MTA Paratransit Relocation Facility
1100 Commerce Avenue
(Aka 1120 Commerce Avenue and 2401 Watson Avenue)
BRONX, NEW YORK

SITE MANAGEMENT PLAN

NYSDEC Order on Consent Index #: R2-20150206-62
NYSDEC Hazardous Waste Site #: 203074

Prepared for:

NYC Economic Development Corporation
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Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date
0	09/13/2021	N/A	

SEPTEMBER 2021

CERTIFICATION STATEMENT

I, Rebecca Kinal, P.E., certify that I am currently a NYS registered professional engineer or Qualified Environmental Professional 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).

_____ P.E.

September 13, 2021 DATE

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LIST OF ACRONYMS

Acronym	Definition
6 NYCRR	New York Codes, Rules and Regulations
AGV	Air Guidance Value
AWQSGVs	Ambient Water Quality Standards and Guidance Values
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
BTEX	A group of VOCs comprising benzene, toluene, ethylbenzene, and xylenes
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
COC	Contaminants of Concern
CoC	Certificate of Completion
CP	Commissioner's Policy
DER	Division of Environmental Remediation
EC	Engineering Control
ECL	Environmental Conservation Law
ECs	Engineering Controls
EPA	United States Environmental Protection Agency
EWP	Excavation Work Plan
FDNY	New York City Fire Department
FER	Final Engineering Report
HASP	Health and Safety Plan
ICs	Institutional Controls
MTA	Metropolitan Transportation Authority
MW	Monitoring Well
NY	New York
NYCOER	New York City Office of Environmental Remediation
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
PAHs	Polycyclic Aromatic Hydrocarbons
PCBS	Polychlorinated Biphenyls
PCE	Tetrachloroethylene
PGWSCOs	Protection of Groundwater Soil Cleanup Objectives
PID	Photoionization detector
PRR	Periodic Review Report

Acronym	Definition
QA/QC	Quality Assurance/Quality Control
QEP	Qualified Environmental Professional
RAOs	Remedial Action Objectives
RAWP	Remedial Action Work Plan
RI	Remedial Investigation
RIR	Remedial Investigation Report
RRSCO	Restricted Residential Soil Cleanup Objective
RSO	Remedial Site Optimization
SB	Soil Boring
SCGS	Standards, Criteria, and Guidance
SCOs	Soil Cleanup Objectives
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TCE	Trichloroethylene
TCL	Target Compound List
TOGS	Technical Operational and Guidance Series
ULURP	Uniform Land Use Review Procedure
USGS	United States Geological Survey
UST	Underground Storage Tank
UUSCOs	Unrestricted Use Soil Cleanup Objectives
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

Table 1 provides a summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance, and reporting activities required by this Site Management Plan.

Table 1
Site Management Plan Summary

Site Identification	Site No. 203074 MTA Paratransit Relocation Facility 1100 Commerce Avenue (Aka 1120 Commerce Avenue or 2401 Watson Avenue) Bronx, New York
Institutional Controls (ICs)	1. The property may be used for commercial and industrial uses only, as set forth in the Environmental Easement.
	2. The property may not be used for a higher level of use, such as unrestricted use or residential use without additional remediation and amendment of the Environmental Easement, as approved by the NYSDEC.
	3. All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this SMP.
	4. The use of the groundwater underlying the property is prohibited without treatment rendering it safe for intended use.
	5. The potential for vapor intrusion must be evaluated for any new buildings developed on the Site, and any potential impacts that are identified must be monitored or mitigated.
	6. Vegetable gardens and farming on the property are prohibited.
	7. The Engineering Controls (ECs) must be maintained and inspected at a frequency and in a manner defined in the NYSDEC-approved SMP.
Engineering Controls (ECs)	Active Sub-Slab Depressurization System (SSDS).
	Composite Cover System.
Inspections*	**Frequency**
Active SSDS Inspection	Annually. Next Inspection in July 2022.
Composite Cover Inspection	Annually. Next Inspection in July 2022.
Monitoring	**Frequency**
Active SSDS	Monthly (by Building Personnel)
Maintenance	**Frequency**
Active SSDS/Cover System Maintenance	As Required to maintain integrity/function.
Reporting	**Frequency**
Periodic Review Report	16 months after NYSDEC approval of the IRM CCR and this SMP. Once every 3 years thereafter.

Notes: * - Annual inspections must be performed by a Remedial Engineer or their designated representative and certified during subsequent reporting to NYSDEC.

1.0 INTRODUCTION

1.1 General

This Site Management Plan (SMP) was prepared on behalf of The New York City Economic Development Corporation (NYCEDC) as an element of the remedial program for the MTA Paratransit Relocation site located at 1100 Commerce Avenue [also known as 1120 Commerce Avenue and recorded in the Environmental Easement as 2401 Watson Avenue, Bronx, New York (Tax Block 3838, portion of Lot 60)] (hereinafter referred to as the "Site") under an Order on Consent (Index Number R2-20150206-62; Site No. 203074) administered by New York State Department of Environmental Conservation (NYSDEC). The Site was remediated during redevelopment in accordance with the 2017 NYSDEC-approved Interim Remedial Measures Work Plan (IRMWP) as reported in the August 2021 Construction Completion Report (CCR). A Site Location map is provided as Figure 1.

A figure showing the Site location and boundaries of the Site is provided a Figure 2. The boundaries of the Site are more fully described in the metes and bounds Site description, which 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". Engineering and Institutional Controls (ECs/ICs) 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 Bronx County Clerk, requires compliance with this SMP and all ECs/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 be revised only with the approval of the NYSDEC.

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 enforcement under the Order on Consent and may lead to 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 Order on Consent (Index #R2-20150206-62; Site #203074) 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 and the responsibilities of the owner and remedial party are provided in Appendix B of this SMP.

This SMP was prepared by AKRF, Inc. (AKRF), on behalf of NYCEDC, in accordance with the requirements of the NYSDEC's DER-10 ("Technical Guidance for Site Investigation and Remediation"), and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs and ECs required by the Environmental Easement for the Site.

1.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. 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. In accordance with the Environmental Easement for the Site, the NYSDEC will provide a notice of any approved changes to the SMP and append these notices to the SMP retained in its files.

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:

- 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.
- 7-day advance notice of any field activity associated with the remedial program.
- 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan.
- 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.
- 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.
- 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:

- 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 NYSDEC Order on Consent and all approved work plans and reports, including this SMP.
- Within 15 days after the transfer of all or part of the Site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Table 2 includes contact information for the notifications. This information will be updated as necessary. A full listing of site-related contact information is provided in Appendix B.

Table 2
Key Regulatory Contacts*

Agency	Name, Role	Contact Information	
NYSDEC	Kyle Forster, Project Manager	518-402-8644 (office)	Kyle.forster@dec.ny.gov
NYSDEC	Sarah Quandt, Section Chief	518-402-9116 (office)	Sarah.quandt@dec.ny.gov
NYSDOH	Eamonn O'Neil, Public Health Engineer	518-402-7860 (office)	Eamonn.oneil@health.ny.gov

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

2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The Site is an approximately 94,958 square-foot (sf) property located at 1120 Commerce Avenue (Tax Block 3838, portion of Lot 60) in the Bronx, New York. The property is occupied by a newly constructed approximately 5,000-sf building occupied by the Metropolitan Transportation Authority (MTA) Paratransit Relocation Facility. The Site is bounded by Commerce Avenue to the northwest, an industrial/warehouse building to the northeast, Westchester Creek to the southeast, and a parking lot/industrial building (a recycling facility) to the southwest. A figure showing the location and boundaries of the 1.54-acre Site is provided as Figure 1 with a more detailed view of the Site and surrounding properties provided as Figure 2. The boundaries of the Site are more fully described in the Environmental Easement included in Appendix A with As-Built record drawings provided in Appendix C.

The owner of the Site parcel at the time of issuance of this SMP is the City of New York (Department of Small Business Services). The owner's agent and representative for the purposes of this SMP is the New York City Economic Development Corporation (NYCEDC).

2.2 Physical Setting

2.2.1 Land Use

According to zoning information provided by the New York City Department of City Planning (NYCDCP), the Site is located within an "M1-1" manufacturing district. Neither "E" nor "D" restrictive declarations are associated with the Site or adjoining properties. The newly constructed MTA Paratransit Relocation Facility building (constructed as part of the overall remedy) is located in the northwestern portion of the Site and includes a training room, administrative offices, and other back of house areas. The remainder of the Site is completed mostly as paved parking for approximately 150 paratransit vehicles. The new facility will serve to receive new vehicles from manufacturers and retired vehicles from private operators for temporary storage on-Site until distributed to new operators/owners, to perform asset recovery of selected vehicle equipment, and to train drivers and maintainers in the operation and maintenance of the vehicles.

The Site is abutted by Commerce Avenue to the northwest, an industrial building to the northeast, Westchester Creek to the southeast, and a parking lot/industrial building to the southwest.

2.2.2 Geology

According to the February 2016 Site Characterization Findings Report conducted by Environmental Planning & Management (EPM), urban fill was encountered in all of the soil borings to depths of up to 15 feet below grade.

The topography of the Site slopes gently from the east toward Westchester Creek. The investigation conducted at the Site in 2016 indicated that groundwater was present at a depth of approximately 7 to 14 feet below grade. There are no surface water bodies or streams on or immediately adjacent to the Site; Westchester Creek is located approximately 200 feet southeast of the Site.

2.2.3 Hydrogeology

The nearest surface water body is Westchester Creek, which is approximately 250 feet east/southeast of the Site. During prior site characterization activities, groundwater was measured at depths ranging from approximately 7 feet bgs in the northern portion of the Site to approximately 14 feet bgs in the southern portion of the Site. Based on calculated groundwater surface elevations, groundwater beneath the Site flows towards the southeast in the overburden aquifer. Groundwater elevation and flow direction may vary due to seasonal fluctuations in precipitation, local usage demands, geology, underground structures, or dewatering operations. Groundwater elevation data and groundwater monitoring well construction logs are available in prior reports including the IRMWP. There are no existing monitoring wells at the Site.

2.3 Investigation and Remedial History

Site Characterization Findings Report, Proposed MTA Paratransit Facility, Bronx, New York, EPM, February 2016

Below is a summary of site conditions from the Site Characterization performed in 2015 by EPM:

Soil

SVOCs and metals were detected in soil samples collected from the Site at concentrations above Restricted Residential and Commercial Use Soil Cleanup Objectives (SCOs). PCBs were detected in soil above Commercial Use SCOs at two boring locations. There were no VOCs detected in soil samples above Restricted Residential Use SCOs.

Groundwater

One VOC (p-isopropyltoluene) was detected in one groundwater sample at a concentration marginally above the Class GA Value. Several metals (iron, magnesium, manganese, and sodium) were detected in groundwater samples above Class GA Values. SVOCs, PCBs, and pesticides were not detected in any groundwater samples collected in 2015. The data collected from the upgradient off-Site wells does not indicate the potential for an upgradient contaminant source in groundwater, and the data collected from the on-Site permanent wells does not indicate that the Site is a source of groundwater impacts.

Soil Vapor

Petroleum and chlorinated-solvent related compounds were detected in soil vapor samples; however, the results for soil vapor samples collected from the upgradient off-Site locations along Commerce Avenue do not provide evidence of an off-Site source of soil vapor impacts to the Site. There appears to be a localized area on-Site with soil vapor impacted with tetrachloroethene (PCE) and trichloroethene (TCE).

