA 10 mg/m^3 (total) TWA 5 mg/m^3 (resp)	TWA 15 mg/m^3 (total) TWA 5 mg/m^3 (resp)	N.D.	Inhalation, skin and/or eye contact	Irritation eyes, skin, respiratory system	Eyes, skin, respiratory system	Silvery-white, malleable, ductile, odorless metal BP: 4221°F Fl.Pt. = NA LEL: NA UEL: NA Combustible Solid, finely divided dust is easily ignited; may cause explosions.
Antimony	7440-36-0	TWA 0.5 mg/m3 (as Sb)	TWA 0.5 mg/m3 [*Note: The REL also applies to other antimony compounds (as Sb).]	TWA 0.5 mg/m3 [*Note: The PEL also applies to other antimony compounds (as Sb).]	50 mg/m3 (as Sb)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, mouth; cough; dizziness; headache; nausea, vomiting, diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly	Eyes, skin, respiratory system, cardiovascular system	Silver-white, lustrous, hard, brittle solid; scale-like crystals; or a dark-gray, lustrous powder BP: 2975°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid in bulk form, but a moderate explosion hazard in the form of dust when exposed to flame.
Arsenic	7440-38-2	TWA 0.01 mg/m3	Ca C 0.002 mg/m3 [15-minute]	[1910.1018] TWA 0.010 mg/m3	Ca [5 mg/m3 (as As)]	Inhalation, skin absorption, skin and/or eye contact, ingestion	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin, [potential occupational carcinogen]	Liver, kidneys, skin, lungs, lymphatic system	Metal: Silver-gray or tin-white, brittle, odorless solid BP: Sublimes Fl.Pt. = NA LEL: NA UEL: NA Metal: Noncombustible Solid in bulk form, but a slight explosion hazard in the form of dust when exposed to flame
Barium	7440-39-3	TWA 0.5 mg/m3	0.5 mg Ba/m3 TWA	0.5 mg Ba/m3 TWA	50 mg Ba/m3	Inhalation, ingestion, skin and/or eye contact	Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death. Contact may cause burns to skin, eyes, and mucous membranes. May be toxic by ingestion, inhalation and skin absorption. Used to make other chemicals.	Lungs, skin, eyes, and mucous membrane	A silver to white metallic solid BP: 1337°F Fl.Pt. = NA LEL: NA UEL: NA
Beryllium	7440-41-7	TWA 0.00005 mg/m^3	Ca C 0.0005 mg/m^3	TWA 0.002 mg/m^3 C 0.005 mg/m^3 0.025 mg/m3 [30-minute maximum peak]	Ca [4 mg/m^3 (as Be)]	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 eyes; dermatitis; [potential occupational carcinogen]	Eyes, skin, respiratory system	Hard, brittle, gray-white solid BP: 4532°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid in bulk form, but a slight explosion hazard in the form of a powder or dust.

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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Cadmium	7440-43-9	TWA 0.01 mg/m^3 total dust TWA 0.002 mg/m^3 (as Cd) respirable fraction	Ca	TWA 0.005 mg/m^3	Ca [9 mg/m3 (as Cd)]	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]	Respiratory system, kidneys, prostate, blood	Silver-white/blue tinged lustrous, odorless solid. BP: 1409°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible - will burn in powder form
Calcium	7440-70-2	https://cameochemicals.noaa.gov/chemical/309				Inhalation, ingestion, skin and/or eye contact	Contact with eyes or skin produces caustic burns.	Eyes, skin	A silvery, soft metal that turns grayish white on exposure to air. BP: 2714°F Fl.Pt. = NA LEL: NA UEL: NA
Chromium	7440-47-3	TWA 0.5 mg/m^3 (metal) TWA 0.003 mg/m^3 (water-soluble Cr III compounds) TWA 0.0002 mg/m^3 (water-soluble Cr VI compounds) STEL 0.0005 mg/m3 (water-soluble Cr VI compounds)	TWA 0.5 mg/m^3	TWA 1 mg/m^3	250 mg/m^3 (as Cr)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin; lung fibrosis (histologic)	Eyes, skin, respiratory system	Blue-white to steel-gray, lustrous, brittle, hard, odorless solid. BP: 4788°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible - will burn in dust form if heated in a flame
Cobalt	7440-48-4	TWA 0.02 mg/m3 [DSEN] [RSEN]	TWA 0.05 mg/m3	TWA 0.1 mg/m3	20 mg/m3 (as Co)	Inhalation, ingestion, skin and/or eye contact	Cough, dyspnea (breathing difficulty), wheezing, decreased pulmonary function; weight loss; dermatitis; diffuse nodular fibrosis; resp hypersensitivity, asthma	Skin, respiratory system	Odorless, silver-gray to black solid BP: 5612°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid in bulk form, but finely divided dust will burn at high temperatures.
Copper	7440-50-8	TWA 0.2 mg/m^3 (fume) TWA 1 mg/m3 (dusts and mists)	TWA 1 mg/m^3	TWA 1 mg/m^3	100 mg/m^3 (as Cu)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, nose, pharynx; nasal septum perforation; metallic taste; dermatitis; In Animals: lung, liver, kidney damage; anemia	Eyes, skin, respiratory system, liver, kidneys (increased risk with Wilson's disease)	Reddish, lustrous, malleable, odorless solid. BP: 4703°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible - powdered form may ignite
Iron (as iron oxide)	7439-89-6	TWA 5 mg/m3 (respirable particulate mass)	TWA 1 mg/m^3	NA	NA	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; abdominal pain, diarrhea, vomiting; possible liver damage	Eyes, skin, respiratory system, liver, gastrointestinal tract	Appearance and odor vary depending upon the specific soluble iron salt. BP: NA Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solids
Lead	7439-92-1	TWA 0.05 mg/m3	TWA (8-hour) 0.050 mg/m3	[1910.1025] TWA 0.050 mg/m3	100 mg/m3 (as Pb)	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 eyes; hypertension	Eyes, gastrointestinal tract, central nervous system, kidneys, blood, gingival tissue	A heavy, ductile, soft, gray solid BP: 3164°F Fl.Pt. = NA LEL: NA UEL: NA Noncombustible Solid in bulk form
Magnesium	7439-95-4	https://cameochemicals.noaa.gov/chemical/6949				Eye and/or skin contact	Dust irritates eyes in same way as any foreign material. Penetration of skin by fragments of metal is likely to produce local irritation, blisters, and ulcers which may become infected.	Eyes	A light silvery metal BP: 1202°F Fl.Pt. = NA LEL: NA UEL: NA
Manganese	7439-96-5	TWA 0.02 mg/m3 [R] TWA 0.1 mg/m3 [I]	TWA 1 mg/m3 ST 3 mg/m3	C 5 mg/m3	500 mg/m3 (as Mn)	inhalation, ingestion	Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like fever; low-back pain; vomiting; malaise (vague feeling of discomfort); lassitude (weakness, exhaustion); kidney damage	respiratory system, central nervous system, blood, kidneys	A lustrous, brittle, silvery solid BP: 3564°F Fl.Pt. = NA LEL: NA UEL: NA Metal: Combustible Solid
Mercury	7439-97-6	TWA 0.1 mg/m3, as Hg Aryl compounds TWA 0.025 mg/m3 as Hg, inorganic forms including metallic mercury	Hg Vapor: TWA 0.05 mg/m3 [skin] Other: C 0.1 mg/m3 [skin]	TWA 0.1 mg/m3	10 mg/m3 (as Hg)	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria	Eyes, skin, respiratory system, central nervous system, kidneys	Metal: Silver-white, heavy, odorless liquid. [Note: "Other" Hg compounds include all inorganic & aryl Hg compounds except (organo) alkyls.] BP: 674°F Fl.Pt. = NA LEL: NA UEL: NA Metal: Noncombustible Liquid

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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Nickel	7440-02-0	TWA 1.5 mg/m^3 [elemental] TWA 0.1 mg/m^3 [soluble inorganic compound] TWA 0.2 mg/m^3 [insoluble inorganic compound] TWA 0.1 mg/m^3 [Nickel subsulfide]	Ca TWA 0.015 mg/m^3	TWA 1 mg/m^3	Ca [10 mg/m3 (as Ni)]	Inhalation, ingestion, skin and/or eye contact	Sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]	Nasal cavities, lungs, skin	Lustrous, silvery, odorless solid. BP: 5139°F Fl.Pt. = NA LEL: NA UEL: NA Combustible Solid; nickel sponge catalyst may ignite spontaneously in air.
Potassium	9/7/7440	https://cameochemicals.noaa.gov/chemical/4289				Eye and/or skin contact	Will burn skin and eyes	Skin, eyes	Potassium is a soft silvery metal though normally grayish white due to oxidation BP: 1425°F Fl.Pt. = NA LEL: NA UEL: NA
Selenium	7782-49-2	TWA 0.2 mg/m3	TWA 0.2 mg/m3	TWA 0.2 mg/m3	1 mg/m3 (as Se)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye, skin burns; In Animals: anemia; liver necrosis, cirrhosis; kidney, spleen damage	Eyes, skin, respiratory system, liver, kidneys, blood, spleen	Amorphous or crystalline, red to gray solid. [Note: Occurs as an impurity in most sulfide ores.] BP: 1265°F Fl.Pt. = NA LEL: NA UEL: NA Combustible Solid
Silver	7440-22-4	TWA 0.1 mg/m3 [Metal, dust, and fume] TWA 0.01 mg/m3 [Soluble compounds, as Ag]	TWA 0.01 mg/m3	TWA 0.01 mg/m3	10 mg/m3 (as Ag)	Inhalation, ingestion, skin and/or eye contact	Blue-gray eyes, nasal septum, throat, skin; irritation, ulceration skin; gastrointestinal disturbance	Nasal septum, skin, eyes	Metal: White, lustrous solid BP: 3632°F Fl.Pt. = NA LEL: NA UEL: NA Metal: Noncombustible Solid, but flammable in form of dust or powder
Sodium	7440-23-5	https://cameochemicals.noaa.gov/chemical/7794				Skin contact	Severe burns caused by burning metal or by caustic soda formed by reaction with moisture on skin	Skin	A silvery soft metal that becomes grayish white upon exposure to air BP: 1621°F Fl.Pt. = NA LEL: NA UEL: NA
Thallium	7440-28-0	0.02 mg/m3 inhallable particulate matter	TWA 0.1 mg/m3 [skin]	TWA 0.1 mg/m3 [skin]	15 mg/m3 (as Tl)	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	Eyes, respiratory system, central nervous system, liver, kidneys, gastrointestinal tract, body hair	Appearance and odor vary depending upon the specific soluble thallium compound BP: NA Fl.Pt. = NA LEL: NA UEL: NA
Vanadium	7440-62-2	https://cameochemicals.noaa.gov/chemical/16147				Inhalation, skin absorption, ingestion, skin and/or eye contact	Highly toxic, may be fatal if inhaled, swallowed or absorbed through skin. Avoid any skin contact. Effects of contact or inhalation may be delayed. Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution	Skin	Silvery-whitish powder BP: NA Fl.Pt. = NA LEL: NA UEL: NA
Zinc	7440-66-6	https://cameochemicals.noaa.gov/chemical/4814				Inhalation, skin absorption, ingestion, skin and/or eye contact	Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death. May produce corrosive solutions on contact with water. Fire will produce irritating, corrosive and/or toxic gases. Runoff from fire control may cause pollution	Lungs	A grayish powder BP: NA Fl.Pt. = NA LEL: NA UEL: NA
PCBs									
PCBs (total)	11097-69-1, 53469-21-9	TWA 0.5 mg/m3 [skin] TWA 1 mg/m3 [skin]	Ca TWA 0.001 mg/m3 Ca TWA 0.001 mg/m3	TWA 0.5 mg/m3 [skin] TWA 1 mg/m3 [skin]	Ca [5 mg/m3] Ca [5 mg/m3]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, chloracne; liver damage; reproductive effects; [potential occupational carcinogen]	Skin, eyes, liver, reproductive system	Colorless to pale-yellow, viscous liquid or solid (below 50°F) with a mild, hydrocarbon odor BP: 689-734°F, 617-691°F Fl.Pt. = NA, NA LEL: NA UEL: NA Nonflammable Liquid, but exposure in a fire results in the formation of a black soot containing PCBs, polychlorinated dibenzofurans, and chlorinated dibenzo-p-dioxins.
Petroleum Hydrocarbons									
Gasoline	86290-81-5	TWA 300 ppm STEL 500 ppm	Ca	None	Ca [N.D.]	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid); possible liver, kidney damage; [potential occupational carcinogen]	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Clear liquid with a characteristic odor BP: 102°F Fl.Pt. = -45°F LEL: 1.4% UEL: 7.6%

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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site.

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties

References

Centers for Disease Control and Prevention, 2018. *NIOSH Pocket Guide to Chemical Hazards.* The National Institute for Occupational Safety and Health.
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National Oceanic and Atmospheric Administration (NOAA) and Environmental Protection Agency (EPA), 2019. *CAMEO Chemicals Database* . https://cameochemicals.noaa.gov/
U.S. Department of Labor, 1990. *OSHA Regulated Hazardous Substances.* Industrial Exposure and Control Technologies Government Institutes, Inc.
Sax, N. Van Nostrand and Reinhold Company, 1987. *Hawley's Condensed Chemical Dictionary, 11th Edition.*
Proctor, N.H., J.P. Hughes and M.L. Fischman, 1989. *Chemical Hazards of the Workplace* . Van Nostrand Reinhold. New York.
Sax, N.I. and R.J. Lewis, 1989. *Dangerous Properties of Industrial Materials, 7th Edition.* Van Nostrand Reinhold. New York.

Abbreviations:

ACGIH – American Conference of Governmental Industrial Hygienists.
BP – boiling point at 1 atmosphere, °F
C – Ceiling, is a concentration that should not be exceeded during and part of the working exposure.
Ca – Carcinogenic.
CAS# - Chemical Abstracts Service registry number which is unique for each chemical.
DSEN - Dermal Sensitization
Ft Pt. – Flash point
IDLH - Immediately Dangerous to Life and Health concentrations represent the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.
LEL – Lower explosive (flammable) limit in air, % by volume (at room temperature)
mg/m^3 – Milligrams of substance per cubic meter of air
NIOSH - National Institute for Occupational Safety and Health.
OSHA – Occupational Safety and Health Administration
OTO - Ototoxicant
PEL - OSHA Permissible Exposure Limit (usually) a time weighted average concentration that must not be exceeded during any 8 hour work shift of a 40 hr work week.
ppm – parts per million
REL – NIOSH Recommended Limit indicated a time weighted average concentration that must not be exceeded during any 10 hour work shift of a 40 hr work week
RSEN - Respiratory Sensitization
SG - Specific Gravity
STEL – ACGIH Short-term exposure limit (ST)
TLV - ACGIH Threshold Limit Values (usually 8 hour time weighted average concentrations).
TWA – 8-hour, time-weighted average
UEL – Upper explosive (flammable) limit in air, % by volume (at room temperature)
VP - Vapor Pressure

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FIGURES

1. Site Location Map
2. Site Plan with Emergency Muster Areas
3. Routes to Urgent Care and Hospital

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SITE
Greenpoint
Williamsburg
Linden Hill
Bedford Stuyvesant
Adelphi
Brooklyn Navy Yards Industrial Park
Pratt Institute
Flushing Ave
Myrtle Ave
Broadway
Marcy Playground
Herbert Von King Park
Jesse Owens Playground
Fulton Park
Maria Hernandez Park
Sternberg Park
McCarren Park
Marsha P Johnson State Park
Cooper Park
Green Central Knoll
Woodhull Med & Mental Hlth Center
Maspeth Creek
English Kills
Grand Ave Depot
Brooklyn Queens Expy
BQE
Bedford Ave
Nostrand Ave
Marcy Ave
Lee Ave
Flushing Ave
Myrtle Ave
Broadway
Williamsburg Brg
Metropolitan Ave
Grand St
Division Ave
Park Ave
Willoughby Ave
De Kalb Ave
Lafayette Ave
Greene Ave
Quincy St
Gates Ave
Monroe St
Madison St
Jefferson Ave
Putnam Ave
Hancock St
Halsey St
Macon St
Fulton St
Atlantic Ave
Dr Sandy F Ray Blvd
Marcus Garvey Blvd
Malcolm X Blvd
Stuyvesant Ave
Bushwick Ave
Graham Ave
Humboldt St
Manhattan Ave
Union Ave
Lorimer St
Driggs Ave
Roebling St
Havemeyer St
Marcy Ave
Rodney St
Kent Ave
Wythe Ave
Berry St
Bedford Ave
Nostrand Ave
Franklin Ave
Classon Ave
Washington Ave
Clinton Ave
Vanderbilt Ave
Carlton Ave
St James Pl
Cambridge Pl
Clermont Ave
Waverly Ave
Grand Ave
Downing St
Irving Pl
Clover Pl
Lefferts Pl
Long Island
Bergen St
Sackett St
Union St
President St
Carroll St
Gowanus Canal
Schaefer Landing-N 6th St
Schaefer Landing-N 9th St
Meeker Ave
Withers St
Frost St
Jackson St
Rewe St
Maspeth Ave
Grand St
Metropolitan Ave
Orient Ave
Sharon St
Olive St
Waterbury St
Meadow St
Stagg St
Ten Eyck St
Scholes St
Meserole St
Montrose Ave
Boerum St
Leonard St
Moore St
Varet St
Cook St
Seigel St
McKibbin St
White St
Bogart St
Johnson Ave
Ingraham St
Harrison Pl
Grattan St
Thames St
Knickerbocker Ave
Starr St
Suydam St
Hart St
Willoughby Ave
Wyckoff Ave
Flushing Ave
Cypress Ave
St Nicholas Ave
Randolph St
Varick Ave
Morgan Ave
Scott Ave
Gardner Ave
Stewart Ave
Meserole St
Long Island
Beaver St
Broadway
Arion Pl
Starwix St
De Kalb Ave
Wilson Ave
P.S. 376
Central Ave
Cedar St
Himrod St
Harman St
Greene Ave
Bleecker St
Evergreen Ave
Kosciuszko St
Lafayette Ave
Van Buren St
Greene Ave
Lexington Ave
Quincy St
Gates Ave
Monroe St
Macon St
Ralph Ave
Howard Ave
Bainbridge St
Chauncey St
Decatur St
Macdonough St
Halsey St
Jefferson Ave
Putnam Ave
Madison St
Hancock St
Fulton St
Fulton Park
Boys And
Tompkins Ave
Throop Ave
Marcy Ave
Nostrand Ave
Bedford Ave
Sandford St
Spencer St
Skillman Ave
Conselyea St
Devoe St
Ainsle St
Powers St
Maujer St
Avenue of Puerto Rico
Lorimer St
Union Ave
Roebling St
Havemeyer St
Marcy Ave
Rodney St
Driggs Ave
Bedford Ave
Kent Ave
Wythe Ave
Berry St
Union Ave
Richardson St
Bayard St
Manhattan Ave
Lorimer St
Driggs Ave
Nassau Ave
Herbert St
Engert Ave
Beadel St
Division Pl
Anthony St
Lombardy St
Porter Ave
Vandervoort Ave
Morgan Ave
Woodpoint Rd
Jackson St
Withers St
Frost St
Graham Ave
Humboldt St
Meeker Ave
Skillman Ave
Conselyea St
Devoe St
Ainsle St
Powers St
Maujer St
Grand St
Metropolitan Ave
Broadway
S 1st St
S 2nd St
S 3rd St
S 4th St
S 5th St
S 6th St
S 7th St
S 8th St
S 9th St
S 10th St
N 1st St
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N 10th St
N 11th St
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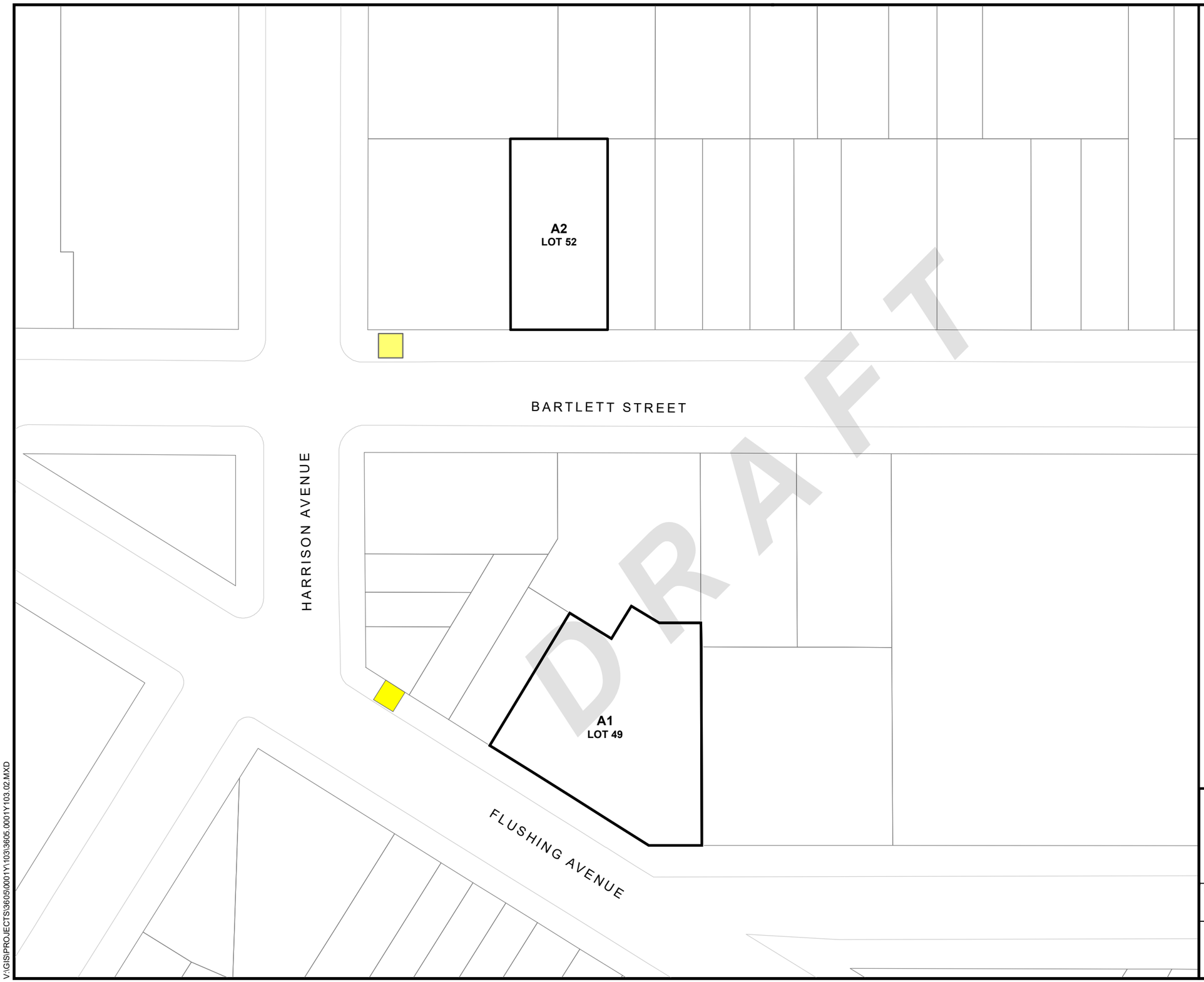
N 13th St
N 14th St
N 15th St
Rover St
Kay Ave
Gee Ave
Assembly Rd
Wallabout Rd
Ross St
Taylor St
Wilson St
Clymer St
Hooper St
Keap St
Penn St
Rutledge St
Fleet St
Harrison Ave
Lynch St
Walton St
Gerry St
Bartlett St
Whipple St
Hopkins St
Embing Ave
Ellery St
Park Ave
Willoughby Ave
Hart St
Vernon Ave
Pulaski St
Lafayette Ave
Greene Ave
Lexington



N

LEGEND

- EMERGENCY MUSTER AREA
- SITE BOUNDARY
- PARCEL BOUNDARY

50 0 50'

Title:

SITE PLAN AND EMERGENCY MUSTER AREA

BROADWAY TRIANGLE PARCELS A1 AND A2
667 FLUSHING AVENUE & 31 BARTLETT STREET
BROOKLYN, NEW YORK

Prepared for:

ST. NICKS ALLIANCE

ROUX

Compiled by: B.W.	Date: 09/10/25
Prepared by: M.S.R.	Scale: AS SHOWN
Project Mgr: L.C.	Project: 3605.0001Y004
File: 3605.0001Y103.02.mxd	

FIGURE 2

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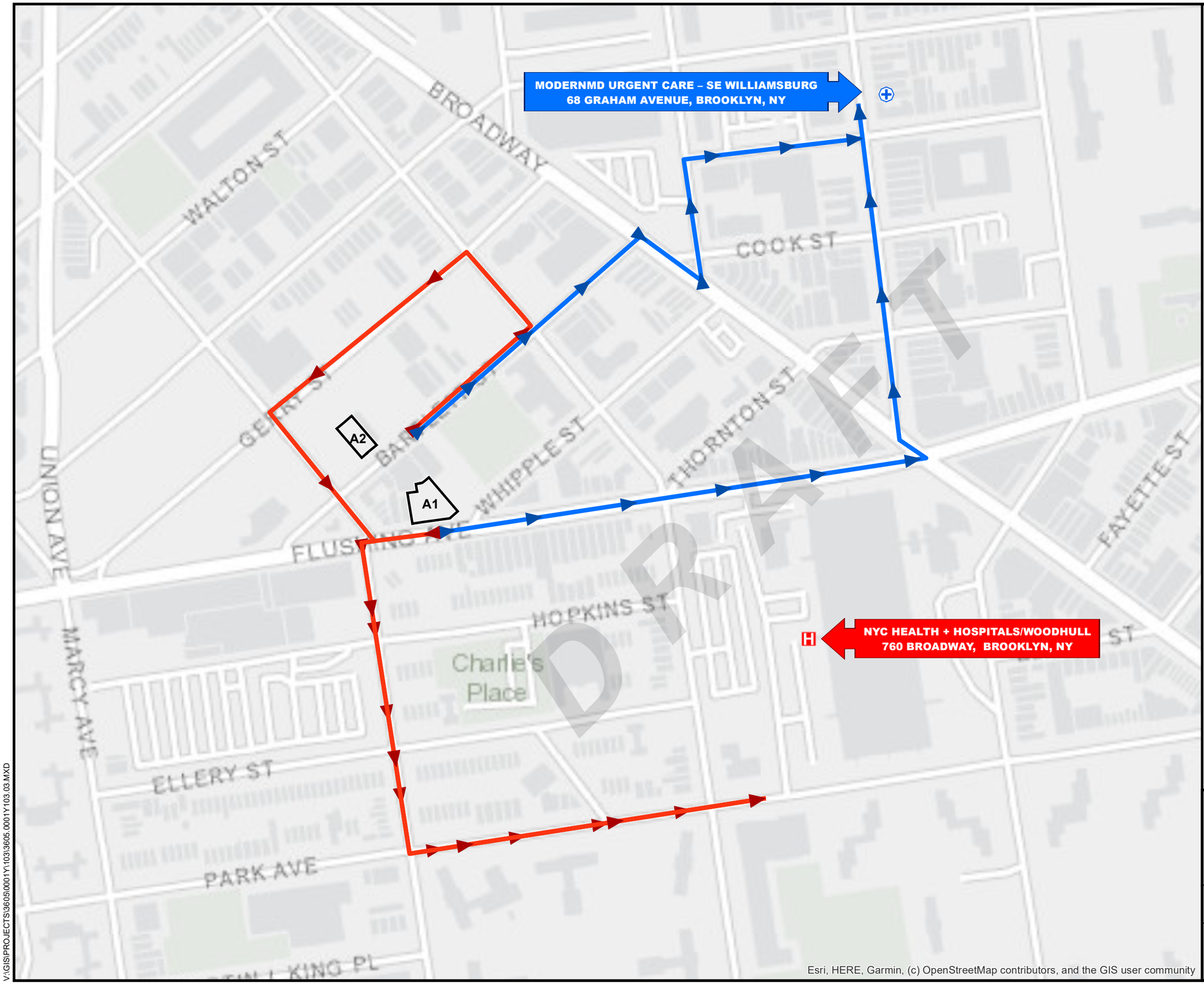

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LEGEND

- HOSPITAL
- URGENT CARE
- ROUTE TO HOSPITAL
- ROUTE TO URGENT CARE

250 0 250'

Title:

ROUTES TO URGENT CARE AND HOPSITAL

BROADWAY TRIANGLE PARCELS A1 AND A2
667 FLUSHING AVENUE & 31 BARTLETT STREET
BROOKLYN, NEW YORK

Prepared for:

ST. NICKS ALLIANCE

ROUX

Compiled by: B.W.	Date: 09/10/25	FIGURE
Prepared by: M.S.R.	Scale: AS SHOWN	3
Project Mgr: L.C.	Project: 3605.0001Y004	
File: 3605.0001Y103.03.mxd		

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APPENDICES

A. Job Safety Analysis (JSA) Forms
B. SDSs for Chemicals Used
C. Heat Illness Prevention Program
D. Personal Protective Equipment (PPE) Management Program
E. Subsurface Utility Clearance Management Program
F. Heavy Equipment Exclusion Zone Management Program

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APPENDIX A

Job Safety Analysis (JSA) Forms

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-006	DATE 05/22/2025	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY:	WORK TYPE:	WORK ACTIVITY (Description):
Generic	**Drilling**	**Direct Push Soil Borings / Well Installation**

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☐ FACE SHIELD ☒ HEARING PROTECTION: (as needed) ☒ SAFETY SHOES: Composite-toe or steel-toe boots	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: Fluorescent reflective vest or high visibility clothing, long-sleeved shirt	☒ GLOVES: Nitrile and cut-resistant ☒ OTHER: Insect Repellant, sunscreen (as needed)

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Geoprobe or Truck-Mounted Direct Push Drill Rig, Hand Tools, Photoionization Detector, Multi-Gas Meter (or equivalent), Macrocore liners, Liner Opening Tool, 20 lb. Type ABC Fire Extinguisher, 42" Cones & traffic control paddles, "Work Area" Signs, Water.

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing LMRAs

EXCLUSION ZONE (EZ): Maintain a Minimum Heavy Equipment Exclusion Zone around equipment and loads while in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, the tip zone of the equipment, the fall zone of the equipment, and the contents.

"SHOW ME YOUR HANDS"
The driller and helper should show that their hands are clear of controls and moving parts.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Mobilization of drilling rig (ensure the Subsurface Clearance Protocol and Drill Rig Checklist are completed)	**1a. CONTACT:** Equipment/property damage.	1a. The drill rig's tower/derrick will be lowered and secured before mobilization. 1a. A spotter should be utilized while moving the drill rig. If personnel move into the path of the drill rig, the drill rig will be stopped until the path is again clear. Use a spotter for all required backing operations. 1a. Set up the work area and position equipment to eliminate or reduce the need for backing support trucks and trailers. 1a. When backing up the truck rig with an attached trailer, use a second spotter if there is tight clearance simultaneously on multiple sides of the equipment or if turning angles limit driver visibility.
Secure Work Zone		1a. Inspect the driving path for uneven terrain. Level or avoid if needed. 1a. Ensure the work area is secure and inform others of work activity. Establish a HEEZ using traffic cones, barrels & snow fencing or telescoping poles. Use flag persons to maintain clear traffic and minimize motorist confusion during set-up. HEEZ is to include the tip/swing radius of the equipment.
	1b. FALL: Slip/trip/fall hazards.	1b. Inspect walking path for uneven terrain, weather-related hazards (i.e., ice, puddles, snow, etc.), and obstructions before mobilizing equipment. 1b. Do not climb over stored materials/equipment; walk around. Practice good housekeeping. 1b. Use established pathways and walk on stable, secure ground.
	1c. CONTACT: Crushing from a rollover.	1c Geoprobe should cross all hills/obstructions head-on with the mast down to reduce the risk of rollover.
2. Raising the tower/derrick of the drill rig	**2a. CONTACT:** Overhead hazards.	2a. Before raising the tower/derrick, the area above the drilling rig will be inspected for wires, tree limbs, piping, or other structures that could come in contact with the rig's tower and/or drilling rods or tools. 2a. Maintain a minimum safe distance of 10' from overhead lines, material, or structures.
	2b. CONTACT: Pinch Points/Amputation Points when raising the rig, and the instability of the rig	2b. Inspect the equipment before use and avoid pinch/amputation points. 2b. Lower outriggers to ensure stability before raising the rig tower/derrick. 2b. If the rig needs to be mounted, use three points of contact.
3. Advancement of drilling equipment and sound installation	**3a. CONTACT:** Flying debris	3a. Be aware of and avoid potential line-of-fire hazards and wear required PPE such as eye, ear, and hand protection.
	3b. EXPOSURE: Noise and dust.	3b. Wet borehole area with sprayer to minimize dust. 3b. Stand upwind and keep your body away from the rig. 3b. If conditions warrant, a disposable dust mask (e.g., N95/P100) should be worn. 3b. Wear hearing protection when the drill rig is in operation.