Interim Remedial Measure Work Plan (IRMWP), Proposed MTA Paratransit Facility, Bronx, NY, TRC Engineers, Inc. (TRC), March 2017

TRC prepared an IRMWP in March 2017, which outlined the remedial activities and cleanup objectives for the Site. The following IRMs were proposed for the Site:

- The soil between grade and approximately 9 feet bgs in the vicinity of historic borings that exhibited elevated lead concentrations on the northwestern portion of the Site will be excavated and removed from the Site due to the presence of dissolved lead in groundwater downgradient of the elevated lead soils area at an order of magnitude above the groundwater standard. Work will be performed in accordance with applicable Federal, State, and local hazardous waste regulations. Additionally, this area overlaps with an area of stained surface soils related to the open spill case assigned to the Site; therefore, the stained surface soils area and lead-

contaminated soil area will be remediated in one excavation area (refer to Figure 6 for the excavation area). Note that there is no excavation planned in the footprint of the new building.

- Permanent groundwater monitoring wells located on-Site and off-Site will be decommissioned in accordance with NYSDEC Commissioner Policy 43 (CP-43) during the Site redevelopment phase of the work.
- Collection and analysis of post-excavation end-point samples from the petroleum-contaminated soil excavation and the area which exhibited elevated lead concentrations on the northwestern portion of the Site to document post-IRM soil conditions. Post excavation soil samples will be analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and lead.
- Appropriate off-Site disposal of all material removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal.
- Construction, operation and maintenance of an active sub-slab depressurization system (SSDS) for the new Paratransit building. The SSDS will go into operation immediately upon the building being put into service.
- Construction and maintenance of an engineered composite cover system consisting of asphalt or concrete pavement, concrete building slabs, and a minimum of one foot of environmentally clean fill over a demarcation layer meeting the requirements of 6 NYCRR Part 375-6.7(d) in landscaped areas to prevent human exposure to residual contaminated soils/fill remaining beneath the Site.
- Import of materials to be used for backfill and cover in compliance with: (1) NYSDEC requirements and (2) all Federal, State and local rules and regulations for handling and transport of material. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to backfill the excavation areas and establish the designed grades at the Site. The site will be re-graded to accommodate installation of a cover system as described in IRM Number 6 above.
- Recording an Environmental Easement, including Institutional Controls, to prevent future exposure to any residual contamination at the Site.
- Publication of a Site Management Plan for long term management of residual contamination as required by the Environmental Easement, including plans for: (1) an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the Site and details the steps and media-specific requirements necessary to ensure the institutional and/or engineering controls identified in this IRM Work Plan remain in place and effective, (2) a Monitoring Plan to assess the performance and effectiveness of the remedy, and (3) an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, inspection, and reporting of any mechanical or physical components of the active vapor mitigation system(s).

  The IRMWP was approved by NYSDEC in April 2017.

2.4 Summary of Remedial Actions

The Site was remediated in accordance with the Order on Consent dated April 2015, and the NYSDEC-approved 2017 IRMWP. Please refer to the 2021 IRM Construction Completion Report (CCR) for details regarding the remediation performed during redevelopment.

The Remedial Actions performed at the Site between 2017 and 2021 included:

1. A community air monitoring plan (CAMP) and environmental monitoring was performed during all appropriate stages of construction with activities summarized in daily reports and other formal correspondence provided to NYSDEC.
2. Excavation and off-site disposal of a targeted area of contaminated soil, initially to a minimum of 9 feet below grade surface (bgs), and extended to 10, 12, or 16 feet bgs in some areas. This excavation was conducted in the northeastern portion of the Site to remediate a surficial petroleum spill and lead-contaminated that was suspect to be impacting groundwater. Disposal of all material removed from the Site occurred in accordance with all federal, state, and local rules and regulations for handling, transport, and disposal.
3. Decommissioning of on-site and off-site permanent groundwater monitoring wells in accordance with NYSDEC Commissioner Policy 43 (CP-43).
4. Collection and analysis of a total of 34 post-excavation remedial performance endpoint soil samples to document the removal effort completed in the northeastern portion of the Site.
5. Installation and activation of an active sub-slab depressurization system (SSDS).
6. Confirmation that all materials imported to the Site to establish designed grades and accommodate installation of a cover system complied with NYSDEC requirements and were imported as per all federal, state, and local rules and regulations for handling and transport of material.
7. Construction and maintenance of an engineered composite cover system consisting of asphalt or concrete pavement, concrete building slab, and a one-foot-thick area of gravel to prevent human exposure to any residual contaminated soil/fill remaining beneath the Site.
8. Recording of an Environmental Easement, including Institutional Controls (ICs), to restrict future use to commercial or industrial use as defined in Part prevent future exposure to any residual contamination at the Site.
9. Preparation of an SMP for long-term management of residual contamination, as required by the Environmental Easement, including plans for Engineering Controls (ECs)/ICs, monitoring, operation and maintenance, and reporting.

2.4.1 Remaining Contamination

Results of the soil endpoint samples indicate that soil remaining at the Site exhibits low to moderate levels of polycyclic aromatic hydrocarbons (PAHs) and lead, which can be attributed to the historical on-site uses. As there is a Site-wide cap (pavement or building foundations), no adverse effect to human health or the environment is anticipated; therefore, the remedial goals have been satisfied as documented in the CCR.

Analytical results for all soil samples remaining at the Site after the completion of the Remedial Action exceeding the applicable SCOs are identified on Figure 3 and Figure 4, which also show the sampling locations of remedial performance soil samples at the Site which were collected to document the Remedial Action.

2.5 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site as listed in the April 2015 Consent Order are as follows:

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

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.

2.6 Remaining Contamination

2.6.1 Soil

Following the completion of the soil excavation and removal, endpoint soil sampling was conducted at the bottom of the hotspot excavation on the northwestern portion of the Site. Results of the soil endpoint samples indicate that soil remaining at the Site exhibits low to moderate levels of PAHs and lead, which can be attributed to historical on-site activities. None of the remedial performance sampling results exceeded the Industrial Use Soil Cleanup Objectives (IUSCOs) or exhibited hazardous waste characteristics for leachable lead. Based on the hot spot removal efforts which removed source areas potentially affecting groundwater/surface water and the installation of a Site-wide cap (pavement, building foundations and layer of imported clean fill), no adverse effect to human health or the environment is anticipated to remain with respect to known soil conditions.

Analytical results for all soil samples remaining at the Site after the completion of the Remedial Action that exceed the CSCOs are identified in Table 3. Figure 3 and Figure 4 show the locations of soil samples at the Site after the completion of the Remedial Action that exceed the CSCOs. As-built drawings of the completed construction are included as Appendix C.

TABLE 3

Remaining Soil Contamination Summary

SAMPLE ID_DEPTH	COMPOUND	CONCENTRATION (mg/kg)	NYSDEC PART 375 CSCO
EP-01-3_11.5-12	Lead	1200	1000
EP02_9-9.5	Benzo(a)Pyrene	1.6	1
EP03_9-9.5	Benzo(a)Anthracene	8.1	5.6
	Benzo(a)Pyrene	6	1
	Benzo(b)Fluoranthene	8.3	5.6
	Dibenzo(a,h)Anthracene	1	0.56
EP07_8.5-9	Benzo(a)Pyrene	1.5	1
	Lead	3600	1000
EP-08-4_9.5-10	Lead	3800	1000
EP09_8.5-9	Benzo(a)Pyrene	1.3	1
	Lead	2200	1000
EP10_9-9.5	Benzo(a)Pyrene	1.3	1
EP-17_3-3.5	Lead	1900	1000
EP-18_4-4.5	Lead	1100	1000
EP-20_5-5.5	Lead	1300	1000

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.

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 Excavation Work Plan (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.

3.2 Institutional Controls

A series of ICs is required by NYSDEC's April 2015 Order on Consent 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 Commercial or Industrial uses only. 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 4. These ICs are:

- The property may be used for: commercial and industrial use provided that the long-term Engineering and Institutional Controls included in this SMP are employed;
- All ECs must be operated and maintained as specified in this SMP;
- All ECs must be inspected at a frequency and in a manner defined in the SMP;
- 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 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.
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP.
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP.
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP.

- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP.
- Access to the Site must be provided to agents, employees, or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.
- Environmental or public health monitoring must be performed as defined in this SMP.
- The Site owner or remedial party will submit a written statement to NYSDEC that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with this SMP. NYSDEC retains the right to access such Controlled Property at any time to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow or will be deemed appropriate by an expert that the NYSDEC finds acceptable.

3.3 Engineering Controls

3.3.1 Active Sub-Slab Depressurization System (SSDS)

An active SSDS was installed beneath the concrete slab of the on-site building to allow the lateral movement, collection, and venting of potential soil gas vapor from below the building and/or off-site sources.

The major components of the SSDS include:

- An approximately 12-inch-thick gas-permeable virgin aggregate layer (ASTM #5 - ¾-inch stone) above the compacted subgrade;
- Communication sleeve penetrations through grade beams;
- Three pits with 6-inch Schedule 40 PVC diameter risers equipped with vacuum gauges, alarms, and sample taps;
- Three active suction fans at the exhaust stack termination; and
- Four sub-slab vacuum monitoring points.

The SSDS plan is shown on Figure 5.

3.3.2 Composite Cover System

Exposure to remaining contamination at the Site is prevented by a cover system placed over the Site. Figure 6 presents the location of the cover system and applicable demarcation layers. The Excavation Work Plan (EWP) provided in Appendix D outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection of this cover system are provided in the Monitoring and Sampling Plan included in Section 4.0 of this SMP. Any work 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. The cover system installed at the Site under the building is composed of a 8-inch-thick concrete building slab, underlain by the vapor barrier and an approximately 6-inch layer of ¾-inch stone laid on top of the compacted existing subgrade material. Imported clean fill was placed over the demarcation layer (Mirafi® filter fabric) across the Site to provide visual reference to the top of "remaining contamination".

3.3.3 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the Order on Consent. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10.

Active SSDS

The active SSDS will not be discontinued unless prior written approval is granted by the NYSDEC and the NYSDOH Project Managers. If monitoring data indicates that the SSDS may be adjusted to passive venting or may no longer be required, a proposal to discontinue operation of the SSDS will be submitted by the remedial party to the NYSDEC and NYSDOH Project Managers.

Composite 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.

Vapor Barrier System

The vapor barrier system is a permanent control, and the quality and integrity of this system will remain intact (but will not require visual inspection due to the location of the system beneath the composite cover system) in accordance with this SMP in perpetuity.

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 be revised only with the approval of the NYSDEC. 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 F.

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

- Sampling and analysis of all appropriate media (e.g., soil vapor);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance (SCGs), particularly NYSDOH Air Guideline Values (AGVs);
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

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

- Sampling locations, protocol and frequency;
- Information on all designed monitoring systems (e.g., Site composite cover system);
- Analytical sampling program requirements for restoration/capping;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements; and
- Annual inspection and periodic certification.

Reporting requirements are provided in Section 7.0 of this SMP.

4.2 Site-wide Inspection

Site-wide inspections will be performed annually. Modification to the frequency or duration of the inspections will require approval from the NYSDEC. 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 G. 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;
- 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 (PRR). 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 SMP.

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 QEP, 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 the public.

Table 4
Monitoring/Inspection Schedule

EC Monitored	Frequency*	Location (s)	Matrix	Analysis
Active SSDS	Monthly	Vertical Risers VR-1, VR-2, and VR-3	Soil Vapor/ Indoor Air	Visual inspection to verify no alarm conditions and no damage to riser piping.
Active SSDS	Annually	Vertical Risers VR-1, VR-2, and VR-3. Monitoring Points MP-1, MP-2, MP-3, and MP-4. Status of fan/equipment from exterior surface grade	Soil Vapor/ Indoor Air	Visual Inspection of Conditions; Pressure/Vacuum Measurements from Monitoring Points
Site Cover System	Annually	First floor and all exterior areas	Cover System Integrity	Visual Inspection of Conditions
Vapor Barrier System	Annually as part of Site cover system integrity; All slab penetrations or modifications within the Site building	Beneath entire building floor slab	Soil Vapor/ Indoor Air	VOCs via EPA Method TO-15

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

VOCs – Volatile Organic Compounds

4.2.1 Active SSDS

Monitoring of the active SSDS will be performed on a routine basis, as identified in the Remedial System Monitoring Requirements and Schedule included as Table 5. The monitoring of remedial systems must be conducted by a QEP as defined in 6 NYCRR Part 375, a P.E. who is licensed and registered in NYS, or a qualified person who directly reports to a P.E. who is licensed and registered in NYS. Modification to the frequency or sampling requirements will require approval from the NYSDEC Project Manager. A visual inspection of the complete system will be conducted during each monitoring event. Unscheduled inspections and/or sampling may take place when a suspected failure of the passive SSDS system has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Active SSDS system components to be monitored include, but are not limited to, the components included in Table 5 below.

Table 5
SSDS Monitoring Requirements and Schedule

Remedial System Component	Monitoring Parameter	Operating Range	Monitoring Schedule
Riser Piping (VR-1, VR-2, VR-3)	Integrity	N/A	Monthly
Alarms	Pressure in Riser	< -0.10 in H_2O	Monthly
Monitoring Points	Pressure beneath floor slab	≤ -0.04 in. H_2O	Annually

A complete list of components to be inspected is provided in the Inspection Checklist in Appendix G. Any equipment that is observed to be malfunctioning maintenance and repair, as per the O&M Plan, would be conducted immediately.

4.2.2 Composite Cover System

Exposure to residual contaminated soil remaining at the Site is being prevented by a composite cover system that is made up of: asphalt or concrete pavement on walkways and parking lots; concrete building slabs; and 2 feet of clean gravel as shown on Figure 6. The composite cover system will remain intact 24-hours a day, 7 days a week, for 365 days a year. Disturbance of the composite cover system or EC components is prohibited by the Environmental Easement. In the unlikely event of an unanticipated accidental or required disturbance of the composite cover system, the response procedure is outlined in the Excavation Work Plan enclosed as Appendix D.

Monitoring of the composite cover system will occur on an annual basis as long as the Environmental Easement is in effect to ensure the system's integrity. Monitoring will consist of visual inspection, which shall evaluate the structural integrity of the concrete floor slab on the first floor, support columns into the floors and the wall joints. Visual inspection will also verify that the minimum thicknesses of concrete/asphalt pavement and gravel areas established at the Site remain as intended. If any cracks or openings are identified, they shall be screened for organic vapors with a photoionization detector (PID) and any readings shall be noted. In addition, any cracks or openings in the floor shall be properly sealed. The results of the inspection will be included in the PRR. In addition, the composite cover system must be inspected and certified any time a disturbance in the

system occurs. The inspection frequency is subject to change with the approval of the NYSDEC. Unscheduled inspections and/or sampling may take place when a suspected failure of the composite cover system has been reported or an emergency occurs that is deemed likely to affect the operation of the system.

4.2.3 Vapor Barrier System Monitoring

The vapor barrier system consists of The Site building vapor barrier system consists of Raven Industries Absolute Barrier™ 30-Mil vapor barrier beneath the building footings and along the horizontal slab across the building footprint as described in Section 3.3. Figure 4 shows the extent of the vapor barrier membrane.

The installed vapor barrier system lies underneath the composite cover system within the building footprint. The vapor barrier system, when functioning as designed under an intact Site cover layer, should not be visible during an inspection.

If sections of the vapor barrier system are visible during a Site inspection, the inspector should note the following items on the inspection report:

- Evidence of damage to seals or overlaps of vapor barrier system;
- Embedded debris found in the vapor barrier sheeting; and/or
- Visible holes, punctures, or other tears in the vapor barrier sheeting.

The inspection report shall include photographs of any damage to the vapor barrier materials, an approximate measurement of the side of any holes or openings, and a description of any embedded debris or protrusions through the vapor barrier layer. Photographs will be taken and presented in the inspection report to document findings.

4.2.4 Soil Vapor Sampling

Prior to the construction of any new building, soil vapor monitoring must be conducted to evaluate the potential for soil vapor intrusion. A soil vapor monitoring plan will be developed by the Remedial Engineer and submitted to NYSDEC for approval prior to any sampling activities. The plan will include the following information:

- Proposed location of building and type of construction (e.g., slab on grade);
- Sampling locations;
- Sampling methodologies;
- Analytical methods;
- Schedule; and
- Reporting.

The results of the sampling will be evaluated with input from NYSDEC to determine the need to incorporate vapor intrusion control measures into the design of the new building.

4.2.5 Monitoring and Sampling Protocol

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

5.0 OPERATION AND MAINTENANCE PLAN

5.1 General

This O&M Plan provides a brief description of the measures necessary to operate, monitor and maintain the mechanical components of the remedy selected for the Site. This O&M Plan:

- Includes the procedures necessary to allow individuals unfamiliar with the Site to operate and maintain the active SSDS system;
- Will be updated periodically to reflect changes in Site conditions or themanner in which the active SSDS systems are operated and maintained.

Further detail regarding the O&M of the active SSDS is provided in the O&M Manual included as Appendix C. A copy of this O&M Manual, along with the complete SMP, is to be maintained at the Site. This O&M Plan is not to be used as a stand-alone document, but as a component document of this SMP.

5.2 Operation and Maintenance of the Active SSDS

Section 3.3.1 describes the active SSDS utilized in the remedial action and Appendix C provides as-built design details and the system location. The SSDS is a permanent EC for the Site. The SSDS is designed to operate continuously, 24 hours a day, 7 days a week, 365 days a year, without any required adjustments or repairs, beyond routine maintenance items. Manufacturer's specifications for each of the SSDS components and the troubleshooting guide are included in Appendix H. These manuals should be consulted prior to any repairs or adjustments that may become necessary. Regular system inspections, operation parameter documentation and performance assessment guidelines are detailed in this SMP. The system will be inspected, and its performance certified at specified intervals defined in this SMP.

5.3 Operation and Maintenance of the Composite Cover System

Section 3.3.2 describes the composite cover system utilized in the remedial action and provides as-built design details and the location of each cover type. The composite cover system is a permanent EC for the Site. The system will be inspected, and its performance certified at specified intervals defined in this SMP. An EWP is included in this SMP and outlines the procedures to be followed in the event that the composite cover system and underlying residual soil/material must be disturbed after the remedial action is complete.

The composite cover system does not require any special operation or maintenance activities. If the system is breached during future construction activities (or "normal wear and tear" is observed), the system will be rebuilt by reconstructing the system according to the original design and tying newly constructed cover layers into existing cover layers to form a continuous layer(s).

5.4 Operation and Maintenance of the Vapor Barrier System

Section 3.3.3 describes the vapor barrier system utilized in the remedial action and provides as-built design details and the system location. The vapor barrier system is a permanent EC for the Site. The system will be inspected, and its performance certified at specified intervals defined in the SMP. An EWP is included in this SMP and outlines the procedures to be followed in the event that the vapor barrier system and underlying residual soil/material must be disturbed after the remedial action is complete.

The vapor barrier system does not require any special operation or maintenance activities. If the system is breached during future construction activities, the system will be rebuilt by reconstructing the vapor barrier layers and sealing the newly constructed materials with existing barrier materials in accordance with manufacturer specifications.

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.

A vulnerability assessment will be conducted for the Site during periodic assessments to ensure resilience of engineering controls to severe storms/weather events and associated flooding.

6.2 Green Remediation Evaluation

NYSDEC's DER-31 Green Remediation requires consideration of green remediation concepts and techniques 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. This SMP does not require any green remediation evaluations to be completed for the Site during site management. Any updates or related site improvements will be incorporated in the Periodic Review Report (PRR).

6.3 Remedial System Optimization

A Remedial Site Optimization (RSO) study will be conducted any time that NYSDEC or the remedial party requests in writing that an in-depth evaluation of the remedy is needed. An RSO may be appropriate if any of the following occur:

- The remedial actions are no longer meeting the RAOs noted in Section 2.5 of this SMP;
- The management and operation of the remedial system is exceeding the estimated costs;
- The remedial system is not performing as expected or as designed;
- Previously unidentified source material may be suspected;
- Plume shift has potentially occurred;
- Site conditions change due to development, change of use, change in groundwater use, etc.;
- There is an anticipated transfer of the Site management to another remedial party or agency; and
- A new and applicable remedial technology becomes available.

An RSO will provide a critique of a site's conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the site's cleanup goals, gather additional performance or media specific data and information and provide recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy.

7.0 REPORTING REQUIREMENTS

7.1 Site Management Reports

All Site management inspection, maintenance and monitoring events will be recorded on the appropriate Site management forms provided in Appendix G. These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including media sampling data and 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 6 and summarized in the PRR.

Table 6
Monitoring/Inspection Report Deliverables

Task/Report	Reporting Frequency*
Periodic Review Report # 1	16 months after NYSDEC approval of this SMP (Revision 0)
Periodic Review Report #2 +	Once Every 3 Years
Soil Vapor Monitoring	In event of slab and/or vapor barrier penetration or new building construction

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

All 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);
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc.);
- Copies of all field forms completed (e.g., chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- 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;
- 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).

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 PRR shall be submitted annually to NYSDEC or at another frequency as may be required by the Department. In the event that the Site is subdivided into separate parcels with different ownership, a single PRR will be prepared that addresses the Site described in the Environmental Easement enclosed as Appendix A. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the Site.
- Results of the required annual Site inspections and severe condition inspections, if applicable.
- 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.
- A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions.
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.
- A Site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the Site-specific DD;
  - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;

- Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored;
- Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan;
- Trends in contaminant levels in the affected media will be evaluated to determine whether the remedy continues to be effective in achieving remedial goals as specified by the DD; and
- The overall performance and effectiveness of the remedy.

If explicitly requested or required by NYSDEC, a summary of the Green Remediation evaluation will be included in the PRR.

7.2.1 Certification of Institutional and Engineering Controls

Certification of ICs/ECs will be included in the PRR.

Following the last inspection of the reporting period, a QEP or P.E. licensed to practice in NYS will prepare, and include in the PRR, 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 ICs/ECs controls required by the remedial program was performed under my direction;
- The ICs/ECs employed at this Site are 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 ECs 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 generally accepted engineering practices; 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] for the Site."

The signed certification will be included in the PRR.

The PRR will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the site is located and the NYSDOH Bureau of Environmental Exposure Investigation. The PRR may need to be submitted in hard-copy format, as requested by the NYSDEC project manager.

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 IC/EC, a Corrective Measures Work Plan will be submitted to NYSDEC 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 NYSDEC.