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[1] Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.
[2] A hazard is a potential danger. Break hazards into six types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards; Energy Source – electricity, pressure, compression/tension.
[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
3. Advancement of drilling equipment and well installation (Continued)	**3c. FALL:** Slip/trip/fall hazards.	3c. Contain drill cuttings and drilling water to prevent fall hazards from developing in the work area. 3c. See 1b.
	3d. CAUGHT: Limb/extremity pinching; abrasion/crushing.	3d. Ensure all Emergency Safety Stop buttons function properly. 3d. Always wear leather gloves when making connections and using hand tools; wear cut-resistant (i.e., Kevlar) gloves when handling cutting tools. 3d. Inspect the equipment prior to use for potential pinch/amputation points. Keep hands away from pinch/amputation points, and the use of tools is preferable compared to fingers and hands. 3d. Inspect the drill head for worn surface or missing teeth; replace it if damaged or blunt. 3d. Ensure all jewelry is removed, loose clothing is secured, and PPE is correctly fitted and secured close to the body. 3d. All non-essential personnel should stay away from the immediate work area; position the body out of the line-of-fire of equipment. 3d. Drillers and helpers will understand and use the "Show Me Your Hands" Policy. 3d. Spinning rods/casing have an **exclusion zone of 24 inches** while in operation.
	3e. CONTACT: Equipment imbalance during the advancement of drill equipment.	3e. Drillers will advance the borehole with caution to avoid causing the rig to become imbalanced and/or tip. 3e. The blocking and leveling devices used to secure the rig will be inspected by drillers and Roux personnel regularly to see if shifting has occurred. 3e. In addition, personnel and equipment that are non-essential to the advancement of the borehole will be positioned away from the rig at a distance that is at least as far as the boom is high (**minimum exclusion zone**).
	3f. EXPOSURE: Inhalation of contamination/vapors.	3f. Monitor ambient air for dangerous conditions using a calibrated photoionization detector (PID) to monitor the breathing zone of the work area. 3f. If a reading of >5ppm is recorded, the Roux field personnel must temporarily cease work, instruct all Site personnel to step away from the area of elevated readings, and inform the Roux PM of the condition. The Roux PM will then recommend additional precautions in accordance with the site-specific health and safety plan. 3f. Use a multi-gas meter to monitor ambient air for dangerous conditions (i.e., unsafe levels of carbon monoxide when drilling indoors or the presence of explosive vapors).
	3g. EXERTION: Potential for muscle strain/injury while lifting and installing well casings, lifting sand bags, and/or lifting rods.	3g. Keep your back straight and bend at the knees. 3g. Utilize team lifting or mechanical means for objects over 40 lbs. 3g. Use a mechanical lifting device for odd-shaped objects.
4. Remove the sample liner.	**4a. EXERTION:** Potential for muscle strain/injury while removing the liner from the probe rod.	4a Utilize team lifting or mechanical means for objects over 40 lbs. 4a. Use the hydraulic liner extruder if available.
	4b. CONTACT: Pinch points and cuts	4b. Place the liner on the sturdy surface when opening. 4b. Don cut-resistant gloves and use an appropriate liner cutter when opening liners. 4b. Always cut away from the body.
	4c. EXPOSURE: Inhalation and/or dermal contact with contaminants.	4c. Wear chemical-resistant disposable gloves when handling liners. 4c. See 3f.

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[1] Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.
[2] A hazard is a potential danger. Break hazards into six types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards; Energy Source – electricity, pressure, compression/tension.
[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
5. Decontaminate equipment.	**5a. EXPOSURE/CONTACT**: To contamination (e.g., Separate Phase Hydrocarbons (SPH), contaminated groundwater, vapors).	5a. Wear chemical-resistant disposable gloves and safety glasses. 5a. Contain decontamination water so that it does not spill. 5a. Use an absorbent pad to clean spills, if necessary. 5a. Spray equipment from a side angle, not straight on, to avoid backsplash. 5a. See 3b and 3f.
	5b. EXPOSURE: The chemicals in the cleaning solution.	5b. See 4a. Review the SDS to ensure appropriate precautions are taken and understood.

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[1] Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.
[2] A hazard is a potential danger. Break hazards into six types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards; Energy Source – electricity, pressure, compression/tension.
[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

JOB SAFETY ANALYSIS	Ctrl. No. GEN-007	DATE 05/22/2025	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)
GENERIC	**General Site Activity**	**Driving**

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☐ HARD HAT: when outside vehicle ☐ LIFELINE / BODY HARNESS ☐ SAFETY GLASSES: when outside vehicle	☐ GOGGLES ☐ FACE SHIELD ☐ HEARING PROTECTION ☐ SAFETY TOE BOOTS: when outside vehicle	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☐ PPE CLOTHING: high visibility vest when outside vehicle	☐ GLOVES: Leather/ cut-resistant level 2 ☐ OTHER _____

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Motor Vehicle (i.e., car, truck, SUV)

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing LMRAs

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Driving to/leaving the Site	**1a. CONTACT:** Severe injury/disability, property damage, monetary loss (insurance premiums, deductibles, loss of license/job) caused by collision with or struck by other vehicles, obstructions, pedestrians, animals, etc. *Common factors that may lead to a CONTACT incident, but not limited to: • distracted driving (cell phone, GPS, radio, billboards, "rubbernecking") • lack of situational awareness • unfamiliarity with traffic patterns/road layout • weather conditions (wet/icy roads, hydroplaning, black ice) • weariness • high speeds • obstructed vision (solar glare, debris on windshield, blind spots, large vehicle at the front) • changes in travel pathway (construction, snow banks, non-operational signals, potholes, detours, special events) • improper vehicle maintenance (non-operational signal light, worn tires, cracked windshield, ineffective wipers) • loose or unsecure objects	1a. PLAN AHEAD – review/make yourself familiar with maps and driving directions before beginning the drive to the Site. Do not attempt to drive and review maps/directions at the same time. Pull over and stop your vehicle before looking at maps/directions. 1a. If a Roux vehicle or a Roux-rented vehicle, complete a vehicle inspection form. If a personal vehicle, complete a basic 360 vehicle inspection before driving. Verify Inspection and Registration are current, tires and wipers are in good condition, all lights are functional, all glass/mirrors are undamaged, the horn is functional, roof/hood/trunk are free from accumulated snow, and visibility is not impaired due to snow/ice/frost/fog on windows. 1a. Do not hang items in the car that can obstruct your view or become projectiles in a collision. 1a. Do not get distracted using touch screen radios or GPS units built into newer models. Keep your eyes on the road and stay alert. 1a. Follow posted speed limits and obey traffic signals and roadway signs. 1a. Always wear your seat belt and shoulder harness when driving. 1a. When driving around large vehicles and trucks, maintain extra space as these vehicles may not be able to see a smaller car too close. 1a. Follow the "Rules of the Road," including: using your turn signals, coming to a complete stop, and allowing vehicles the right of way (yield) when required by traffic laws. 1a. Apply the Smith Five Keys® of safe driving • Aim High in Steering® - Expand eye lead time to a minimum of 15 seconds • Get the Big Picture® - Maintain a proper 4-second minimum following distance at all times - Scan mirrors every 5-8 seconds to achieve a circle of awareness - Position your vehicle so you can see relevant/non-relevant objects • Keep Your Eyes Moving® - Try to maintain about 180 degrees of visibility - Avoid blank and fixed stares. Avoid focusing on one object for more than 2 seconds • Leave Yourself an Out® - Avoid traveling in traffic clusters - Surround yourself with space - Anticipate the actions of others

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Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Driving to/leaving Site (cont'd)	**1a. CONTACT:** Severe injury/disability, property damage, monetary loss (insurance premiums, deductibles, loss of license/job) caused by collision with or struck by other vehicles, obstructions, pedestrians, animals, etc.	• Make Sure They See You® - Maintain eye contact with oncoming vehicles/pedestrians - Use warning devices (e.g., hand signals, high-lights, horns, etc.) - Proper timing is essential 1a. Do not perform reconnaissance or inspections while driving. Your vehicle should be parked in a safe location when viewing or surveying the Site and vicinity 1a. Avoid sudden turns and stops. Do not drive recklessly – be in control of the vehicle at all times. 1a. In inclement weather, first determine if work can be POSTPONED. Otherwise, plan according to weather conditions, including checking the forecast along the entirety of the travel route (especially for long distances). Reduce speed as road conditions warrant. Travelling with winter car equipment in the winter is strongly recommended (i.e., shovel, scraper, brush, blanket, extra clothing, flashlight, bag of sand). If your vehicle has 4-wheel drive, review the operator's manual and understand the operating procedure prior to engaging 4-wheel drive. If at any point on your drive, the weather becomes too severe to proceed safely, pull over if safe to do so or seek nearest cover (e.g., overpass) 1a. If feeling drowsy or sleepy, do not drive. Pull over in a safe place to rest if you experience any signs of drowsiness. Make sure to get adequate sleep the night before an early drive. 1a. Never operate a vehicle under the influence of alcohol, illegal substances, or medications affecting your performance. 1a. Keep your eyes on the road. Do not call, text, or talk on cellular phones. Pull over to a safe location if you must answer or make a call. 1a. When parking, pull through when possible. If backing is required, visually inspect the area to ensure it is free from obstructions prior to backing in and relying solely on mirrors; use spotters when available.
2. Entering/Exiting Vehicle.	**2a. CAUGHT:** Personal injury (broken fingers/hand) while entering or exiting vehicles **2b. FALL:** Personal injury (twisted ankle, deep contusion, concussion, broken wrist/arm, etc.) from a slip/fall on an uneven, unstable, or slippery surface while exiting/entering the vehicle **2c. CONTACT:** Severe injury/disability, property damage, monetary loss (insurance premiums, deductibles, loss of license/job) caused by collision with or struck by other vehicles, obstructions, pedestrians, animals, etc.	2a. Open and close doors slowly. Never put hands or feet in between the door and the vehicle to avoid pinch points. 2b. When exiting the vehicle, make sure your feet are on firm footing and weight is evenly distributed before exiting/standing. In inclement weather, use your hands to support yourself by holding the car door and/or steering wheel when exiting the vehicle. 2c. Check both directions for traffic before opening the door. Do not exit the vehicle if traffic does not permit you to exit safely 2c. Check the anticipated path of the door prior to opening. Do not open the door into any obstructions (e.g., bollards, high curbs)

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-009	DATE: 05/23/2025	☐ NEW ☒ REVISED	PAGE 1 of 1
JSA TYPE CATEGORY **Generic**	WORK TYPE **O&M**	WORK ACTIVITY (Description) **Movement of 55-Gallon Drums/Drum Handling with Mobile Carrier**		

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST	☐ GOGGLES	☐ AIR PURIFYING RESPIRATOR	☒ GLOVES: Cut-resistant gloves level II
☒ HARD HAT	☐ FACE SHIELD	☐ SUPPLIED RESPIRATOR	☐ OTHER:
☐ LIFELINE / BODY HARNESS	☐ HEARING PROTECTION	☒ PPE CLOTHING: Fluorescent long-sleeve shirt or shirt and reflective safety vest.	
☒ SAFETY GLASSES	☒ SAFETY SHOES: Steel or composite toe		

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Mobile Drum Carrier, over-pack drum container, safety cones, and caution tape

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing LMRAs

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Preparing for an Inspection of the Drum	**1a. FALL:** Tripping/falling due to uneven surface. Loose debris/garbage in the work area.	1a. Clear the area of loose garbage and debris. Inspect 55-gal drums for proper condition, labeling, check drum ring and bolts for tightness, and inspect mobile drum carrier. 1a. Do a Test Lift to get a general sense of the weight of the drum. 1a. Inspect and use established pathways to avoid uneven terrain, weather-related hazards (i.e., debris, puddles, ice, etc.), and other obstructions. 1a. Secure a work area and coordinate and communicate the planned work activities with other personnel working in the area. 1a. Delineate work area with safety cones and caution tape
	1b. CONTACT/EXPOSURE: Drums could potentially be damaged or contain hazardous material. A mobile drum carrier could potentially be in poor working condition, causing malfunctioning during operation.	1b. Prior to inspecting drums, don cut-resistant gloves. If the drum is not properly labeled, do not open it and cease all drum transport activities. Immediately contact the project manager and inform him/her of the drum situation. 1b. Do not continue drum transport activities until the project manager determines further actions. 1b. If the drum is properly labeled, but leaking, improperly sealed, or in poor condition, place the drum in an overpack drum. 1b. Inspect the mobile drum carrier to ensure its overall integrity. Look for rust marks or potential weak points where the drum carrier could malfunction. Inspect the wheels to ensure that they easily turn and nothing is impeding their movement.
	1c. EXERTION/CAUGHT: Potential pinching/exertion hazards while securing the ring/ tightening bolts	1c. Keep back straight and knees slightly bent while securing the drum ring/tightening bolt. Wear cut-resistant gloves.
2. Position the drum clamp tightly in between the drum ribs, securing the drum clamp to the drum with the chain	**2a. CAUGHT:** Pinching fingers between the drum clamp and the handle/chain.	2a. Attach drum clamp with chain and tighten until snug. Do not place hands between the drum clamp and the drum as the chain is tightened; wear cut-resistant gloves. Keep face away from the drum when handling in case of escaping vapors.

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Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
3. Disengage safety latches on handle, pull handle down until drum is lifted off the ground, and safety latches are reengaged; slightly suspend drum off the ground	**3a. EXERTION/ CONTACT:** Potential muscle strain associated with lifting/engaging the drum/handle. The drum could shift/slip downward and crush toes.	3a. Ascertain whether the drum is overweight; if it is, then two people are needed to lower the handle while the drum is secured with the clamp so that safety latches can be engaged. Keep body out of the line-of-fire of the handle (do not position the head above the handle) as it is being pushed down. Do not allow feet/toes to be positioned under the drum as it is being lifted; wear steel/composite-toed boots.
	3b. CAUGHT: Fingers could be pinched while engaging/disengaging the safety latches on the handle	3b. Wear cut-resistant gloves while disengaging/reengaging safety latches. 3b. Avoid placing hands in pinch points.
4. Transport drums to the designated location and disengage the drum clamp (repeat Step 3 in reverse order)	**4a. FALL:** Tripping/ falling due to obstructions and uneven terrain. Potential for the drum to fall during transport.	4a. Ensure the transport path is free of potential obstructions that may cause the drum/carrier to become unstable. Position the drum clamp between the ribs on the drum to prevent possible slipping.

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JOB SAFETY ANALYSIS Ctrl. No. GEN-013	DATE 05/28/2025	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE:	WORK ACTIVITY (Description):
Generic	**Gauging and Sampling**	**Gauging and Sampling**

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☒ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☐ FACE SHIELD ☐ HEARING PROTECTION ☒ SAFETY SHOES: Composite-toed or steel-toed boots	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: Fluorescent reflective vest or high visibility clothing	☒ GLOVES: , Nitrile and cut-resistant level II ☒ OTHER: Knee pads, Insect Repellant, sunscreen (as needed)

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Traffic Safety Cones, Caution Tape, Interface Probe with Ground Clamp, and/or Water Level Meter, 20-lb. type ABC Fire Extinguisher, Buckets. Tools as needed: Socket Wrench, Screw Driver, Crow Bar, Mallet, and Wire Brush.

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Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Mobilization to monitoring well(s).	**1a. FALL:** Personal injury from slip/trip/fall due to uneven terrain and/or obstructions.	1a. Inspect the pathway and plan for the most suitable designated pathway prior to mobilization. 1a. Use established pathways, walk and/or drive on stable, secure ground, and avoid steep hills or uneven terrain. 1a. If working near open water with an unguarded edge, wear a personal flotation device (PFD).
	1b. CONTACT: With traffic/third parties.	1b. Identify potential traffic sources and delineate the work area with traffic safety cones. Position the vehicle to protect against oncoming traffic. Use caution tape to provide a more visible delineation of the work area if necessary. 1b. Wear appropriate PPE, including high visibility clothing and reflective vest, when exposed to traffic 1b. Face traffic, maintain eye contact with oncoming vehicles, and establish a safe exit route.
	1c. EXERTION: Muscle strain from lifting equipment	1c. Use proper lifting techniques when handling/moving equipment; bend knees and keep back straight. 1c. Use mechanical assistance or team lifting techniques when equipment is 40 lbs. or heavier. 1c. Make multiple trips to carry equipment.
	1d. EXPOSURE: To biological hazards.	1d. Inspect work area for bees and insects. 1d. Use insect/tick repellent, as necessary. 1d. Treat clothing with permethrin prior to mobilization. 1d. Don Tyvek/mosquito nets, as applicable.
2. Open/close well.	**2a. EXERTION:** Muscle strain.	2a. Use proper lifting techniques; keep back straight, lift with legs, and bend knees when reaching to open/close the well.
	2b. CAUGHT: Pinch/crush points associated with removing/replacing manholes and working with hand tools.	2b. Wear cut-resistant level II gloves when working with well cover and hand tools. 2b. Use proper tools (ratchet and pry bar or magnet for well cover) and inspect before use. 2b. Do not put fingers under the well cover.
	2c. CAUGHT: Pinch points associated with placing the J-plug back onto the PVC pipe.	2c. See 2b. 2c. Keep fingers out of line-of-fire when securing cap.
	2d. EXPOSURE: To potential hazardous vapors.	2d. No open flames/heat sources. 2d. To minimize exposure to vapors, allow the well to vent after opening it and before sampling activities begin. 2d. Stand upwind if possible, to avoid inhaling vapors. 2d. Monitor atmosphere with multi-gas meter/PID.
3. Gauge well.	**3a. CONTACT:** With contamination (e.g., contaminated groundwater).	3a. Wear chemical-resistant disposable gloves (over cut-resistant gloves) and safety glasses when gauging well. 3a. Insert and remove the probe slowly to avoid splashing. 3a. Use an absorbent pad to clean probe.
	3b. CONTACT: With traffic.	3b. See 1b.
	3c. Exposure: To static electricity, fire, or explosion.	3c. Ground interface probe to a designated grounding point/rod, well casing, or electrically conductive surface to dissipate static electricity.

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Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
4. Purge and sample well	**4a. EXPOSURE/CONTACT:** To contamination (e.g., SPH, contaminated groundwater, vapors) and/or sample preservatives.	4a. Open and fill sample jars slowly to avoid splashing and contact with preservatives. 4a. Wear cut-resistant gloves and chemical-resistant disposable gloves when sampling. 4a. Fill sample containers over the purge container to avoid spilling water onto the ground. 4a. Use an absorbent pad to clean spills. 4a. When using a bailer to purge a well, pull the bailer slowly from the well to avoid splash hazards. 4a. When sampling or purging the water using a bailer, pour water slowly to reduce the potential for splash hazards with groundwater. 4a. When using a tubing valve, always remove the valve slowly after sample collection to release any pressure and avoid pressurized splash hazards. 4a. When collecting a groundwater sample, always point the sampling apparatus (tubing, bailer, etc.) away from the face and body.
	4b. CONTACT: Personal injury from cuts, abrasions, or punctures by glassware or sharp objects.	4b. To avoid spills or breakage, place sampleware on an even surface. 4b. Do not over-tighten caps on glass sampleware. 4b. Wear chemical-resistant nitrile disposable gloves over cut-resistant (i.e., Kevlar) gloves when sampling and handling glassware (i.e., VOA vials) or when using approved cutting tools.
	4c. EXERTION: Muscle strain while carrying equipment.	4c. Use proper lifting techniques when handling/moving equipment, bend knees, and keep back straight. 4c. Use mechanical assistance or team lifting techniques when equipment is 40 lbs. or heavier. 4c. Make multiple trips to carry equipment.
	4d. CONTACT: With traffic.	4d. See 1b.
	4e. CONTACT: Pinch points with groundwater pump components (i.e., wheel, line, clamps).	4e. Wear cut-resistant gloves when working with groundwater pumps. 4e. Never place hands on or near pinch points such as the wheel, clamps, or other moving parts during pump operations. 4e. Use the correct mechanisms, such as a pump reel, to lower the pump into the well. 4e. Never attempt to manually stop any moving part of equipment, including hose reels and/or tubing.
	4f. EXERTION: Muscle strain from repetitive motion of bailing and sampling a well.	4f. See 4c. 4f. Include a stretch break when repetitive motions are part of the task.
5. Management of purge water.	**5a. EXPOSURE/CONTACT:** To contamination (e.g., SPH, contaminated groundwater, vapors).	5a. Do not overfill the container, and pour liquids slowly so that they do not splash. 5a. Properly dispose of used materials/PPE in an appropriate container in the designated storage area.
	5b. EXERTION: Muscle strain from lifting/carrying, and moving containers.	5b. Use proper lifting techniques when lifting/carrying or moving container(s) (see 4c.). 5b. Do not overfill container(s).
6. Decontaminate equipment.	**6a. EXPOSURE/CONTACT:** To contamination (e.g., SPH, contaminated groundwater, vapors).	6a. Work on the upwind side, where possible, of the decon area. 6a. Wear chemical-resistant disposable gloves and safety glasses. 6a. Use an absorbent pad to clean spills.
	6b. CAUGHT: Pinch points associated with handling hand tools	6b. See 2b. 6b. Inspect hand tools for sharp edges before decontaminating.

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-015	DATE: 05/28/2025	☐NEW ☒REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)
GENERIC	**Site Recon**	**Mobilization/Demobilization**

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☐ FACE SHIELD ☒ HEARING PROTECTION (as needed) ☒ SAFETY SHOES: Steel Toe or composite toe	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: Fluorescent reflective vest of high-visibility clothing; long-sleeved shirt; long pants	☒ GLOVES: Cut-resistant Level II, nitrile ☐ OTHER

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Required Equipment: Varies

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EXCLUSION ZONE (EZ): Maintain a Minimum Heavy Equipment Exclusion Zone around equipment and loads while in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, the tip zone of the equipment, the fall zone of the equipment, and the contents.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Mobilize/demobilize and establish a work area	**1a. FALL:** Slip/trips/falls from obstructions, uneven terrain, weather conditions, heavy loads, and/or poor housekeeping.	1a. Use 3 points-of-contact/ensure secure footing when entering and exiting the vehicle. 1a. Inspect walking path for uneven terrain, steep hills, obstructions, and/or weather-related hazards (i.e., ice, snow, and puddles) prior to mobilizing equipment. Use established pathways. Walk on stable/secure ground. 1a. Do not climb over stored materials/equipment; walk around. Practice good housekeeping; organize and store equipment neatly in one area at its lowest potential energy. 1a. Wear boots with adequate treads. 1a. Delineate unsafe areas with traffic safety cones, caution tape, and/or flagging.
	1b. CONTACT: Personal injury and/or property damage caused by being struck by Site traffic or equipment used in Site activities.	1b. Observe and maintain the posted speed limits. 1b. When first arriving onsite, park vehicles in designated parking spaces and/or out of the way locations. Use parking brake on all vehicles and tire chocks on work trucks and trailers. 1b. Check in with Site Manager/Supervisor to ensure coordination with other Site activities and to discuss any special hazards. Ensure that short-service employees (SSE) are identified. 1b. Identify potential traffic sources. 1b. Wear PPE, including high visibility clothing or reflective vest, when around vehicles or operating equipment 1b. Use a spotter while moving work vehicles; plan to avoid backing whenever possible. 1b. Maintain a minimum exclusion zone when vehicles are in motion (i.e., greater than the swing/tip radius of the equipment). When backing up the truck rig with an attached trailer, use a second spotter if there is tight clearance simultaneously on multiple sides of the equipment or if turning angles limit driver-to-spotter visibility. 1b. Delineate work area with traffic cones, flags, caution tape, and/or other barriers. 1b. Position “Work Area” signs at Site entrances, if possible, or at either side of the work area. 1b. Position the largest vehicle to protect against oncoming traffic. 1b. Face traffic, maintain eye contact with oncoming vehicles, use a spotter, and establish a safe exit route.

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Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
		1b. Observe potential overhead and ground surface features that may interfere with moving equipment. Clear the path of physical hazards prior to initiating mobilization.
	1c. CAUGHT: Personal injury from pinch points and being in the line of fire of the vehicle and/or equipment.	1c. Make sure the driver has engaged the parking brake and placed wheel chocks in a position to prevent movement. Be sure that the vehicle is parked in front/down gradient (positioned to block oncoming traffic) of the work area. 1c. Wear cut-resistant gloves (Kevlar or similar) when handling objects/tools or equipment, 1c. Keep body parts away from line-of-fire of equipment. 1c. Always carry tools by the handles and/or designated carrier. Ensure sharp-edged tools are sheathed/secure. 1c. Remove any loose jewelry. Avoid wearing loose clothing and/or ensure loose clothing is secure. 1c. Secure all items on the equipment, tighten up any items or features that have the potential to shift or break during mobilization.
	1d. OVEREXERTION: Muscle strains while lifting/carrying equipment.	1d. Use body positioning and lifting techniques that avoid muscle strain; keep back straight, lift with legs, turn with whole body, keep load close to body, and never reach with a load. 1d. Ensure that loads are balanced. Use assistance (mechanical or additional person) to carry equipment that is either unwieldy or over 50 lbs.
	1e. EXPOSURE: Personal injury from exposure to biological and environmental hazards.	1e. Inspect the area to avoid contact with biological hazards (i.e., poisonous plants, stinging insects, ticks, etc.). 1e. Wear long-sleeved clothes that can be treated with Permethrin, apply insect repellent (may contain DEET) to exposed skin, and inspect clothes and skin for ticks during and after work. 1e. Apply sunscreen (SPF 15+) if exposure to the sun for 30 minutes or more is expected.
	1f. EXPOSURE: Weather-related injuries.	1f. Watch for heat stress symptoms (muscle cramping, exhaustion, dizziness, nausea, rapid and shallow breathing). Take breaks in cool places and hydrate as needed. 1f. Watch for cold stress symptoms (severe shivering, slowing body movement, weakness, stumbling or inability to walk, collapse). Take breaks in warm areas as needed. 1f. Wear clothing appropriate for weather and temperature conditions (e.g., rain jackets, snow pants, multiple layers). 1f. If lightning is observed, wait 30 minutes in a sheltered location (car is acceptable) before resuming work.
	1g. EXPOSURE: Personal injury from noise hazards.	1g. Wear hearing protection if sound levels exceed 85 dBA (if you must raise your voice for normal conversation).

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-017	DATE: 05/28/2025	☐NEW ☒REVISED	PAGE 1 of 2

JSA TYPE CATEGORY:	WORK TYPE:	WORK ACTIVITY (Description):
GENERIC	**Drilling**	**Monitoring and Recovery Well Development**

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☐ FACE SHIELD ☒ HEARING PROTECTION (as needed) ☒ SAFETY SHOES: Composite-toe or steel-toe boots	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: Fluorescent reflective vest or high visibility clothing	☒ GLOVES: Cut-resistant level II and Nitrile ☒ OTHER: Insect repellent, sunscreen (as needed)

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Required Equipment as needed: Truck Rig or support truck, Trailer, Traffic Safety cones and flags, Caution Tape, Interface Probe, Power Source, Submersible Pump, Surge Block/Plunger, 20 lb. Type ABC Fire Extinguisher, Holding Tanks and/or Buckets, Absorbent Pads, 5-gas meter, Tools as needed: Socket and Pipe Wrench, Screw Driver, Pry Bar, Ratchet, Vault Key, Clamp or Vice Grip.

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing LMRAs

EXCLUSION ZONE (EZ): Maintain a Minimum Heavy Equipment Exclusion Zone around equipment and loads while in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, the tip zone of the equipment, the fall zone of the equipment, and the contents.

"SHOW ME YOUR HANDS"
The driller and helper should show that their hands are clear of controls and moving parts.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Mobilization / Demobilization (**Review Mobilization and Demobilization JSA - GEN-015**)	**1a. CONTACT:** Equipment/property damage.	1a. The truck rig's tower/derrick will be lowered and secured prior to mobilization. 1a. Set up the work area/position equipment in a manner that eliminates or reduces the need for backing of trucks and trailers. 1a. All non-essential personnel should **maintain an exclusion zone greater than the swing/tip radius of the equipment.** 1a. Beep horn twice before backing up. 1a. When backing up with an attached trailer, use a spotter Position if able to avoid backing up and pull through.
	1b. FALL: Slip/trip/fall hazards.	1b Inspect walking path for uneven terrain, weather-related hazards (i.e., ice, puddles, snow, etc.), and obstructions prior to mobilizing equipment. 1b. Do not climb over stored materials/equipment; walk around. Store equipment at the lowest potential energy.
2. Open/close well.	**2a. EXERTION:** Muscle strain (some wells have large vault covers).	2a. Keep back straight, lift with legs, keep the load close to the body, and never reach with a load. Ensure that loads are balanced to reduce the potential for muscle strain. Use the buddy system or mechanical means when lifting objects heavier than 50 lbs or when the shape makes the object difficult to lift.
	2b. CAUGHT: Pinch points are associated with removing/replacing manholes and working with hand tools.	2b. Wear cut-resistant gloves when working with well vault/cover and hand tools. Do not put fingers under the well vault/cover. 2b. Use ratchet and pry bar for the well cover and inspect before use.
	2c. EXPOSURE: Potentially hazardous vapors.	2c. No open flames/heat sources. 2c. Allow the well to vent after opening it and before starting development activities to minimize exposure to vapors. Air monitoring must be performed prior to set up and during the well development activities. Work on the upwind side of the well.
	2d. CONTACT: Traffic.	2d. Wear required PPE, including high visibility clothing or reflective vest. 2d. Delineate work area with safety cones and/or other barriers. Position the vehicle to protect against oncoming traffic. 2d. Face traffic, maintain eye contact with oncoming vehicles, and establish a safe exit route.

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[2] A hazard is a potential danger. Break hazards into six types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards; Energy Source – Electricity, Pressure, compression, tension, torque.
[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
3. Develop well (mechanical surging).	**3a. CAUGHT:** Cut hazards and finger pinch points.	3a See 2b. 3a. Use required PPE, including cut-resistant level II gloves, when handling development equipment. Identify finger/hand pinch points. Keep hands away from active surge equipment. 3a. All non-essential personnel should **maintain an exclusion zone greater than the swing/tip radius of the equipment.**
	3b. CONTACT/EXPOSURE: Contamination (e.g., SPH, contaminated groundwater, vapors).	3b. See 2c. 3b. Wear Nitrile gloves and safety glasses. Insert and remove the surge block/plunger and line/cable slowly to avoid splashing at the surface. 3b. Use an absorbent pad to clean any spills.
	3c. EXERTION: Muscle strain from lifting equipment.	3c. See 2a. 3c. Use mechanical device to insert and remove surge block/plunger if greater than 40 lb.
	3d. CONTACT: Injury while handling wench line/cable, or with active surging equipment.	3d. If using a drill rig, inspect all wench lines/cables for any kinks or fraying prior to use. Replace any damaged lines/cables. Review the **Drill Rig checklist prior to development activities**. 3d. See 3a.
4. Purging well (pumping water to holding tanks/drums/buckets).	**4a. CAUGHT:** Pinch points are associated with connecting the hose to the tank. Pinch points are associated with handling the pump and hoses.	4a. See 3a. 4a. Ensure that fingers are not placed near the coupling when attaching and securing the hose(s). Do not place fingers under the pump/hoses. Wear cut-resistant gloves when handling pump/hose(s). 4a. Keep hands clear of any line of fire.
	4b. FALL: Using a side-mounted ladder when attaching a hose to the tank. Slip, trip, or fall from lines/hoses	4b. Inspect ladder steps to make sure steps are not bent/damaged and free of debris/fluid. 4b. Use three points of contact always when using a ladder. 4b. Use a hoist or other mechanical means to secure and move hoses. 4b. Utilize anti-whip cords and secure couplings on all pressurized hoses. Keep hoses and lines coiled and organized out of designated walking paths around the work zone.
	4c. CONTACT: Contamination (e.g., SPH, contaminated groundwater).	4c. Secure water hose to holding tanks/drums/buckets with clamp, vice grip, or similar tool. 4c. Do not overfill tanks, and purge/transfer liquids in such a manner that they do not splash. (See 3b). 4c. Dispose of used materials/PPE in the designated impacted PPE container.
	4d. EXERTION: Muscle strain from lifting/carrying equipment.	4d. See 2a.
	4e. FALL: Spilled purge water.	4e. Clean up any spills using absorbent pads or spill kits.
5. Decontaminate equipment	**5a. CONTACT/EXPOSURE:** Contamination (e.g., SPH, contaminated groundwater, vapors).	5a. See 3b.
	5b. EXPOSURE/CONTACT: Chemicals in the cleaning solution	5b. Decontaminate equipment in a well-ventilated area. Wear nitrile gloves to avoid skin contact with cleaning solutions.

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-019	DATE: 05/28/2025	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)
GENERIC	**Site Reconnaissance**	**Site Walk and Inspection**

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☐ FACE SHIELD ☒ HEARING PROTECTION: earplugs/muffs as necessary ☒ SAFETY SHOES: Steel or composite toed	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: High-visibility vest or high-vis outerwear	☒ GLOVES: /cut-resistant (level II)/chemical resistant ☒ OTHER: Tyvek and rubber boots as necessary, dust mask as necessary

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Required Equipment: Site map, emergency contact list, documentation of urgent care/hospital routes, and/or guide familiar with Site, operating cell phone or walkie-talkie if Site allows, and bug spray.

Commitment to Safety – All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing LMRAs

EXCLUSION ZONE (EZ): Maintain a Minimum Heavy Equipment Exclusion Zone around equipment and loads while in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, the tip zone of the equipment, the fall zone of the equipment, and the contents.

SITE SECURITY: Before site inspection, verify the appropriate method to address Site Security concerns related to potential criminal activity, homeless population, and/or isolation concerns. Work with the Project Principal and/or Project Manager to address appropriately.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Check in with the Site contact.	**1a. CONTACT/EXPOSURE/FALL:** Personal injury caused by a lack of awareness of site-specific hazards.	1a. Inquire about hazards and other activities taking place at the Site. 1a. Inform Site contact of work scope, timeline, and location(s). 1a. Discuss emergency evacuation procedures and muster points with the Site contact.
2. Traversing the Site	**2a. CONTACT:** Property damage and personal injury caused by obstructions/vehicles or unauthorized personnel at remote Sites.	2a. All equipment must be stowed and secured prior to moving. 2a. Maintain speed limit as posted on-site. 2a. When possible, drive on established roadways. 2a. Yield to all pedestrians. 2a. Use pull-through spots or back into parking spots. 2a. Don high-visibility clothing/safety vest. If working at a remote Site, add orange accessories during hunting season.
	2b. FALL: Uneven terrain and weather conditions. Overgrown shrubs and vines. Equipment in the work zone.	2b. Inspect walking path for uneven terrain, weather-related hazards (i.e., ice, puddles, snow, etc.), and obstructions prior to mobilizing equipment. 2b. Use established pathways and walk on stable, secure ground when possible. 2b. Communicate traversing hazards with others.
	2c. OVEREXERTION: Muscle strain while carrying equipment.	2c. When carrying equipment to/from the work area, use proper lifting techniques; keep back straight, lift with legs, keep the load close to the body, never reach with a load. Ensure that loads are balanced to reduce the potential for muscle strain. Use the buddy system or mechanical means to maneuver items heavier than 40 lbs. If necessary, make multiple trips to carry equipment.
	2d. EXPOSURE: Biological hazards – ticks, bees/wasps, poison ivy, insects; (Ticks are most active whenever the temperature is above freezing, typically from March to November.)	2d. Inspect the area to avoid contact with biological hazards. 2d. Ticks: • Treat outer clothing, including pants, shirts, socks, boots, and hats, the evening before with Permethrin (allowing at least two hours before use). • Apply DEET or equivalent to exposed skin before travelling to the Site and reapply after two hours. • Wear light colored clothing and visually check for ticks during and after work. 2d. Bees: • Use bee spray as appropriate to deter/eliminate bees. • Protect exposed skin with insect repellent.