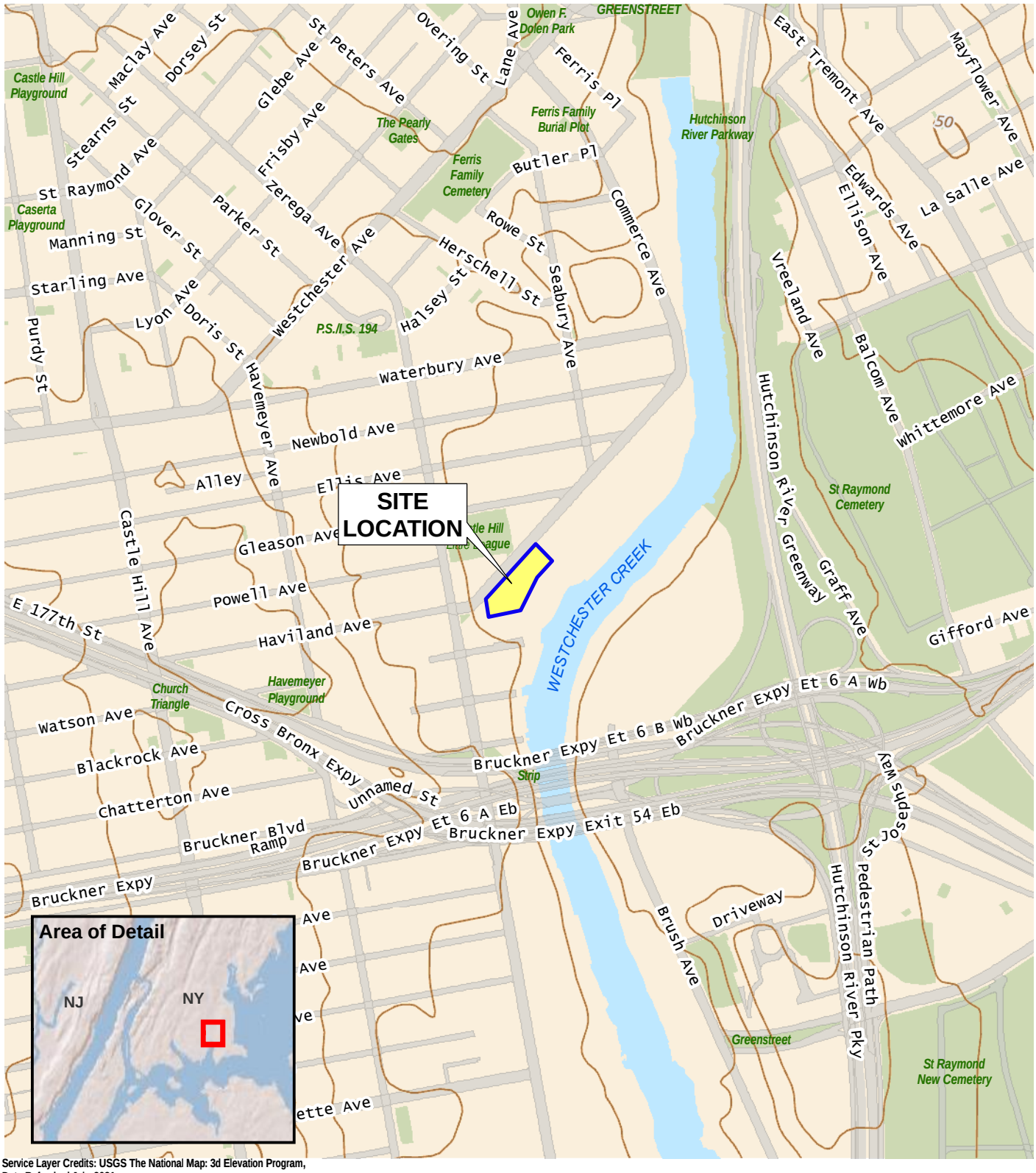
7.4 Remedial Site Optimization Report

If an RSO is to be performed, an RSO report must be submitted to NYSDEC for approval. The RSO report will document the research/investigation and data gathering that was conducted, evaluate the results and facts obtained, present a revised conceptual Site model and present recommendations. RSO recommendations are to be implemented upon approval from NYSDEC. Additional work plans, design documents, HASPs etc., may be required to implement the recommendations, based upon the actions that need to be taken. A final engineering report (FER) and update to the SMP may also be required.

The RSO report will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the Site is located, and the NYSDOH Bureau of Environmental Exposure Investigation.

8.0 REFERENCES

1. 6 NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.
2. NYSDEC DER-10 – "Technical Guidance for Site Investigation and Remediation".
3. 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).
4. NYSDEC Order on Consent Index #R2-20150206-62, Site #203074, April 2015.
5. MTA Paratransit Relocation Facility Construction Completion Report, September 2021, AKRF, Inc.



Service Layer Credits: USGS The National Map: 3d Elevation Program, Data Refreshed July, 2021

0 800 1,600

SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

MTA-Paratransit Relocation Facility
Bronx, New York

SITE LOCATION

DATE
5/12/2021

PROJECT NO.
80612

FIGURE
1

0 25 50 100

SCALE IN FEET

LEGEND

SITE BOUNDARY

Aerial Source:
2020 New York State ITS GIS Orthoimagery

Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database

AKRF
440 Park Avenue South, New York, NY 10016

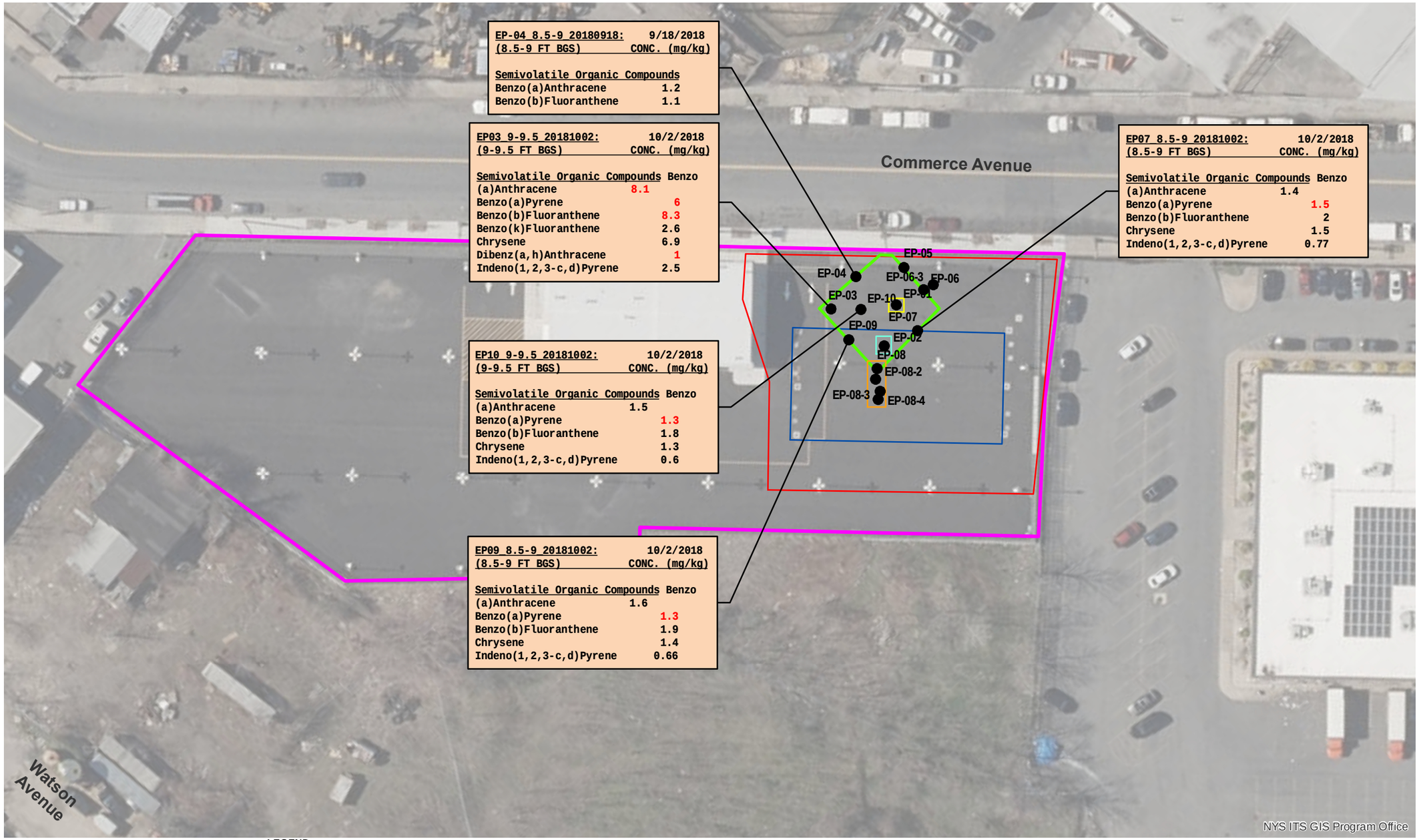
MTA-Paratransit Relocation Facility
Bronx, New York

SITE DETAIL LOCATION PLAN

DATE
8/25/2021

PROJECT NO.
809612

FIGURE
2



EP-04 8.5-9 20180918: (8.5-9 FT BGS) — 9/18/2018 CONC. (mg/kg)

Semivolatile Organic Compounds	
Benzo(a)Anthracene	1.2
Benzo(b)Fluoranthene	1.1

EP03 9-9.5 20181002: (9-9.5 FT BGS) — 10/2/2018 CONC. (mg/kg)

Semivolatile Organic Compounds	Benzo
(a)Anthracene	8.1
Benzo(a)Pyrene	6
Benzo(b)Fluoranthene	8.3
Benzo(k)Fluoranthene	2.6
Chrysene	6.9
Dibenz(a,h)Anthracene	1
Indeno(1,2,3-c,d)Pyrene	2.5

EP07 8.5-9 20181002: (8.5-9 FT BGS) — 10/2/2018 CONC. (mg/kg)

Semivolatile Organic Compounds	Benzo
(a)Anthracene	1.4
Benzo(a)Pyrene	1.5
Benzo(b)Fluoranthene	2
Chrysene	1.5
Indeno(1,2,3-c,d)Pyrene	0.77

EP10 9-9.5 20181002: (9-9.5 FT BGS) — 10/2/2018 CONC. (mg/kg)

Semivolatile Organic Compounds	Benzo
(a)Anthracene	1.5
Benzo(a)Pyrene	1.3
Benzo(b)Fluoranthene	1.8
Chrysene	1.3
Indeno(1,2,3-c,d)Pyrene	0.6

EP09 8.5-9 20181002: (8.5-9 FT BGS) — 10/2/2018 CONC. (mg/kg)

Semivolatile Organic Compounds	Benzo
(a)Anthracene	1.6
Benzo(a)Pyrene	1.3
Benzo(b)Fluoranthene	1.9
Chrysene	1.4
Indeno(1,2,3-c,d)Pyrene	0.66

0 25 50 100

SCALE IN FEET

Aerial Source:
2020 New York State ITS GIS Orthoimagery

Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database

LEGEND

- ENDPOINT SAMPLE LOCATIONS
- EXTENT OF HAZARDOUS LEAD SOIL REMOVAL AREA (DEPTH RANGED FROM 0.5 TO 1.5 FT BGS)
- EXTENT OF EXCAVATION FOR STORMWATER DETENTION BASIN (DEPTH 3 FEET BGS).
- EXTENT OF HOTSPOT EXCAVATION COMPLETED DURING IRM (DEPTH 9 FT BGS)
- TARGETED HOTSPOT EXCAVATION BENEATH WATER TABLE (DEPTH 10 FT BGS)
- TARGETED HOTSPOT EXCAVATION BENEATH WATER TABLE (DEPTH 12 FT BGS)
- TARGETED HOTSPOT EXCAVATION BENEATH WATER TABLE (DEPTH 16.5 FT BGS)
- SITE BOUNDARY

NOTES

Part 375 Soil Cleanup Objectives (SCOs): SCOs listed in the New York State Department of Environmental Conservation (NYSDEC) "Part 375" Regulations (6 NYCRR Part 375).

Exceedances of NYSDEC Unrestricted Use Soil Cleanup Objectives (UUSCOs) are presented in bold font.
Exceedances of NYSDEC Commercial Site Cleanup Objectives (CSCOs) are presented in red.

	PART 375 COMMERCIAL mg / kg	PART 375 UNRESTRICTED mg / kg
Semivolatile Organic Compounds		
Benzo(a)Anthracene	5.6	1
Benzo(a)Pyrene	1	1
Benzo(b)Fluoranthene	5.6	1
Benzo(k)Fluoranthene	56	0.8
Chrysene	56	1
Dibenz(a,h)Anthracene	0.56	0.33
Indeno(1,2,3-c,d)Pyrene	5.6	0.5

AKRF
440 Park Avenue South, New York, NY 10016

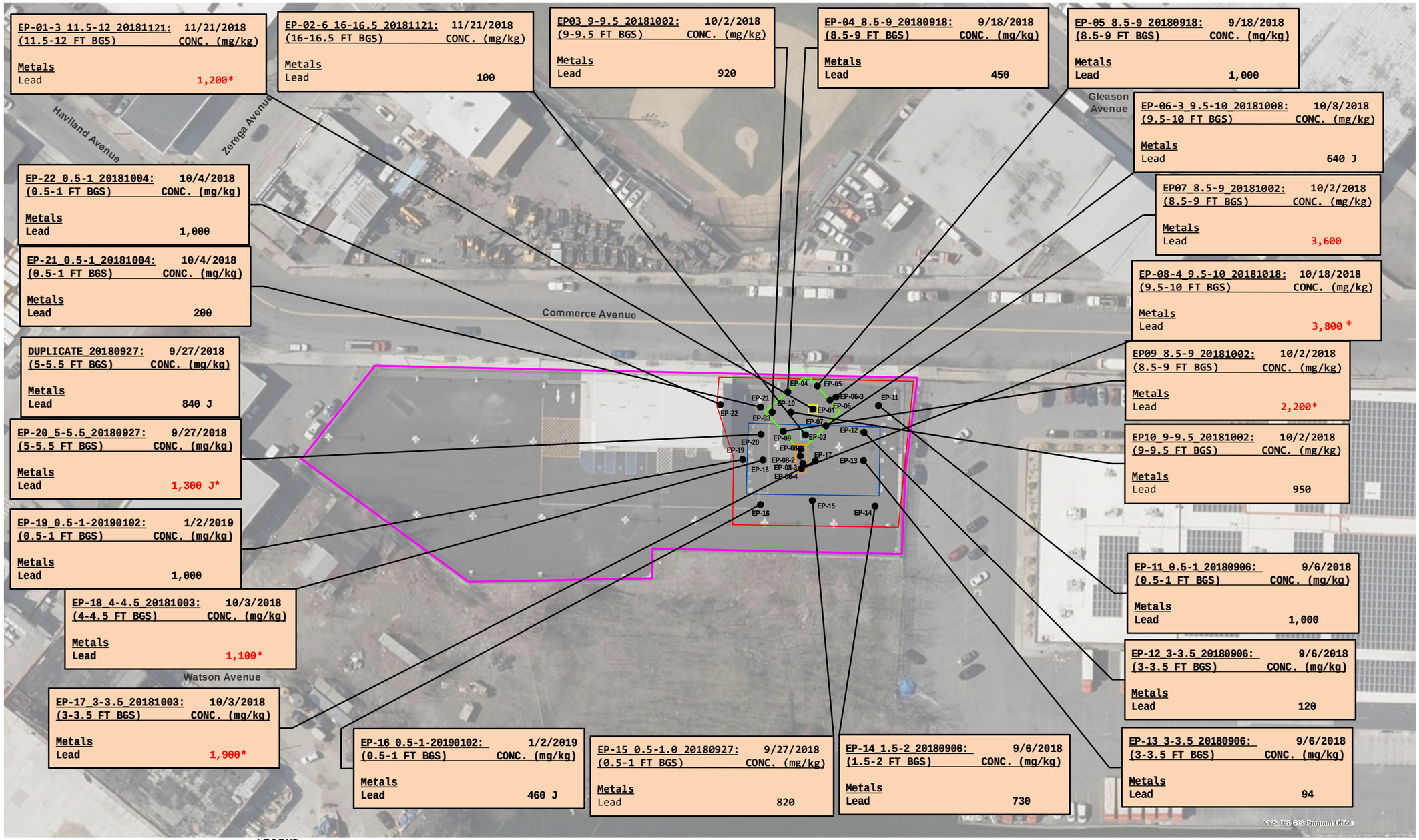
MTA-Paratransit Relocation Facility
Bronx, New York

REMAINING CONCENTRATIONS OF SVOCS IN SOIL

DATE 8/24/2021

PROJECT NO. 809612

FIGURE 3



EP-01-3 11.5-12 20181121: 11/21/2018
(11.5-12 FT BGS) CONC. (mg/kg)

Metals	
Lead	1,200*

EP-02-6 16-16.5 20181121: 11/21/2018
(16-16.5 FT BGS) CONC. (mg/kg)

Metals	
Lead	100

EP03 9-9.5 20181002: 10/2/2018
(9-9.5 FT BGS) CONC. (mg/kg)

Metals	
Lead	920

EP-04 8.5-9 20180918: 9/18/2018
(8.5-9 FT BGS) CONC. (mg/kg)

Metals	
Lead	450

EP-05 8.5-9 20180918: 9/18/2018
(8.5-9 FT BGS) CONC. (mg/kg)

Metals	
Lead	1,000

EP-06-3 9.5-10 20181008: 10/8/2018
(9.5-10 FT BGS) CONC. (mg/kg)

Metals	
Lead	640 J

EP07 8.5-9 20181002: 10/2/2018
(8.5-9 FT BGS) CONC. (mg/kg)

Metals	
Lead	3,600

EP-08-4 9.5-10 20181018: 10/18/2018
(9.5-10 FT BGS) CONC. (mg/kg)

Metals	
Lead	3,800 *

EP09 8.5-9 20181002: 10/2/2018
(8.5-9 FT BGS) CONC. (mg/kg)

Metals	
Lead	2,200*

EP10 9-9.5 20181002: 10/2/2018
(9-9.5 FT BGS) CONC. (mg/kg)

Metals	
Lead	950

EP-11 0.5-1 20180906: 9/6/2018
(0.5-1 FT BGS) CONC. (mg/kg)

Metals	
Lead	1,000

EP-12 3-3.5 20180906: 9/6/2018
(3-3.5 FT BGS) CONC. (mg/kg)

Metals	
Lead	120

EP-13 3-3.5 20180906: 9/6/2018
(3-3.5 FT BGS) CONC. (mg/kg)

Metals	
Lead	94

EP-14 1.5-2 20180906: 9/6/2018
(1.5-2 FT BGS) CONC. (mg/kg)

Metals	
Lead	730

EP-15 0.5-1.0 20180927: 9/27/2018
(0.5-1 FT BGS) CONC. (mg/kg)

Metals	
Lead	820

EP-16 0.5-1-20190102: 1/2/2019
(0.5-1 FT BGS) CONC. (mg/kg)

Metals	
Lead	460 J

EP-17 3-3.5 20181003: 10/3/2018
(3-3.5 FT BGS) CONC. (mg/kg)

Metals	
Lead	1,900*

EP-18 4-4.5 20181003: 10/3/2018
(4-4.5 FT BGS) CONC. (mg/kg)

Metals	
Lead	1,100*

EP-19 0.5-1-20190102: 1/2/2019
(0.5-1 FT BGS) CONC. (mg/kg)

Metals	
Lead	1,000

EP-20 5-5.5 20180927: 9/27/2018
(5-5.5 FT BGS) CONC. (mg/kg)

Metals	
Lead	1,300 J*

DUPLICATE 20180927: 9/27/2018
(5-5.5 FT BGS) CONC. (mg/kg)

Metals	
Lead	840 J

EP-21 0.5-1 20181004: 10/4/2018
(0.5-1 FT BGS) CONC. (mg/kg)

Metals	
Lead	200

EP-22 0.5-1 20181004: 10/4/2018
(0.5-1 FT BGS) CONC. (mg/kg)

Metals	
Lead	1,000

0 40 80 160

SCALE IN FEET

Aerial Source:
2020 New York State ITS GIS Orthoimagery

Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database

LEGEND

- ENDPOINT SAMPLE LOCATIONS
- SITE BOUNDARY
- EXTENT OF HAZARDOUS LEAD SOIL REMOVAL AREA (DEPTH RANGED FROM 0.5 TO 1.5 FT BGS)
- EXTENT OF EXCAVATION FOR STORMWATER DETENTION BASIN (DEPTH 3 FEET BGS).
- EXTENT OF HOTSPOT EXCAVATION COMPLETED DURING IRM (DEPTH 9 FT BGS)
- TARGETED HOTSPOT EXCAVATION BENEATH WATER TABLE (DEPTH 10 FT BGS)
- TARGETED HOTSPOT EXCAVATION BENEATH WATER TABLE (DEPTH 12 FT BGS)
- TARGETED HOTSPOT EXCAVATION BENEATH WATER TABLE (DEPTH 16.5 FT BGS)

NOTES

Part 375 Soil Cleanup Objectives (SCOs): SCOs listed in the New York State Department of Environmental Conservation (NYSDEC) "Part 375" Regulations (6 NYCRR Part 375).

Exceedances of NYSDEC Unrestricted Use Soil Cleanup Objectives (UUSCOs) are presented in **bold** font.
Exceedances of NYSDEC Commercial Site Cleanup Objectives (CSCOs) are presented in red.

* Soil sample analysis performed for leach-able lead at this location verified remaining lead concentrations in soil after removal were below the EPA hazardous waste threshold

Contaminant of Concern	Part 375 IUSCO mg/kg	Part 375 CSCO mg/kg	Part 375 UUSCO mg/kg
Lead	3900	1000	63

AKRF
440 Park Avenue South, New York, NY 10016

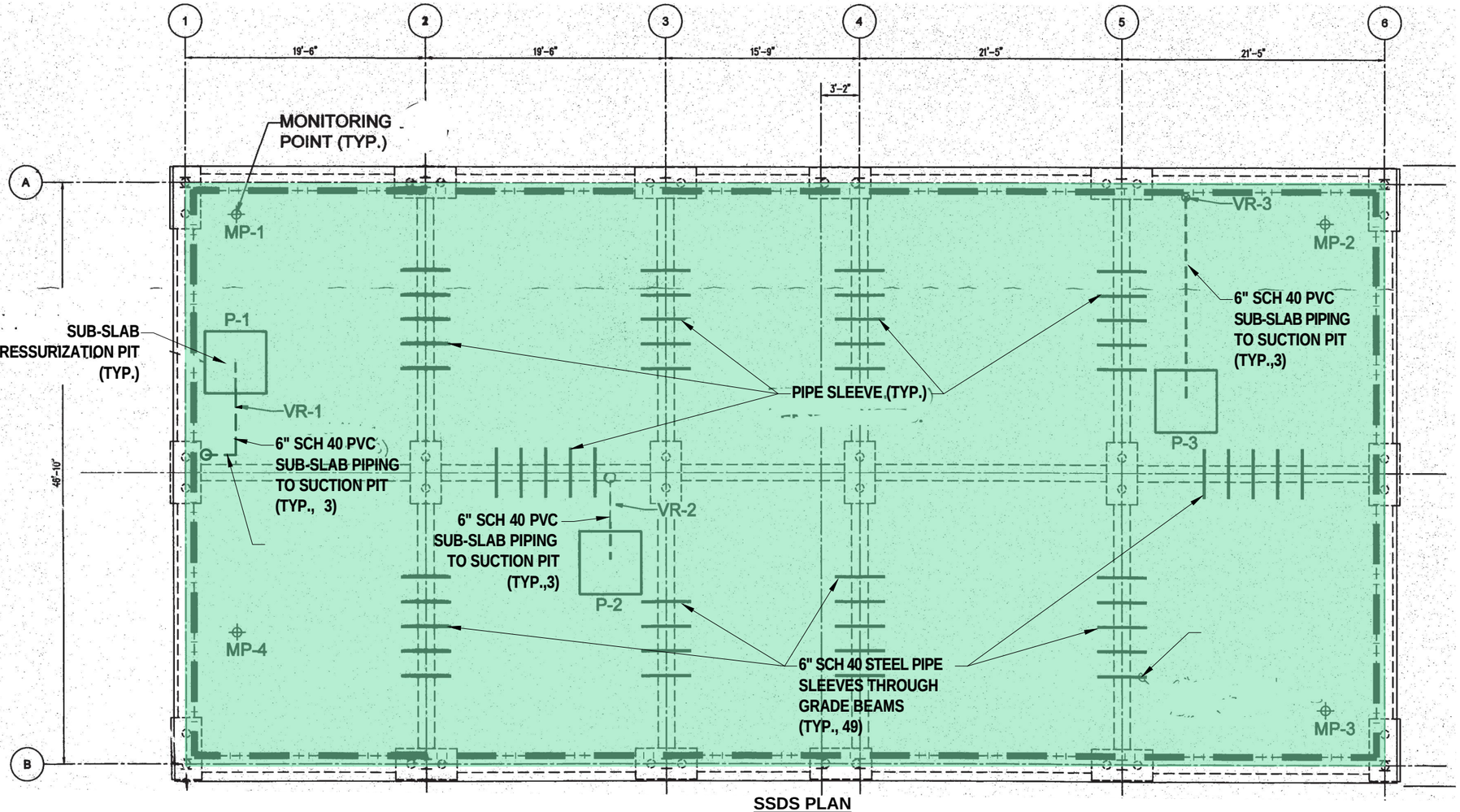
MTA-Paratransit Relocation Facility
Bronx, New York