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Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
		2d. Poison Ivy: • Identify areas of poison ivy and spray with weed killer. Don Tyvek and rubber boots while traversing poison ivy areas. • If skin comes into contact with poison ivy, wash the skin thoroughly with soap and water.
	2e. EXPOSURE: Heat Stress & Cold Stress. Personal injury from working in inclement weather conditions.	2e. Wear sunscreen with SPF 15 or greater on exposed skin whenever 30 minutes or more of sun exposure is expected. 2e. Watch for heat stress symptoms (muscle cramping, exhaustion, dizziness, rapid and shallow breathing). Take breaks as needed. 2e. Watch for cold stress symptoms (severe shivering, slowing body movement, weakness, stumbling or inability to walk, collapse). Take breaks as needed. 2e. Wear appropriate rain gear as needed. 2e. Take frequent breaks if tired, wet, or cold/hot. Drink water. 2e. If lightning is observed, wait 30 minutes after the last thunder boom/lightning bolt in a sheltered location (car acceptable) before starting work again.
3. Walking near heavy equipment and machinery.	**3a. CONTACT:** Personal injury from Site and roadway traffic. Personal injury from flying debris	3a. See 2a. 3a. Maintain an exclusion zone of at least 10 feet from all engaged equipment. Increase distance to include swing tip radius. 3a. Keep body parts out of the line-of-fire of pinch points. 3a. Wear appropriate PPE always.
	3b. OVEREXERTION: Personal injury from lifting/moving/rotating equipment.	3b. See 2c.
	3c. EXPOSURE: Hearing damage from noise-generating equipment/processes. Inhalation/exposure to hazardous vapors and or dust.	3c. Wear hearing protection if >85 dBA. (i.e., noise levels which require you to raise your voice to communicate) 3c. Always wear cut-resistant gloves when handling any tools or equipment. 3c. Always wear appropriate PPE based on the chemicals present.
	3d. EXPOSURE: Working in a remote area.	3d. Use the "buddy system" whenever possible. If working alone, contact PM upon arrival/departure and during work activities prior to commencing work if applicable. 3d. Always carry a communication device (i.e., cell phone, walkie-talkie) or directional (i.e., map, compass, etc.) when traversing remote areas. 3d. If available, follow Lone Worker Protocol/Procedure.
4. Working in adverse weather conditions.	**4a. EXPOSURE:** Heat Stress & Cold Stress. Personal injury from working in inclement weather conditions.	4a. Watch for heat stress symptoms (muscle cramping, exhaustion, dizziness, rapid and shallow breathing). Take breaks as needed. 4a. Watch for cold stress symptoms (severe shivering, slowing body movement, weakness, stumbling or inability to walk, collapse). Take breaks as needed. 4a. Wear appropriate rain gear as needed. 4a. Take frequent breaks if tired, wet, or cold/hot. Drink water. 4a. If lightning is observed, wait 30 minutes after the last thunder boom/lightning bolt in a sheltered location (car acceptable) before starting work again.
5. Departing Site.	**5a. EXPOSURE:** Exposure to unnecessary hazards should prompt personnel to believe Roux is on-site during an emergency and conduct a search.	5a. Sign out or notify the Site contact and Roux Project Manager of your departure.

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-020	DATE: 05/29/2025	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY:	WORK TYPE:	WORK ACTIVITY (Description):
GENERIC	**Gauging & Sampling**	**Soil Sampling**

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES ☒ FLAME RESISTANT CLOTHING (as needed)	☐ GOGGLES ☐ FACE SHIELD: ☒ HEARING PROTECTION: (as needed) ☒ SAFETY SHOES: Composite-toe or steel-toe boots	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: Fluorescent reflective vest or high visibility clothing	☒ GLOVES: , Nitrile and cut resistant level II ☒ OTHER: Insect repellent, sunscreen (as needed)

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Recommended Equipment: traffic safety cones, caution tape, trowel

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing LMRAs.

EXCLUSION ZONE (EZ): Maintain a Minimum Heavy Equipment Exclusion Zone around equipment and loads while it is in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, the tip zone of the equipment, the fall zone of the equipment, and the contents.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Secure location	**1a. CONTACT:** Personnel and vehicular traffic may enter the work area.	1a. If in an area with foot or vehicle traffic, delineate the work area with traffic cones and/or caution tape to prevent exposure to traffic and inform others of work activity. 1a. Wear a reflective vest and/or high visibility clothing. 1a. Face the direction of any vehicular traffic. Position the vehicle to protect the worker from traffic. 1a. Communicate work activity with adjacent work areas.
	1b. FALL: Tripping/falling due to uneven terrain or entry/exit from excavations.	1b. Inspect pathways and work area for uneven terrain, weather-related hazards (i.e., ice, puddles, snow, etc.), and obstructions. 1b. Use established pathways and walk on stable, secure ground. 1b. Stage equipment and tools in a convenient, stable, and orderly manner. Store equipment at the lowest potential energy. 1b. Roux employees should stay 6 feet from in-progress excavations and trenches. Should entry to an excavation be required (when stabilization is complete), ladders must be employed for steep embankments, excavations, pits, and trenches.
	1c. EXPOSURE: Exposure to sun and excessive heat, possibly causing sunburn, heat exhaustion, or heat stroke. Exposure to cold temperatures may cause cold stress. Skin burn as a result of fire, if applicable. Exposure to explosive vapors due to tank farm operations. Exposure to airborne dust due to high wind speeds. Biological hazards - ticks, bees/wasps, poison ivy, thorns, insects, etc.	1c. Wear sunscreen with an SPF 15 or greater whenever 30 minutes or more of exposure is expected. 1c. Use a tent to shade the work area from direct sunlight, particularly when warm temperatures are expected. 1c. Be aware of the location of all Site personnel. 1c. Watch for heat stress symptoms (muscle cramping, exhaustion, dizziness, rapid and shallow breathing). 1c. Watch for cold stress symptoms (severe shivering, slowing of body movement, weakness, stumbling or inability to walk, collapse). 1c. Take breaks for rest and water as necessary. Move to an area that is well shaded or a climate-controlled area (i.e., car, site trailer, etc.). 1c. No open flames/heat sources. 1c. Conduct air monitoring and ensure that harmful vapor concentrations are within the levels detailed in the Site Specific HASP. Follow the procedures detailed in HASP for exceedances. 1c. Flame retardant clothing must be worn when specified by Site policy. 1c. Cell phones should be disabled when specified by Site policy. 1c. Pre-treat field clothing with Permethrin prior to site visit to kill ticks and insects. 1c. Wear long-sleeved shirts and tuck in (or tape) pant legs into socks or boots to prevent ticks from reaching skin. 1c. Spray insect repellent containing DEET or equivalent on exposed skin when working in overgrown areas of the Site. 1c. Inspect the area to avoid contact with biological hazards. 1c. Wear cut-resistant gloves when handling material, equipment, or branches, shrubs, etc. that may lie within the walking path. 1c. Wear spoggles if the average wind speeds are above 15 mph. 1c. Personnel shall examine themselves and their co-workers' outer clothing for ticks periodically when on-site. 1c. If skin comes in contact with poison ivy, wash skin thoroughly with soap and water. If rash persists after washing, immediately notify your supervisor, the OM, and OHSM for possible consultation with a physician at an approved Occupational Health Clinic.

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Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
2. Collect Soil Sample	**2a. CONTACT:** Personal injury from pinch points, cuts, and abrasions from sampling equipment, tools, and material within the soil sample. Personal injury from contact with moving equipment while sampling. Personal injury from contact with glass sample jars.	2a. Wear cut-resistant (i.e., Kevlar) gloves under chemical-resistant (nitrile) disposable gloves when handling soil samples and sampling jars. 2a. Where possible, use a trowel or equivalent tool to avoid contact with soil. 2a. If sampling from a bucket of heavy equipment, ensure all equipment is off and the operator utilizes the "show me your hands" policy. 2a. See 1a.
	2b. EXPOSURE: Exposure to contamination (impacted soil) and/or lab preservatives.	2b. Wear chemical-resistant (nitrile) disposable gloves over cut-resistant gloves to protect hands when handling samples; use containment material or plastic sheeting to protect surrounding areas. 2b. Wear safety glasses to protect eyes from dust or air-borne contaminants that may result from disturbing the soil. 2b. Where possible, remain upgradient from the sample location if collecting soil samples from stockpile, drill rig, etc., to avoid breathing contaminant vapors, if they are present. 2b. When collecting a soil sample from a hand auger, put a large zip lock bag over the entire auger to prevent soil from spilling onto the ground. 2b. Open sample jars slowly and fill carefully to avoid contact with preservatives.
	2c. EXERTION: Exertion due to repetitive motion and ergonomics.	2c. Utilize a table or raised surface for soil sampling if multiple soil samples are going to be taken to minimize repetitive bending motion.
3. Decontaminate equipment	**3a. EXPOSURE/CONTACT:** Contamination (e.g., Separate Phase Hydrocarbons (SPH), contaminated vapors, and/or soil). **3b. EXPOSURE:** Chemicals in the cleaning solution include ammonia.	3a. Wear chemical-resistant (nitrile) disposable gloves and safety glasses. 3a. Use an absorbent pad to clean spills. 3a. Properly dispose of used materials/PPE in the provided drums in the designated drum storage area. 3a. Remain upwind of the sample and avoid breathing contaminant vapors, if they are present. 3b. Wear chemical-resistant (nitrile) disposable gloves and safety glasses. 3b. Work on the upwind side of the decontamination area. 3b. Use an absorbent pad to clean spills. 3b. Properly dispose of used materials/PPE in the provided drums in the designated drum storage area. Ensure that all drums are properly labeled and secured.

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-021	DATE: 05/29/2025	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY:	WORK TYPE	WORK ACTIVITY (Description)
GENERIC	**Gauging and Sampling**	**Soil Vapor Sampling (Permanent Monitoring Points)**

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☐ FACE SHIELD ☐ HEARING PROTECTION ☒ SAFETY SHOES: Steel-toe composite safety boots	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: Fluorescent reflective vest or high visibility clothing	☒ GLOVES: Cut-resistant level ii & Nitriles ☒ OTHER: Bug Spray, Sun Screen, Knee Pads, or kneeling pad

REQUIRED AND / OR RECOMMENDED EQUIPMENT

9/16" Socket and Wrench, Non-Toxic Clay, Teflon-Lined Tubing, Masterflex Tubing, Air Pump with Low Flow, Dry Cal, Enclosure (Bucket with 2 holes), Helium Gas Canister, Summa Canisters and Flow Controllers, MultiRAE Photo Ionization Detector (PID), Helium Detector, Tubing Cutter, Traffic/Safety Cones, Caution Tape or Retractable Cone Bars

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing LMRAs.

Work Zone (WZ): A 5-foot exclusion zone will be maintained for non-essential personnel.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Define and secure a work area.	**1a. FALL:** Potential tripping hazards.	1a. Ensure work area is secure and inform others (third party) of work activity. 1a. Remove tripping hazards and inspect the walking path for uneven terrain, weather-related hazards (i.e., ice, puddles, snow, etc.), and obstructions prior to mobilizing equipment.
	1b. CONTACT: Potential contact with moving vehicles or pedestrians.	1b. If working alongside roads, look both ways before entering roadways, face traffic, and utilize the work vehicle to protect employees. 1b. Delineate work area (including vehicles) with traffic safety cones and caution tape or retractable cone bars. 1b. Maintain a 5-foot exclusion zone. 1b. Wear high visibility clothing or a reflective safety vest.
	1c. EXERTION: Muscle strain while lifting and carrying equipment.	1c. When carrying equipment to/from the work area, keep back straight, lift with legs, keep the load close to the body, never reach with a load. Ensure that loads are balanced. Use the buddy system or mechanical means to maneuver loads heavier than 40 lbs. If necessary, make multiple trips to carry equipment.
2. Remove well cover / close well cover.	**2a. CONTACT/CAUGHT:** Pinch points and scrapes associated with hand tools and well covers.	2a. Keep hands away from pinch points. 2a. Use hand tools with extensions or a magnet to remove and replace well covers. 2a. Wear cut-resistant gloves. 2a. Use knee pads or a kneeling pad when repetitive kneeling on rough ground is anticipated.
	2b. FALL: Potential tripping hazards associated with installing bolts.	2b. Place security bolts in a secure location so as not to create tripping hazards. Replace security bolts so that they fit flush with monitoring well covers.
	2c. EXERTION: Physical exertion is required to remove bolts that were over-torqued or stripped.	2c. Replace any security bolts that show signs of stripping. Do not over-tighten. 2c. Use body positioning and bending techniques that minimize muscle strain; keep back straight, bend at the knees. 2c. See 2a.

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Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
3. Screen vapor point with PID.	**3a. FALL:** Potential tripping hazards associated with equipment.	3a. Place the equipment in one area close to the sampling location. 3a. Identify an area where the equipment is to be stored within the work area (away from the main walking path). 3a. Do not leave equipment on the ground. Return equipment to the storage area between uses.
	3b. EXPOSURE: Inhalation of soil vapor	3b. Replace brass caps immediately upon completion to avoid soil vapors migrating to the surface through sample tubing. 3b. Stand upwind of the sample point during screening activities.
4. Remove/replace brass caps at the end of the sample tubing.	**4a. CONTACT:** Pinch points are associated with hand tools and brass caps.	4a. Use a wrench to remove and replace brass caps. 4a. Wear cut-resistant gloves to protect against pinch points and scrapes.
	4b. EXPOSURE: Potential pathway for vapors to migrate to the land surface.	4b. See 3b. 4b. Stand upwind of the sample point location.
5. Set up soil vapor sampling equipment and calibration of meters.	**5a. FALL:** Potential tripping hazards associated with equipment and tubing.	5a. See 3a. 5a. Keep tubing slack to a minimum and locate the summa canister as close to the sampling location as possible. 5a. Avoid stepping over equipment and tubing.
	5b. CONTACT: Pinch points associated with handling equipment.	5b. Do not place fingers/hands under sampling equipment. 5b. Make multiple trips when unloading equipment in the work area. 5b. Wear cut-resistant gloves to protect against pinch points while handling sampling equipment.
	5c. EXPOSURE: Inhalation of calibration gas and helium.	5c. Review the SDS for each type of calibration gas used before calibrating. 5c. Calibrate meters in a well-ventilated area and keep the air flow regulator away from your face. 5c. Close valve on canisters after use to avoid inhalation of excess helium or calibration gas. 5c. Stand upwind of the bucket during the helium tracer gas test.
6. Cleaning Work Area.	**6a. FALL:** Potential tripping hazards are associated with equipment and tubing.	6a. See 3a. 6a. See 3b.
	6b. CONTACT: Storing and transport of equipment in car.	6b. Ensure that the equipment is placed securely in the vehicle. Do not stack equipment on top of each other. Secure the equipment so that it will not slide while being transported. 6b. Wear cut-resistant gloves while handling/loading equipment.

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-022	DATE 05/29/2025	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY:	WORK TYPE:	WORK ACTIVITY (Description):
General	**Drilling**	**Rotosonic Soil Borings / Well Installation**

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☐ FACE SHIELD ☒ HEARING PROTECTION: (as needed) ☒ SAFETY SHOES steel or composite toe	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: fluorescent long-sleeve shirt and reflective safety vest.	☒ GLOVES: Nitrile and cut resistant level II ☒ OTHER: Insect Repellant, sunscreen (as needed)

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Truck-Mounted Sonic Drilling Rig or Mini Sonic Rig, Hand Tools, Photoionization Detector, Multi-Gas Meter (or equivalent), Interface Probe, 20 lb. Type ABC Fire Extinguisher, Traffic/Safety Cones & Flags, "Work Area" Signs, Water

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing LMRAs

EXCLUSION ZONE (EZ): Maintain a Minimum Heavy Equipment Exclusion Zone around equipment and loads while it is in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, tip zone of the equipment, fall zone of the equipment and contents.

"SHOW ME YOUR HANDS"
Driller and helper should show that their hands are clear from controls and moving parts

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Mobilization of the drilling rig (ensure the Subsurface Clearance Protocol and Drill Rig Checklist are completed). **See also Mobilization/Demobilization JSA.**	**1a. CONTACT/CRUSH:** Equipment/property damage during movement. Crush point between the moving rig and other objects.	1a. The drill rig's tower/derrick will be lowered and secured prior to mobilization. 1a. A spotter should be utilized while moving the drill rig or backing operations. If personnel move into the path of the drill rig, the drill rig will be stopped until the path is again clear. 1a. Set up the work area and position equipment in a manner that eliminates or reduces the need for backing of support trucks and trailers. 1a. When backing up the truck rig with an attached trailer, use a second spotter if there is tight clearance simultaneously on multiple sides of the equipment or if turning angles limit driver/spotter visibility. 1a. Inspect the driving path for uneven terrain. Level or avoid if needed. 1a. Drill rig should have a **minimum exclusion zone (i.e., greater than the swing/tip radius of the rig)** for non-essential personnel (i.e., geologist) when the rig is moving/in operation.
	1b. FALL: Slip/trip/fall hazards.	1b Inspect walking path for uneven terrain, weather-related hazards (i.e., ice, puddles, snow, etc.), and obstructions prior to mobilizing equipment. 1b. Do not climb over stored materials/equipment; walk around. Practice good housekeeping. 1b. Use established pathways and walk on stable, secure ground.
2. Raising the tower/derrick of the drill rig.	**2a. CONTACT**: Overhead hazards.	2a. Prior to raising the tower/derrick, the area above the drilling rig will be inspected for overhead utilities, tree limbs, piping, or other structures that could come in contact with the rig's tower and/or drilling rods or tools. 2a. Site requirements for raising a tower/derrick around overhead utilities must be reviewed prior to drilling. Maintain **a minimum distance of 10 feet** from overhead structures. 2a. The tower/derrick must not be raised beneath overhead power lines unless approved by both the Roux and Project PMs.
	2b. CONTACT: Amputation points occur when raising the rig and the instability of the rig.	2b. Inspect the equipment prior to use and avoid amputation points when engaging the tower/derrick. 2b. Lower outriggers to ensure stability prior to raising the rig tower/derrick. 2b. If the rig needs to be mounted, be sure to use three points of contact.

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Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
3. Advancement of soil boring and well installation.		**If possible, operate the drill rig using a remote control to avoid potential hazards.**
	3a. CONTACT: Flying debris.	3a. Be aware of and avoid potential line-of-fire hazards and wear required PPE such as eye, ear, and hand protection.
See also Soil Sampling JSA.	**3b. EXPOSURE**: Noise and dust.	3b. Wet borehole area with sprayer to minimize dust. 3b. Stand upwind and keep your body away from the rig. 3b. A disposable dust mask/respiratory protection (depending on site COCs) should be worn if there is visible dust in the breathing zone. 3b. Wear hearing protection when the drill rig is in operation.
	3c. CAUGHT: Limb/extremity amputation points; abrasion/crushing.	3c. Always wear cut-resistant gloves (Level II) when making connections, using hand tools, or when handling cutting tools. 3c. Inspect the equipment prior to use for potential amputation points. Keep hands away from being between connections, and the use of tools is preferable compared to fingers and hands. 3c. Inspect the drill head for worn surface or missing teeth; replace it if damaged or blunt. 3c. Ensure all jewelry is removed, loose clothing is secured, and PPE is secured close to the body. 3c. All non-essential personnel should remain outside the heavy equipment exclusion zone, which is at least as far as the boom is high (**minimum exclusion zone based on swing/tip radius**). 3c. Drillers and helpers will understand and use the “Show Me Your Hands” Policy. Operators and helpers will remain a **minimum of 3 feet** from augers/drill rods while in operation.
	3d. CONTACT/CRUSH: Crushed between equipment due to an imbalance during the advancement of the drill equipment.	3d. Drillers will advance the borehole with caution to avoid causing the rig to become imbalanced and/or tip. 3d. The blocking and leveling devices used to secure the rig will be inspected by drillers and Roux personnel regularly to see if shifting has occurred. 3d. In addition, personnel and equipment that are non-essential to the advancement of the borehole will be positioned away from the rig at a distance that is at least as far as the boom is high (**minimum exclusion zone based on swing/tip radius**).
	3e. EXPOSURE: Inhalation of contamination/vapors.	3e. Air monitoring using a calibrated photoionization detector (PID) will be used to monitor the breathing zone of the work area. 3e. If readings above the site-specific action levels, the Roux field personnel must temporarily cease work, instruct all Site personnel to step away from the area of elevated readings, and inform the Roux PM of the condition. The Roux PM will then recommend additional precautions in accordance with the site-specific health and safety plan.
	3f. FALL: Slip/trip/fall hazards.	3f. Contain drill cuttings and drilling water to prevent slip/trip/fall hazards from developing in the work area. 3f. See 1b.
	3g. EXERTION: Potential for muscle strain/injury while installing well casings and/or lifting sonic rods/casings.	3g. Keep back straight and bend at the knees. 3g. Utilize team lifting for objects over 40 lbs. 3g. Use a mechanical lifting device for odd-shaped objects.

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Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
4. Decontaminate equipment.	**4a. EXPOSURE:** Contamination (e.g., Separate Phase Hydrocarbons (SPH), contaminated groundwater, vapors, chemicals in cleaning supplies).	4a. Wear chemical-resistant gloves and safety glasses. 4a. Contain decontamination water so that it does not spill. 4a. Use an absorbent pad to clean spills, if necessary. 4a. See 3b.

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JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)
Generic	**Construction**	**Spotting Heavy Machinery**

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST	☐ GOGGLES	☐ Particulate Respirator	☒ GLOVES: Cut resistant Level II
☒ HARD HAT	☐ FACE SHIELD	☐ SUPPLIED RESPIRATOR	☐ OTHER:
☒ LONG SLEEVED SHIRT	☒ HEARING PROTECTION	☒ PPE CLOTHING: Fluorescent reflective clothing/safety vest	
☐ LIFELINE / BODY HARNESS	☒ SAFETY SHOES: Steel-/Composite-toe boots		
☒ SAFETY GLASSES			

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Heavy Machinery (i.e., excavator, payloader, truck, forklift, etc.), two-way radios.

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing LMRAs

EXCLUSION ZONE (EZ): Maintain a Minimum Heavy Equipment Exclusion Zone around equipment and loads while it is in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, tip zone of the equipment, fall zone of the equipment and contents, distance that debris may travel during demolition activities, and/or footprint of a structure to be demolished.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Prepare for machine activity.	**1a. CONTACT:** Obstructions in the work area may create contact hazards from machinery. **1b. Fall :** Slip/Trip/Fall	1a. Cordon off the work area with safety barrels/cones and a rigid barrier (snow fence, traffic bar, etc.). Ensure that only necessary personnel are in the work area. Spotter and equipment operator shall enforce the Exclusion Zone (**EZ**). The operator will not operate but shall remain in the hands-off mode while personnel are within the exclusion zone. 1b. Ensure that the work area is flat, level, and clear of any obstructions or debris before setting up the work zone.
2. Spotting.	**2a. CONTACT:** Machine or load contact with personnel, property, or machinery.	2a. Discuss the specifics of the work with the operator and be clear about any hand signals that will be used. Clearly discuss the limits of the assigned work area and the machine's **EZ**. Maintain **EZ**. The **EZ** shall be delineated by using traffic cones/barrels and a fixed rigid barrier. 2a. The Minimum Heavy Equipment **EZ** is greater than the swing/tip radius of the equipment. 2a. Both the spotter and equipment operators shall have verbal/ visual contact and/or 2-way radios/cellular devices on their persons to ensure audible communication in the event any changes or new hazards may arise. 2a. All workers should stay outside of the **EZ** of all equipment unless the operator is stopped and in "Hands Off" mode. **(This includes the spotter unless an exception has been established in the Site-specific JSA.)** If the **EZ** must be reduced due to work area restrictions, then the spotter and operator shall enforce the reduced **EZ**. 2a. Spotters must make eye contact with the machine operator, or all movement ceases until visual contact can be reestablished. 2a. Spotter shall keep an eye out for any issues with the machine that the operator may not see and communicate with other work crews and spotters on behalf of the operator. 2a. If the spotter needs to take a break, he must find a replacement before leaving or have the machine stop operations. **No heavy equipment shall operate without a spotter under any circumstances.** 2a. Wear fluorescent clothing/safety vest. 2a. **Do not multitask. Only perform Spotting**

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Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
	2b. FALL: Slip/Trip/Fall	2b. Look where you are walking to identify and avoid slip/trip/fall hazards. Avoid icy and/or wet surfaces. Remove obstacles if possible. 2b. Use designated walkways during spotting whenever possible. 2b. **Do not walk backwards. Always face the direction towards which you are walking.**
	2c. CAUGHT: Caught between machinery and nearby objects.	2c. **Maintain EZ.** Do not stand between large, loose, or fixed objects or structures and the machinery while it is in motion. Keep the operator in sight at all times while being aware of surrounding structures.
	2d. EXPOSURE: Inhalation of exhaust from machinery.	2d. The spotter will position him/herself upwind of the working machinery, when possible. Spotter will also inform others working within the vicinity of the EZ of proper positioning, if applicable.

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-029	DATE: 05/29/2025	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)
GENERIC	**Preclearing/Sampling**	**Hand Augering**

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS SAFETY GLASSES	☐ GOGGLES ☐ FACE SHIELD ☐ HEARING PROTECTION ☒ SAFETY SHOES: Steel or composite-toed boots	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☒ PPE CLOTHING: Long-sleeved high-visibility clothing	☒ GLOVES: Cut Resistant level II / Nitrile / Chemical resistant ☐ OTHER

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Hand Auger Tools (buckets, rods), 5-gallon buckets, hand tools (hammer, etc.)

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing LMRAs.

Assess [1] JOB STEPS	Analyze [2] POTENTIAL HAZARDS	Act [3] CRITICAL ACTIONS
1. Drive/walk to hand clearing/hand augering location	**1a. CONTACT:** Property damage and personal injury caused by obstructions/vehicles	1a. Maintain speed limit on-site. 1a. All equipment must be stowed and secured prior to moving. 1a. Drive on established roadways. 1a. Do not back up the vehicle without a spotter where visibility is limited; use pull-through spots or back into parking spots; use an audible signal (horn/back-up alarm) when backing up vehicles.
	1b. FALL: Personal injury from tripping/falling due to uneven terrain, weather conditions, and materials/equipment stored at portions of the Site	1b. Inspect walking path for uneven terrain, weather-related hazards (i.e., ice, puddles, snow, etc.), and obstructions prior to mobilizing equipment. 1b. Do not climb over stored materials/equipment; walk around. Use established pathways and walk on stable, secure ground. 1b. Use the established ramp when descending into/ascending from impoundment areas. 1b. Keep tools and equipment in a designated area. When not in use, tools and equipment must be returned to their proper storage location. Keep the work area clear of obstructions.
	1c. EXERTION: Muscle strain/exhaustion while carrying equipment (i.e., hand auger, post-hole digger, shovel, pry bar)	1c. When carrying equipment to/from the work area, use proper lifting techniques; keep back straight, lift with legs, keep the load close to the body, never reach with a load. Ensure that loads are balanced to reduce the potential for muscle strain. Use mechanical assistance or make multiple trips to carry equipment.
	1d. EXPOSURE: Exposure to the sun, possibly causing sunburn. Biological hazards - bees/wasps, poison oak, thorns, insects, etc.	1d. Wear sunscreen with an SPF of at least 15 whenever 30 minutes or more of exposure is expected. 1d. Inspect the area to avoid contact with biological hazards. 1d. Wear cut-resistant gloves when handling material, debris, branches, shrubs, etc. that may lie within the walking path. 1d. Avoid any areas on-site that have poison oak.
Assess [1] JOB STEPS	**Analyze [2] POTENTIAL HAZARDS**	**Act [3] CRITICAL ACTIONS**
2. Secure location	**2a. CONTACT:** Personnel and vehicular traffic may enter the work area.	2a. Delineate the work area with traffic cones and/or caution tape to prevent exposure to traffic and inform others of work activity. 2a. Wear a reflective vest and/or fluorescent clothing. 2a. Face the direction of vehicular traffic. Position the vehicle to protect the worker from traffic. 2a. Communicate work activity with adjacent work areas.
	2b. FALL: Tripping/falling due to uneven terrain, and materials /equipment stored within the work area	2b. Inspect walking path for uneven terrain, weather-related hazards (i.e., ice, puddles, snow, etc.), and obstructions prior to mobilizing equipment to the impoundments. 2b. Equipment and tools will be staged in a convenient, stable, and orderly manner. 2b. Equipment and tools will be stored at the lowest point of potential energy and out of the walkway and immediate work area (i.e., tools should not be propped against walls or nearby equipment or vehicles). 2b. Equipment and tools that are not anticipated to be used will be returned to an appropriate storage area that is out of the immediate work area.

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Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
3. Verify pre-clearance protocol; review completed Subsurface Utility Checklist and utility verification site walkthrough.	**3a. ENERGY SOURCE:** Underground utility damage; property damage; personal injury	3a. Confirm that "Call Before You Dig"/811 and local utility companies were contacted prior to hand augering. 3a. Walk the Site to evaluate utility markings and review maps.
4. Augering/advancing borehole	**4a. EXPOSURE:** Contaminated soil/water/vapor	4a. Monitor the breathing zone with a PID when VOCs are a concern. If vapors exceed site-specific action levels, upgrade PPE as per the HASP. 4a. Wear chemical-resistant disposable gloves and safety glasses when handling impacted materials. 4a. Place excavated soil on plastic sheeting and store soil waste in a designated area. 4a. Work on the upwind side of the boring.
	4b. EXERTION: Muscle strain from lifting, bending, repetitive motion.	4b. Body positioning and rotating with the auger to reduce strain. Do not twist back.
	4c. CAUGHT: Personal injury as a result of jewelry/loose clothing caught on equipment, well covers, machinery, hand auger, pry bar, etc.	4c. No form of jewelry should be worn while on-site. 4c. Clothing must be appropriately sized so that it is not loose-fitting.
	4d. CONTACT/CAUGHT: Pinch points, abrasions	4d. Keep head and upper body clear when lifting hand auger, pry bar/post-hole digger. Ensure not to be overly aggressive when using the pry bar. 4d. Ensure all jewelry is removed, loose clothing is secured, and PPE is secured close to the body.
5. Lithologic observation and soil sampling	**5a. EXPOSURE:** Contact with contamination (impacted soil and/or lab preservatives)	5a. Wear chemical-resistant disposable gloves to protect hands when handling samples; wear safety glasses when on site and/or goggles when handling any preservatives; use containment material or plastic sheeting to protect surrounding areas. 5a. When collecting a soil sample from a hand auger, put a large zip lock bag over the entire auger to prevent the spillage of soil onto the ground. 5a. Open sample jars slowly and fill them carefully to avoid contact with preservatives.
6. Decontaminate equipment	**6a. EXPOSURE:** Contact with contamination (impacted soil and/or lab preservatives, decontamination solution)	6a. Wear chemical-resistant disposable gloves and safety glasses. 6a. Use an absorbent pad to clean spills. 6a. Properly dispose of used materials/PPE trash bags. 6a. Refer to the SDS for the decontamination solution for proper handling.
	6b. CONTACT/CAUGHT: pinch points and cuts/abrasions	6b. Keep fingers/hands out of pinch points when disassembling the hand auger during decontamination.

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-032	DATE: 05/30/2025	☐ NEW ☒ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)
Generic	**Construction**	**Spotting Third-Party Traffic**

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☐ LIFE VEST	☐ GOGGLES	☐ Particulate Respirator	☒ GLOVES: Cut-resistant Level II
☒ HARD HAT	☐ FACE SHIELD	☐ SUPPLIED RESPIRATOR	☐ OTHER:
☐ LIFELINE / BODY HARNESS	☐ HEARING PROTECTION	☒ PPE CLOTHING: Fluorescent reflective clothing	
☒ SAFETY GLASSES	☒ SAFETY SHOES: Steel-/Composite-toe boots		

REQUIRED EQUIPMENT

Traffic cones/ barrels, Handheld stop/slow paddles (1 per spotter), two-way radios as needed

COMMITMENT TO SAFETY- All personnel onsite will actively participate in hazard recognition and mitigation throughout the day by verbalizing LMRAs

EXCLUSION ZONE (EZ): Maintain a Minimum Heavy Equipment Exclusion Zone around equipment, active operations (e.g., excavation, truck loading, etc.), and loads while it is in motion. The HEEZ must be greater than the swing zone of any moving part of the equipment, tip zone of the equipment, fall zone of the equipment and contents, distance that debris may travel during demolition activities, and/or footprint of a structure to be demolished. The HEEZ should not be compromised in any way by third-party traffic.

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
1. Prepare for heavy equipment operations and/or job activities that require traffic stoppage.	**1a. CONTACT:** Third-party traffic in and/or adjacent to the work area may create contact hazards with machinery and site personnel.	1a. Cordon off the work area with safety barrels/cones and a rigid barrier (snow fence, traffic bar, etc.). Ensure that only necessary personnel are in the work area. Spotter and equipment operator shall enforce the **EZ**. The operator will not operate but shall remain in hands-off mode while personnel are within the exclusion zone. • Spotters must agree on communication via voice and hand signals before the activity begins. • Spotters must be visible and maintain contact with other spotters. • If contact is lost with either spotter, work operations should stop until communication has been re-established. • Spotters should never have additional duties while they are spotting. 1a. Spotters must analyze traffic patterns adjacent to the site to assess which traffic direction will need to be redirected and what issues must be resolved before spotting traffic. 1a. The "Traffic Control Point" is a specific location where the spotter is positioned to direct traffic. 1a. **Spotters should select an appropriate Traffic Control Point where visibility, directions, and personal safety will be maximized.**
	1b. Fall : Slip/Trip/Fall	1b. Ensure that the Traffic Control Point is flat, level, and clear of any obstructions or debris before beginning spotting operations.

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[2] A hazard is a potential danger. Break hazards into six types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards; Energy Source – electricity, pressure, compression/tension.
[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

Assess [1]JOB STEPS	Analyze [2]POTENTIAL HAZARDS	Act [3]CRITICAL ACTIONS
2. Spotting third-party traffic during site operations.	**2a. CONTACT:** Machine or load contact with third-party traffic.	2a. Discuss the specifics of the work, limits of the assigned work area, and the machine's Exclusion Zone. Maintain the Exclusion Zone while spotting third-party traffic. 2a. **Spotters and equipment operators shall have visual/ verbal contact or 2-way radios/cellular devices on their persons** to ensure audible communication in the event any changes or new hazards may arise. 2a. Spotters must make eye contact with the machine operations and third-party traffic, or all movement ceases until visual contact can be reestablished. 2a. Spotter shall keep an eye out for any traffic issues the operator may not see and communicate with other work crews and spotters accordingly. 2a. If the spotter needs to take a break, he must find a replacement before leaving or stop operations. **Operations that may contact third-party traffic shall not be performed without a spotter under any circumstances.** 2a. Wear fluorescent clothing/safety vest. **Handheld stop/ slow paddles (1 per spotter) are required for spotting third-party traffic.** 2a. Establish traffic control by performing all signals/movements with precision and ensuring drivers obey signals. • Break traffic at natural gaps whenever possible to direct opposite sides of traffic • Maintain consistency in the time you allow each direction of traffic to travel. Prioritize major routes over secondary routes. • If breaks do not occur, allow traffic to accumulate on opposite sides of the road before directing it to move. • Allow right turns whenever they do not interfere with traffic and pedestrians. • Make sure opposite lanes are stopped before allowing left turns to be made. 2a. **Do not multitask. Only perform Spotting.**
	2b. FALL: Slip/Trip/Fall	2b. Look where you are walking to identify and avoid slip/trip/fall hazards. Avoid icy and/or wet surfaces. Remove obstacles if possible. 2b. Use designated walkways during spotting whenever possible. 2b. **Do not walk backwards. Always face the direction towards which you are walking.**
	2c. CAUGHT: Caught between machinery and nearby objects.	2c. **Maintain Exclusion Zone.** Do not stand between large, loose, or fixed objects or structures and the machinery while it is in motion. Keep in sight of the operator at all times while being aware of surrounding structures.
	2d. EXPOSURE: Inhalation of exhaust from machinery.	2d. The spotter will position themself upwind of the working machinery, when possible. Spotter will also inform others working within the vicinity of the EZ of proper positioning, if applicable.