REMAINING CONCENTRATIONS OF LEAD IN SOIL

DATE
8/24/2021

PROJECT NO.
809612

FIGURE
4



SSDS PLAN

0 10 20

SCALE IN FEET

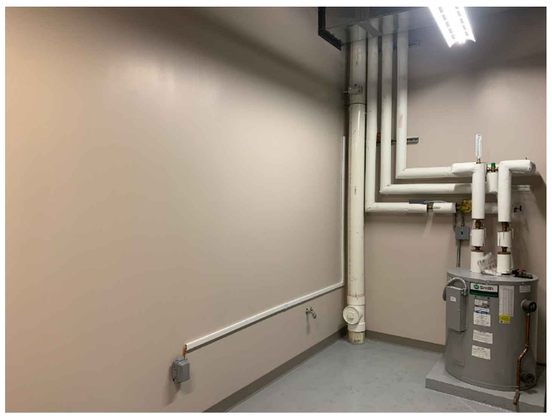
LEGEND:

AREAL COVERAGE AND EXTENT OF VAPOR BARRIER AND UNDERLYING GAS PERMEABLE AGGREGATE INSTALLED FOR SUB-SLAB DEPRESSURIZATION SYSTEM (SSDS).

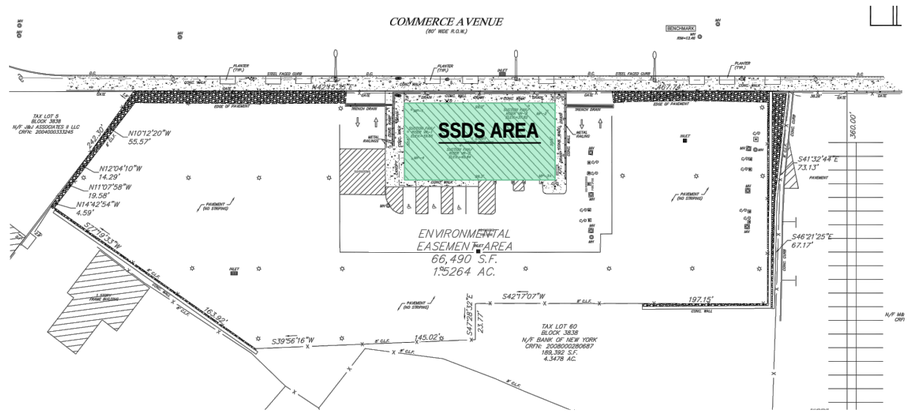
REFERENCE:

Based on Land Survey at 1100 Commerce Ave, Bronx, NY
Prepared by DPK LandSurveying P.C.
Survey No. 18-8164
August 2019

SSDS Plan Based on ***SSDS AS-BUILT DRAWING***,
Prepared by EPH, INC
1120 Commerce Avenue Bronx, New York
November 2019



VR-1 RISER AND ALARM



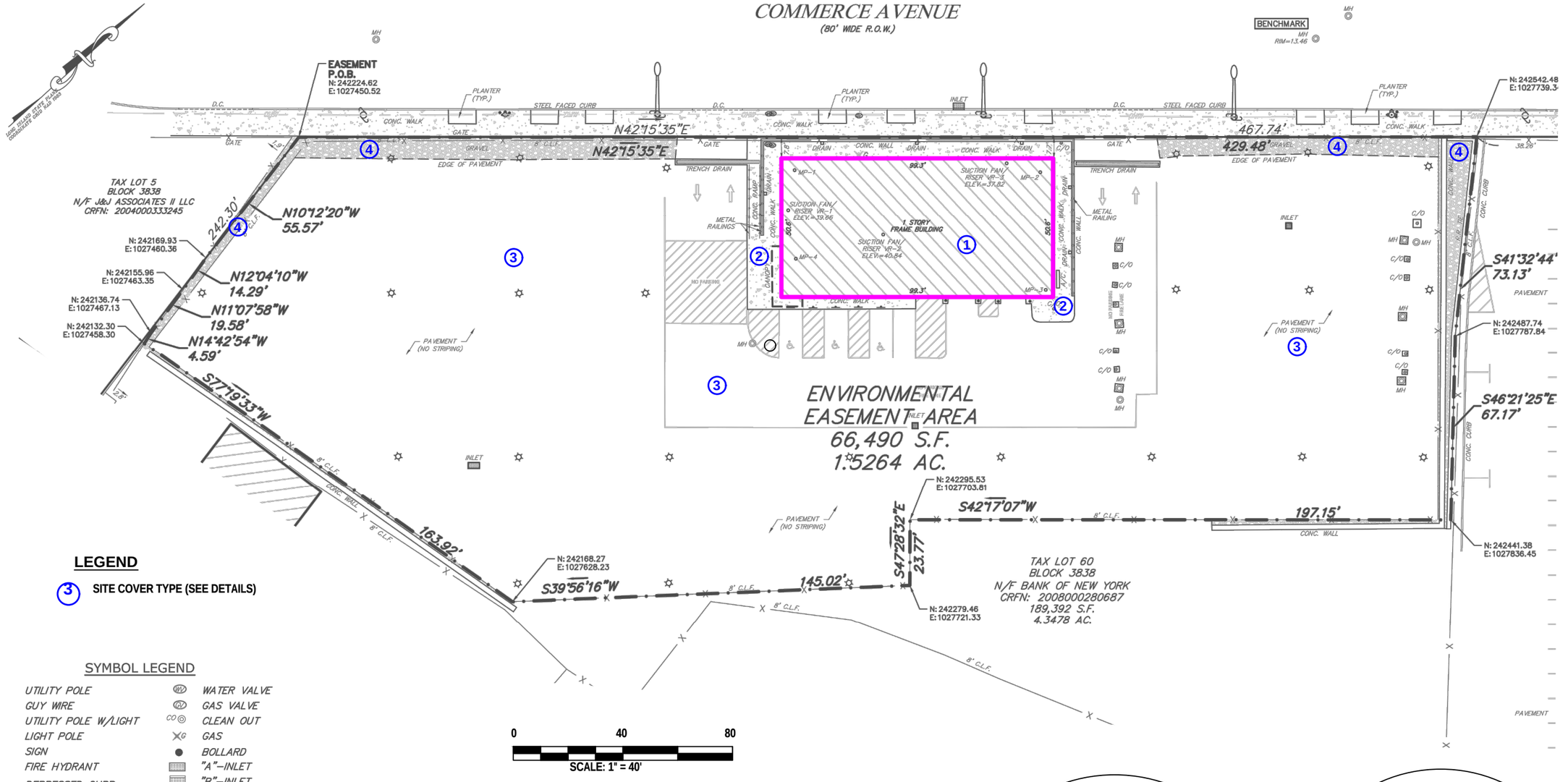
KEY PLAN - NTS

AKRF
440 Park Avenue South, New York, NY 10016

MTA-Paratransit Relocation Facility
Bronx, New York

SUB-SLAB DEPRESSURIZATION PLAN

DATE
8/25/2021
PROJECT NO.
80612
FIGURE
5



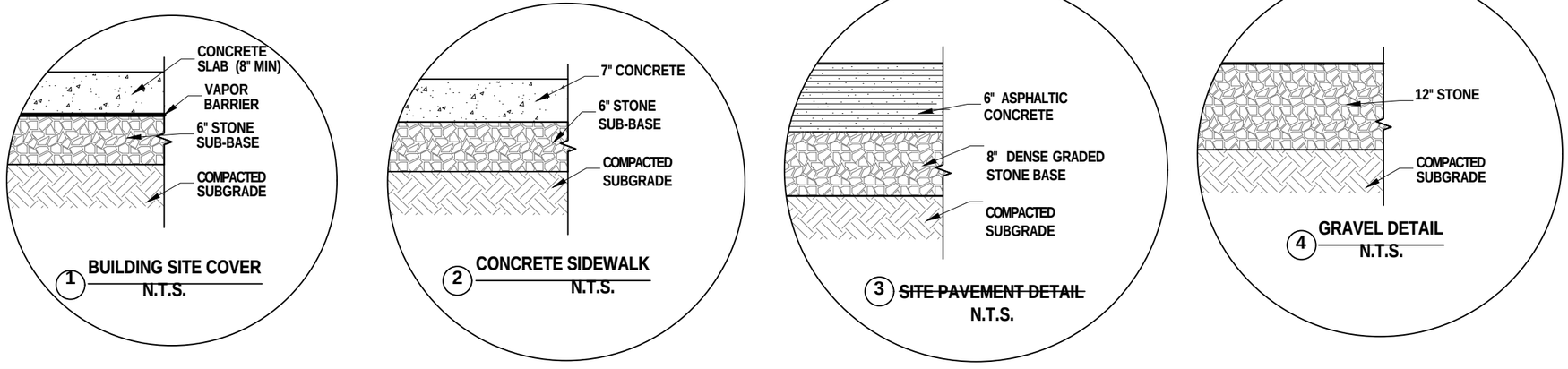
LEGEND

3 SITE COVER TYPE (SEE DETAILS)

SYMBOL LEGEND

UTILITY POLE	WATER VALVE
GUY WIRE	GAS VALVE
UTILITY POLE W/LIGHT	CLEAN OUT
LIGHT POLE	GAS
SIGN	BOLLARD
FIRE HYDRANT	"A"–INLET
DEPRESSED CURB	"B"–INLET
MANHOLE	YARD INLET

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."