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APPENDIX B

SDSs for Chemicals Used

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Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

1 Identification of the substance/mixture and of the supplier

1.1 Product identifier

Trade Name: Alconox
Synonyms:
Product number: Alconox

1.2 Application of the substance / the mixture : Cleaning material/Detergent

1.3 Details of the supplier of the Safety Data Sheet

Manufacturer
Alconox, Inc.
30 Glenn Street
White Plains, NY 10603
1-914-948-4040

Supplier
Not Applicable

Emergency telephone number:
ChemTel Inc
North America: 1-800-255-3924
International: 01-813-248-0585

2 Hazards identification

2.1 Classification of the substance or mixture:

In compliance with EC regulation No. 1272/2008, 29CFR1910/1200 and GHS Rev. 3 and amendments.

Hazard-determining components of labeling:
Tetrasodium Pyrophosphate
Sodium tripolyphosphate
Sodium Alkylbenzene Sulfonate

2.2 Label elements:

Skin irritation, category 2.
Eye irritation, category 2A.

Hazard pictograms:

Signal word: Warning

Hazard statements:
H315 Causes skin irritation.
H319 Causes serious eye irritation.

Precautionary statements:
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents and container as instructed in Section 13.

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according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 12.08.2015 **Revision** : 12.10.2015

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Additional information: None.

Hazard description

Hazards Not Otherwise Classified (HNOC): None

Information concerning particular hazards for humans and environment:

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

Classification system:

The classification is according to EC regulation No. 1272/2008, 29CFR1910/1200 and GHS Rev. 3 and amendments, and extended by company and literature data. The classification is in accordance with the latest editions of international substances lists, and is supplemented by information from technical literature and by information provided by the company.

3 Composition/information on ingredients

3.1 Chemical characterization : None

3.2 Description : None

3.3 Hazardous components (percentages by weight)

Identification	Chemical Name	Classification	Wt. %
CAS number: 7758-29-4	Sodium tripolyphosphate	Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	12-28
CAS number: 68081-81-2	Sodium Alkylbenzene Sulfonate	Acute Tox. 4; H303 Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	8-22
CAS number: 7722-88-5	Tetrasodium Pyrophosphate	Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	2-16

3.4 Additional Information : None.

4 First aid measures

4.1 Description of first aid measures

General information: None.

After inhalation:

Maintain an unobstructed airway.
Loosen clothing as necessary and position individual in a comfortable position.

After skin contact:

Wash affected area with soap and water.
Seek medical attention if symptoms develop or persist.

After eye contact:

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.
Remove contact lens(es) if able to do so during rinsing.
Seek medical attention if irritation persists or if concerned.

After swallowing:

Rinse mouth thoroughly.
Seek medical attention if irritation, discomfort, or vomiting persists.

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4.2 Most important symptoms and effects, both acute and delayed

None

4.3 Indication of any immediate medical attention and special treatment needed:

No additional information.

5 Firefighting measures

5.1 Extinguishing media

Suitable extinguishing agents:

Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition.

For safety reasons unsuitable extinguishing agents : None

5.2 Special hazards arising from the substance or mixture :

Thermal decomposition can lead to release of irritating gases and vapors.

5.3 Advice for firefighters

Protective equipment:

Wear protective eye wear, gloves and clothing.
Refer to Section 8.

5.4 Additional information :

Avoid inhaling gases, fumes, dust, mist, vapor and aerosols.
Avoid contact with skin, eyes and clothing.

6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures :

Ensure adequate ventilation.
Ensure air handling systems are operational.

6.2 Environmental precautions :

Should not be released into the environment.
Prevent from reaching drains, sewer or waterway.

6.3 Methods and material for containment and cleaning up :

Wear protective eye wear, gloves and clothing.

6.4 Reference to other sections : None

7 Handling and storage

7.1 Precautions for safe handling :

Avoid breathing mist or vapor.
Do not eat, drink, smoke or use personal products when handling chemical substances.

7.2 Conditions for safe storage, including any incompatibilities :

Store in a cool, well-ventilated area.

7.3 Specific end use(s):

No additional information.

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8 Exposure controls/personal protection

8.1 Control parameters :

7722-88-5, Tetrasodium Pyrophosphate, OSHA TWA 5 mg/m3.

8.2 Exposure controls

Appropriate engineering controls:

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling.

Respiratory protection:

Not needed under normal conditions.

Protection of skin:

Select glove material impermeable and resistant to the substance.

Eye protection:

Safety goggles or glasses, or appropriate eye protection.

General hygienic measures:

Wash hands before breaks and at the end of work.
Avoid contact with skin, eyes and clothing.

9 Physical and chemical properties

Appearance (physical state, color):	White and cream colored flakes - powder	**Explosion limit lower**: **Explosion limit upper**:	Not determined or not available. Not determined or not available.
Odor:	Not determined or not available.	**Vapor pressure at 20°C**:	Not determined or not available.
Odor threshold:	Not determined or not available.	**Vapor density**:	Not determined or not available.
pH-value:	9.5 (aqueous solution)	**Relative density**:	Not determined or not available.
Melting/Freezing point:	Not determined or not available.	**Solubilities**:	Not determined or not available.
Boiling point/Boiling range:	Not determined or not available.	**Partition coefficient (n-octanol/water)**:	Not determined or not available.
Flash point (closed cup):	Not determined or not available.	**Auto/Self-ignition temperature**:	Not determined or not available.
Evaporation rate:	Not determined or not available.	**Decomposition temperature**:	Not determined or not available.

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Flammability (solid, gaseous):	Not determined or not available.	**Viscosity**:	a. Kinematic: Not determined or not available. b. Dynamic: Not determined or not available.
Density at 20°C:	Not determined or not available.		

10 Stability and reactivity

10.1 Reactivity : None

10.2 Chemical stability : None

10.3 Possibility hazardous reactions : None

10.4 Conditions to avoid : None

10.5 Incompatible materials : None

10.6 Hazardous decomposition products : None

11 Toxicological information

11.1 Information on toxicological effects :

Acute Toxicity:

Oral:

: LD50 > 5000 mg/kg oral rat - Product .

Chronic Toxicity: No additional information.

Skin corrosion/irritation:

Sodium Alkylbenzene Sulfonate: Causes skin irritation. .

Serious eye damage/irritation:

Sodium Alkylbenzene Sulfonate: Causes serious eye irritation .

Tetrasodium Pyrophosphate: Rabbit - Risk of serious damage to eyes .

Respiratory or skin sensitization: No additional information.

Carcinogenicity: No additional information.

IARC (International Agency for Research on Cancer): None of the ingredients are listed.

NTP (National Toxicology Program): None of the ingredients are listed.

Germ cell mutagenicity: No additional information.

Reproductive toxicity: No additional information.

STOT-single and repeated exposure: No additional information.

Additional toxicological information: No additional information.

12 Ecological information

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Trade Name: Alconox

12.1 Toxicity:

Sodium Alkylbenzene Sulfonate: Fish, LC50 1.67 mg/l, 96 hours.
Sodium Alkylbenzene Sulfonate: Aquatic invertebrates, EC50 Daphnia 2.4 mg/l, 48 hours.
Sodium Alkylbenzene Sulfonate: Aquatic Plants, EC50 Algae 29 mg/l, 96 hours.
Tetrasodium Pyrophosphate: Fish, LC50 - other fish - 1,380 mg/l - 96 h.
Tetrasodium Pyrophosphate: Aquatic invertebrates, EC50 - Daphnia magna (Water flea) - 391 mg/l - 48 h.

12.2 Persistence and degradability: No additional information.

12.3 Bioaccumulative potential: No additional information.

12.4 Mobility in soil: No additional information.

General notes: No additional information.

12.5 Results of PBT and vPvB assessment:

PBT: No additional information.

vPvB: No additional information.

12.6 Other adverse effects: No additional information.

13 Disposal considerations

13.1 Waste treatment methods (consult local, regional and national authorities for proper disposal)

Relevant Information:

It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities. (US 40CFR262.11).

14 Transport information

14.1 UN Number: None
ADR, ADN, DOT, IMDG, IATA

14.2 UN Proper shipping name: None
ADR, ADN, DOT, IMDG, IATA

14.3 Transport hazard classes:
ADR, ADN, DOT, IMDG, IATA

Class: None
Label: None
LTD. QTY: None

US DOT
Limited Quantity Exception: None

Bulk:
RQ (if applicable): None
Proper shipping Name: None
Hazard Class: None
Packing Group: None
Marine Pollutant (if applicable): No additional information.

Non Bulk:
RQ (if applicable): None
Proper shipping Name: None
Hazard Class: None
Packing Group: None
Marine Pollutant (if applicable): No additional information.

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Trade Name: Alconox

	Comments: None	**Comments:** None
14.4	**Packing group:** ADR, ADN, DOT, IMDG, IATA	None
14.5	**Environmental hazards** :	None
14.6	**Special precautions for user:**	None
	Danger code (Kemler):	None
	EMS number:	None
	Segregation groups:	None
14.7	**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:**	Not applicable.
14.8	**Transport/Additional information:**	
	Transport category:	None
	Tunnel restriction code:	None
	UN "Model Regulation":	None

15 Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.

North American

SARA

Section 313 (specific toxic chemical listings): None of the ingredients are listed.
Section 302 (extremely hazardous substances): None of the ingredients are listed.

CERCLA (Comprehensive Environmental Response, Clean up and Liability Act) Reportable

Spill Quantity: None of the ingredients are listed.

TSCA (Toxic Substances Control Act):

Inventory: All ingredients are listed.
Rules and Orders: Not applicable.

Proposition 65 (California):

Chemicals known to cause cancer: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for males: None of the ingredients are listed.

Chemicals known to cause developmental toxicity: None of the ingredients are listed.

Canadian

Canadian Domestic Substances List (DSL):
All ingredients are listed.

EU

REACH Article 57 (SVHC): None of the ingredients are listed.

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Trade Name: Alconox

Germany MAK: Not classified.

Asia Pacific

Australia

Australian Inventory of Chemical Substances (AICS): All ingredients are listed.

China

Inventory of Existing Chemical Substances in China (IECSC): All ingredients are listed.

Japan

Inventory of Existing and New Chemical Substances (ENCS): All ingredients are listed.

Korea

Existing Chemicals List (ECL): All ingredients are listed.

New Zealand

New Zealand Inventory of Chemicals (NZOIC): All ingredients are listed.

Philippines

Philippine Inventory of Chemicals and Chemical Substances (PICCS): All ingredients are listed.

Taiwan

Taiwan Chemical Substance Inventory (TSCI): All ingredients are listed.

16 Other information

Abbreviations and Acronyms: None

Summary of Phrases

Hazard statements:

H315 Causes skin irritation.
H319 Causes serious eye irritation.

Precautionary statements:

P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents and container as instructed in Section 13.

Manufacturer Statement:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

NFPA: 1-0-0

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Effective date: 12.08.2015 **Revision** : 12.10.2015

Trade Name: Alconox

HMIS: 1-0-0

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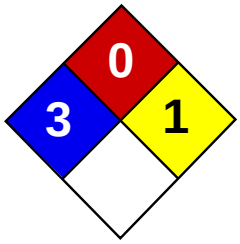

Material Safety Data Sheet
Hydrochloric acid MSDS

DRAFT

Section 1: Chemical Product and Company Identification

Product Name: Hydrochloric acid

Catalog Codes: SLH1462, SLH3154

CAS#: Mixture.

RTECS: MW4025000

TSCA: TSCA 8(b) inventory: Hydrochloric acid

CI#: Not applicable.

Synonym: Hydrochloric Acid; Muriatic Acid

Chemical Name: Not applicable.

Chemical Formula: Not applicable.

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Hydrogen chloride	7647-01-0	20-38
Water	7732-18-5	62-80

Toxicological Data on Ingredients: Hydrogen chloride: GAS (LC50): Acute: 4701 ppm 0.5 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant, corrosive), of ingestion, . Slightly hazardous in case of inhalation (lung sensitizer). Non-corrosive for lungs. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (sensitizer). CARCINOGENIC EFFECTS: Classified 3 (Not classifiable for human.) by IARC [Hydrochloric acid]. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, liver, mucous membranes, upper respiratory tract, skin, eyes, Circulatory System, teeth. Repeated or prolonged exposure to the substance can produce target

organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: of metals

Explosion Hazards in Presence of Various Substances: Non-explosive in presence of open flames and sparks, of shocks.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards:
Non combustible. Calcium carbide reacts with hydrogen chloride gas with incandescence. Uranium phosphide reacts with hydrochloric acid to release spontaneously flammable phosphine. Rubidium acetylene carbides burns with slightly warm hydrochloric acid. Lithium silicide in contact with hydrogen chloride becomes incandescent. When dilute hydrochloric acid is used, gas spontaneously flammable in air is evolved. Magnesium boride treated with concentrated hydrochloric acid produces spontaneously flammble gas. Cesium acetylene carbide burns hydrogen chloride gas. Cesium carbide ignites in contact with hydrochloric acid unless acid is dilute. Reacts with most metals to produce flammable Hydrodgen gas.

Special Remarks on Explosion Hazards:

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Hydrogen chloride in contact with the following can cause an explosion, ignition on contact, or other violent/vigorous reaction: Acetic anhydride AgClO + CCl4 Alcohols + hydrogen cyanide, Aluminum Aluminum-titanium alloys (with HCl vapor), 2-Amino ethanol, Ammonium hydroxide, Calcium carbide Ca3P2 Chlorine + dinitroanilines (evolves gas), Chlorosulfonic acid Cesium carbide Cesium acetylene carbide, 1,1-Difluoroethylene Ethylene diamine Ethylene imine, Fluorine, HClO4 Hexalithium disilicide H2SO4 Metal acetylides or carbides, Magnesium boride, Mercuric sulfate, Oleum, Potassium permanganate, beta-Propiolactone Propylene oxide Rubidium carbide, Rubidium, acetylene carbide Sodium (with aqueous HCl), Sodium hydroxide Sodium tetraselenium, Sulfonic acid, Tetraselenium tetranitride, U3P4 , Vinyl acetate. Silver perchlorate with carbon tetrachloride in the presence of hydrochloric acid produces trichloromethyl perchlorate which detonates at 40 deg. C.

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

Large Spill:
Corrosive liquid. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, organic materials, metals, alkalis, moisture. May corrode metallic surfaces. Store in a metallic or coated fiberboard drum using a strong polyethylene inner package.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
CEIL: 5 (ppm) from OSHA (PEL) [United States] CEIL: 7 (mg/m3) from OSHA (PEL) [United States] CEIL: 5 from NIOSH CEIL: 7 (mg/m3) from NIOSH TWA: 1 STEL: 5 (ppm) [United Kingdom (UK)] TWA: 2 STEL: 8 (mg/m3) [United Kingdom (UK)]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

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Odor: Pungent. Irritating (Strong.)

Taste: Not available.

Molecular Weight: Not applicable.

Color: Colorless to light yellow.

pH (1% soln/water): Acidic.

Boiling Point:
108.58 C @ 760 mm Hg (for 20.22% HCl in water) 83 C @ 760 mm Hg (for 31% HCl in water) 50.5 C (for 37% HCl in water)

Melting Point:
-62.25°C (-80°F) (20.69% HCl in water) -46.2 C (31.24% HCl in water) -25.4 C (39.17% HCl in water)

Critical Temperature: Not available.

Specific Gravity:
1.1- 1.19 (Water = 1) 1.10 (20%and 22% HCl solutions) 1.12 (24% HCl solution) 1.15 (29.57% HCl solution) 1.16 (32% HCl solution) 1.19 (37% and 38%HCl solutions)

Vapor Pressure: 16 kPa (@ 20°C) average

Vapor Density: 1.267 (Air = 1)

Volatility: Not available.

Odor Threshold: 0.25 to 10 ppm

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether.

Solubility: Soluble in cold water, hot water, diethyl ether.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, water

Incompatibility with various substances:
Highly reactive with metals. Reactive with oxidizing agents, organic materials, alkalis, water.

Corrosivity:
Extremely corrosive in presence of aluminum, of copper, of stainless steel(304), of stainless steel(316). Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Reacts with water especially when water is added to the product. Absorption of gaseous hydrogen chloride on mercuric sulfate becomes violent @ 125 deg. C. Sodium reacts very violently with gaseous hydrogen chloride. Calcium phosphide and hydrochloric acid undergo very energetic reaction. It reacts with oxidizers releasing chlorine gas. Incompatible with, alkali metals, carbides, borides, metal oxides, vinyl acetate, acetylides, sulphides, phosphides, cyanides, carbonates. Reacts with most metals to produce flammable Hydrogen gas. Reacts violently (moderate reaction with heat of evolution) with water especially when water is added to the product. Isolate hydrogen chloride from heat, direct sunlight, alkalies (reacts vigorously), organic materials, and oxidizers (especially nitric acid and chlorates), amines, metals, copper and alloys (e.g. brass), hydroxides, zinc (galvanized materials), lithium silicide (incandescence), sulfuric acid(increase in temperature and pressure) Hydrogen chloride gas is emitted when this product is in contact with sulfuric acid. Adsorption of Hydrochloric Acid onto silicon dioxide results in exothmeric reaction. Hydrogen chloride causes aldehydes and epoxides to violently polymerize. Hydrogen chloride or Hydrochloric Acid in contact with the folloiwng can cause explosion or ignition on contact or

Special Remarks on Corrosivity:

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Highly corrosive. Incompatible with copper and copper alloys. It attacks nearly all metals (mercury, gold, platinium, tantalum, silver, and certain alloys are exceptions). It is one of the most corrosive of the nonoxidizing acids in contact with copper alloys. No corrosivity data on zinc, steel. Severe Corrosive effect on brass and bronze

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
Acute oral toxicity (LD50): 900 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 1108 ppm, 1 hours [Mouse]. Acute toxicity of the vapor (LC50): 3124 ppm, 1 hours [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified 3 (Not classifiable for human.) by IARC [Hydrochloric acid]. May cause damage to the following organs: kidneys, liver, mucous membranes, upper respiratory tract, skin, eyes, Circulatory System, teeth.

Other Toxic Effects on Humans:
Very hazardous in case of skin contact (corrosive, irritant, permeator), of ingestion, . Hazardous in case of eye contact (corrosive), of inhalation (lung corrosive).

Special Remarks on Toxicity to Animals:
Lowest Published Lethal Doses (LDL/LCL) LDL [Man] -Route: Oral; 2857 ug/kg LCL [Human] - Route: Inhalation; Dose: 1300 ppm/30M LCL [Rabbit] - Route: Inhalation; Dose: 4413 ppm/30M

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects (fetoxicity). May affect genetic material.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Corrosive. Causes severe skin irritation and burns. Eyes: Corrosive. Causes severe eye irritation/conjuntivitis, burns, corneal necrosis. Inhalation: May be fatal if inhaled. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract. Inhalation of hydrochloric acid fumes produces nose, throat, and larryngeal burning, and irritation, pain and inflammation, coughing, sneezing, choking sensation, hoarseness, laryngeal spasms, upper respiratory tract edema, chest pains, as well has headache, and palpitations. Inhalation of high concentrations can result in corrosive burns, necrosis of bronchial epithelium, constriction of the larynx and bronchi, nasospetal perforation, glottal closure, occur, particularly if exposure is prolonged. May affect the liver. Ingestion: May be fatal if swallowed. Causes irritation and burning, ulceration, or perforation of the gastrointestinal tract and resultant peritonitis, gastric hemorrhage and infection. Can also cause nausea, vomitting (with "coffee ground" emesis), diarrhea, thirst, difficulty swallowing, salivation, chills, fever, uneasiness, shock, strictures and stenosis (esophogeal, gastric, pyloric). May affect behavior (excitement), the cardiovascular system (weak rapid pulse, tachycardia), respiration (shallow respiration), and urinary system (kidneys- renal failure, nephritis). Acute exposure via inhalation or ingestion can also cause erosion of tooth enamel. Chronic Potential Health Effects: dyspnea, bronchitis. Chemical pneumonitis and pulmonary edema can also

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

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Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Hydrochloric acid, solution UNNA: 1789 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Hydrochloric acid Illinois toxic substances disclosure to employee act: Hydrochloric acid Illinois chemical safety act: Hydrochloric acid New York release reporting list: Hydrochloric acid Rhode Island RTK hazardous substances: Hydrochloric acid Pennsylvania RTK: Hydrochloric acid Minnesota: Hydrochloric acid Massachusetts RTK: Hydrochloric acid Massachusetts spill list: Hydrochloric acid New Jersey: Hydrochloric acid New Jersey spill list: Hydrochloric acid Louisiana RTK reporting list: Hydrochloric acid Louisiana spill reporting: Hydrochloric acid California Director's List of Hazardous Substances: Hydrochloric acid TSCA 8(b) inventory: Hydrochloric acid TSCA 4(a) proposed test rules: Hydrochloric acid SARA 302/304/311/312 extremely hazardous substances: Hydrochloric acid SARA 313 toxic chemical notification and release reporting: Hydrochloric acid CERCLA: Hazardous substances.: Hydrochloric acid: 5000 lbs. (2268 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC):
R34- Causes burns. R37- Irritating to respiratory system. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 1

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 0

Reactivity: 1

Specific hazard:

Protective Equipment:
Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

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References:
-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -SAX, N.I. Dangerous Properties of Indutrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangeureuses au canada. Centre de conformité internatinal Ltée. 1986.

Other Special Considerations: Not available.

Created: 10/09/2005 05:45 PM

Last Updated: 05/21/2013 12:00 PM

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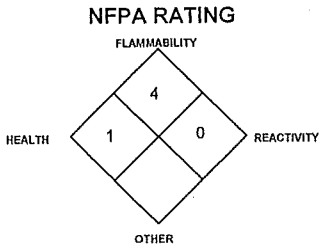
MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards



PART I *What is the material and what do I need to know in an emergency?*

1. PRODUCT IDENTIFICATION

CHEMICAL NAME; CLASS:	**ISOBUTYLENE - C_4H_8** Document Number: Isobutylene
PRODUCT USE:	For general analytical/synthetic chemical uses.
SUPPLIER/MANUFACTURER'S NAME: ADDRESS:	MESA Specialty Gases & Equipment 3619 Pendleton Avenue, Suite C Santa Ana, CA 92704
BUSINESS PHONE: EMERGENCY PHONE:	1-714-434-7102 INFOTRAC: 1-800-535-5053
DATE OF PREPARATION:	May 10, 1999

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2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	mole %	EXPOSURE LIMITS IN AIR					
			ACGIH		OSHA			
			TLV ppm	STEL ppm	PEL ppm	STEL ppm	IDLH ppm	OTHER
Isobutylene	115-11-7	> 99.0%	There are no specific exposure limits for Isobutylene. Isobutylene is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					
Maximum Impurities		< 1.0%	None of the trace impurities in this mixture contribute significantly to the hazards associated with the product. All hazard information pertinent to this product has been provided in this Material Safety Data Sheet, per the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) and State equivalent standards.					

NE = Not Established C = Ceiling Limit See Section 16 for Definitions of Terms Used

NOTE: All WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-1993 format.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: Isobutylene is a colorless, liquefied, flammable gas with an unpleasant odor similar to burning coal. The liquefied gas rapidly turns into a gas at standard atmospheric temperatures and pressures. Isobutylene is an asphyxiant and presents a significant health hazard by displacing the oxygen in the atmosphere. Rapid evaporation of liquid from the cylinder may cause frostbite. Both the liquid and gas pose a serious fire hazard when accidentally released. The gas is heavier than air and may travel to a source of ignition and flash back to a leak or open container. Flame or high temperature impinging on a localized area of a cylinder of Isobutylene can cause the cylinder to rupture without activating the cylinder's relief devices. Provide adequate fire protection during emergency response situations.

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: The most significant route of overexposure for this gas is by inhalation. The following paragraphs describe symptoms of exposure by route of exposure.

INHALATION: High concentrations of this gas can cause an oxygen-deficient environment. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. Under some circumstances of overexposure, death may occur. Isobutylene also has some degree of anesthetic action and can be mildly irritating to the mucous membranes. The effects associated with various levels of oxygen are as follows:

CONCENTRATION	SYMPTOMS OF EXPOSURE
12-16% Oxygen:	Breathing and pulse rate increased, muscular coordination slightly disturbed.
10-14% Oxygen:	Emotional upset, abnormal fatigue, disturbed respiration.
6-10% Oxygen:	Nausea and vomiting, collapse or loss of consciousness.
Below 6%:	Convulsive movements, possible respiratory collapse, and death.

OTHER POTENTIAL HEALTH EFFECTS: Contact with liquid or rapidly expanding gases (which are released under high pressure) may cause frostbite. Symptoms of frostbite include change in skin color to white or grayish-yellow. The pain after such contact can quickly subside.

HAZARDOUS MATERIAL INFORMATION SYSTEM

HEALTH	(BLUE)	1
FLAMMABILITY	(RED)	4
REACTIVITY	(YELLOW)	0
PROTECTIVE EQUIPMENT		B

EYES	RESPIRATORY	HANDS	BODY
	See Section 8		See Section 8

For routine industrial applications

See Section 16 for Definition of Ratings

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in **Lay Terms**. Overexposure to Isobutylene may cause the following health effects:

ACUTE: The most significant hazard associated with this gas is inhalation of oxygen-deficient atmospheres. Symptoms of oxygen deficiency include respiratory difficulty, headache, dizziness, and nausea. At high concentrations, unconsciousness or death may occur. Contact with liquefied gas or rapidly expanding gases may cause frostbite.

CHRONIC: There are currently no known adverse health effects associated with chronic exposure to Isobutylene.

TARGET ORGANS: Respiratory system.

PART II *What should I do if a hazardous situation occurs?*

4. FIRST-AID MEASURES

RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO ISOBUTYLENE WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus and Fire-Retardant Personal Protective equipment should be worn. Adequate fire protection must be provided during rescue situations.

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4. FIRST-AID MEASURES (Continued)

Remove victim(s) to fresh air as quickly as possible. Trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation, if necessary. Only trained personnel should administer supplemental oxygen.

In case of frostbite, place the frostbitten part in warm water. DO NOT USE HOT WATER. If warm water is not available, or is impractical to use, wrap the affected parts gently in blankets. Alternatively, if the fingers or hands are frostbitten, place the affected area in the armpit. Encourage victim to gently exercise the affected part while being warmed. Seek immediate medical attention.

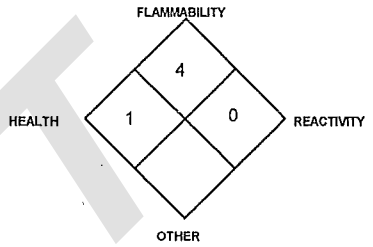
Victim(s) must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to physician or other health professional with victim(s).

5. FIRE-FIGHTING MEASURES

FLASH POINT (Closed Cup): -10°C (< 14°F)
AUTOIGNITION TEMPERATURE: 465°C (869°F)
FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): 1.8%
Upper (UEL): 9.6%

NFPA RATING



See Section 16 for Definition of Ratings

FIRE EXTINGUISHING MATERIALS: Extinguish Isobutylene fires by shutting off the source of the gas. Use water spray or a foam agent to cool fire-exposed containers, structures, and equipment.

UNUSUAL FIRE AND EXPLOSION HAZARDS: When involved in a fire, this material may ignite and produce toxic gases, including carbon monoxide and carbon dioxide.

DANGER! Fires impinging (direct flame) on the outside surface of unprotected pressure storage vessels of Isobutylene can be very dangerous. Direct flame exposure on the cylinder wall can cause an explosion either by BLEVE (Boiling Liquid Expanding Vapor Explosion), or by exothermic decomposition. This is a catastrophic failure of the vessel releasing the contents into a massive fireball and explosion. The resulting fire and explosion can result in severe equipment damage and personnel injury or death over a large area around the vessel. For massive fires in large areas, use unmanned hose holder or monitor nozzles; if this is not possible, withdraw from area and allow fire to burn.

Explosion Sensitivity to Mechanical Impact: Not sensitive.
Explosion Sensitivity to Static Discharge: Static discharge may cause Isobutylene to ignite explosively if released.

SPECIAL FIRE-FIGHTING PROCEDURES: Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. The best fire-fighting technique may be simply to let the burning gas escape from the pressurized cylinder, tank car, or pipeline. Stop the leak before extinguishing fire. If the fire is extinguished before the leak is sealed, the leaking gas could explosively re-ignite without warning and cause extensive damage, injury, or fatality. In this case, increase ventilation (in enclosed areas) to prevent flammable or explosive mixture formation. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Because of the potential for a BLEVE, evacuation of non-emergency personnel is essential. If water is not available for cooling or protection of vessel exposures, evacuate the area. Refer to the North American Emergency Response Guidebook for additional information. Other information for pre-planning can be found in the American Petroleum Institute Publications 2510 and 2510A.

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a release, clear the affected area, protect people, and respond with trained personnel. Adequate fire protection must be provided. Minimum Personal Protective Equipment should be **Level B: fire-retardant protective clothing, gloves resistant to tears, and Self-Contained Breathing Apparatus.**

Use only non-sparking tools and equipment. Locate and seal the source of the leaking gas. Protect personnel attempting the shut off with water spray. Allow the gas to dissipate. Monitor the surrounding area for combustible gas levels and oxygen. Combustible gas concentration must be below 10% of the LEL (LEL = 1.8%) prior to entry. The atmosphere must have at least 19.5 percent oxygen before personnel can be allowed in the area without Self-Contained Breathing Apparatus. Attempt to close the main source valve prior to entering the area. If this does not stop the release (or if it is not possible to reach the valve), allow the gas to release in place or remove it to a safe area and allow the gas to be released there.

THIS IS AN EXTREMELY FLAMMABLE GAS. Protection of all personnel and the area must be maintained.

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PART III *How can I prevent hazardous situations from occurring?*

7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting Isobutylene IN YOU. Do not eat or drink while handling chemicals. Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of Isobutylene could occur without any significant warning symptoms.

STORAGE AND HANDLING PRACTICES: Cylinders should be stored in dry, well-ventilated areas away from sources of heat. Compressed gases can present significant safety hazards. Store containers away from heavily trafficked areas and emergency exits. Post "No Smoking or Open Flames" signs in storage or use areas.

SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS: Protect cylinders against physical damage. Store in cool, dry, well-ventilated area, away from sources of heat, ignition and direct sunlight. Do not allow area where cylinders are stored to exceed 52°C (125°F). Isolate from oxidizers such as oxygen, chlorine, or fluorine. Use a check valve or trap in the discharge line to prevent hazardous backflow. Post "No Smoking or Open Flame" signs in storage and use areas. Cylinders should be stored upright and be firmly secured to prevent falling or being knocked over. Cylinders can be stored in the open, but in such cases, should be protected against extremes of weather and from the dampness of the ground to prevent rusting. Never tamper with pressure relief devices in valves and cylinders. Electrical equipment should be non-sparking or explosion proof. The following rules are applicable to situations in which cylinders are being used:

Before Use: Move cylinders with a suitable hand truck. Do not drag, slide, or roll cylinders. Do not drop cylinders or permit them to strike each other. Secure cylinders firmly. Leave the valve protection cap, if provided, in place until cylinder is ready for use.

During Use: Use designated CGA fittings and other support equipment. Do not use adapters. Do not heat cylinder by any means to increase the discharge rate of the product from the cylinder. Use check valve or trap in discharge line to prevent hazardous backflow into the cylinder. Do not use oils or grease on gas-handling fittings or equipment.

After Use: Close main cylinder valve. Replace valve protection cap, if provided. Mark empty cylinders "EMPTY".

NOTE: Use only DOT or ASME code containers. Earth-ground and bond all lines and equipment associated with Isobutylene. Close valve after each use and when empty. Cylinders must not be recharged except by or with the consent of owner. For additional information refer to the Compressed Gas Association Pamphlet P-1, *Safe Handling of Compressed Gases in Containers*. Additionally, refer to CGA Bulletin SB-2 "*Oxygen Deficient Atmospheres*".

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely. Purge gas handling equipment with inert gas (e.g., nitrogen) before attempting repairs.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation. Local exhaust ventilation is preferred, because it prevents Isobutylene dispersion into the work place by eliminating it at its source. If appropriate, install automatic monitoring equipment to detect the presence of potentially explosive air-gas mixtures and level of oxygen.

RESPIRATORY PROTECTION: Maintain oxygen levels above 19.5% in the workplace. Maintain level of gas below the level listed in Section 2 (Composition and Information on Ingredients). Use supplied air respiratory protection if oxygen levels are below 19.5% or during emergency response to a release of Isobutylene. If respiratory protection is required, follow the requirements of the Federal OSHA Respiratory Protection Standard (29 CFR 1910.134) or equivalent State standards.

EYE PROTECTION: Splash goggles or safety glasses, for protection from rapidly expanding gases and splashes of liquid Isobutylene.

HAND PROTECTION: Wear gloves resistant to tears when handling cylinders of Isobutylene. Use low-temperature protective gloves (e.g., Kevlar) when working with containers of liquid Isobutylene.

BODY PROTECTION: Use body protection appropriate for task. Transfer of large quantities under pressure may require protective equipment appropriate to protect employees from splashes of liquefied product, as well as fire retardant items.

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9. PHYSICAL and CHEMICAL PROPERTIES

VAPOR DENSITY @ 21.1°C (70°F): 2.396 kg/m^3 (0.1496 lb/ft^3)
SPECIFIC GRAVITY (air = 1): 1.997
SOLUBILITY IN WATER: Insoluble.
EVAPORATION RATE (nBuAc = 1): Not applicable.
ODOR THRESHOLD: Not established.
COEFFICIENT WATER/OIL DISTRIBUTION: Not applicable.
pH: Not applicable.
FREEZING POINT: -140°C (-220.6°F)
BOILING POINT @ 1 atm: -6.9°C (19.6°F)
EXPANSION RATIO: Not applicable
VAPOR PRESSURE (psia): 39
SPECIFIC VOLUME (ft^3/lb): 6.7

APPEARANCE AND COLOR: Colorless gas with the unpleasant odor of burning coal. The liquid is also colorless and has the same unpleasant odor of burning coal.

HOW TO DETECT THIS SUBSTANCE (warning properties): There are no distinct warning properties. In terms of leak detection, fittings and joints can be painted with a soap solution to detect leaks, which will be indicated by a bubble formation.

10. STABILITY and REACTIVITY

STABILITY: Stable.

DECOMPOSITION PRODUCTS: When ignited in the presence of oxygen, this gas will burn to produce carbon monoxide and carbon dioxide.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong oxidizers (e.g., chlorine, bromine pentafluoride, oxygen, oxygen difluoride, and nitrogen trifluoride).

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Contact with incompatible materials and exposure to heat, sparks, and other sources of ignition. Cylinders exposed to high temperatures or direct flame can rupture or burst.

PART IV *Is there any other useful information about this material?*

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The following information is for pure Isobutylene.

ISOBUTYLENE:
LC_{50} (rat, inhalation) = 620 g/m^3/4 hours
LC_{50} (mouse, inhalation) = 415 g/m^3/2 hours

SUSPECTED CANCER AGENT: Isobutylene is not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, CAL/OSHA, and therefore is neither considered to be nor suspected to be a cancer-causing agent by these agencies.

IRRITANCY OF PRODUCT: Isobutylene may be mildly irritating to the mucous membranes. In addition, contact with rapidly expanding gases can cause frostbite to exposed tissue.

SENSITIZATION TO THE PRODUCT: Isobutylene is not known to cause sensitization in humans.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of Isobutylene on the human reproductive system.

Mutagenicity: No mutagenic effects have been described for Isobutylene.
Embryotoxicity: No embryotoxic effects have been described for Isobutylene.
Teratogenicity: No teratogenic effects have been described for Isobutylene.
Reproductive Toxicity: No reproductive toxicity effects have been described for Isobutylene.

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e., within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Acute or chronic respiratory conditions may be aggravated by overexposure to Isobutylene.

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11. TOXICOLOGICAL INFORMATION (Continued)

RECOMMENDATIONS TO PHYSICIANS: Administer oxygen, if necessary. Treat symptoms and eliminate exposure.

BIOLOGICAL EXPOSURE INDICES (BEIs): Currently, Biological Exposure Indices (BEIs) are not applicable for Isobutylene.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL STABILITY: This gas will be dissipated rapidly in well-ventilated areas.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: Any adverse effect on animals would be related to oxygen-deficient environments. No adverse effect is anticipated to occur to plant life, except for frost produced in the presence of rapidly expanding gases. See Section 11, Toxicological Information, for additional information on effects on animals.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No evidence is currently available on the effects of Isobutylene on aquatic life.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. Return cylinders with any residual product to MESA Specialty Gases & Equipment Do not dispose of locally.

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

For Isobutylene Gas:

PROPER SHIPPING NAME:	Isobutylene
HAZARD CLASS NUMBER and DESCRIPTION:	2.1 (Flammable Gas)
UN IDENTIFICATION NUMBER:	UN 1055
PACKING GROUP:	Not Applicable
DOT LABEL(S) REQUIRED:	Flammable Gas

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (1996): 115

Alternate Description:

PROPER SHIPPING NAME:	Petroleum gases, liquefied
HAZARD CLASS NUMBER and DESCRIPTION:	2.1 (Flammable Gas)
UN IDENTIFICATION NUMBER:	UN 1075
PACKING GROUP:	Not Applicable
DOT LABEL(S) REQUIRED:	Flammable Gas

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (1996): 115

MARINE POLLUTANT: Isobutylene is not classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B).

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: THIS MATERIAL IS CONSIDERED AS DANGEROUS GOODS. Use the above information for the preparation of Canadian Shipments.

15. REGULATORY INFORMATION

U.S. SARA REPORTING REQUIREMENTS: Isobutylene is not subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

U.S. SARA THRESHOLD PLANNING QUANTITY: Not applicable.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

CANADIAN DSL/NDSL INVENTORY STATUS: Isobutylene is on the DSL Inventory.

U.S. TSCA INVENTORY STATUS: Isobutylene is listed on the TSCA Inventory.

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15. REGULATORY INFORMATION (Continued)

OTHER U.S. FEDERAL REGULATIONS: Isobutylene is subject to the reporting requirements of Section 112(r) of the Clean Air Act. The Threshold Quantity for this gas is 10,000 lb. Depending on specific operations involving the use of Isobutylene, the regulations of the Process Safety Management of Highly Hazardous Chemicals may be applicable (29 CFR 1910.119). Under this regulation Isobutylene is not listed in Appendix A; however, any process that involves a flammable gas on-site, in one location, in quantities of 10,000 lb (4,553 kg) or greater is covered under this regulation unless it is used as a fuel.

U.S. STATE REGULATORY INFORMATION: Isobutylene is covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: Liquefied Petroleum Gas.
California - Permissible Exposure Limits for Chemical Contaminants: Liquefied Petroleum Gas.
Florida - Substance List: Isobutylene.
Illinois - Toxic Substance List: No.
Kansas - Section 302/313 List: No.
Massachusetts - Substance List: Isobutylene.
Michigan - Critical Materials Register: No.
Minnesota - List of Hazardous Substances: Liquefied Petroleum Gas.
Missouri - Employer Information/Toxic Substance List: No.
New Jersey - Right to Know Hazardous Substance List: Isobutylene.
North Dakota - List of Hazardous Chemicals, Reportable Quantities: No.
Pennsylvania - Hazardous Substance List: Isobutylene.
Rhode Island - Hazardous Substance List: Liquefied Petroleum Gas.
Texas - Hazardous Substance List: Liquefied Petroleum Gas.
West Virginia - Hazardous Substance List: Liquefied Petroleum Gas.
Wisconsin - Toxic and Hazardous Substances: Liquefied Petroleum Gas.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): Isobutylene is not on the California Proposition 65 lists.

LABELING:

DANGER:

FLAMMABLE LIQUID AND GAS UNDER PRESSURE.
CAN FORM EXPLOSIVE MIXTURES WITH AIR.
MAY CAUSE FROSTBITE.

Keep away from heat, flames, and sparks.
Store and use with adequate ventilation.
Cylinder temperature should not exceed 52°C (125°F).
Do not get liquid in eyes, on skin, or clothing.
Close valve after each use and when empty.
Use in accordance with the Material Safety Data Sheet.

FIRST AID:

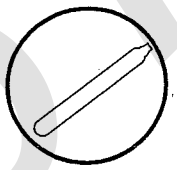
IF INHALED, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

IN CASE OF FROSTBITE, obtain immediate medical attention.

DO NOT REMOVE THIS PRODUCT LABEL.

CANADIAN WHMIS SYMBOLS:

Class A: Compressed Gas
Class B1: Flammable Gas



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16. OTHER INFORMATION

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. MESA Specialty Gases & Equipment assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, MESA Specialty Gases & Equipment assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following:

CAS #: This is the Chemical Abstract Service Number which uniquely identifies each constituent. It is used for computer-related searching.

EXPOSURE LIMITS IN AIR:
ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. **TLV** - Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average **(TWA)**, the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level **(C)**. Skin absorption effects must also be considered.
OSHA - U.S. Occupational Safety and Health Administration. **PEL** - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order.
IDLH - Immediately Dangerous to Life and Health - This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. **The DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration **(OSHA)**. NIOSH issues exposure guidelines called Recommended Exposure Levels **(RELs)**. When no exposure guidelines are established, an entry of **NE** is made for reference.

HAZARD RATINGS:
HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: Health Hazard: **0** (minimal acute or chronic exposure hazard); **1** (slight acute or chronic exposure hazard); **2** (moderate acute or significant chronic exposure hazard); **3** (severe acute exposure hazard; onetime overexposure can result in permanent injury and may be fatal); **4** (extreme acute exposure hazard; onetime overexposure can be fatal). Flammability Hazard: **0** (minimal hazard); **1** (materials that require substantial pre-heating before burning); **2** (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]); **3** (Class IB and IC flammable liquids with flash points below 38°C [100°F]); **4** (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F]. Reactivity Hazard: **0** (normally stable); 1 (material that can become unstable at elevated temperatures or which can react slightly with water); **2** (materials that are unstable but do not detonate or which can react violently with water); **3** (materials that can detonate when initiated or which can react explosively with water); **4** (materials that can detonate at normal temperatures or pressures).
NATIONAL FIRE PROTECTION ASSOCIATION: Health Hazard: **0** (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); **1** (materials that on exposure under fire conditions could cause irritation or minor residual injury); **2** (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); **3** (materials that can on short exposure could cause serious temporary or residual injury); **4** (materials that under very short exposure causes death or major residual injury).

NATIONAL FIRE PROTECTION ASSOCIATION (Continued): Flammability Hazard and Reactivity Hazard: Refer to definitions for "Hazardous Materials Identification System".

FLAMMABILITY LIMITS IN AIR:
Much of the information related to fire and explosion is derived from the National Fire Protection Association **(NFPA)**. Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:
Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD_{50}** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC_{50}** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m^3** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV. Ecological Information: EC is the effect concentration in water.

REGULATORY INFORMATION:
This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Superfund Amendments and Reauthorization Act **(SARA)**; the Canadian Domestic/Non-Domestic Substances List **(DSL/NDSL)**; the U.S. Toxic Substance Control Act **(TSCA)**; Marine Pollutant status according to the **DOT**; the Comprehensive Environmental Response, Compensation, and Liability Act **(CERCLA or Superfund)**; and various state regulations.

Manufactured for

INDUSTRIAL SCIENTIFIC

CORPORATION

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Oakdale, PA 15071-1500

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MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

1. PRODUCT IDENTIFICATION

CHEMICAL NAME; CLASS: NON-FLAMMABLE GAS MIXTURE

Containing One or More of the Following Components in a Nitrogen Balance Gas: Oxygen, 0.0015-23.5%; Propane, 0-1.1%; n-Pentane, 0-0.75%; n-Hexane; 0-0.48%; Carbon Monoxide, 0.0005-1.0%; Hydrogen Sulfide, 0.001-0.025%

NOTE: MIXTURES COMPRISED OF AN AIR BALANCE GAS CONTAIN BETWEEN 19.5-23.5% OXYGEN.

SYNONYMS: Not Applicable

CHEMICAL FAMILY NAME: Not Applicable

FORMULA: Not Applicable

Document Number: 50016 (Replaces ISC MSDS No.1810-2187, 1810-2343, 1810-3366, 1810-3937 1810-7219, 1810-7599, 1810-6179)

Note: The Material Safety Data Sheet is for this gas mixture supplied in cylinders with 33 cubic feet (935 liters) or less gas capacity (DOT - 39 cylinders). This MSDS has been developed for various gas mixtures with the composition of components within the ranges listed in Section 2 (Composition and Information on Ingredients). Refer to the product label for information on the actual composition of the product.

PRODUCT USE:	Calibration of Monitoring and Research Equipment
SUPPLIER/MANUFACTURER'S NAME:	CALGAZ
ADDRESS:	821 Chesapeake Drive Cambridge, MD 21613
EMERGENCY PHONE:	CHEMTREC: 1-800-424-9300
BUSINESS PHONE:	1-410-228-6400
General MSDS Information	1-713/868-0440
Fax on Demand:	1-800/231-1366

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	mole %	EXPOSURE LIMITS IN AIR					
			ACGIHTLV		OSHA		IDLH	OTHER
			TWA ppm	STEL ppm	TWA ppm	STEL ppm	ppm	ppm
Oxygen	7782-44-7	0.0015 - 23.5%	There are no specific exposure limits for Oxygen. Oxygen levels should be maintained above 19.5%.					
Propane	74-98-6	0 - 1.1%	2500	NE	1000	NE	2100	NIOSH REL: 1000 DFG MAK: 1000 ppm
n-Pentane	109-66-0	0 - 0.75%	600	750	1000 600 (Vacated 1989 PEL)	750 (Vacated 1989 PEL)	1500	NIOSH REL: TWA = 120 STEL = 610 (ceiling) 15 minutes DFG MAKs: TWA =1000 PEAK = 2•MAK, 60 min., momentary value
n-Hexane	110-54-3	0 - 0.48%	50	NE	500 50 (Vacated 1989 PEL)	NE	1100	NIOSH REL: 50 DFG MAK: 50
Hydrogen Sulfide	7783-06-4	0.001-0.025 %	10 NIC = 5	15 NIC = 5	10 (Vacated 1989 PEL)	20 (ceiling), 50 (10 min. peak, once per shift) 15 (Vacated 1989 PEL)	100	NIOSH REL: STEL = 10 (ceiling), 10 minutes DFG MAKs: TWA = 10 PEAK = 2•MAK, 10 min., momentary value
Carbon Monoxide	630-08-0	0.0005 - 1.0%	25	NE	50 35 (Vacated 1989 PEL)	200 (ceiling) (Vacated 1989 PEL)	1200	NIOSH RELs: TWA = 35 STEL = 200 ceiling DFG MAKs: TWA = 30 PEAK = 2•MAK, 15 min., average value, 1 hr interval DFG MAK Pregnancy Risk Classification: B
Nitrogen	7727-37-9	Balance	There are no specific exposure limits for Nitrogen. Nitrogen is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					

NE = Not Established. NIC = Notice of Intended Change See Section 16 for Definitions of Terms Used.

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1998 format. This gas mixture has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

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3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This gas mixture is a colorless gas which has a rotten-egg odor (due to the presence of Hydrogen Sulfide). The odor cannot be relied on as an adequate warning of the presence of this gas mixture, because olfactory fatigue occurs after over-exposure to Hydrogen Sulfide. Hydrogen Sulfide and Carbon Monoxide (another component of this gas mixture) are toxic to humans in relatively low concentrations. Over-exposure to this gas mixture can cause skin or eye irritation, nausea, dizziness, headaches, collapse, unconsciousness, coma, and death. The Propane, n-Pentane, and n-Hexane components can cause anesthetic or peripheral neuropathy effects. Additionally, releases of this gas mixture may produce oxygen-deficient atmospheres (especially in small confined spaces or other poorly-ventilated environments); individuals in such atmospheres may be asphyxiated.

SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: The most significant route of over-exposure for this gas mixture is by inhalation.

INHALATION: Due to the small size of an individual cylinder of this gas mixture, no unusual health effects from over-exposure to the product are anticipated under routine circumstances of use. A significant health hazard associated with this gas mixture is the potential of inhalation of Hydrogen Sulfide, a component of this gas mixture. Such over-exposures may occur if this gas mixture is used in a confined space or other poorly-ventilated area. Over-exposures to Hydrogen Sulfide can cause dizziness, headache, and nausea. Exposure to this component can result in respiratory arrest, coma, or unconsciousness. Continuous inhalation of low concentrations of Hydrogen Sulfide may cause olfactory fatigue, so that the odor is no longer an effective warning of the presence of this gas. A summary of exposure concentrations and observed effects are as follows

CONCENTRATION OF HYDROGEN SULFIDE	OBSERVED EFFECT
0.3-30 ppm	Odor is obvious and unpleasant.
50 ppm	Eye irritation. Dryness and irritation of nose, throat.
Slightly higher than 50 ppm	Irritation of the respiratory system.
100-150 ppm	Temporary loss of smell.
200-250 ppm	Headache, vomiting nausea. Prolonged exposure may lead to lung damage. Exposures of 4-8 hours can be fatal.
300-500	Swifter onset of symptoms. Death occurs in 1-4 hours.
500 ppm	Headache, excitement, staggering, and stomach ache after brief exposure. Death occurs within 0.5 - 1 hour of exposure.
> 600 ppm	Rapid onset of unconsciousness, coma, death.
> 1000 ppm	Immediate respiratory arrest.
NOTE:	This gas mixture contains a maximum of 250 ppm Hydrogen Sulfide. The higher concentration values here are presented to delineate the complete health effects which have been observed for humans after exposure to Hydrogen Sulfide.

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

HEALTH HAZARD	(BLUE)	3
FLAMMABILITY HAZARD	(RED)	0
PHYSICAL HAZARD	(YELLOW)	0

PROTECTIVE EQUIPMENT

EYES	RESPIRATORY	HANDS	BODY
See Section 8			

For Routine Industrial Use and Handling Applications

Inhalation over-exposures to atmospheres containing more than the Threshold Limit Value of Carbon Monoxide (25 ppm), another component of this gas mixture, can result in serious health consequences. Carbon Monoxide is classified as a chemical asphyxiant, producing a toxic action by combining with the hemoglobin of the blood and replacing the available oxygen. Through this replacement, the body is deprived of the required oxygen, and asphyxiation occurs.

Since the affinity of Carbon Monoxide for hemoglobin is about 200-300 times that of oxygen, only a small amount of Carbon Monoxide will cause a toxic reaction to occur. Carbon Monoxide exposures in excess of 50 ppm will produce symptoms of poisoning if breathed for a sufficiently long time. If this gas mixture is released in a small, poorly ventilated area (i.e. an enclosed or confined space), symptoms which may develop include the following:

CONCENTRATION OF CARBON MONOXIDE	OBSERVED EFFECT
All exposure levels: ..	Over-exposure to Carbon Monoxide can be indicated by the lips and fingernails turning bright red.
200 ppm:	Slight symptoms (i.e. headache) after several hours of exposure.
400 ppm:	Headache and discomfort experienced within 2-3 hours of exposure.
1,000 -2000 ppm:	Within 30 minutes, slight palpitations of the heart occurs. Within 1.5 hours, there is a tendency to stagger.
200-2500 ppm:	Within 2 hours, there is mental confusion, headaches, and nausea. Unconsciousness within 30 minutes.
> 2500 ppm:	Potential for collapse and death before warning symptoms.

Another hazard associated with this gas mixture is the potential for anesthetic and peripheral neuropathy effects after inhalation over-exposures to the Propane, n-Pentane and n-Hexane components of this gas mixture. Specific human over-exposure data are available for n-Pentane and n-Hexane, as follows:

CONCENTRATION OF n-PENTANE	OBSERVED EFFECT
Brief (10 minute) up to 5,000 ppm:	No symptoms.
Higher than 5,000 ppm:	Exhilaration, dizziness and headache can occur.
Long term:	Can cause chronic neurological disorder causing damage to the nerves in the hands and feet (peripheral neuropathy)

CONCENTRATION OF n-HEXANE	OBSERVED EFFECT
Brief (10 minute) at 1,500 ppm:	Irritation of the respiratory tract, nausea and headache.
5000 ppm:	Dizziness and drowsiness can occur.
Long term at 500 ppm:	Can affect the nerves in the arms and legs. Effects include numbing or tingling sensations in the fingers and toes, tiredness, muscle weakness, cramps and spasms in the leg, difficulty in holding objects or walking, abdominal pains, loss of appetite, weight loss. More serious exposures can cause damage to the nerves in the hands and feet (peripheral neuropathy).
Eyes and Vision:	Abnormal color perception and pigment changes in the eyes have been reported among industrial workers exposed to 423-1280 ppm for 5 years or more.
Blood Cells:	Mild forms of anemia have also been associated with exposure to hexane. These are of temporary nature.

Additionally, if mixtures of this gas mixture contain less than 19.5% Oxygen and are released in a small, poorly ventilated area (i.e. an enclosed or confined space), an oxygen-deficient environment may occur. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. Under some circumstances of over-exposure, death may occur. The following effects associated with various levels of oxygen are as follows:

CONCENTRATION OF OXYGEN	OBSERVED EFFECT
12-16% Oxygen:	Breathing and pulse rate increased, muscular coordination slightly disturbed.
10-14% Oxygen:	Emotional upset, abnormal fatigue, disturbed respiration.
6-10% Oxygen:	Nausea, vomiting, collapse, or loss of consciousness.
Below 6%:	Convulsive movements, possible respiratory collapse, and death.

SKIN and EYE CONTACT: The Hydrogen Sulfide component of this gas mixture may be irritating to the skin. Inflammation and irritation of the eyes can occur at very low airborne concentration of Hydrogen Sulfide (less than 10 ppm). Exposure over several hours may result in “gas eyes” or “sore eyes” with symptoms of scratchiness, irritation, tearing and burning. Above 50 ppm of Hydrogen Sulfide, there is an intense tearing, blurring of vision, and pain when looking at light. Over-exposed individuals may see rings around bright lights. Most symptoms disappear when exposure ceases. However, in serious cases, the eye can be permanently damaged.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms. Over-exposure to this gas mixture may cause the following health effects:

ACUTE: Due to the small size of the individual cylinder of this gas mixture, no unusual health effects from exposure to the product are anticipated under routine circumstances of use. However, the Hydrogen Sulfide and Carbon Monoxide components of this gas mixture are toxic to humans. Over-exposure to this gas mixture can cause nausea, dizziness, headaches, collapse, unconsciousness, coma, and death. Due to the presence of Hydrogen Sulfide, over-exposures to this gas mixture can also irritate the skin and eyes; severe eye contamination can result in blindness.

Inhalation over-exposures to Propane, n-Pentane, and n-Hexane can cause anesthetic effects and motor neuropathy (i.e. pain and tingling in feet and hands).

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3. HAZARD IDENTIFICATION (Continued)

CHRONIC: Abnormal color perception and pigment changes in the eyes have been reported among persons exposed to 420 -1300 ppm of n-Hexane for five years. Additionally, long-term exposure to low levels of n-Hexane or n-Pentane can affect the nerves in the arms and legs. Effects include numbing or tingling sensation, tiredness, cramps, spasms in legs, difficulty holding objects or walking, loss of appetite and weight loss. Pentane isomers, such as n-Pentane, and Propane can cause sensitization of the heart to epinephrine. Refer to Section 11 (Toxicology Information) for additional information on the components of this gas mixture.

TARGET ORGANS: ACUTE: Respiratory system, blood system, central nervous system, cardiovascular system. CHRONIC: Reproductive system, cardiovascular system.

4. FIRST-AID MEASURES

RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO THIS GAS MIXTURE WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus must be worn.

No unusual health effects are anticipated after exposure to this gas mixture, due to the small cylinder size. If any adverse symptom develops after over-exposure to this gas mixture, remove victim(s) to fresh air as quickly as possible. Only trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation if necessary.

Victim(s) who experience any adverse effect after over-exposure to this gas mixture must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take a copy of the label and the MSDS to physician or other health professional with victim(s).

SKIN EXPOSURE: If irritation of the skin develops after exposure to this gas mixture, immediately begin decontamination with running water. Minimum flushing is for 15 minutes. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim must seek immediate medical attention.

EYE EXPOSURE: If irritation of the eye develops after exposure to this gas mixture, open victim's eyes while under gentle running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Seek medical assistance immediately, preferably an ophthalmologist.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing respiratory conditions may be aggravated by over-exposure to this gas mixture. Carbon Monoxide, a component of this gas mixture, can aggravate some diseases of the cardiovascular system, such as coronary artery disease and angina pectoris. Because of the presence of Hydrogen Sulfide, n-Hexane or n-Pentane in this gas mixture, central nervous system conditions, eye disorders, or skin problems may be aggravated by over-exposure to this gas mixture.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate over-exposure. Hyperbaric oxygen is the most efficient antidote to Carbon Monoxide poisoning, the optimum range being 2-2.5 atm. A special mask, or, preferably, a compression chamber to utilize oxygen at these pressures is required. Avoid administering stimulant drugs. Be observant for initial signs of pulmonary edema in the event of severe inhalation over-exposures.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not applicable.

Upper (UEL): Not applicable.

FIRE EXTINGUISHING MATERIALS: Non-flammable gas mixture. Use extinguishing media appropriate for surrounding fire.

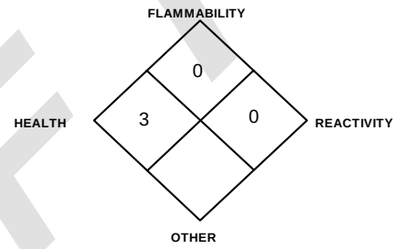
UNUSUAL FIRE AND EXPLOSION HAZARDS: This gas mixture contains toxic gases, Hydrogen Sulfide and Carbon Monoxide, and presents an extreme health hazard to firefighters. This gas mixture is not flammable; however, containers, when involved in fire, may rupture or burst in the heat of the fire.

Explosion Sensitivity to Mechanical Impact: Not Sensitive.

Explosion Sensitivity to Static Discharge: Not Sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment.

NFPA RATING



6. ACCIDENTAL RELEASE MEASURES

LEAK RESPONSE: Due to the small size and content of the cylinder, an accidental release of this gas mixture presents significantly less risk of over-exposure to Hydrogen Sulfide and Carbon Monoxide, the toxic components of this gas mixture, and other safety hazards related to the remaining components of this gas mixture, than a similar release from a larger cylinder. However, as with any chemical release, extreme caution must be used during emergency response procedures. In the event of a release in which the atmosphere is unknown, and in which other chemicals are potentially involved, evacuate immediate area. Such releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a leak, clear the affected area, protect people, and respond with trained personnel.

For emergency disposal, secure the cylinder and slowly discharge the gas to the atmosphere in a well-ventilated area or outdoors. Allow the gas mixture to dissipate. If necessary, monitor the surrounding area (and the original area of the release) for Hydrogen Sulfide, Carbon Monoxide, and Oxygen. Hydrogen Sulfide and Carbon Monoxide level must be below exposure level listed in Section 2 (Composition and Information on Ingredients) and Oxygen levels must be above 19.5% before non-emergency personnel are allowed to re-enter area.

If leaking incidentally from the cylinder, contact your supplier.

7. HANDLING and USE

WORK PRACTICES AND HYGIENE PRACTICES: Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of this gas mixture could occur without any significant warning symptoms, due to olfactory fatigue or oxygen deficiency. Do not attempt to repair, adjust, or in any other way modify cylinders containing a gas mixture with Hydrogen Sulfide or Carbon Monoxide. If there is a malfunction or another type of operational problem, contact nearest distributor immediately. Eye wash stations/safety showers should be near areas where this gas mixture is used or stored. All work operations should be monitored in such a way that emergency personnel can be immediately contacted in the event of a release. All work practices should minimize releases of Hydrogen Sulfide and Carbon Monoxide-containing gas mixtures.

STORAGE AND HANDLING PRACTICES: Cylinders should be firmly secured to prevent falling or being knocked-over. Cylinders must be protected from the environment, and preferably kept at room temperature (approximately 21°C, 70°F). Cylinders should be stored in dry, well-ventilated areas, away from sources of heat, ignition, and direct sunlight. Protect cylinders against physical damage.

Full and empty cylinders should be segregated. Use a first-in, first-out inventory system to prevent full containers from being stored for long periods of time. These cylinders are not refillable. **WARNING! Do not refill DOT 39 cylinders. To do so may cause personal injury or property damage.**

SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS: WARNING! Compressed gases can present significant safety hazards. During cylinder use, use equipment designed for these specific cylinders. Ensure all lines and equipment are rated for proper service pressure.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely. Always use product in areas where adequate ventilation is provided.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: No special ventilation systems or engineering controls are needed under normal circumstances of use. As with all chemicals, use this gas mixture in well-ventilated areas. If this gas mixture is used in a poorly-ventilated area, install automatic monitoring equipment to detect the levels of Oxygen, Hydrogen Sulfide, and Carbon Monoxide.

RESPIRATORY PROTECTION: No special respiratory protection is required under normal circumstances of use. Use supplied air respiratory protection if Carbon Monoxide levels exceed the exposure levels given in Section 2 (Composition and Information on Ingredients) or if oxygen levels are below 19.5%, or if either level is unknown during emergency response to a release of this gas mixture. If respiratory protection is required for emergency response to this gas mixture, follow the requirements of the Federal OSHA Respiratory Protection Standard (29 CFR 1910.134) or equivalent State standards. The following NIOSH respiratory protection recommendations for Hydrogen Sulfide and Carbon Monoxide are provided for further information.

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8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

NIOSH/OSHA RECOMMENDATIONS FOR HYDROGEN SULFIDE CONCENTRATIONS IN AIR:

Up to 100 ppm: Powered air-purifying respirator with cartridge(s) to protect against hydrogen sulfide; or gas mask with canister to protect against hydrogen sulfide; or SAR; or full-facepiece SCBA.

Emergency or Planned Entry into Unknown Concentration or IDLH Conditions: Positive pressure, full-facepiece SCBA; or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.

Escape: Gas mask with canister to protect against hydrogen sulfide; or escape-type SCBA

NOTE: The IDLH concentration for Hydrogen Sulfide is 100 ppm.

NIOSH/OSHA RECOMMENDATIONS FOR CARBON MONOXIDE CONCENTRATIONS IN AIR:

Up to 350 ppm Supplied Air Respirator (SAR)

Up to 875 ppm Supplied Air Respirator (SAR) operated in a continuous flow mode.

Up to 1200 ppm Gas mask with canister to protect against carbon monoxide; or full-facepiece SCBA; or full-facepiece Supplied Air Respirator (SAR).

Emergency or Planned Entry into Unknown Concentration or IDLH Conditions: Positive pressure, full-facepiece SCBA; or positive pressure, full-facepiece Supplied Air Respirator (SAR) with an auxiliary positive pressure SCBA.

Escape: Gas mask with canister to protect against carbon monoxide; or escape-type SCBA.

NOTE: End of Service Life Indicator (ESLI) required for gas masks.

EYE PROTECTION: Safety glasses. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

HAND PROTECTION: No special protection is needed under normal circumstances of use. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: No special protection is needed under normal circumstances of use. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR 1910.136.

9. PHYSICAL and CHEMICAL PROPERTIES

The following information is for Nitrogen, the main component of this gas mixture.

GAS DENSITY @ 32°F (0°C) and 1 atm: 0.072 lbs/ ft^3 (1.153 kg/m^3)

FREEZING/MELTING POINT @ 10 psig: -210°C (-345.8°F)

BOILING POINT: -195.8°C (-320.4°F)

SPECIFIC GRAVITY (air = 1) @ 70°F (21.1°C): 0.906

pH: Not applicable.

SOLUBILITY IN WATER vol/vol @ 32°F (0°C) and 1 atm: 0.023

MOLECULAR WEIGHT: 28.01

EVAPORATION RATE (nBuAc = 1): Not applicable.

EXPANSION RATIO: Not applicable.

ODOR THRESHOLD: Not applicable.

SPECIFIC VOLUME (ft^3/lb): 13.8

VAPOR PRESSURE @ 70°F (21.1°C) psig: Not applicable.

COEFFICIENT WATER/OIL DISTRIBUTION: Not applicable.

The following information is for the gas mixture.

APPEARANCE AND COLOR: This gas mixture is a colorless gas which has an rotten egg-like odor, due to the presence of Hydrogen Sulfide.

HOW TO DETECT THIS SUBSTANCE (warning properties): Continuous inhalation of low concentrations of Hydrogen Sulfide (a component of this gas mixture) may cause olfactory fatigue, so that there are no distinct warning properties. In terms of leak detection, fittings and joints can be painted with a soap solution to detect leaks, which will be indicated by a bubble formation. Wet lead acetate paper can be used for leak detection. The paper turns black in the presence of Hydrogen Sulfide. Cadmium chloride solutions can also be used. Cadmium solutions will turn yellow upon contact with Hydrogen Sulfide.

10. STABILITY and REACTIVITY

STABILITY: Normally stable in gaseous state.

DECOMPOSITION PRODUCTS: The thermal decomposition products of Propane, n-Hexane, and n-Pentane include carbon oxides. The decomposition products of Hydrogen Sulfide include water and sulfur oxides. The other components of this gas mixture do not decompose, per se, but can react with other compounds in the heat of a fire.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Titanium will burn in Nitrogen (the main component of this gas mixture). Lithium reacts slowly with Nitrogen at ambient temperatures. Components of this gas mixture (Hydrogen Sulfide, Propane, n-Pentane, n-Hexane) are also incompatible with strong oxidizers (i.e. chlorine, bromine pentafluoride, oxygen, oxygen difluoride, and nitrogen trifluoride). Carbon Monoxide is mildly corrosive to nickel and iron (especially at high temperatures and pressures). Hydrogen Sulfide is corrosive to most metals, because it reacts with these substances to form metal sulfides.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Contact with incompatible materials. Cylinders exposed to high temperatures or direct flame can rupture or burst.

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The following toxicology data are available for the components of this gas mixture:

NITROGEN: There are no specific toxicology data for Nitrogen. Nitrogen is a simple asphyxiant, which acts to displace oxygen in the

n-PENTANE:

LD_{50} (intravenous, mouse) = 446 mg/kg.

LC_{50} (inhalation, rat) = 364 g/m^3/4 hours

LCLo (inhalation, mouse) = 325 g/m^3/2 hours

n-HEXANE:

Eye, rabbit = 10 mg/ mild

TCLo (inhalation, rat) = 10,000 ppm/7 hr.

TCLo (inhalation, rat) = 5000 ppm/20 hours; teratogenic effects

LD50 (oral, rat) = 28710 mg/kg

LDLo (intraperitoneal, rat) = 9100 mg/kg

LCLo (inhalation, mouse) = 120,000 mg/kg

LD50 (rat, oral): 28,710 mg/kg

ACUTE INHALATION (mouse): 30,000 ppm, narcosis within 30 to 60 minutes; 35,000-40,000 ppm, convulsions and death.

DERMAL (rabbit): 2 to 5 ml/kg for 4 hours resulted in restlessness and discoordination,; death occurred at 5 ml/kg.

HYDROGEN SULFIDE:

LCLo (inhalation, human) = 600 ppm/30 minutes

LDLO (inhalation, man) = 5.7 mg/kg; central nervous system, pulmonary effects

n-HEXANE (continued):

CHRONIC INHALATION (rat): 400-600 ppm, 5 days/week, peripheral neuropathy in 45 days; 850 ppm for 143 days, loss of weight and degeneration of the sciatic nerve. (mouse): 250 ppm, peripheral neuropathy within 7 months; no effects at 100 ppm.

PROPANE:

Long-Term Inhalation: No toxicity or abnormalities were observed when monkeys were exposed to approximately 750 ppm for 90 days. Similar results were obtained when monkeys were exposed to an aerosol spray containing 65% propane and isobutane.