Based on Land Survey at 1100 Commerce Ave, Bronx, NY
Prepared by DPK LandSurveying P.C.
Survey No. 18-8164
August 2019

AKRF
440 Park Avenue South, New York, NY 10016

MTA-Paratransit Relocation Facility
Bronx, New York

SITE COVER SYSTEM PLAN

DATE
8/25/2021

PROJECT NO.
80612

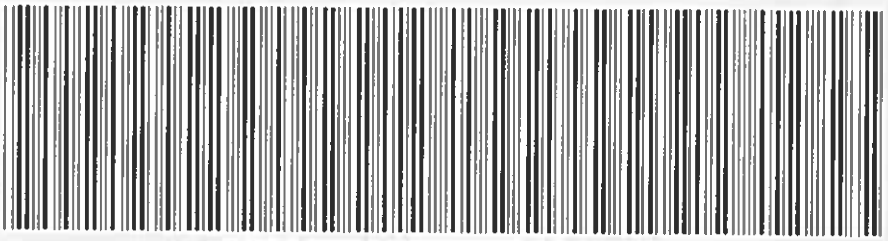
FIGURE
6

APPENDIX A

ENVIRONMENTAL EASEMENT

NYC DEPARTMENT OF FINANCE
OFFICE OF THE CITY REGISTER

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



2021033100939001001E3DF0

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

Document ID: 2021033100939001 Document Date: 11-03-2020 Preparation Date: 03-31-2021
Document Type: EASEMENT
Document Page Count: 10

PRESENTER:
NEW YORK CITY ECONOMIC DEVELOPMENT CORPORATION
ONE LIBERTY PLAZA
NEW YORK, NY 10006
212-312-3570
LEGALADMIN.ASSISTANTSLIST@NYCEDC.COM

RETURN TO:
NEW YOIR CITY ECONOMIC DEVELOPMENT CORPORATION
C/O: CARLOS GUERRA
ONE LIBERTY PLAZA
NEW YORK, NY 10006
212-312-3892

PROPERTY DATA

Borough	Block	Lot	Unit	Address
BRONX	3838	60	Entire Lot	2401 WATSON AVENUE

Property Type: COMMERCIAL REAL ESTATE

CROSS REFERENCE DATA

CRFN_____ *or* DocumentID_____ *or* _____ Year____ Reel____ Page____ *or* File Number_____

PARTIES

GRANTOR/SELLER:
THE CITY OF NEW YORK
C/O: NEW YORK CITY ECONOMIC DEVELOPMENT CORPORATIO, ONE LIBERTY PLAZA
NEW YORK, NY 10006

GRANTEE/BUYER:
NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 BROADWAY
ALBANY, NY 12233-1500

FEES AND TAXES

Mortgage :

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

Filing Fee: $ 250.00

NYC Real Property Transfer Tax: $ 0.00

NYS Real Estate Transfer Tax: $ 0.00

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

THIS INDENTURE made this 3rd day of November, 2020 between Owner, City of New York, having an office at c/o NYC Economic Development Corporation, One Liberty Plaza, New York, New York 10006, County of New York, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee"), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

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

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

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

WHEREAS, Grantor, is the owner of real property located at the address of 1100 Commerce Avenue in the City of New York, County of Bronx and State of New York, known and designated on the tax map of the County Clerk of Bronx as tax map parcel number: Block 3838 Lot 60, being a portion of the property acquired by Grantor by condemnation in a Final Decree "So Ordered" by the Honorable Wallace R. Cotton on February 6, 1976 and filed with the Bronx County Clerk in Reel 304, Page 256. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 1.5264 +/- acres, and is hereinafter more fully described in the Land Title Survey dated August 30, 2019 prepared by James J. Heiser, L.L.S. of DPK Land Surveying, which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation

established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Order on Consent Index Number: R2-20150206-62, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

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

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

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

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

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

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

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

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

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

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

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

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

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

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

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

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

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

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

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation

pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

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

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

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

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

(i) are in-place;

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

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

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

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

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

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

(7) the information presented is accurate and complete.

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

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

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

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

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

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

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

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

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

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

Parties shall address correspondence to:

Site Number: 203074
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

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

communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

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

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

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

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

Remainder of Page Intentionally Left Blank

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

City of New York:

By: _____

Print Name: Andrew Schwartz

Title: Deputy Commissioner of SBS Date: 9-24-2020

Grantor's Acknowledgment

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

On the 24th day of September, in the year 20 20, before me, the undersigned, personally appeared Andrew Schwartz, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____
Notary Public - State of New York

SEAL

Carlos A. Guerra
Notary Public, State of New York
No. 01GU6292830
Qualified in New York County
Commission Expires 11/12/2021

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

By: _____
Michael J. Ryan, Director
Division of Environmental Remediation

Grantee's Acknowledgment

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

On the 3rd day of November, in the year 2020, before me, the undersigned, personally appeared Michael J. Ryan, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

JUSTIN F STENERSON
NOTARY PUBLIC, STATE OF NEW YORK
Registration No. 02ST6383061
Qualified in Ulster County
Commission Expires November 13, 2022

SEAL

SCHEDULE "A" PROPERTY DESCRIPTION

DESCRIPTION OF AN ENVIRONMENTAL EASEMENT AREA ACROSS A PORTION OF TAX LOT 60 BLOCK 3838 IN THE BOROUGH OF BRONX, BRONX COUNTY, NEW YORK.

BEGINNING AT A POINT ON THE SOUTHERLY SIDELINE OF COMMERCE AVENUE, 80 FEET WIDE RIGHT OF WAY AT THE DIVIDING LINE BETWEEN TAX LOT 60 AND TAX LOT 5 B LOCK 3838, SAID POINT HAVING NEW YORK LONG ISLAND STATE PLANE GRID COORDINATES, NAD 83 OF NORTH: 242,224.62 EAST: 1,027,450.52 (US SURVEY FEET); AND RUNS THENCE

1. ALONG THE SOUTHERLY LINE OF COMMERCE AVENUE, NORTH 42 DEGREES 15 MINUTES 35 SECONDS EAST 429.48 FEET TO A POINT HAVING NEW YORK LONG ISLAND STATE PLANE GRID COORDINATES NAD 83 OF NORTH: 242,542.48 EAST: 1,027,739.34; THENCE

CROSSING LOT 60 THE FOLLOWING NINE COURSES:

2. ALONG THE NORTHEASTERLY LINE OF A RAILROAD TIE WALL, SOUTH 41 DEGREES 32 MINUTES 44 SECONDS EAST 73.13 FEET TO AN ANGLE POINT IN SAME HAVING NEW YORK LONG ISLAND STATE PLANE GRID COORDINATES NAD 83 OF NORTH: 242,487.74 EAST: 1,027,787.84; THENCE
3. CONTINUING ALONG THE SAME, SOUTH 46 DEGREES 21 MINUTES 25 SECONDS EAST 67.17 FEET TO A POINT HAVING NEW YORK LONG ISLAND STATE PLANE GRID COORDINATES NAD 83 OF NORTH: 242,441.38 EAST: 1,027,836.45; THENCE LEAVING SAID WALL,
4. ALONG THE LINE OF AN 8 FOOT HIGH CHAIN LINK FENCE, SOUTH 42 DEGREES 17 MINUTES 07 SECONDS WEST 197.15 FEET TO AN ANGLE POINT IN SAME HAVING NEW YORK LONG ISLAND STATE PLANE GRID COORDINATES NAD 83 OF NORTH: 242,295.53 EAST: 1,027,703.81; THENCE
5. STILL ALONG THE LINE OF SAID 8 FEET HIGH CHAIN LINK FENCE, SOUTH 47 DEGREES 28 MINUTES 32 SECONDS EAST 23.77 FEET TO AN ANGLE POINT IN SAME HAVING NEW YORK LONG ISLAND STATE PLANE GRID COORDINATES NAD 83 OF NORTH: 242,279.46 EAST: 1,027,721.33; THENCE
6. STILL ALONG THE LINE OF SAID 8 FEET HIGH CHAIN LINK FENCE, SOUTH 39 DEGREES 56 MINUTES 16 SECONDS WEST 145.02 FEET TO AN ANGLE POINT IN SAME HAVING NEW YORK LONG ISLAND STATE PLANE GRID COORDINATES NAD 83 OF NORTH: 242,168.27 EAST: 1,027,682.23; THENCE
7. STILL ALONG THE LINE OF SAID CHAIN LINK FENCE, SOUTH 77 DEGREES 19 MINUTES 33 SECONDS WEST 163.92 FEET TO A POINT IN AN EXISTING CHAIN LINK FENCE HAVING NEW YORK LONG ISLAND STATE PLANE GRID COORDINATES NAD 83 OF NORTH: 242,132.30 EAST: 1,027,468.30; THENCE
8. ALONG THE LINE OF SAID CHAIN LINK FENCE, NORTH 14 DEGREES 42 MINUTES 54 SECONDS WEST 4.95 FEET TO AN ANGLE POINT IN SAME

HAVING NEW YORK LONG ISLAND STATE PLANE GRID COORDINATES NAD 83 OF NORTH: 242,136.74 EAST: 1,027,467.13; THENCE

9. ALONG THE LINE OF SAID CHAIN LINK FENCE, NORTH 11 DEGREES 07 MINUTES 58 SECONDS WEST 19.58 FEET TO AN ANGLE POINT IN SAME HAVING NEW YORK LONG ISLAND STATE PLANE GRID COORDINATES NAD 83 OF NORTH: 242,155.96 EAST: 1,027,463.35; THENCE

10. ALONG THE LINE OF SAID CHAIN LINK FENCE, NORTH 12 DEGREES 04 MINUTES 10 SECONDS WEST 14.29 FEET TO A POINT IN THE DIVIDING LINE BETWEEN TAX LOT 60 AND TAX LOT 5 B LOCK 3838, HAVING NEW YORK LONG ISLAND STATE PLANE GRID COORDINATES NAD 83 OF NORTH: 242,169.93 EAST: 1,027,460.36; THENCE

11. ALONG THE SAID DIVIDING LINE, NORTH 10 DEGREES 12 MINUTES 20 SECONDS WEST 55.57 FEET TO THE POINT AND PLACE OF **BEGINNING.**

CONTAINING 66,490 SQUARE FEET / 1.5264 ACRES OF LAND.

ALL COORDINATE VALUES RECITED HEREIN ARE IN US SURVEY FEET.

NYC DEPARTMENT OF FINANCE
OFFICE OF THE CITY REGISTER

2021033100939001 00111AF0

REAL PROPERTY TRANSFER TAX COVER PAGE **PAGE 1 OF 1**

Document ID: 2021033100939001 Document Date: 11-03-2020 Preparation Date: 03-31-2021
Document Type: EASEMENT

PARTIES

FIRST GRANTOR/SELLER:	**FIRST GRANTEE/BUYER:**
THE CITY OF NEW YORK C/O: NEW YORK CITY ECONOMIC DEVELOPMENT CORPORATIO, ONE LIBERTY PLAZA NEW YORK, NY 10006	NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION 625 BROADWAY ALBANY, NY 12233-1500

ASSOCIATED TAX FORM ID: 202003110038310104

RPTT SUPPORTING DOCUMENTS SUBMITTED:

Page Count

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)

CITY REGISTER

APR 01 2021

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

GRANTOR

● Name THE CITY OF NEW YORK

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

Telephone Number

● Permanent mailing address after transfer (number and street) C/O: NEW YORK CITY ECONOMIC DEVELOPMENT CORPORATIO ONE LIBERTY PLAZA

● City and State NEW YORK, NY

Zip Code 10006

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

SOCIAL SECURITY NUMBER

OR

EMPLOYER IDENTIFICATION NUMBER 13-6400434

SINGLE MEMBER EIN OR SSN

GRANTEE

● Name NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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

Telephone Number

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

● City and State ALBANY, NY

Zip Code 12233-1500

● 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
2401 WATSON AVENUE		BRONX	3838	60	1	7,230	692,550.00

● DATE OF TRANSFER TO GRANTEE: 11/3/2020

● PERCENTAGE OF INTEREST TRANSFERRED: 0 %

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

2020031100383101O4

● 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): COMMERCIAL REAL ESTATE

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

2020031100383101O4

GRANTOR'S ATTORNEY ▼

Name of Attorney		Telephone Number
JILL BRAVERMAN, ESQ.		(212) 619-5000
Address (number and street)	**City and State**	**Zip Code**
NEW YORK CITY ECONOMIC DEVELOPMENT CORPORATION ONE LIBERTY PLAZA	NEW YORK, NY	10006
EMPLOYER IDENTIFICATION NUMBER	OR	SOCIAL SECURITY NUMBER

GRANTEE'S ATTORNEY ▼

Name of Attorney		Telephone Number
JENNIFER ANDALORO, ESQ.		(518) 402-9199
Address (number and street)	**City and State**	**Zip Code**
NYSDEC - 625 BROADWAY	ALBANY, NY	12233-1500
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 24th day of September, 2020

Signature of Notary

Notary's stamp or seal

Carlos A. Guerra
Notary Public, State of New York
No. 01GU6292830
Qualified in New York County
Commission Expires 11/12/2022

SEAL

13-6400434
EMPLOYER IDENTIFICATION NUMBER OR SOCIAL SECURITY NUMBER

THE CITY OF NEW YORK
Name of Grantor

Signature of Grantor
Deputy Commissioner of SBS.