CARBON MONOXIDE:

TCLo (inhalation, mouse) = 65 ppm/24 hours (7-18 preg): rep. effects

TCLo (inhalation, mouse) = 8 pph/1 hour (female 8D post): ter. effects

HYDROGEN SULFIDE (continued):

LCLo (inhalation, human) = 800 ppm/5 minutes

LC_{50} (inhalation, rat) = 444 ppm

CARBON MONOXIDE (continued):

TCLo (inhalation, human) = 600 mg/m^3/10 minutes

LCLo (inhalation, man) = 4000 ppm/30 minutes

TCLo (inhalation, man) = 650 ppm/45 minutes: central nervous system and blood system effects.

LCLo (inhalation, human) = 5000 ppm/5 minutes

LCLo (inhalation, dog) = 4000 ppm/46 minutes

LCLo (inhalation, rabbit) = 4000 ppm

LC_{50} (inhalation, rat) = 1811 ppm/4 hours

LC_{50} (inhalation, guinea pig) = 2450 ppm/4 hours

LC_{50} (inhalation, guinea pig) = 5718 ppm/4 hours

LCLo (inhalation, mammal) = 5000 ppm/5 minutes

LD_{50} (inhalation, wild bird) = 1334 ppm

HYDROGEN SULFIDE (continued):

LC_{50} (inhalation, mouse) = 673 ppm/1 hour

LCLo (inhalation, mammal) = 800 ppm/5 minutes

SUSPECTED CANCER AGENT: The components of this gas mixture are not found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, and IARC; therefore, they are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: The Hydrogen Sulfide component of this gas mixture, is irritating to the eyes, and may be irritating to the skin.

SENSITIZATION OF PRODUCT: The components of this gas mixture are not known to be skin or respiratory sensitizers. Pentane isomers (i.e. n-Pentane) and Propane can cause cardiac sensitization to epinephrine.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this gas mixture on the human reproductive system.

Mutagenicity: No mutagenicity effects have been described for the components of this gas mixture.

Embryotoxicity: This gas mixture contains components that may cause embryotoxic effects in humans; however, due to the small total amount of the components, embryotoxic effects are not expected to occur.

Teratogenicity: This gas mixture is not expected to cause teratogenic effects in humans due to the small cylinder size and small total amount of all components. The Carbon Monoxide component of this gas mixture which exists up to 1%, can cause teratogenic effects in humans. Severe

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11. TOXICOLOGICAL INFORMATION (continued)

exposure to Carbon Monoxide during pregnancy has caused adverse effects and the death of the fetus. In general, maternal symptoms are an indicator of the potential risk to the fetus since Carbon Monoxide is toxic to the mother before it is toxic to the fetus.

Reproductive Toxicity: The components of this gas mixture are not expected to cause adverse reproductive effects in humans.

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generation lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

BIOLOGICAL EXPOSURE INDICES (BEIs): Biological Exposure Indices (BEIs) have been determined for the components of this gas mixture, as follows:

CHEMICAL DETERMINANT	SAMPLING TIME	BEI
CARBON MONOXIDE • Carboxyhemoglobin in blood • Carbon monoxide in end-exhaled air	 • End of shift • End of shift	 • 3.5% of hemoglobin • 20 ppm
n-HEXANE • 2,5-Hexanedione in urine • n-Hexane in end-exhaled air	• End of shift	• 5 mg/g creatinine

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL STABILITY: The gas will be dissipated rapidly in well-ventilated areas. The following environmental data are applicable to the components of this gas mixture.

OXYGEN: Water Solubility = 1 volume Oxygen/32 volumes water at 20°C. Log K_{ow} = -0.65

PROPANE: Log K_{ow} = 2.38. Water Solubility = 62.4 ppm, 25°C. Propane is readily degraded by soil bacteria.

PENTANE: Log K_{ow} = 3.39. Water Solubility = 38.5 mg/L. LOG BCF (n-pentane) = calculated, 1.90 and 2.35, respectively. Photolysis, hydrolysis, and bioconcentration are not anticipated to be important fate processes. Biodegradation and soil adsorption are anticipated to be more important processes for this compound.

n-HEXANE: Log K_{ow} = 3.90-4.11. Water Solubility = 9.5 mg/L. Estimated Bioconcentration Factor =2.24 and 2.89. Bioconcentration in aquatic organisms is low. Hexane is volatile. Rapid volatilization from water and soil is anticipated for this compound. Hexane will float in slick on surface of the water

HYDROGEN SULFIDE: Water Solubility = 1 g/242 mL at 20°C.

CARBON MONOXIDE: Water solubility = 3.3 ml/100 cc at 0 °C, 2.3 ml at 20°C.

NITROGEN: Water Solubility = 2.4 volumes Nitrogen/100 volumes water at 0°C; 1.6 volumes Nitrogen/100 volumes water at 20°C.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: No evidence is currently available on this gas mixture's effects on plant and animal life. The Hydrogen Sulfide and Carbon Monoxide components of this gas mixture, can be deadly to exposed animal life, producing symptoms similar to those experienced by humans. This gas mixture may also be harmful to plant life.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No evidence is currently available on the effects of this gas effects on aquatic life. The presence of more than a trace of Carbon Monoxide is a hazard to fish. The following aquatic toxicity data are available for the Hydrogen Sulfide component of this gas mixture.

TLm (Asellussp) = 0.111 mg/L/96 hour
TLm (Cranfgonyx sp) =1.07 mg/L/96 hour
TLm (Gammarrus) = 0.84 mg/L/96 hour
LC_{50} (fly inhalation) = 380 mg/m^3/960 minutes
LC_{50} (fly inhalation) = 1500 mg/m^3/7 minutes
TLm (Lepomis macrochirus, bluegill sunfish) = 0.0478 mg/L/96 hour
TLm (Lepomis macrochirus, bluegill sunfish) = 0.0448 mg/L/96 hour at 21-22 °C
TLm (Pimephlaes promelas, fathead minnow) = 0.0071-0.55 mg/L/96 hour
TLm (Salvenilis foninalis, brook trout) = 0.0216-0.038 mg/L/96 hour at 8-12.5 °C

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. Cylinders with undesired residual product may be safely vented outdoors with the proper regulator. For further information, refer to Section 16 (Other Information).

14. TRANSPORTATION INFORMATION

THIS GAS MIXTURE IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Compressed gases, n.o.s. (*Oxygen, Nitrogen)*or the gas component with the next highest concentration next to Nitrogen.

HAZARD CLASS NUMBER and DESCRIPTION: 2.2 (Non-Flammable Gas)

UN IDENTIFICATION NUMBER: UN 1956

PACKING GROUP: Not Applicable

DOT LABEL(S) REQUIRED: Class 2.2 (Non-Flammable Gas)

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): 126

MARINE POLLUTANT: The components of this gas mixture are not classified by the DOT as Marine Pollutants (as defined by 49 CFR 172.101, Appendix B).

SPECIAL SHIPPING INFORMATION: Cylinders should be transported in a secure position, in a well-ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards. If transporting these cylinders in vehicles, ensure these cylinders are not exposed to extremely high temperatures (as may occur in an enclosed vehicle on a hot day). Additionally, the vehicle should be well-ventilated during transportation.

Note: DOT 39 Cylinders ship in a strong outer carton (overpack). Pertinent shipping information goes on the outside of the overpack. DOT 39 Cylinders do not have transportation information on the cylinder itself.

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This gas is considered as Dangerous Goods, per regulations of Transport Canada.

PROPER SHIPPING NAME: Compressed gases, n.o.s. (*Oxygen, Nitrogen)*or the gas component with the next highest concentration next to Nitrogen.

HAZARD CLASS NUMBER and DESCRIPTION: 2.2 (Non-Flammable Gas)

UN IDENTIFICATION NUMBER: UN 1956

PACKING GROUP: Not Applicable

HAZARD LABEL: Class 2.2 (Non-Flammable Gas)

SPECIAL PROVISIONS: None

EXPLOSIVE LIMIT AND LIMITED QUANTITY INDEX: 0.12

ERAP INDEX: None

PASSENGER CARRYING SHIP INDEX: None

PASSENGER CARRYING ROAD VEHICLE OR PASSENGER CARRYING RAILWAY VEHICLE INDEX: 75

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): 126

NOTE: Shipment of compressed gas cylinders via Public Passenger Road Vehicle is a violation of Canadian law (Transport Canada Transportation of Dangerous Goods Act, 1992).

15. REGULATORY INFORMATION

ADDITIONAL U.S. REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: This gas is not subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act., as follows:

COMPONENT	SARA 302 (40 CFR 355, Appendix A)	SARA 304 (40 CFR Table 302.4)	SARA 313 (40 CFR 372.65)
n-Hexane	NO	YES	YES
Hydrogen Sulfide	YES	YES	YES

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15. REGULATORY INFORMATION (Continued)

U.S. SARA THRESHOLD PLANNING QUANTITY: Section 302 EHS TPQ = Hydrogen Sulfide = 500 lbs (227 kg);
U.S. TSCA INVENTORY STATUS: The components of this gas mixture are listed on the TSCA Inventory.
U.S. CERCLA REPORTABLE QUANTITY (RQ): Hexane = 5000 lb (2270 kg); Hydrogen Sulfide = 100 lbs (45.4 lb)
OTHER U.S. FEDERAL REGULATIONS:

- Hydrogen Sulfide, Carbon Monoxide, Propane, n-Pentane and n-Hexane are subject to the reporting requirements of CFR 29 1910.1000.
- Hydrogen Sulfide, Propane and n-Pentane are subject to the reporting requirements of Section 112(r) of the Clean Air Act. The Threshold Quantity for each of these gases is 10,000 pounds and so this mixture will not be affected by the regulation.
- Depending on specific operations involving the use of this gas mixture, the regulations of the Process Safety Management of Highly Hazardous Chemicals may be applicable (29 CFR 1910.119). Hydrogen Sulfide is listed in Appendix A of this regulation. The Threshold Quantity for Hydrogen Sulfide under this regulation is 1500 lbs.
- This gas mixture does not contain any Class I or Class II ozone depleting chemicals (40 CFR part 82).
- Nitrogen, Oxygen and n-Hexane are not listed Regulated Substances, per 40 CFR, Part 68, of the Risk Management for Chemical Releases. Hydrogen Sulfide is listed under this regulation in Table 1 as a Regulated Substance (Toxic Substance), in quantities of 10,000 lbs (4,553 kg) or greater. Carbon Monoxide, Propane and n-Pentane are listed under this regulation in Table 3, as Regulated Substances (Flammable), in quantities of 10,000 lbs (4,553 kg) or greater, and so this mixture will not be affected by the regulation.

U.S. STATE REGULATORY INFORMATION: The components of this gas mixture are covered under the following specific State regulations:

Alaska - Designated Toxic and Hazardous Substances: Carbon Monoxide, Propane, n-Pentane, n-Hexane, Hydrogen Sulfide.
California - Permissible Exposure Limits for Chemical Contaminants: Carbon Monoxide, Nitrogen, Propane, n-Pentane, n-Hexane, Hydrogen Sulfide.
Florida - Substance List: Oxygen, Carbon Monoxide, n-Pentane, n-Hexane, Hydrogen Sulfide.
Illinois - Toxic Substance List: Carbon Monoxide, Propane, n-Pentane, n-Hexane, Hydrogen Sulfide.
Kansas - Section 302/313 List: No.
Massachusetts - Substance List: Oxygen, Carbon Monoxide, Propane, n-Pentane, n-Hexane, Hydrogen Sulfide.
Michigan - Critical Materials Register: No.
Minnesota - List of Hazardous Substances: Carbon Monoxide, Propane, n-Pentane, n-Hexane, Hydrogen Sulfide.
Missouri - Employer Information/Toxic Substance List t: n-Pentane, n-Hexane, Propane, Hydrogen Sulfide.
New Jersey - Right to Know Hazardous Substance List: Oxygen, Carbon Monoxide, Nitrogen, Propane, n-Pentane, n-Hexane.
North Dakota - List of Hazardous Chemicals, Reportable Quantities: Hydrogen Sulfide.
Pennsylvania - Hazardous Substance List: Oxygen, Carbon Monoxide, Nitrogen, Propane, n-Pentane, n-Hexane, Hydrogen Sulfide.
Rhode Island - Hazardous Substance List: Oxygen, Carbon Monoxide, Nitrogen, Propane, n-Pentane, n-Hexane, Hydrogen Sulfide.
Texas - Hazardous Substance List: n-Pentane, n-Hexane, Propane, Hydrogen Sulfide.
West Virginia - Hazardous Substance List: n-Pentane, n-Hexane, Propane, Hydrogen Sulfide.
Wisconsin - Toxic and Hazardous Substances: n-Pentane, n-Hexane, Propane, Hydrogen Sulfide

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): The Carbon Monoxide component of this gas mixture is on the California Proposition 65 lists as a chemical known to the State of California to cause birth defects or other reproductive harm.
ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL/NDSL INVENTORY STATUS: The components of this gas mixture are on the Canadian DSL Inventory.
CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: The components of this gas mixture are not on the CEPA Priorities Substances List.
CANADIAN WHMIS CLASSIFICATION: This gas mixture is categorized as a Controlled Product, Hazard Classes A and D2A, as per the Controlled Product Regulations.

16. OTHER INFORMATION

INFORMATION ABOUT DOT-39 NRC (Non-Refillable Cylinder) PRODUCTS

DOT 39 cylinders ship as hazardous materials when full. Once the cylinders are relieved of pressure (empty) they are not considered hazardous material or waste. Residual gas in this type of cylinder is not an issue because toxic gas mixtures are prohibited. Calibration gas mixtures typically packaged in these cylinders are Nonflammable n.o.s., UN 1956. A small percentage of calibration gases packaged in DOT 39 cylinders are flammable or oxidizing gas mixtures.

For disposal of used DOT-39 cylinders, it is acceptable to place them in a landfill if local laws permit. Their disposal is no different than that employed with other DOT containers such as spray paint cans, household aerosols, or disposable cylinders of propane (for camping, torch etc.). When feasible, we recommended recycling for scrap metal content. CALGAZ will do this for any customer that wishes to return cylinders to us prepaid. All that is required is a phone call to make arrangements so we may anticipate arrival. Scrapping cylinders involves some preparation before the metal dealer may accept them. We perform this operation as a service to valued customers who want to participate.

MIXTURES: When two or more gases or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

Further information about the handling of compressed gases can be found in the following pamphlets published by: Compressed Gas Association Inc. (CGA), 1725 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4102. Telephone: (703) 412-0900.

P-1 *"Safe Handling of Compressed Gases in Containers"*
AV-1 *"Safe Handling and Storage of Compressed Gases"*
"Handbook of Compressed Gases"

PREPARED BY: CHEMICAL SAFETY ASSOCIATES, Inc.
PO Box 3519, La Mesa, CA 91944-3519
619/670-0609

Fax on Demand: 1-800/231-1366

AIR LIQUIDE™

This Material Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this gas mixture. To the best of CALGAZ knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this gas mixture is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.

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APPENDIX C

Heat Illness Prevention Program

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HEAT ILLNESS
PREVENTION PROGRAM

CORPORATE HEALTH AND SAFETY DIRECTOR	:	**Brian Hobbs, CIH, CSP**
EFFECTIVE DATE	:	**10/2019**
REVISION DATE	:	**03/2025**
REVISION NUMBER	:	**4**

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1. PURPOSE

Roux Associates, Inc. and its affiliated companies, Roux Environmental Engineering and Geology, D.P.C, and Remedial Engineering (collectively, "Roux"), have established this heat illness prevention program to assist in preventing workplace accidents, injuries, and illnesses associated with temperature extremes. Roux is committed to taking every precaution to protect employees who might be exposed to heat stress, including establishing safe work practices, heat illness prevention controls, and emergency preparedness, which will be detailed in this plan.

2. SCOPE AND APPLICABILITY

Roux's Heat Illness Prevention Program applies to all employees and subcontractors who may be exposed to heat stress in the field.

3. ROLES AND RESPONSIBILITIES

The Heat Illness Prevention Program Administrator for Roux is the Corporate Health and Safety Director (CHSD), Brian Hobbs, CIH, CSP. The daily administration of the program is delegated to the Operations Manager (OM) , Office Health and Safety Manager (OHSM), and Site Health and Safety Officer (SHSO). The CHSD has the authority, responsibility, and overall accountability for the comprehensive implementation of this program.

All managers and supervisors shall implement and maintain the heat illness prevention program in work areas where there is a potential for heat stress.

Management Responsibilities

Management (i.e., Project Managers, Project Principals, OM) must provide the following to promote compliance and foster a good safety culture:

- Comply with applicable standards.
- Inform employees of the provisions of the heat illness prevention program and ensure understanding.
- Provide sufficient water, shade, rest areas, and other heat illness controls for employees.
- Assist with establishing work practices to minimize heat stress risks, such as acclimatization, required rest periods, employee monitoring, and strategic scheduling.
- Encourage employees to report hazardous conditions or heat illness symptoms.
- Provide training to any employee who could possibly be exposed to the risk of heat illness.

Employee Responsibilities

Employees are expected to actively participate in the organization's heat illness prevention program, which includes the following responsibilities:

- Receive appropriate training with regard to heat stress.
- Understand core concepts of heat illness prevention and follow guidelines to mitigate risks.
- Recognize the signs and symptoms of heat illness and immediately report them.
- Cooperate with workplace inspections and incident investigations.

Effective Communication

All Roux employees shall be accountable for ensuring there is effective communication with both the field team and their subcontractors. Communication between Roux employees, project leads (e.g., Project Principal, Project

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Managers), and subcontractors (if applicable) will be established and maintained so that employees can quickly contact should there be a change in condition or someone at the Site exhibits signs/symptoms of heat stress. These types of incidents would follow Roux's Incident Investigation and Reporting Management Program 2.12 and Roux's Injury Illness Prevention Program 2.22.

4. HAZARD IDENTIFICATION AND ASSESSMENT

Prior to scheduled fieldwork, the project team shall ensure a hazard assessment is conducted as it relates to heat stress. This will include a determination of how much heat and exertion employees are likely to be exposed to based on the work activity.

Factors that can increase heat stress include the following:

- Temperatures at the work site;
- Humidity;
- A lack of air movement or exchange;
- The amount of time employees spend working in the heat;
- The time of day work takes place;
- Sources of radiant heat (e.g., sunlight, fire, or hot furnace);
- Work activities that produce heat (e.g., welding);
- Physical contact with warm or hot objects or liquids;
- The clothing and PPE employees are required to wear; and/or
- Physically strenuous work.

Results of the hazard analysis should be used to determine appropriate controls for mitigating heat stress, whenever possible, for planning acclimatization, and for developing work schedules that rotate workers to limit employee exposure. Typically, the Site Supervisor (SS) or Site Health and Safety Officer (SHSO) shall conduct worksite observations to ensure all employees follow heat illness prevention procedures and that hazards are sufficiently controlled. However, all employees should be continuously evaluating work site conditions and be able to recognize heat stressors in order to prevent heat illnesses.

5. TRAINING

All Roux employees shall be trained on the topics listed below prior to beginning work, which may potentially expose workers to heat stress.

Training Topics

- The environmental, behavioral, and personal risk factors for heat illness, such as radiant heat sources, exertion, clothing and PPE, and use of alcohol or drugs.
- Types of heat illnesses, common symptoms, and appropriate emergency response for each.
- The knowledge that mild symptoms may quickly become more severe or life-threatening.
- The importance of immediately reporting any signs or symptoms of heat illness to the supervisor.
- The employer's responsibility to provide shade, water, access to first aid, and cool-down rests during work and the employee's freedom to exercise their rights under this standard without fear of retaliation.

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- The employer's heat stress plan and its procedures:
  - Procedures for employees who are newly assigned to work in high-heat areas.
  - The organization's acclimatization methods, as applicable.
  - Heatwave procedures.
  - Heat illness and emergency response, including contact information.
- The importance of frequent consumption of water and the taking of rest breaks.
- How heat illness prevention applies to employees' specific tasks.

Increasing Training Effectiveness:

- The SS/SHSO will hold daily tailgates with the field team to go over daily work tasks and basic safety information, including Job Safety Analysis (JSA) review, as well as incorporate elements such as current weather and effects on the work activities for the day.
- If a heat wave or high heat is anticipated, OHSMs and/or OMs will provide communications to Roux employees prior to their shifts and remind them of any special high heat procedures.

6. DRINKING WATER

Employees shall be given access to potable drinking water. Access to water will be provided as near as possible to where employees are working, and there shall be enough locations so employees will have sufficient water. Water should be fresh and pure, free of taste or smell that would discourage employees from drinking, comfortably cool, and obtained from an approved source.

The recommendation is that during warm or hot weather, employees drink four 8-ounce glasses of water, or a total of one quart per hour, throughout the entire work shift. Easy access to sufficient potable drinking water throughout the work shift encourages employees to drink.

During a heat wave, water shall be replenished more often to keep it available and cool. Water containers (and all spouts and levers) must be kept clean. If able, provide single-use drinking cups with appropriate waste receptacles. Accessible sanitation facilities shall also be maintained at work Sites as appropriate.

SS/SHSO is responsible for the following:

- Drink sufficient water before, during, and after work shifts to maintain hydration.
- Encourage frequent drinking of small amounts of water throughout the shift. In high-heat environments, remind field staff and subcontractors that drinking extra water may be necessary.
- Discourage the choice of drinks with caffeine or sugar that may possibly dehydrate employees instead of water. Also, discourage the drinking of alcohol.
- Monitor the water supply.
- If employees become dehydrated and are unable to alleviate symptoms with the steps below, get them immediate medical attention.

Field Staff/Subcontractors are responsible for the following:

- Drink sufficient water before, during, and after work shifts to maintain hydration. Drink up to 4 cups of water per hour, especially during hot weather.
- Be aware that in high-heat situations, you may need to drink more water.

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- Monitor yourself and others for signs of dehydration. If you feel dehydrated:
  - Follow Roux's Incident Notification Flowchart;
  - Rest in the shaded resting area; and
  - Drink water in small amounts, but frequently.

7. ACCESS TO SHADE

Access to shaded areas will be provided to Roux staff, as needed. Employees are encouraged to use these areas when they feel overheated. Roux's SS/SHSO shall oversee the proper implementation of shaded areas and will communicate these locations on a daily basis with the Field Team.

Depending on the Site, shaded areas can include the following:

- Pop-up Tents
- Canopies
- Umbrellas
- Structures mechanically ventilated or open to air movement
  - Garage
- Conex-mounted RV canopies
- Full and thick tree canopies that block direct sunlight
- Buildings
- Enclosed areas only if they provide cooling comparable to shade in open-air
  - Vehicles with air conditioning

Shaded Area Requirements

The shade shall be strong enough to cool employees down and other shadows should not be visible in the shade. The shade will be provided by Roux when the air temperature exceeds 80°F. If the temperature is less than 80°F, shade will be available and provided upon request. The SS/SHSO will monitor conditions to determine when the air will exceed (and is exceeding) 80°F. For most Sites, air will be monitored hourly and shade will be set up immediately if 80°F is exceeded.

Shade shall be located as close as practical to areas where employees are working and is easily accessible. These areas will be considered safe and free from other hazards. Shaded areas should be large enough to accommodate all employees who are on a break, resting, or recovering without crowding. Should natural vegetation be used for shade, the SS/SHSO will evaluate shade for effectiveness.

Field Staff Responsibilities

Field Staff should take ordinary rest breaks in the shaded areas and monitor themselves for signs of heat stress, and go to the shaded area when they need to cool down. Any issues or problems with shaded areas should be reported to the SS/SHSO for the Site.

If shaded areas are used for a preventative cool-down, the SS/SHSO will ensure the affected employees will remain in the shade until they begin to feel better. The SS/SHSO will continue to monitor the employees and ask them if

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they are experiencing symptoms of a heat illness. Employees shall not be sent back to work before symptoms have ended and at a minimum at least 10 minutes of rest.

8. MONITORING AND SCHEDULING

Monitoring

The SS/SHSO and Field Team will continue to monitor themselves and others for signs of heat illness. The SS/SHSO will monitor when the air temperature exceeds 80°F. Throughout the summer, weather and temperature will be monitored at least two weeks ahead, and the work schedule will be planned to accommodate the expected weather.

Scheduling

Scheduling accommodations may include:

- Working during cooler hours of the day
- Working at night
- Stopping work early
- Rescheduling work activities
- Increasing frequency of breaks

In general, strenuous work activities shall be rescheduled to the coolest parts of the day.

Special precautions are required for temperatures above 80°F, 95°F, and heat waves. These precautions are provided in the sections below.

9. ACCLIMATIZATION AND NEW EMPLOYEE PROCEDURES

Roux requires employees to be acclimatized in order for them to better tolerate heat in the workplace. Acclimatization is the physical process of adapting to a different thermal environment, allowing a better toleration of heat. Acclimatization procedures require gradual exposure that gives the employee time to adjust to each level of exposure. Acclimatization is essential for new employees but is necessary for all employees when the temperature significantly changes. Heat stress is much more likely if these procedures are not followed.

The SS/SHSO is responsible for observing new employees during their first 14 days of employment in high-heat areas.

Re-acclimatization is necessary if employees are absent from high-heat environments for a week or more or the temperature increases significantly.

10. HEATWAVE AND EXTREME HEAT PROCEDURES

Heat Wave Procedures

A heat wave is defined as consistent temperatures over 80°F or if the temperature is 10° higher than the average daily temperatures in the preceding 5 days.

SS/SHSO and Project Management (e.g., PP, PM) shall closely observe and monitor employees during a heat wave. The Field Teams should institute a ratio of one SS to 20 or fewer employees, a mandatory buddy system, or

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a consistent practice for supervisors to check on employees. Pre-shift meetings to review high-heat procedures with employees will be carried out to emphasize work-rest schedules, drinking water, shade, etc.

Extreme Heat Procedures

When work-site temperatures equal or exceed 95°F, the employer will enact extreme heat procedures:

- Employees will be closely observed by the SS/SHSO for signs of heat illness. New employees will be supervised for acclimatization.
- Effective communication and monitoring will be ensured through the use of periodic check-ins via phone with the SS/SHSO. Communications between employees and Project Management (e.g., PP/PM) will be established and maintained. Mandatory 10-minute break periods are required for every two hours worked. SS/SHSO must enforce this rule.
- Pre-shift safety tailgate meetings will occur to review procedures and to remind employees to drink water and take cool-down rests if needed. SS/SHSO shall remind employees to rest and drink water. Employees should drink more water than usual.

11. EMERGENCY RESPONSE PROCEDURES

Roux is dedicated to providing prompt appropriate care for all employees who report or show symptoms of heat illness. If an employee shows signs of heat illness, they will be monitored and shall not be left alone or sent home without being offered first aid or emergency medical services. If on-site personnel require any medical treatment, the following steps will be taken:

1. Notify Roux's Project and Corporate Management Team for any work-related injury and/or illness occurrence, and communicate with the contracted Occupational Health Care Management Provider, AllOne Health (AOH), immediately following the notifications provided above.
2. Based on discussions with the Project Team, Corporate Management, and the AOH evaluation, if medical attention beyond onsite First Aid is warranted, transport the injured/ill person (IP) to the Urgent Care Center, or notify the Fire Department or Ambulance Emergency service and request an ambulance or transport the victim to the hospital, and continue communications with Corporate Management Team. An Urgent Care/Hospital Route map with locations and directions is provided within Site Specific Health and Safety Plans.
3. First aid medical support will be provided by onsite personnel trained and certified in First Aid, Cardio Pulmonary Resuscitation (CPR), Automatic External Defibrillation (AED), and Blood-Borne Pathogens (BBP) Awareness, until relieved by emergency medical services (EMS).
4. The SHSO and Project Manager will perform a Loss Investigation (LI), and the Project Team will complete the final Loss Report.

12. HEAT-RELATED ILLNESSES

Heat Stress

Heat stress is a significant potential hazard and can be associated with heavy physical activity and/or the use of personal protective equipment (PPE) in hot-weather environments. For these reasons, the company will provide potable drinking water and access to shade or other areas of relief (i.e., air-conditioned vehicles and work trailers). Supervisors, prior to supervising personnel in the field as well as all personnel involved with the fieldwork of a project, are trained in this HASP that includes preventing heat-related illnesses and the below procedures in response to heat-related symptoms and illness. Since much of our work is dependent upon environmental factors beyond our control, we must closely monitor air temperature and humidity and be aware of avoiding radiant heat sources and providing as much air circulation as possible wherever we work. Physical factors that need to be evaluated as part of our Job Safety Analysis (JSA) reviews include the level of physical activity and duration of work

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and the type (i.e., color, weight breathability) of the clothing we select. In addition, personal factors such as age, weight, fitness, drug/alcohol use, and prior history of heat-related illness need to be considered.

Heat cramps are brought on by prolonged exposure to heat. As an individual sweats, water and salts are lost by the body, resulting in painful muscle cramps. The signs and symptoms of heat stress are as follows:

- Severe muscle cramps, usually in the legs and abdomen;
- Exhaustion, often to the point of collapse; and
- Dizziness or periods of faintness.

First aid treatment includes, but is not limited to, shade, rest, and fluid replacement. Typically, the individual should recover within one-half hour while being monitored constantly. If the individual has not improved substantially within 30 minutes and the body temperature has not decreased, the individual should be transported to a hospital for medical attention.

Heat Exhaustion

Heat exhaustion may occur in a healthy individual who has been exposed to excessive heat while working or exercising. The circulatory system of the individual fails as blood collects near the skin to rid the body of excess heat through transference. The signs and symptoms of heat exhaustion are as follows:

- Rapid and shallow breathing;
- Weak pulse;
- Cold and clammy skin with heavy perspiration;
- Skin appears pale;
- Fatigue and weakness;
- Dizziness; and
- Elevated body temperature.

First aid treatment includes, but is not limited to, cooling the victim, elevating the feet, and replacing fluids. If the individual is not substantially improved within 30 minutes and the body temperature has not decreased, the individual should be transported to the hospital for medical attention.

Heat Stroke

Heat stroke occurs when an individual is exposed to excessive heat and stops sweating. This condition is classified as a MEDICAL EMERGENCY requiring immediate cooling of the victim and transport to a medical facility. The signs and symptoms of heat stroke are as follows:

- Dry, hot red skin;
- Body temperature approaching or above 105 degrees F;
- Confusion, altered mental state, slurred speech;
- Seizures;
- Large (dilated) pupils; and
- Loss of consciousness – the individual may go into a coma.

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First aid treatment requires immediate cooling and transportation to a medical facility. Heat stress is a significant hazard if any type of protective equipment (semi-permeable or impermeable) that prevents evaporative cooling is worn in hot-weather environments.

13. OTHER HEAT CONTROLS

Clothing and PPE

Employees should choose clothing that is reflective, light-colored, lightweight, loose-fitting, and breathable. Clothing should cover the exposed parts of the body. In direct sun, hard hats with a brim or bill may be helpful. Should specialized cooling garments be applicable, please consult with your OM/OHSM/CHSD.

Managing Employee Risk Factors

It is recommended that employees are aware of how their health can affect their risk of heat stress. The following increases personnel's risk for a heat-related illness:

- A poor level of physical fitness
- Obesity
- Chronic or acute illnesses
- Conditions such as diabetes, heart disease, or high blood pressure
- Certain medications, such as diuretics
- Age (60+)

Employees should:

- Maintain their health outside of work
- Be aware of the effects of medications
- Drink adequate amounts of water
- Eat light, cool meals during work shifts and save heavy meals until after the shift is over
- Do not skip meals: food helps replace electrolytes when sweating
- Take breaks as needed
- Do not consume alcohol prior to working in a hot environment

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APPENDIX D

Personal Protective Equipment (PPE)
Management Program

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PERSONAL PROTECTIVE EQUIPMENT MANAGEMENT PROGRAM

CORPORATE HEALTH AND SAFETY DIRECTOR	:	**Brian Hobbs, CIH, CSP**
EFFECTIVE DATE	:	**01/2019**
REVIEW DATE	:	**03/2025**
REVISION NUMBER	:	**6**

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1. PURPOSE

Roux Associates, Inc. and its affiliated companies, Roux Environmental Engineering and Geology, D.P.C., and Remedial Engineering (collectively, “Roux”), have instituted the following program to establish guidelines for the selection of personal protective equipment (PPE) for use by Roux personnel performing field activities in hazardous environments. PPE is not meant to be a substitute for engineering, work practice, and/or administrative controls, but PPE should be used in conjunction with these controls to protect employees in the workplace. Clothing, body coverings, and other accessories designed to prevent worker exposure to workplace hazards are all types of PPE. To ensure adequate PPE,, employee-owned PPE is assessed on a case-by-case basis to ensure its adequacy, maintenance, and sanitation.

2. SCOPE AND APPLICABILITY

These guidelines apply to all PPE selection decisions to implement the Roux program. The foundations for this program are the numerous Occupational Health and Safety Administration (OSHA) standards related to PPE cited in 29 CFR 1910 Subpart I, 29 CFR 1926 Subpart E, and the hazardous environment work employee protection requirements under the OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) standard at 29 CFR 1910.120 and 1926.65 as well as California OSHA (Cal/OSHA) Title 8 5192 HAZWOPER. To ensure hazard assessments are documented, the levels of protection, types of protection, and tasks requiring protection are covered in site-specific Health and Safety Plans (HASPs) and Job Safety Analyses (JSAs).

3. PROCEDURES

Due to the varied nature of site activities and the different potential hazards associated with different sites, several aspects must be considered when selecting PPE. The following text describes PPE selection logic and provides guidelines and requirements for the appropriate selection and use of PPE.

3.1 Introduction

To harm the body, chemicals must first gain entrance. The intact skin and respiratory tract are usually the first body tissues that are exposed to chemical contaminants. These tissues provide barriers to some chemicals but, in many cases, are damaged themselves or are highly permeable by certain chemical compounds. PPE, therefore, is used to minimize or eliminate chemical compounds from coming into contact with these first barrier tissues.

Proper PPE selection is essential in preventing exposure. The Project Manager (PM) or health and safety personnel making the selection will have to consider several factors. The level of protection, type, and kind of equipment selected depends on the hazardous conditions. In some cases, additional selection factors include cost, availability, compatibility with other equipment, and performance. All these factors must be accurately assessed before work can be safely carried out.

3.1.1 Training

Training shall be provided to all field-based employees on how to properly use and care for PPE. Training shall include, but not be limited to, the initial 40-hour HAZWOPER training, annual 8-hour HAZWOPER refresher training, and site-specific PPE training. The training program includes when PPE is necessary, what types of PPE are required; how to don, doff, adjust, and wear PPE; the limitations of PPE; the proper care, maintenance, useful life, signs of PPE failure and emergency procedures to follow in the event of PPE failure and disposal of PPE. In addition, retraining shall be conducted when workplace changes require a change in PPE when an employee demonstrates a lack of knowledge or improper use of PPE is identified.

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3.2 Types of PPE

The type and selection of PPE must meet certain general criteria and requirements as required under OSHA 29 CFR 1910.132 (General Industry) and 1926.95 (Construction). In addition to these general requirements, specific requirements and specifications exist for some types of PPE that form the basis of the protective clothing scheme. All manufacturer's recommendations for PPE care and use shall be followed. All PPE shall be maintained in a sanitary and reliable condition. Additionally, proper fit and size shall be evaluated to ensure adequate employee protection. Should PPE become defective, it shall be immediately removed from service and discarded.

The following is a list of the common types of specific PPE and the specific requirements for the PPE type, where applicable:

1. Hard Hats - Regulated by 29 CFR 1910.135 and 1926.100; and specified in ANSI Z89.1.
2. Face Shields and Safety Glasses - Regulated by 29 CFR 1910.133 and 1926.102; and specified in ANSI Z87.1.
3. Respiratory Protection - Regulated by 29 CFR 1910.134 and 1926.103.
4. Hand Protection - Regulated by 29 CFR 1910.138
5. Foot Protection - Regulated by 29 CFR 1910.136 and 1926.96; and specified in ANSI Z41.1.
6. Protective Clothing (e.g., fully encapsulated suits, aprons) - Specified in NFPA 1991/1992/1994.

3.2.1 PPE Inspection, Cleaning Maintenance, and Storage

The Office Health and Safety Manager (OHSM) or their designee is responsible for procuring PPE, in accordance with this management program. Single-use/disposable PPE should be purchased and used whenever practicable.

3.2.1.1 PPE Inspection

Roux employees must inspect PPE regularly, before and after each use, to check for defects and damage. Garments and other PPE in central storage must be inspected at least annually or as recommended by the manufacturer by the OHSM, Equipment Manager, and/or their designee. Defective or damaged equipment must be tagged as out-of-service, immediately removed from the work site, and discarded.

3.2.1.2 PPE Cleaning and Maintenance

All Roux employees are responsible for routine cleaning of their assigned PPE. Decontamination of PPE is addressed within Roux's Site Control and Decontamination Program as specified within site-specific health and safety plans. As appropriate, Roux employees should be issued single-use PPE when practicable to minimize the requirement for decontamination. When performing routine cleaning of reusable PPE:

- Always follow the manufacturer's recommendations to avoid damaging the PPE. For example, some cleaning solutions compromise the integrity of protective helmets shell.
- Clean and maintain PPE according to the manufacturer's recommendations. Before being re-issued, PPE should be thoroughly sanitized.
- Disassemble, wash and sanitize reusable respirators after each use. For more information, refer to Roux's Respiratory Protection Management Program.

Employees are not authorized to repair PPE without prior approval from the Health and Safety Department. Reusable PPE may require maintenance by the manufacturer to maintain integrity and certification. Many

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manufacturers specify which repairs, if performed by the end-user, will void the product warranty. Therefore, Roux employees are not authorized to perform such maintenance or repairs.

3.2.1.3 PPE Storage

Certain equipment failures can be directly attributed to improper storage. The OHSM or Equipment Manager (or another designated person) is responsible for implementing procedures for appropriate PPE storage, for equipment that is centrally stored. Both central storage and dedicated PPE provided to employees should be stored using the following:

- Store goggles and safety glasses in protective cases.
- Store PPE (such as helmets, boots, etc.) in clean, dust-proof containers or bags out of direct sunlight.
- PPE should ideally be stored under climate-controlled conditions. PPE, stocked gear bags, and/or go-kits should not be stored in hot, cold, or other extreme environmental conditions, and they should not be stored in vehicles (government-owned or rentals) for even short periods of time. Do not store helmets on the rear window shelf of a vehicle.
- Store different kinds of clothing and gloves separately to prevent errors in selection.
- Hang or fold protective clothing in accordance with manufacturers' recommendations.
- Never store contaminated PPE near new protective clothing or street clothing. Potentially contaminated, reusable clothing must be stored (usually bagged) away from new PPE in a well-ventilated area with good airflow around each item until the garment is decontaminated or disposed.
- See Roux's Respiratory Protection Management Program for detailed respirator storage procedures.

3.3 Fitting, Donning, and Doffing PPE

Roux shall provide appropriately sized PPE for Roux employees. Improper fitting such as tight-fitting garments, can tear, especially at the knees, crotch, shoulders, back, and elbows due to movement. Protective clothing that is too large can easily snag and/or limit a user's dexterity. The Roux PM shall ensure site/project-specific PPE is kept in a sufficient stock of appropriately sized PPE (e.g., Level C ensembles). The OHSM, Equipment Manager, and/or their designee shall maintain a sufficient stock of appropriately sized PPE in central storage locations.

The Site Supervisor (SS)/Site Health and Safety Officer (SHSO) is responsible for ensuring that site-specific procedures for donning and doffing PPE are incorporated into site-specific HASPs. Donning and doffing procedures may differ depending on the type of PPE and clothing (e.g., Level D, Modified Level D, Level C) utilized. Figures 1-4, provide examples of procedures that can be used to don and doff Levels A through D and are provided as a reference. Site-specific conditions may warrant adjustments to such procedures. Consult the CHSD for additional information.

Site-specific donning and doffing procedures should include using an assistant where necessary. Donning and doffing certain types of PPE without assistance could risk failure or damage. Care must be taken to prevent the spread of contaminants on the PPE. Decontamination procedures should limit the potential for cross-contamination and may include gross decontamination of outer boots, gloves, and suits as necessary to prevent contaminants from tracking into the contamination reduction zone (CRZ) and clean zone(s).

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3.4 Controlling Hazards Associated with PPE Use

PPE use can pose potential health and safety hazards, which range from minor discomfort to life-threatening height stroke. The magnitude of the potential hazard can vary and will depend on various factors, including an individual's fitness level, the type of PPE worn, the work demands, individual work practices, duration of work, and environmental conditions. The use of PPE can also lead to reduced efficiency and work performance.

Among hazards associated with PPE use, heat stress emerges as a prevalent and significant hazard. Particularly, the use of substantial and/or impermeable attire, such as heavy coveralls, Tyvek suits, splash suits, or Level A or B suits, alongside strenuous work, amplifies the risk of heat stress. Regular monitoring for indications of heat stress is imperative for workers operating in such conditions. Roux's Heat Illness Prevention Program lays out requirements for signs and symptoms as well as preventative measures to mitigate the potential for heat illness. In addition, cold environments can pose adverse risk, such examples include use of non-insulated steel-toe safety shoes in frigid conditions which has the potential to increase the risk of frostbite, while safety gloves worn for chemical protection may inadequately insulate hands from the cold.

It is the responsibility of Project Teams to integrate site-specific protocols to manage PPE hazards into such site-specific HASPs. These protocols can encompass considerations like work/rest ratios, crew rotations, and other accommodations for exceptionally demanding conditions.

The following measures are recommended for controlling hazards posed by PPE use:

- Prioritize through the hierarchy of controls with a focus on elimination, substitution, engineering, work practice and administrative control implementation rather than sole reliance on PPE. PPE shall be considered the last line of worker protection.
- Workers should maintain physical fitness to be able to withstand the potential physical strain of PPE use. A physically fit individual will endure less physiological strain, manifesting in a lower heart rate, reduced body temperature (indicating diminished retained body heat), more effective sweating, slightly lower oxygen consumption, and carbon dioxide production. Furthermore, acclimatization to extreme environmental conditions, such as high temperatures, can influence work performance and physical capacity.
- Understand the symptoms of PPE failure. Workers encountering any of these symptoms while donning PPE should promptly notify their onsite SHSO and/or SS:
    - Perception of odors when wearing a respirator
    - Skin irritation
    - Acute discomfort
    - Difficulty breathing
    - Unusual fatigue
    - Dizziness
    - Inability to see, hear, or speak clearly
    - Uncomfortable restriction of movement
    - Rapid pulse, nausea, or chest pain
- Implement a buddy system. Especially in situations where there is a need for increased level of protection (e.g., Level A-C) workers should work in pairs or teams, and are instructed to monitor the integrity of their team/partners gear and remain alert for symptoms of PPE failure.

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3.5 PPE Selection

For site-specific work, the Project Manager, in consultation with the Health and Safety Department, has overall responsibility for coordinating the selection and distribution of PPE to field staff and for ensuring that the selected PPE is appropriate for the site-specific hazards. Generally speaking, Roux employees are not engaged in emergency response or perform work at uncontrolled hazardous waste sites; if this is the case, the CHSD shall be made aware of the work and consult with the Project Team on appropriate PPE selection. Most work falls under environmental sampling of low-concentration contaminants in water/soil/perimeter air. Therefore work is carried out in Level D PPE. Upgrades would be based on more information as it becomes available. The United States Environmental Protection Agency (EPA) has created Guidelines for PPE Ensemble Selection to assist workers in selecting PPE ensembles for specific activities and tasks and determining which ensembles and air monitoring equipment should be used to address specific chemicals. Guidelines to Ensembles for Specific Activities/Tasks Where Chemical Exposure is Possible is provided as a reference in Appendix A.

3.6 Protective Clothing Selection Criteria

3.6.1 Chemicals Present

The most important factor in selecting PPE is the determination of what chemicals the employee may be exposed to. The number of chemicals on field investigations may range from a few to several hundred. The exact chemicals or group of chemicals present at the site (certain groups tend to require similar protection) can be determined by collecting and analyzing air, soil, water, or other site media samples. When data are lacking, research into the hazardous materials used or stored at the site can be used to infer potential chemical exposures on the site.

The most appropriate clothing shall be selected once the known or suspected chemicals have been identified and considered based on the type of work to be performed.

Protective garments are made of several different substances for protection against specific chemicals. There is no universal protective material. All will decompose, permeate, or otherwise fail to protect under given circumstances. Fortunately, most manufacturers make guides to using their products (i.e., Dupont's Tyvek™ Permeation Guide). These guides are usually for gloves and coveralls and typically provide information regarding chemical degradation rates (failure of the material to maintain structural integrity when in contact with the chemical) and may provide information on the permeation rate (whether or not the material allows the chemical to pass through). When permeation tables are available, they shall be used with degradation tables to determine the most appropriate protective material for the specific chemical hazard(s).

During most site work, chemicals are usually in mixed combinations, and the protective materials are not in continuous contact with pure chemicals for long periods; therefore, the selected material may be adequate for the particular chemical of most concern and the type of work being performed, yet not the "best" protecting material for all site chemicals and activities. Selection shall depend upon the most hazardous chemicals based on their hazards and concentrations. Sometimes, layering (i.e., using several layers of protective materials) affords the best protection.

3.6.2 Concentration of the Chemical(s)

One of the major criteria for selecting protective material is the concentration of the chemical(s) in air, liquid, and solid state. Airborne and liquid chemical concentrations should be compared to the OSHA standards, American Conference of Governmental Industrial Hygienists (ACGIH) and National Institute for Occupational Safety and Health (NIOSH) guidelines to determine the level of skin or other absorptive

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surface (e.g., eyes) protection needed. While these standards are not designed specifically for skin exposed directly to the liquid, they may provide skin designations indicative of chemicals known to have significant skin or dermal absorption effects. For example, airborne levels of PCBs on-site may be low because they are not very volatile, so the inhalation hazard may be minimal; however, PCB-containing liquid coming in direct contact with the skin may cause overexposure. Thus, PCBs have been assigned a skin designation in the OSHA and ACGIH exposure limit tables.

3.6.3 Physical State

The characteristics of a chemical may range from nontoxic to highly toxic, depending on its physical state. Inorganic lead in soil would not be considered toxic to site personnel unless it became airborne since it is generally not absorbed through the intact skin. However, organic lead in a liquid could be readily absorbed through the skin. Soil is frequently contaminated with hazardous materials. Concentrations will vary from a few parts per million to nearly one hundred percent by volume. The degree of hazard depends on the type of soil and concentration of the chemical. Generally speaking, “dry” soils that have not become airborne do not pose a hazard to site personnel if they take minimal precautions, such as wearing lightweight gloves.

3.6.4 Length of Exposure

The length of time a material is exposed to a chemical increases the probability of a breakthrough. Determinations of actual breakthrough times for short-term exposures indicate that several materials that would be considered inadequate under long-term exposures can be used. Different materials that would be considered inadequate under long-term exposures can be used. It should be kept in mind that during the manufacturer’s permeation testing, a pure (100% composition) liquid is usually placed in direct contact with the material, producing a worst-case situation.

3.6.5 Abrasion

When selecting protective clothing, the job the employee is engaged in must be taken into consideration. Persons moving drums or performing other manual tasks may require added protection for their hands, lower chest, and thighs. Using leather gloves and a heavy apron over other normal protective clothing will help prevent damage to the normal PPE and thus reduce worker exposures.

3.6.6 Dexterity

Although protection from skin and inhalation hazards is the primary concern when selecting PPE, the ability to perform the assigned task must be maintained. For example, personnel cannot be expected to perform work that requires fine dexterity if they must wear thick gloves. Therefore, the PPE selection process must consider the task being performed and provide PPE alternatives or techniques that maintain dexterity while still protecting the worker (e.g., wearing tight latex gloves over more bulky hand protection to increase dexterity).

3.6.7 Ability to Decontaminate

If disposable clothing cannot be used, the ability to decontaminate the materials selected must be taken into consideration. Once a chemical makes contact with the material, the PPE must be cleaned before reusing it. If the chemical has completely permeated the material, the clothing cannot be adequately decontaminated, and the material should be discarded.

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3.6.8 Climactic Conditions

The human body works best with few restraints from clothing. Protective clothing adds a body burden by increasing weight, restricting movement, and preventing the body's natural cooling process. In severe situations, a modified work program must be used.

Some materials act differently when they are very hot and very cold. For example, PVC becomes almost brittle in frigid temperatures. If there are any questions about the stability of the protective materials under different conditions, the manufacturer should be contacted before using PPE in the field.

3.6.9 Work Load

Like climactic conditions, the type of work activity may affect work duration and personnel's ability to perform certain tasks. Similarly, the amount of protective materials a person wears will affect their ability to perform certain tasks. For example, a person in a total encapsulating suit, even at 72˚F, cannot work for more than a short period of time without requiring a break.

The work schedule should be adjusted to maintain the health of the employees. Modified work practices may include allowing more time for individual job tasks and implementing work/rest cycles per NIOSH and ACGIH thermal stress recommendations. Special consideration should be given to the selection of clothing that protects the worker and adds the least burden when personnel are required to perform strenuous tasks. Excessive bodily stress frequently represents the most significant hazard encountered during fieldwork.

3.6.10 Types of Protective Materials

1. Cellulose or Paper: suitable for nuisance dust and coarse fibers.
2. Natural and Synthetic Fibers
    a. Tyvek™: suitable small-sized hazardous particles, including lead, asbestos, and mold.
    b. Tychem™: is suitable for a variety of hazards, from light liquid splashes to heavy exposures to industrial chemicals and agents.
    c. Nomex™: is suitable for flame-resistance, radiation resistance, acids, alkalis, fluorocarbon refrigerants (CFCs), and non-polar solvents.
3. Elastomers
    a. Polyethylene: suitable for polar substances and solvents.
    b. Saran™ : suitable for flame-resistance, acids, alkalis, oils, and organic solvents.
    c. Polyvinyl Chloride (PVC): suitable for alcohols, oils, inorganic acids, alkalis, and salts.
    d. Neoprene: suitable for polar/non-polar substances, petroleum mixtures, and ≤ 200 F heat resistance.
    e. Butyl Rubber: suitable for polar substances and solvents.
    f. Viton: suitable for non-polar substances, petroleum mixtures, and ≤ 200 F heat resistance.
    g. Nitrile: suitable for polar/non-polar substances and petroleum mixtures.

3.7 Protection Levels

3.7.1 Level A Protection

Level A protection (a fully encapsulated suit) is used when skin hazards exist or when no known data positively rule out skin and other absorption hazards. Per the Roux Respiratory Protection Management Program, Roux employees are not authorized to enter an IDLH atmosphere; therefore, the program does

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not allow supplied air respirators (SARs) or self-contained breathing apparatus (SCBA). At no time will Level A work be performed without the consent of the CHSD and OM.

The following conditions warrant the use of Level A protection:

- Hazardous substances have been identified and require the highest level of protection for skin, eyes, and the respiratory system;
- The atmosphere contains less than 19.5% oxygen or an atmosphere immediately dangerous to life and health (IDLH) that have not been ruled out;
- Site operations involve a high potential for splash, skin immersion, or exposure to suspected skin hazards;
- Direct-reading instruments indicate high levels of unidentified but potentially hazardous vapors or gases in the air (e.g., Total atmospheric readings on the Photoionization Detector (PID), Flame Ionization Detector (FID), and similar instruments indicate 500 to 1,000 ppm of unidentified substances); and
- Direct-reading instruments are not available to test the air and suspected highly toxic substances may be present.

It may be necessary to base the decision to use Level A protection on indirect evidence. Other conditions that may indicate the need for Level A protection include:

- Confined spaces;
- Sites containing known skin hazards;
- Sites with no established history to rule out skin and other absorption hazards;
- Site exhibiting signs of acute mammalian toxicity (e.g., dead animals, illnesses associated with past entry into the site by humans);
- Sites at which sealed drums of unknown materials must be opened;
- Visible indicators such as leaking containers or smoking chemical fires; and
- Extremely hazardous substances (e.g., cyanide compounds, concentrated pesticides, Department of Transportation Poison "A" materials, suspected carcinogens, and infectious substances) are known or suspected to be present, and skin contact is possible.

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Table 1: Recommended Level A Ensemble Components

Component	Type	Manufacturer / Recommended Material	Notes
Respirator	Positive-pressure full-facepiece SCBA or positive-pressure supplied-air respirator with escape SCBA[1]	NIOSH approved respirator	See Roux's Respiratory Protection Program. Roux employees are not approved to utilize Supplied Air (SAR) and/or Self-contained breathing apparatus (SCBA).
Suit	Totally encapsulated chemical- and vapor-protective suit	DuPont® Tychem™ or Responder CSM™	Other material types may be substituted based on known contaminants.
Inner Gloves	Lightweight	Nitrile, Neoprene, PVC, or Viton®	Other material types may be substituted based on known contaminants.
Outer Gloves	An integral part of the suit	See Appendix A for additional information	Confirm chemical performance rating for suspected contaminants. Glove material may have different performance ratings than suit material. All fully-encapsulating suit materials must be compatible with substances involved.
Inner Boot	Integral Part of Suit	-	-
Outer Boot	HazMat boot[2]	–	Confirm chemical performance rating of outer boot for suspected contaminants. Provides slip/abrasion resistance.
Hard Hat	Standard[3]	-	-

[1] Must be NIOSH approved.
[2] Must meet NFPA 1991/NFPA 1994 requirements depending on the site hazard assessment.
[3] Must comply with the applicable ANSI standard.

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3.7.2 Level B Protection

Level B protection is utilized when the highest level of respiratory protection is needed, but hazardous material exposure to the few unprotected areas of the body is unlikely. At no time will Level B work be performed by Roux personnel without the consent of the CHSD and OM.

The following conditions suggest a need for Level B protection:

- The type and atmospheric concentration of toxic substances have been identified, and they require the highest level of respiratory protection;

- IDLH atmospheres where the substance or concentration in the air does not present a severe skin hazard;
- The type and concentrations of toxic substances do not meet the selection criteria permitting the use of air-purifying respirators and
- It is highly unlikely that the work being done will generate high concentrations of vapors, gases, particulates, or splashes of materials that will affect personnel's skin.

Table 2: Recommended Level B Ensemble Components

Component	Type	Manufacturer / Recommended Material	Notes
Respirator	Positive-pressure full- facepiece SCBA or positive-pressure supplied-air respirator with escape SCBA[1]	NIOSH approved respirator	See Roux's Respiratory Protection Program. Roux employees are not approved to utilize Supplied Air (SAR) and/or Self-contained breathing apparatus (SCBA).
Suit	Chemical-resistant clothing (liquid-splash protective suit with integral boot and hood)[2]	DuPont® Tychem® CPF 3	Other material types may be substituted based on known contaminants.
Inner Gloves	Light/medium weight	Nitrile, Neoprene, PVC, Viton®, or PE/EVAL	Other material types may be substituted based on known contaminants.
Outer Gloves	Medium/heavy weight	Butyl MIL-G12223, Nitrile, Neoprene, PVC, Viton®, PE/EVAL, or heavy weight Nitrile or Neoprene	Confirm chemical performance rating. Other material types may be substituted based on known contaminants.
Inner Boot	Safety work boot	–	Other boot types may be substituted based on known contaminants and physical hazards. Puncture resistant shanks may be required.
Outer Boot	Heavy weight Latex booties or outer boots[2]	Latex booties are used to protect suit for light duty applications. NFPA-rated outer boots may be required based on anticipated site conditions and tasks.	Other outer boot coverings may be substituted based on known contaminants/anticipated tasks.
Hard Hat	Standard[3]	-	-

[1] Must be NIOSH approved.
[2] Must meet NFPA 1991/NFPA 1994 requirements depending on the site hazard assessment.
[3] Must comply with the applicable ANSI standard.

3.7.3 Level C Protection

Level C protection is utilized when skin and respiratory hazards are well defined, and the criteria for using negative pressure respirators have been fulfilled (i.e., known contaminants and contaminant concentrations, acceptable oxygen levels, approved filter/cartridge available, known cartridge service

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life, etc.). Level C protection may require an emergency escape respirator during specific initial entry and site reconnaissance situations or when applicable after that.

Table 3: Recommended Level C Ensemble Components

Component	Type	Manufacturer / Recommended Material	Notes
Respirator	Full-face air-purifying respirator with appropriate cartridge[1]	NIOSH approved respirator	See Roux's Respiratory Protection Program for information about the brand, model, acceptable configurations, and specific care instructions for the standard issue respirator. Half-faced respirators may be donned if hazard assessment warrants.
Suit	Puncture/tear resistant suit material with boot and hood[2]	DuPont® Tychem® CPF 2/CPF 3 or Saranex	Other material types may be substituted based on known contaminants, if considered more appropriate.
Inner Gloves	Light weight	Nitrile, Neoprene	Other material types like Neoprene, PVC, Viton®, or PE/EVAL may be substituted based on known contaminants, if considered more appropriate.
Outer Gloves	Medium/heavy weight	Butyl, Nitrile, or other work glove	Confirm chemical performance rating. Other material types may be substituted based on known contaminants, if considered more appropriate.
Inner Boot	Safety work boot	–	Other boot types may be substituted based on known contaminants and physical hazards. Puncture resistant shanks may be required.
Outer Boot	Heavy weight Latex booties or outer boots[2]	Latex booties are used to protect suit for light duty applications. NFPA rated outer boots may be required based on anticipated site conditions and tasks.	Other outer boot coverings may be substituted based on known contaminants.
Hard Hat	Standard[3]	-	-
Eye Protection	Safety glasses/goggles[3,4]	-	-

1 Must be NIOSH approved.
2 Must meet NFPA 1991/NFPA 1994 requirements depending on the site hazard assessment.
3 Must comply with the applicable ANSI standard.
4 In the case a ½ face respirator is worn eye protection is required.

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3.7.4 Level D Protection

Level D is the basic work uniform. Level D is worn when the atmosphere contains no known hazard. Work functions preclude splashes, immersion, potential for inhalation, or direct contact with hazard chemicals. For most Roux field jobs Level D is the standard minimum level of protection worn.

Table 4: Recommended Level D Ensemble Components

Component	Type	Manufacturer / Recommended Material	Notes
Respirator	None	-	-
Suit	Coveralls, street clothes, or disposable Tyvek suit	–	Other types may be substituted as appropriate.
Inner Gloves	N/A		
Outer Gloves	As appropriate for physical hazards and for comfort	–	-
Boot	Safety work boot	–	Roux's standard safety boot is 6", steel/composite safety toe, and electrical hazard (EH) rated.
Outer Boot Covering	As appropriate	–	–
Hard Hat	Standard[3]	-	-
Eye Protection	Safety glasses/goggles[3]	-	-
High Visibility Clothing	High Visibility Vest /Jacket[3]	-	ANSI Class 2 Safety Vests/Jackets are the standard. Class 3 Safety vests/jackets shall be worn in worksites with 50+ MPH traffic.
Hearing Protection	Ear muffs/plugs	-	Workers exposed to excessive noise shall don hearing protection. Refer to Roux's Hearing Conservation Program for more information.

[1] Must be NIOSH approved.
[2] Must meet NFPA 1991/NFPA 1994 requirements depending on the site hazard assessment.
[3] Must comply with the applicable ANSI standard.

3.7.5 Level E Protection

Level E protection is used when radioactivity above 10 millirems per hour (mrems/hr) is detected at the site. Personal protective equipment for Level E includes:

- Coveralls;
- Air purifying respirator (i.e., P100 or equivalent);
- Time limits on exposure;
- Appropriate dermal protection for the type of radiation present, and

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- Radiation dosimetry and ambient monitoring.

3.7.6 Additional Considerations

Fieldwork will contain a variety of situations due to chemicals in various concentrations and combinations. These situations may be partially ameliorated by following the work practices listed below:

1. Foot protection is needed on every site. If the ground to be worked on is contaminated with liquid, and it is necessary to walk in the chemicals, some sort of protective shoe coverings or "booties" can be worn over the boots. Shoe coverings should be designed with soles to help prevent slips. Using disposable shoe coverings when contacting liquid contamination can on and reduce overall decontamination requirements. If non-liquids are to be encountered, a Tyvek™ bootie could be used. The advantage of booties is questionable if the ground contains any sharp objects. Boots should be worn with either cotton or wool socks to help absorb perspiration.
2. If the site requires hard hats, chin straps should be used if a person is stooping over where his/her hat may fall off. Respirator straps should not be placed over the hard hats, as this will affect the respirator's fit.

   Some types of protective materials conduct heat and cold readily. In cold conditions, natural material clothing should be worn under protective clothing. Protective clothing should be removed before allowing a person "to get warm." Applying heat, such as with a space heater, to the outside of the protective clothing may drive contaminant permeation. In hot weather, under clothing will absorb sweat. It is recommended that workers use all cotton undergarments.
3. Body protection should be worn and taped to prevent anything from running into the top of the boot. Gloves should be worn and taped to prevent substances from entering the top of the glove. Duct tape is preferred, but masking tape can be used. When aprons are used, they should be taped across the back for added protection. However, this should be done so that the person has mobility.
4. Atmospheric conditions such as precipitation, temperature, wind direction, humidity, wind velocity, and pressure determine the behavior of contaminants in air or the potential for volatile materials to become airborne. These parameters should be considered in determining the need for and the level of protection.
5. A program must be established for periodic air monitoring during site operations. Without an air monitoring program, any changes to air quality would go undetected and might jeopardize on-site personnel. Monitoring can be done with various types of air pumps and filtering devices, followed by laboratory analysis of the filtration media, personnel dosimeters, and periodic walk-throughs by personnel carrying real-time direct-reading survey instruments.
6. For operations in the exclusion zone, different levels of protection may be selected, and various types of chemical-resistant clothing may be worn. This selection should be based on the job function, reason for being in the area, and the potential for skin contact with, or inhalation of, the chemicals present.
7. Escape masks must be readily available when levels of respiratory protection do not include an SCBA and the possibility of an IDLH atmosphere exists. The use and placement of escape masks should be made on a case-by-case basis. Escape masks should be strategically located at the site in areas with a higher potential for vapors, gases, or particulates.

3.8 Decontamination of PPE

Roux prefers the use of single-use PPE to minimize the requirement for significant decontamination. The following procedures shall be considered should a field project require the need for decontamination of PPE. Roux has also developed a Site Control and Decontamination Management Program.

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3.8.1 Site-Specific Decontamination Plans

The Project Manager (or another authorized individual) is responsible for formulating the site-specific PPE decontamination plan as an integral part of the Health and Safety Plan (HASP). The SHSO/SS' responsibilities include ensuring the plan's implementation and adapting it as site conditions evolve. Refer to Roux's Site Control and Decontamination Management program for additional requirements.

The decontamination plan, often created in conjunction with PPE selection, must be established prior to workers entering potentially contaminated areas. The plan should address the following key aspects:

- Decontamination Hazard Evaluation and Risk Assessment: Assessing risks associated with decontamination processes.
- PPE for Decontamination Line Assistants: Specifying appropriate PPE for personnel involved in decontamination.
- Roles and Responsibilities During Decontamination: Defining tasks and duties during the decontamination process.
- Layout and Quantity of Decontamination Stations: Determining the number and arrangement of decontamination stations, along with the designated PPE decontamination procedures at each station.
- Decontamination Equipment: Identifying the necessary equipment for effective decontamination.
- Decontamination Methods: Describing the methods and protocols for decontaminating personnel and equipment.
- Preventing Contamination of Clean Areas: Outlining procedures to prevent contamination of uncontaminated zones.
- Minimizing Contact with Contaminants During CPC Removal: Providing guidelines to reduce wearer exposure during the removal of Chemical Protective Clothing (CPC).
- Disposal Procedures for Inadequately Decontaminated Clothing and Equipment: Ensuring proper disposal practices for items that have not been adequately decontaminated.

The initial decontamination plan, which is developed in conjunction with the initial site hazard assessment, should be based on worst-case assumptions about the extent and type of contamination.

3.8.2 Emergency Decontamination of PPE

The designated SHSO/SS (or another authorized individual) assumes responsibility for addressing emergency decontamination within the site-specific Health and Safety Plan (HASP). Emergency decontamination may become necessary due to events such as fires, explosions, sudden violent storms, or medical emergencies. The emergency decontamination plan must clearly delineate emergency egress routes, as well as procedures for both decontamination and egress.

Some key points to consider regarding emergency decontamination.

- Immediate Notification: The SHSO/SS (or their designated counterpart) must be promptly informed of any circumstances requiring emergency decontamination. Additionally, they are accountable for tracking all personnel during the process.
- Urgent Medical Treatment: If urgent medical attention is necessary, decontamination of PPE may be delayed until the victim's condition stabilizes.
- Balancing Priorities: When feasible, decontamination should occur without hindering essential first aid. However, if a worker is exposed to an extremely toxic or corrosive substance, immediate decontamination is crucial to prevent severe injury or fatality.

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- Heat-Related Illness: In cases of heat-related illness, protective clothing must be promptly removed (refer to Roux's Heat Illness Prevention Program).

Emergency Facilities:

- For workers potentially exposed to corrosive materials, quick drenching or flushing facilities must be provided in accordance with 29 CFR 1910.151(c) and 1926.50(g).
- Similarly, if workers face other hazards (such as splash or dust) that could harm the eyes or body, readily accessible wash stations are essential. These stations should be properly located and maintained, including regular water changes, as per the manufacturer's instructions.

3.8.3 Protection of Decontamination Line Assistants

Should work require a decontamination corridor the following shall be used as guidance. The SHSO/SS (or other designated person) must for ensuring that decontamination line assistants receive appropriate PPE and addressing their protection within the site-specific HASP. Key zones—namely, the Exclusion Zone (EZ), Contamination Reduction Zone (CRZ), and Clean Support Zone—must be clearly marked both in the field and within the site-specific HASP. The following should be considered when preparing for protection of decontamination line assistants.

1. Task Hazard Analysis: A thorough analysis must be conducted for line assistants to determine the optimal PPE level required. Factors influencing this decision include:
    - Expected or Visible Contamination on Responders
    - Type of Contaminant and associated respiratory and skin hazards
    - Total Vapor/Gas Concentrations in the CRZ
    - Presence of Particulates and specific inorganic or organic vapors in the CRZ
    - Results of Wipe Tests (refer to Section 5.4)
    - Slope and Configuration of the CRZ
2. PPE Levels: Depending on the situation:
    - Line assistants may need to wear the same PPE level as workers in the EZ.
    - Alternatively, line assistants may be adequately protected by using PPE one level lower (e.g., wearing Level C protection while decontaminating workers who are wearing Level B)."

3.8.4 Procedures to Minimize PPE Contamination

Proper work practices and procedures should be implemented at sites to minimize the potential for contact with chemicals of concern while onsite. The following guidance should be considered when developing site-specific procedures:

- Opt for single-use Personal Protective Equipment (PPE) when feasible to minimize decontamination needs.
- Ensure complete sealing of PPE closures and interfaces, including pockets, zippers, and other potential openings.
- Position gloves and boots underneath the sleeves and pant legs of outerwear to reduce exposure.
- Place hoods outside the collar if they are not already attached.
- Utilize disposable outerwear and equipment when suitable to facilitate easy disposal and reduce decontamination efforts.
- Secure all junctions with tape to block contaminants from entering gloves, boots, jackets, and suits.

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- Adopt work practices that limit contact with hazardous substances, such as avoiding unnecessary exposure.
- Employ remote techniques for sampling, handling, and opening containers, like using drum grapples and pneumatic impact wrenches.
- Store monitoring and sampling devices in bags designed with openings for sample ports and sensors.
- Cover contaminant sources with plastic sheeting or overpacks to shield PPE from contamination.

3.8.5 PPE Disposal

The PM, in coordination with the field team, shall ensure the safe disposal of all wastes generated from PPE use. PPE must be placed in appropriate containers, labeled, and prepared for disposal separately from other forms of waste. Refer to Roux's General Waste Corporate Management Program for further guidance.

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APPENDIX A
EPA's Emergency Responder Health and Safety Manual

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APPENDIX E

Subsurface Utility Clearance
Management Program

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SUBSURFACE UTILITY CLEARANCE MANAGEMENT PROGRAM

CORPORATE HEALTH AND SAFETY MANAGER	**:**	**Brian Hobbs, CIH, CSP**
EFFECTIVE DATE	**:**	**01/19**
REVISION NUMBER	**:**	**2**

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1. PURPOSE

Roux Associates, Inc. and its affiliated companies, Roux Environmental Engineering and Geology, D.P.C, and Remedial Engineering (collectively, "Roux") has instituted the following program for completing proper utility mark-outs and for conducting subsurface clearance activities. This establishes a method to ensure, to the greatest extent possible, that utilities have been identified and contact and/or damage to underground utilities and other subsurface structures will be avoided.

2. SCOPE AND APPLICABILITY

The Subsurface Utility Clearance Management Program applies to all Roux employees, its contractors and subcontractors. Employees are expected to follow this program for all intrusive work involving Roux or other personnel (e.g., contractors/subcontractors) working for Roux unless the client's requirements are more stringent. Deviation from the program regardless of the specific work activity or work location must be pre-approved based on client's site knowledge, site experience and client's willingness for the use of this program. Any and all exceptions shall be documented and pre-approved by the Project Principal and the Office Manager.

3. PROCEDURES

3.1 Before Intrusive Activities

During the project kick-off meeting for intrusive activities the PM will review the Roux Subsurface Utility Clearance Checklist and Utility Verification (Appendix C) / Site Walkthrough Record (Appendix D) and the below bullet points with the project field team:

(Please note that these are intended as general reminders only and should not be solely relied upon.)

- Ensure the Mark-out / Stake-out Request Information Sheet (or one-call report) is complete and accurate for the site including address and cross streets and review for missing utilities. (Note: utility mark-out organizations do not have contracts with all utilities and it is often necessary to contact certain utilities separately such as the local water and sewer authorities).
- Have written confirmation prior to mobilizing to the site that the firm or Roux personnel performing the intrusive activity has correctly completed the mark-out notification process including requesting mark-outs, waiting for mark-outs to be applied to ground surfaces at the site, and receiving written confirmation of findings (via fax or email) from utility operators for all known or suspected utilities in the proposed area of intrusive activity, and provided utility owner written confirmation to Roux personnel for review and project files documentation.
- Do not begin any intrusive activity until all utilities mark-out has been completed (i.e., did all utilities mark-out the site?) and any unresolved mark-out issues are finalized. Perform a site walk to review the existing utilities and determine if said utilities have been located by the utility locators.

  (Note: The Tolerance Zone is defined as two feet plus half of the diameter or half of the greatest dimension (for elliptical sewers, duct banks and other non-cylindrical utilities) of a utility and two feet from the outside edge of any subsurface structure.)
- Install Pre-Clearance exploratory test holes (e.g., hand-dug test holes or other soft digging techniques) for the first 5-ft below land surface (BLS) at each location prior to conducting mechanized intrusive activities. The size of the pre-clearance exploratory test hole should be at a minimum twice the diameter of any downhole tool or boring device. (Note: Pre-Clearance exploratory test holes should be defined in the SOW/proposal provided to the client to prevent project delays and to allow adequate time for PM and PP to evaluate alternative approaches for the project. Alternative approaches will need to be pre-approved by the OM.

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- For excavations, all utilities need to be marked and then exposed by hand following the protocols in this program. Pre-clearing for excavations may be performed by the "moat" technique (i.e., soft digging around the perimeter). In these cases, dig in small lifts (<12" for first 5 feet) using a dedicated spotter.) For Tolerance Zone work, unless otherwise agreed upon with the Utility Operator, work within the tolerance zone requires verification by means of hand-dug test holes performed to expose the utility. Once structures have been verified a minimum clearance of two feet must be maintained between the utility and any powered equipment.
- In addition, the following activities should be conducted:
  - Review the work scope to be performed with the site owner/tenant to determine if it may impact any utilities;
  - Attempt to procure any utility maps or historic drawings of subsurface conditions of the site;
  - **Determine the need for utility owner companies to be contacted or to have their representatives on site**;
  - Where mark-outs terminate at the property boundary, consider the use of private utility locating / GPR / geophysical-type services which may be helpful in locating utilities. Use of private utility locating firms, however, does not eliminate the legal requirement for the Excavator firm to submit a request for Public Utility Mark-outs. Also, the information provided by the service may be inaccurate and unable to locate subsurface utilities and structures in urban areas, landfills, urban fill areas and below reinforced slabs, etc. They should not be relied upon as the only means of performing utility clearance;
  - Documented description of the dig site which is included in the projects Health and Safety Plan (HASP) and one call report will be maintained in the field and distributed amongst Roux personnel its contractors and subcontractors; and
  - Documentation of the actual placement of mark outs in the field shall be collected using dated pictures, videos and/or sketches with distance from markings to fixed objects. All documentation shall be maintained within the project file.

3.2 During Intrusive Activities

The PM, field team lead or personnel performing oversight is to:

- Ensure the mark-out remains valid. (In certain states there are limits regarding the duration of time after the mark-out was applied to the ground surface work can be started or interrupted.) Additionally, the mark-outs must be maintained, documented, and in many cases refreshed periodically to be considered valid, this will be accomplished through calls to the one call center.
- Ensure intrusive activities are only performed within the safe boundaries of the mark-out as detailed in the One-Call Report.
- Halt all work if intrusive activities have resulted in discovery of an unmarked utility. Roux personnel shall notify the facility owner/operator and the one call center. All incidents such as this will be reported as per Roux Incident Investigation and Reporting Management Program.
- Halt all work if intrusive activities must take place outside of the safe boundaries of a mark-out and only proceed after new mark-outs are performed.
- Halt the intrusive activities and immediately consult with the PP if an unmarked utility is encountered.
- Completing any subsurface utility clearance incident reports that are necessary.

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- If a utility cannot be found as marked Roux personnel shall notify the facility owner/operator directly or through the one call center. Following notification, the excavation may continue, unless otherwise specified in state law.
- Contractors/subcontractors must contact the one-call center to refresh the ticket when the excavation continues past the life of the ticket. Ticket life shall be dictated by state law however at a maximum ticket life shall not exceed 20 working days.

3.3 Stop Work Authority

Each Roux employee has Stop Work Authority which he or she will execute upon determination of any imminent safety hazard, emergency situation, or other potentially dangerous situation, such as hazardous weather conditions. This Stop Work Authority includes subsurface clearance issues such as the adequacy of a mark-out or identification during intrusive operations of an unexpected underground utility. Authorization to proceed with work will be issued by the PM/PP after such action is reviewed and resolved. The PM will initiate and execute all management notifications and contact with emergency facilities and personnel when this action is appropriate.

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Appendix A - Definitions

Intrusive Work Activities	All activities such as digging or scraping the surface, including but not limited to, excavation, test pitting or trenching, soil vapor sampling or the installation of soil borings, soil vapor monitoring points and wells, or monitoring wells, and drilling within the basement slab of a recently demolished building.
Mark-out / Stake Out	The process of contracting with a competent and qualified company to confirm the presence or absence of underground utilities and structures. This process will clearly mark-out and delineate utilities that are identified so that intrusive work activities can be performed without causing disturbance or damage to the subsurface utilities and structures. After utility mark-outs are completed the soft digging will be completed prior to intrusive work.
Tolerance Zone	Defined as two feet on either side of the designated centerline of an identified utility, plus half of the diameter or half of the greatest dimension (for elliptical sewers, duct backs and other non-cylindrical utilities) of that utility and two feet from the outside edge of any subsurface structure.
Structure	For the purpose of this program a structure is defined as any underground feature that may a present potential source(s) of energy such as, but not limited to, utility vaults, bunkers, piping, electrical boxes, wires, conduits, culverts, utility lines, underground tanks and ducts.
Soft Digging	The safest way to remove material from unknown obstructions or services is by using tools such as a vactor or air knife, non-mechanical tools, or hand tools. The methods are clean and non-evasive and used for uncovering and exposing buried services, excavating and for providing a quick method of soil removal from sensitive areas.
Verification	Exploratory test-hole dug with hand tools within the Tolerance Zone to expose and verify the location, type, size, direction-of-run and depth of a utility or subsurface structure. Vacuum excavation (soft dig) methods can further facilitate exposure of a subsurface utility and accurately provide its location and identification prior to intrusive work approaching the Tolerance Zone.

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Appendix B - Example of Completed One Call Report

Example Completed One-Call Report

New York 811

Send To: C_EMAIL Seq No: 744

Ticket No: 133451007 ROUTINE

Start Date: 12/16/13 Time: 7:00 AM Lead Time: 20

State: NY County: QUEENS Place: QUEENS
Dig Street: 46TH AVE Address:
Nearest Intersecting Street: VERNON BLVD
Second Intersecting Street: 11TH ST

Type of Work: SOIL BORINGS
Type of Equipment: GEOPROBE
Work Being Done For: ROUX

In Street: X On Sidewalk: X Private Property: Other:
On Property Location if Private: Front: Rear: Side:

Location of Work: MARK THE ENTIRE NORTH SIDE OF THE STREET AND SIDEWALK OF: 46TH AVE BETWEEN VERNON BLVD AND 11TH STREET

Remarks:

Nad: Lat: Lon: Zone:
ExCoord NW Lat: 40.7475399 Lon: -73.9534811 SE Lat: 40.7457406 Lon: -73.9493680

Company : ZEBRA ENVIROMENTAL Best Time: 6AM-5PM
Contact Name: DAVID VINES Phone: (516)596-6300
Field Contact: DAVID VINES Phone: (516)596-6300
Caller Address: 30 N PROSPECT AVE Fax Phone: (516)596-4422
LYNBROOK, NY 11563
Email Address: david@zebraenv.com

Additional Operators Notified:
ATTNY01 AT&T CORPORATION (903)753-3145
CEQ CONSOLIDATED EDISON CO. OF N.Y (800)778-9140
MCINY01 MCI (800)289-3427
PANYNJ01 PORT AUTHORITY OF NY & NJ (201)595-4841
VZQ VERIZON COMMUNICATIONS (516)297-1602

Link to Map for C_EMAIL: http://ny.itic.occinc.com/XGMZ-DF2-L23-YAY

Original Call Date: 12/11/13 Time: 1:15 PM Op: webusr
IMPORTANT NOTE: YOU MUST CONTACT ANY OTHER UTILITIES DIRECTLY

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Appendix C - Roux Subsurface Utility Clearance Checklist

Roux Subsurface Utility Clearance Checklist ***Date of Revision – 12/3/14***

Work site set-up and work execution

ACTIVITY	Yes	No	N/A	COMMENTS INCLUDING JUSTIFICATION IF RESPONSE IS NO OR NOT APPLICABLE
Daily site safety meeting conducted, SPSAs performed, JSAs reviewed, appropriate work permits obtained.				
HASP is available and reviewed by site workers / visitors.				
Subsurface Utility Clearance Procedure has been reviewed with all site workers.				
Work area secured; traffic control established as needed. Emergency shut-off switch located. Fire extinguishers / other safety equipment available as needed.				
Utility mark-outs (public / private) clear and visible. Provide Excavator's Stake-Out Reference Number / Request Date / Time.				
Tolerance zone work identified.				
Work execution plan reviewed and adhered to (ground disturbance methods, clearance depths, any special utility protection requirements, or any other execution requirements; especially for Tolerance Zone work).				
Verbal endorsement received from Roux PM for any required field deviations to work execution plan.				

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Key reminders for execution:

The Subsurface Utility Clearance Protocol should be referenced to determine all requirements while executing subsurface work. The bullet points below are intended as general reminders only and should not be solely relied upon.

- Tolerance zone is defined as two feet plus half of the diameter or half of the greatest dimension (for elliptical sewers, duct banks and other non-cylindrical utilities) of a utility and two feet from the outside of any subsurface structure.
- Install Pre-Clearance exploratory test holes (e.g., hand-dug test holes or vacuum excavation) must be performed for the first five feet below land surface (BLS) at each location prior to conducting mechanized intrusive activities. The size of the pre-clearance exploratory test hole should be at a minimum twice the diameter of any downhole tool or boring device. (Note: Pre-clearance exploratory test holes should be defined in the SOW/proposal provided to the client to prevent project delays and to allow adequate time for PM and PP to evaluate alternative approaches for the project. Alternate approaches will need to be pre-approved by the OM.
- For excavations, all utilities need to be marked and then exposed by hand following the protocols in this program. Pre-clearing for excavations may be performed by the "moat" technique (i.e., soft

digging around the perimeter). In these cases, dig in small lifts (<12" for first five feet) using a dedicated spotter.) For Tolerance Zone work, unless otherwise agreed upon with the Utility Operator, work within the tolerance zone requires verification by means of hand-dug test holes to expose the utility. Once structures have been verified a minimum clearance of two feet must be maintained between the utility and any powered equipment.

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Appendix D - Utility Verification/Site Walkthrough Record

Employee Name: _____

Date: _____

Instructions: For each utility suspected at the job site, indicate location on the job site, approximate burial depth, and means of detecting the utility. Leave blank if that utility is not believed to be present.

Utility	Description of Utility Location Identified Onsite	Approx. Depth (bls)	Method / Instrumentation used to determine Utility Location	Utility Owner Response (Date/Time)	Mark Out Indicates (Clear / Conflict)
Electrical Lines					
Gas Lines					
Pipelines					
Steam Lines					
Water Lines					
Sanitary and Stormwater Sewer lines					
Pressured Air-Lines					
Tank Vent Lines					
Fiber Optic Lines					
Underground Storage Tanks					
Phone Lines/ Other					

* bls - below land surface

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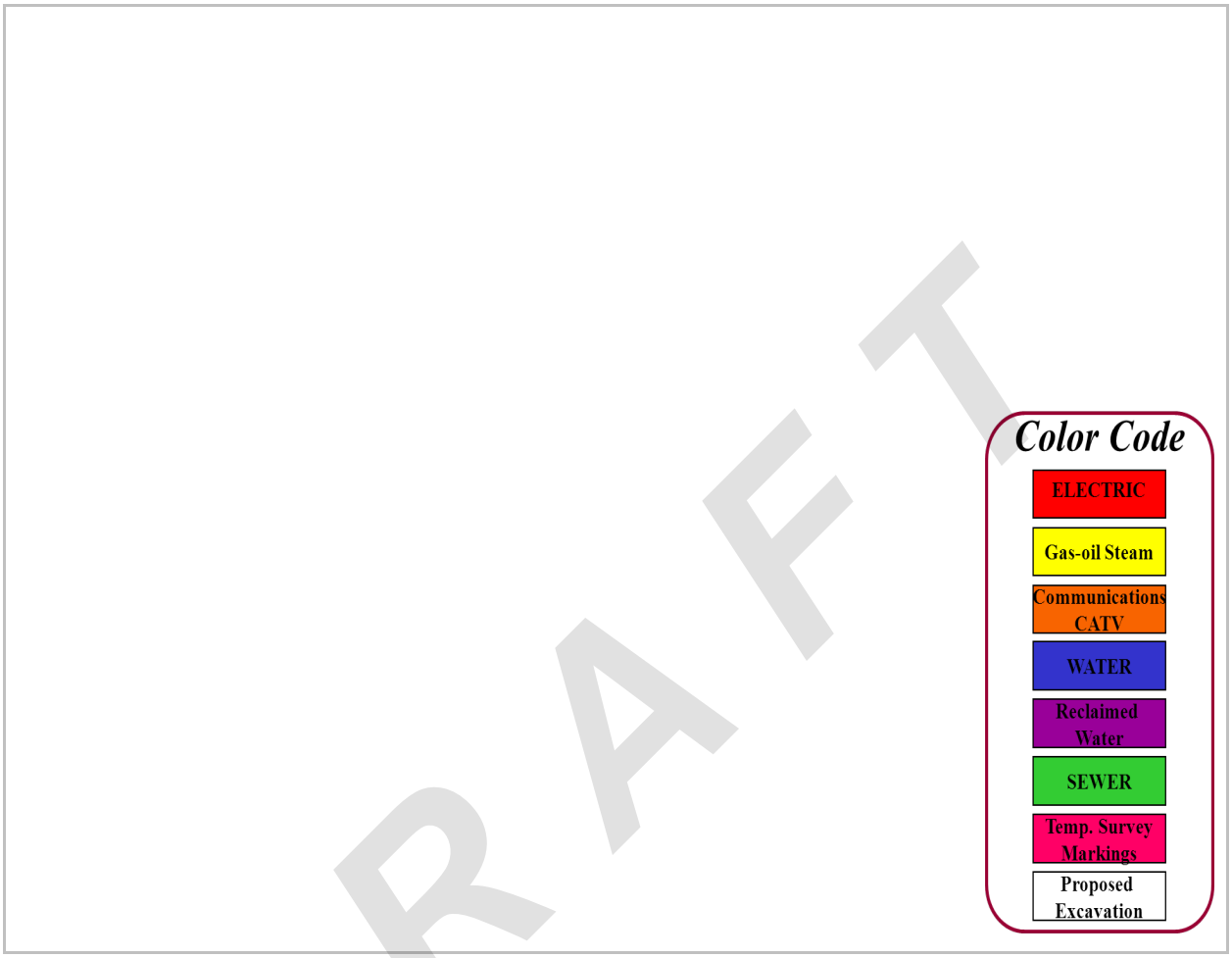
Site Sketch Showing Utilities:



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Other Comments / Findings:

Completed by: _____

Signature: _____ Date: _____

APPENDIX F

Heavy Equipment Exclusion Zone
Management Program

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HEAVY EQUIPMENT EXCLUSION ZONE MANAGEMENT PROGRAM

CORPORATE HEALTH AND SAFETY MANAGER	:	**Brian Hobbs, CIH, CSP**
EFFECTIVE DATE	:	**01/2019**
REVISION NUMBER	:	**1**

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1. PURPOSE

The purpose of the Exclusion Zone Management Program is to establish the minimum clearance distance that must be maintained between workers and heavy equipment while equipment is in operation (i.e., engaged or moving). The intent is to have no personnel or equipment entering the Exclusion Zone while the equipment is in operation or moving to ensure that Roux and Subcontractor employees are not unnecessarily exposed to the hazards of the equipment.

2. SCOPE AND APPLICABILITY

This Management Program applies to all Roux Associates, Inc. and its affiliated companies, Roux Environmental Engineering and Geology, D.P.C, and Remedial Engineering (collectively, "Roux") employees and their subcontractors who are performing field work and are potentially exposed to heavy equipment. For the purpose of this program, heavy equipment includes, but is not necessarily limited to: excavation equipment, drill rigs, vacuum trucks, forklifts, lull telehandlers, man lifts, bobcats, delivery trucks, etc.

3. PROCEDURES

As specified in the following sections of this Program, an Exclusion Zones must be established and maintained during activities involving the movement/operation of heavy equipment. The Exclusion Zone requirements apply to all personnel on the site but are primarily focused on those personnel who are required to be working in the vicinity of the equipment. The exclusion zone is in effect when heavy equipment is moving or engaged (ex. movement of an arm or bucket of an excavator, rotation of an auger, lifting of a load with a forklift, raising/lowering of a man lift, etc.).

1. The Exclusion Zone must meet the following minimum requirements:
   - A minimum distance of 10 feet from all heavy equipment and loads being moved by the equipment;
   - Greater than the swing/reach radius of any moving part on the heavy equipment (i.e., for large equipment this may mean an exclusion zone distance larger than 20 feet);
   - Greater than the tip-over distance of the heavy equipment; and
   - Greater than the radius of blind spots.

   The size of the Exclusion Zone will need to be determined on a task-specific basis considering the size of the heavy equipment in use and the task being performed. Prior to all heavy equipment operations, the Exclusion Zone(s) distance must be specifically identified in the Job Safety Analysis (JSA).
2. The spotter (or another individual) should be assigned responsibility for enforcing the Exclusion Zone. The spotter should be positioned immediately outside of the Exclusion Zone within a clear line of sight of the equipment operator. The spotter must signal the operator to stop work if anyone or anything has the potential to enter or compromise the Exclusion Zone. The operator should stop work if the spotter is not within his/her line of sight. If multiple pieces of equipment are being used, each piece of equipment must have its own Exclusion Zone and spotter. For large excavation and demolition projects the spotter should be in constant radio contact (not cell phone) with the machine driver.
3. If an individual must enter the Exclusion Zone, the designated Spotter must signal the Equipment Operator to stop the equipment. Once the equipment is no longer moving (ex. movement of an arm of an excavator is STOPPED, lifting of a load with a forklift STOPPED, raising/lowering of a man lift is

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STOPPED, etc.), the operator must DISENGAGE THE CONTROLS and STOP and SIGNAL BY "SHOWING HIS HANDS". This signal will indicate that it is safe for the personnel to enter the limits of the Exclusion Zone to perform the required activity. The equipment must remain completely stopped/disengaged until all personnel have exited the limits of the Exclusion Zone and the designated Spotter has signaled by "SHOWING HIS HANDS" to the Equipment Operator that it is safe to resume operations.

4. When entering the limits of the Exclusion Zone, personnel must at a minimum:
   - Establish eye contact with the operator and approach the heavy equipment in a manner that is in direct line of sight to the Equipment Operator;
   - Never walk under any suspended loads or raised booms/arms of the heavy equipment; and
   - Identify a travel path that is free of Slip/Trip/Fall hazards.
5. The Exclusion Zone should be delineated using cones with orange snow fence or solid poles between the cones, barrels, tape or other measures. For work in rights-of-way rigid barriers, such as Jersey barriers or temporary chain link fence should be used. For certain types of wide-spread or moving/mobile equipment operations, such delineation may not be practicable around pieces of equipment or individual work areas. In such instances, it is expected that the entire operation will be within a larger secure work area or that additional means will be utilized to ensure security of the work zone.

All subcontractors who provide heavy equipment operations to field projects must implement a program that meets or exceeds the expectations described above as well as any additional requirements that may be required on a client or site-specific basis.

3.1 Exceptions

It is recognized that certain heavy equipment activities may require personnel to work within the limits of the Exclusion Zone as specified in this program. Such activities may include certain excavation clearance tasks, drill crew activities or construction tasks. However, any such activity must be pre-planned with emphasis on limiting the amount and potential exposure of any activity required within the zone. The critical safety steps to mitigate the hazards associated with working within the Exclusion Zone must be defined in the JSA and potentially other project-specific plans (i.e., critical lift plans, etc.), and approved by the Roux Project Principal and client representative, if required, prior to implementation.

4. TRAINING

Many Roux projects have different requirements that are client-specific or site-specific in nature. It is the responsibility of the Project Principal (or Project Manager if delegated this responsibility by the Project Principal) to ensure that the workers assigned to his/her projects are provided orientation and training with respect to these client and/or site-specific requirements.

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Community Air Monitoring Plan

Broadway Triangle Site A
667 Flushing Avenue &
31 Bartlett Street
Brooklyn, New York 11206

March 3, 2026

Prepared for:

Bartlett Crossing LLC, Bartlett Crossing Managers LLC, Bartlett Crossing UNP LLC, Bartlett Crossing Housing Development Fund Company, Inc.
2 Kingsland Avenue
Brooklyn, New York 11211

Prepared by:

Roux Environmental Engineering and Geology, D.P.C.
209 Shafter Street
Islandia, New York 11749

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& Management
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rouxinc.com

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   1.4 Available Suppression Techniques 3
   1.5 Reporting 3

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1. Action Limit Summary for VOCs and Particulates

Appendices

A. Action Limit Report

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1. Introduction

Roux Environmental Engineering and Geology, D.P.C. (Roux) on behalf of Bartlett Crossing LLC, Bartlett Crossing Managers LLC, and Bartlett Crossing UNP LLC (collectively, the "Volunteer"), has developed a project specific Community Air Monitoring Plan (CAMP) to implement real time monitoring at the Site, which occupies Tax Lot 49 of Tax Block 2272 and Tax Lot 52 of Tax Block 2269, during remedial construction activities.

The monitoring program will be implemented at all times during which earth disturbance activities are occurring. The CAMP is designed to provide a measure of protection for the downwind community and on-Site workers not directly involved with the subject work activities from potential airborne contaminant releases as a direct result of remedial and construction activities. This plan is consistent with the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan guidance document.

The specifics of the CAMP are presented in the following four (4) sections:

- 1.1 Volatile Organic Compound (VOC) Monitoring Approach
- 1.2 Particulate Monitoring Approach
- 1.3 Meteorological Monitoring Approach
- 1.4 Available Suppression Techniques

1.1 VOC Monitoring Approach

Total VOC concentrations in air will be monitored continuously at a location downwind of the investigation activities during all ground intrusive activities. An upwind monitoring station will be set up adjacent to where the intrusive activities are occurring. The VOC monitoring equipment will be located at temporary monitoring stations that will be established daily based on Site logistics and weather conditions. The monitoring work will be conducted using MiniRAE 3000 (or equivalent) portable VOC monitors, or similar type monitors, for all VOC monitoring. The equipment will be calibrated at least once daily using isobutylene as the calibration gas. One (1) upwind and one (1) downwind monitor will be deployed each day. Each monitoring unit is equipped with an audible alarm to indicate exceedance of the action levels (as defined below and summarized in Table 1).

The equipment is capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total VOCs at the downwind perimeter of the Site exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If the ambient air concentration of total VOCs at the downwind perimeter of the Site persists at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of VOCs identified, suppression techniques employed to abate emissions, and monitoring continued. After these steps, work activities can resume if the total organic vapor level at the Site perimeter is below 5 ppm over the background concentration for the 15-minute average. If levels are in excess of 25 ppm above background, identified contributing ground-intrusive activities will be halted and vapor suppression techniques will be evaluated and modified until monitoring indicates VOC levels at the Site perimeter are below 5 ppm over background. Once VOC levels are below 5 ppm at the Site perimeter, work will resume with continued monitoring.

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- All 15-minute readings will be recorded and be available for State Regulator (New York State Department of Environmental Conservation [NYSDEC] and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes will be recorded. If an exceedance of the action level occurs, an Action Limit Report (ALR) will be completed, identifying the monitoring device location, the measured VOC level, the activity causing the exceedance, meteorological conditions, and the corrective actions taken, as provided in Appendix A. Additionally, the NYSDEC and NYSDOH will be notified within 24 hours of the VOC ALR generation. Daily monitoring equipment locations and meteorological conditions will also be documented on the daily CAMP Monitoring Location Plan. All documentation will be kept on file at the Site.

1.2 Particulate Monitoring, Response Levels and Actions

Particulate concentrations will be monitored continuously at temporary particulate monitoring stations set up at the sidewalk at upwind and downwind locations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action levels (as defined below and summarized in Table 1). Monitoring equipment will be TSI DustTrak II monitors or equivalent. A minimum of one (1) upwind and one (1) downwind monitor will be deployed each day, equipped with an omni-directional sampling inlet and a PM-10 sample head. The data logging averaging period will be set to 15-minutes with time and date stamp recording. Alarm averaging will be set at 90 micrograms per cubic meter ($\mu g/m^3$) per 15-minute period. This setting will allow proactive evaluation of Site conditions prior to reaching Action Levels of 100 $\mu g/m^3$ above background. The equipment will be outfitted with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. The monitoring will be used to compare values to the following:

- If the downwind PM-10 particulate level is 100 $\mu g/m^3$ greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the Site, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 $\mu g/m^3$ above the upwind level and provided that no visible dust is migrating from the Site.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 $\mu g/m^3$ above the upwind level, work must be stopped, a re-evaluation of activities initiated, and dust suppression techniques modified. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 $\mu g/m^3$ of the upwind level and in preventing visible dust migration.

All 15-minute readings will be recorded and be available for State Regulator (NYSDEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes will be recorded. If an exceedance of the action level occurs, an ALR will be completed, identifying the monitoring device location, the measured particulate concentration, the activity causing the exceedance, meteorological conditions, and the corrective actions taken, as provided in Appendix A. Daily monitoring equipment locations will also be documented on the daily CAMP Monitoring Location Plan. All documentation will be kept on file at the Site.

1.3 Meteorological Monitoring

Wind speed (estimated) and wind direction, will be approximated based on field observations of on-Site personnel. Meteorological data consisting of temperature, barometric pressure, and relative humidity will be recorded in the field book based upon publically available information from local weather stations.

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1.4 Available Suppression Techniques

Odor Control

Due to the nature of the project, with intrusive activities occurring, the potential for generation of nuisance odors and the need for odor control may be necessary. If nuisance odors are identified, 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. Both NYSDEC and NYSDOH will be notified of all nuisance odor events and of all other complaints about the project.

All necessary means will be employed to prevent on- and off-Site nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) use of chemical odorants in spray or misting systems; and (e) use of staff to monitor odors in surrounding neighborhoods.

Dust Control

Due to the nature of the project, the potential for generation of nuisance dust and the need for dust control may be necessary. Dust suppression will be achieved through the use of water for wetting excavation areas, if required. Water will be available on-Site at suitable supply and pressure for use in dust control.

1.5 Reporting

All recorded monitoring data will be downloaded, and field logged periodically, including action limit reports (if any) and daily CAMP monitoring location plans. All records will be maintained on-Site and available for NYSDEC/NYSDOH review. A summary of CAMP findings, including excursions, will be provided in the Daily and Monthly Reports. All CAMP monitoring records will be included in the overall Final Engineering Report (FER) that will be submitted to the NYSDEC and NYSDOH and will include all of the CAMP data collected, daily monitoring station location maps, and copies of the ALRs (if any). If an ALR is generated due to VOC exceedances, the NYSDEC and NYSDOH will be notified within 24 hours of the exceedance.

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TABLES

1. Action Limit Summary for VOCs and Particulates

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Table 1. Action Limit Summary for VOCs and Particulates, Broadway Triangle Site A, Brooklyn, NY

Contaminant	Downwind Action Levels*	Action/Response
Volatile Organic Compounds (VOCs) (Monitoring Via Photoionization Detector and Odor Observation)	< 5 ppm	1. Resume work with continuing monitoring.
	5 ppm < level < 25 ppm	1. Work activities must be temporarily halted, source vapors must be identified, suppression techniques employed to abate emissions and monitoring continued. 2. After these steps, if VOC levels (200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or structure, whichever is less) is below 5 ppm over background, resume work.
	> 25 ppm	1. Identified contributing ground intrusive activities must be halted and vapor suppression techniques must be evaluated and modified until monitoring indicates VOC levels below the action level. 2. After these steps, if VOC levels (half the distance to the nearest potential receptor or structure) are below 5 ppm over background, resume work.
Particulates (Monitoring Via Particulate Meter and Observation)	< 100 ug/m^3	1. If dust is observed leaving the work area, then dust control techniques must be implemented or additional controls used.
	100 ug/m3 < level < 150 ug/m^3	1. Employ dust suppression techniques. 2. Work may continue with dust suppression techniques provided that downwind PM-10 particulate concentration do not exceed 150 ug/m^3 above the upwind level and provided that no visible dust is migrating from the work area.
	> 150 ug/m^3	1. STOP work 2. Re-evaluate activities, modify dust suppression techniques. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 ug/m^3 of the upwind level and in preventing visible dust migration.

* Instantaneous readings above background. Particulate readings are based on the respirable (PM-10) fraction. Background readings are taken at upwind locations relative to Work Areas or Exclusion Zones.

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APPENDIX A

Action Limit Report

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ACTION LIMIT REPORT

Project Location:

Date: _____ Time: _____

Name: _____

Contaminant: PM-10: _____ VOC: _____

Wind Speed: _____ Wind Direction: _____

Temperature: _____ Barometric Pressure: _____

DOWNWIND DATA

Monitor ID #: _____ Location: _____ Level Reported: _____

Monitor ID#: _____ Location: _____ Level Reported: _____

UPWIND DATA

Monitor ID #: _____ Location: _____ Level Reported: _____

Monitor ID#: _____ Location: _____ Level Reported: _____

BACKGROUND CORRECTED LEVELS

Monitor ID #: _____ Location: _____ Level Reported: _____

Monitor ID#: _____ Location: _____ Level Reported: _____

ACTIVITY DESCRIPTION

CORRECTIVE ACTION TAKEN

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APPENDIX F

Site Management Forms

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Site Inspection Checklist
Broadway Triangle Site A, Brooklyn, New York
NYSDEC BCP Site #C224333

Date: _____
Completed By: _____

Description	Status			Actions Taken / Comments
	Ok	Action Req.	N/A	
Site Cover System				
1 Inspect site cover system for cracks and leaks.				
Institutional Controls				
1 Confirm that the site usage is in compliance with the institutional controls.				
Site Records				
1 Inspect site records and confirm that they are on-Site and up to date (e.g., Site Management Plan, Site Inspection Checklists, etc.)				

Summary of Green Remediation Metrics for Site Management

Site Name: _____ Site Code: _____
Address: _____ City: _____
State: _____ Zip Code: _____ County: _____

Initial Report Period (Start Date of period covered by the Initial Report submittal)
Start Date: _____

Current Reporting Period
Reporting Period From: _____ To: _____

Contact Information
Preparer's Name: _____ Phone No.: _____
Preparer's Affiliation: _____

I. Energy Usage: Quantify the amount of energy used directly on-site and the portion of that derived from renewable energy sources.

	Current Reporting Period	Total to Date
Fuel Type 1 (e.g. natural gas (cf))		
Fuel Type 2 (e.g. fuel oil, propane (gals))		
Electricity (kWh)		
Of that Electric usage, provide quantity:		
Derived from renewable sources (e.g. solar, wind)		
Other energy sources (e.g. geothermal, solar thermal (Btu))		

Provide a description of all energy usage reduction programs for the site in the space provided on Page 3.

II. Solid Waste Generation: Quantify the management of solid waste generated on-site.

	Current Reporting Period (tons)	Total to Date (tons)
Total waste generated on-site		
OM&M generated waste		
Of that total amount, provide quantity:		
Transported off-site to landfills		
Transported off-site to other disposal facilities		
Transported off-site for recycling/reuse		
Reused on-site		

Provide a description of any implemented waste reduction programs for the site in the space provided on Page 3.

III. Transportation/Shipping: Quantify the distances travelled for delivery of supplies and lab-supplied bottles, shipping of laboratory samples, and the removal of waste.

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	Current Reporting Period (miles)	Total to Date (miles)
Standby Engineer/Contractor		
Laboratory Courier/Delivery Service (bottle and sample delivery)		
Waste Removal/Hauling		

Provide a description of all mileage reduction programs for the site in the space provided on Page 3. Include specifically any local vendor/services utilized that are within 50 miles of the site.

IV. Water Usage: Quantify the volume of water used on-site from various sources.

	Current Reporting Period (gallons)	Total to Date (gallons)
Total quantity of water used on-site (not including treated water)		
Of that total amount, provide quantity:		
Public potable water supply usage		
Surface water usage		
On-site groundwater usage		
Collected or diverted storm water usage		

Provide a description of any implemented water consumption reduction programs for the site in the space provided on Page 3.

V. Land Use and Ecosystems: Quantify the amount of land and/or ecosystems disturbed and the area of land and/or ecosystems restored to a pre-development condition (i.e. Green Infrastructure).

	Current Reporting Period (acres)	Total to Date (acres)
Land disturbed		
Land restored		

Provide a description of any implemented land restoration/green infrastructure programs for the site in the space provided on Page 3.

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Description of green remediation programs reported above (Attach additional sheets if needed)
Energy Usage:
Waste Generation:
Transportation/Shipping:
Water usage:
Land Use and Ecosystems:
Recommendations/Other:

CONTRACTOR CERTIFICATION
I, _____ (**Name**) do hereby certify that I am _____ (**Title**) of _____ (**Contractor Name**), which is responsible for the work documented on this form. According to my knowledge and belief, all of the information provided in this form is accurate and the site management program complies with the DER-10, DER-31, and CP-49 policies. _____ **Date** **Contractor**

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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

Site Name:

Site Number:

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.

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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:

Name and address of fill 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:

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The information provided on this form is accurate and complete.

_____ _____

Signature Date

_____

Print Name

_____

Firm

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