GRANTEE

Sworn to and subscribed to before me on this 3rd day of November, 2020

Signature of Notary

Notary's stamp or seal

JUSTIN F STENERSON
NOTARY PUBLIC, STATE OF NEW YORK
Registration No. 02ST6383061
Qualified in Ulster County
Commission Expires November 13, 2022

14-6013200
EMPLOYER IDENTIFICATION NUMBER OR SOCIAL SECURITY NUMBER

NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Name of Grantee

Signature of Grantee

2020031100383101

NYC DEPARTMENT OF FINANCE
OFFICE OF THE CITY REGISTER

2021033100939001 00121BB0

REAL ESTATE TRANSFER TAX COVER PAGE **PAGE 1 OF 1**

Document ID: 2021033100939001 Document Date: 11-03-2020 Preparation Date: 03-31-2021
Document Type: EASEMENT

PARTIES

FIRST GRANTOR/SELLER:	**FIRST GRANTEE/BUYER:**
THE CITY OF NEW YORK C/O: NEW YORK CITY ECONOMIC DEVELOPMENT CORPORATIO, ONE LIBERTY PLAZA NEW YORK, NY 10006	NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION 625 BROADWAY ALBANY, NY 12233-1500

ASSOCIATED TAX FORM ID: 20200311003833O103

RETT SUPPORTING DOCUMENTS SUBMITTED:

Page Count

TP-584-NYC (9/19)

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

CITY REGISTER

APR 01 2021

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*): THE CITY OF NEW YORK

Social Security number (SSN):

Mailing address: C/O NEW YORK CITY ECONOMIC DEVELOPMENT CORPORATIO ONE LIBERTY PLAZA

SSN:

City: NEW YORK | State: NY | ZIP code: 10006

Employer identification number (EIN): 13 6400434

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 DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SSN:

Mailing address: 625 BROADWAY

SSN:

City: ALBANY | State: NY | ZIP code: 12233-1500

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
2 - 3838 - 60	650000	2401 WATSON AVENUE	NEW YORK	BRONX

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: 11 (month) 3 (day) 2020 (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)* ENVIRONMENTAL EASEMENT

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

2020031100383301O3

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 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 *(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 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 on Part 1, line 1 *(mark 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 ☐

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
		[signature]	Senior attorney
[signature]	Deputy Commissioner of SBS		

2020031100383301

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

APPENDIX B

RESPONSIBLE PARTY INFORMATION

APPENDIX B

1.0 LIST OF SITE CONTACTS

Company/Regulator	Contact Name	Contact Title	Contact Number
AKRF	Rebecca Kinal, P.E.	Remedial Engineer	914-922-2362 (office)
AKRF	Dustin Kapson, LSRP	Project Manager	646-388-9767 (office)
NYSDEC	Kyle Forster	Project Manager	518-402-8644 (office)
NYSDEC	Sarah Quandt	Section Chief	518-402-9116 (office)
NYSDOH	Eamonn O'Neill	Public Health Engineer	518-402-7860 (office)
NYCEDC	Tracey Bell	Vice President	212-721-6032
NYC DSBS	Andrew Schwartz	Deputy Commissioner	212-513-6428
Medical, Fire, Police	N/A	N/A	911
One Call Center	N/A	N/A	(800) 272-4480
Poison Control Center	N/A	N/A	(800) 222-1222
Pollution Toxic Chemical Oil Spills	N/A	N/A	(800) 424-8802
NYSDEC Spills Hotline	N/A	N/A	(800) 457-7362

* Note: Contact numbers subject to change and will be updated as necessary.

2.0 RESPONSIBILITIES OF OWNER AND OPERATOR

2.1 Responsibilities

The responsibilities for implementing the Site Management Plan (SMP) for the MTA Paratransit Relocation site located at 1100 Commerce Avenue [also known as 1120 Commerce Avenue and recorded in the Environmental Easement as 2401 Watson Avenue, Bronx, New York (Tax Block 3838, portion of Lot 60)] (the "Site"), Order on Consent (Index Number R2-20150206-62; Site No. 203074) are divided between the Site owner and operator, as defined below.

The owner(s) is/are currently listed as:
The City of New York (the "owner").

The operator planned for the Site is:
The Metropolitan Transportation Authority (MTA) (the "operator")

Nothing on this page shall supersede the provisions of the Environmental Easement (EE) executed with NYSDEC in November 2020, Consent Order #R2-20150206-62, Consent Decree, agreement, or other legally binding document that affects rights and obligations relating to the Site.

Site Owner's Responsibilities:

1. The owner shall follow the SMP provisions regarding any construction and/or excavation it undertakes at the Site.
2. In the event the Site is delisted, the owner remains bound by the EE and shall submit, upon request by the NYSDEC, a written certification that the EE is still in place and has been complied with.
3. Prior to a change in use that impacts the remedial system or requirements and/or responsibilities for implementing the SMP, the owner shall submit to the NYSDEC for approval an amended SMP.
4. The owner shall notify the NYSDEC of any changes in the operator and of any changes in the party/entity responsible for the operation, maintenance, and monitoring of and reporting with respect to any remedial system (ECs). The owner shall provide contact information for the new party/entity. Such activity constitutes a Change of Use pursuant to 375-1.11(d) and requires 60-days prior notice to the NYSDEC. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.
5. The owner must notify the NYSDEC of any change in ownership of the Site property (identifying the tax map numbers in any correspondence) and provide contact information for the new owner of the Site property. 6 New York City Rules and Regulations (NYCRR) Part contains notification requirements applicable to any construction or activity changes and changes in ownership. Among the notification requirements is the following: Sixty days prior written notification must be made to the NYSDEC. Notification is to be submitted to the NYSDEC Division of Environmental Remediation's Site Control Section. Notification requirements for a change in use are detailed in Section 1.3 of the SMP. A change of use includes, but is not limited to, any activity that may increase direct human or environmental exposure (e.g., day care, school or park). A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.

Operator Responsibilities:

1. The operator shall grant access to the Site to the owner and its agents and NYSDEC and its agents for the purposes of performing activities required under the SMP and assuring compliance with the SMP.
2. The operator must follow the SMP provisions regarding any construction and/or excavation it undertakes at the Site.
3. In accordance with a periodic time frame determined by the NYSDEC, the operator shall periodically certify, in writing, that all Institutional Controls (ICs) set forth in the EE remain in place and continue to be complied with. The operator shall provide a written certification to the owner and the NYSDEC.

4. The operator shall report to the owner and the NYSDEC all activities required for remediation, operation, maintenance, monitoring, and reporting. Such reporting includes, but is not limited to, PRRs and certifications, electronic data deliverables, corrective action work plans and reports, and updated SMPs.
5. The operator is responsible for assuring the security of the remedial components located on the Site to the best of its ability. If damage to the remedial components or vandalism is evident, the operator shall notify the owner and the NYSDEC in accordance with the timeframes indicated in Section 1.3 Notifications.
6. Until such time as the NYSDEC deems the vapor mitigation system unnecessary, the operator shall operate the system, pay for the utilities for the system's operation, and report any maintenance issues to the owner and the NYSDEC.
7. The operator shall notify the owner and the NYSDEC of any damage to or modification of the systems as required under Section 1.3 Notifications of the SMP.
8. The operator is responsible for the proper maintenance of any installed vapor intrusion mitigation systems associated with the Site, as required in Section 5.0 of the SMP.
9. If some action or inaction by the operator adversely impacts the Site, the operator must notify the owner and the NYSDEC in accordance with the time frame indicated in Section 1.3 of the SMP. The operator is responsible for notifications to any occupants and the performance of necessary corrective actions in coordination with existing occupants or others assigned by the owner and/or NYSDEC.
10. If the NYSDEC determines that an update of the SMP is necessary, the operator shall update the SMP in coordination with the owner and obtain final approval from the NYSDEC. Within 5 business days after NYSDEC approval, the operator shall submit a copy of the approved SMP to the owner.
11. Before accessing the Site property to undertake a specific activity related to the SMP, the operator shall provide the owner advance notification that shall include an explanation of the work expected to be completed. The operator shall provide to (i) the owner, upon the owner's request, (ii) the NYSDEC, and (iii) other entities, if required by the SMP, a copy of any data generated during the Site visit and/or any final report produced.
12. In accordance with the tenant notification law, within 15 days of receipt, the operator must supply a copy of any vapor intrusion data, that is produced with respect to structures and that exceeds NYSDOH or OSHA guidelines on the Site, whether produced by the NYSDEC, operator, or owner, to the tenants on the property. The operator must otherwise comply with the tenant and occupant notification provisions of Environmental Conservation Law Article 27, Title 24.

Change in operator and/or control and/or Site ownership does not affect either the operator's or the owner's obligations with respect to the Site unless a legally binding document executed by the NYSDEC releases the operator and/or the owner of its obligations.

Future Site owners and operators and their successors and assigns are required to carry out the activities set forth above and adhere to the requirements established by the NYSDEC-approved SMP.

Execution Copy

RELOCATION AGREEMENT

This RELOCATION AGREEMENT (this "Agreement") made as of this 19 day of February, 2016 by and between THE CITY OF NEW YORK, a New York municipal corporation, acting by and through the Department of Small Business Services, with principal offices at 110 William Street, New York, New York 10038 (the "City"), and METROPOLITAN TRANSPORTATION AUTHORITY ("MTA"), a New York public benefit corporation with principal offices at 2 Broadway, New York, New York 10004, and NEW YORK CITY TRANSIT AUTHORITY ("NYCT") a New York public benefit corporation having an office at 2 Broadway, New York, New York 10004. The City, MTA and NYCT are referred to individually as a "Party" and collectively, the "Parties."

WITNESSETH

WHEREAS, NYCT, pursuant to the Public Authorities Law and an Agreement of Lease with the City dated June 1, 1953 (as amended, supplemented, renewed and extended, the "Master Lease"), operates the New York City public transportation system, including but not limited to maintaining jurisdiction, control, supervision and possession of all transit facilities, materials, supplies and property that was constructed by the City or acquired by the City before and after the Master Lease;

WHEREAS, the City desires to develop certain City-owned property located at 65 Commercial Street, Brooklyn, New York 11222, and identified as part of Block 2472, Lot 425 on the Tax Map of the City of New York (the "Tax Map") for the Borough of Brooklyn (the "Commercial Street Site") for park purposes;

WHEREAS, a portion of the Commercial Street Site is currently used by NYCT, consistent with the Master Lease, for an Emergency Response Unit (the "ERU") (the "ERU Area") and another portion of the Commercial Street Site is used by NYCT, consistent with the Master Lease for ParaTransit operations (the "ParaTransit Facility") (the "ParaTransit Area") as shown on the drawing attached as Exhibit A;

WHEREAS, the ERU Area and the ParaTransit Area have separate entrances, which allow for emergency repair vehicles to enter and exit the ERU Area without disturbing or entering into the ParaTransit Area;

WHEREAS, the City is planning to convert the Commercial Street Site into a park in two phases and plans to convert the ParaTransit Area in the first phase;

WHEREAS, in order to convert the ParaTransit Area to park uses, the City has requested MTA and NYCT to surrender their interests in the ParaTransit Area to the City;

WHEREAS, the City has identified a relocation site for NYCT's ParaTransit Facility, as hereinafter provided;

WHEREAS, the City, as owner of property located at 2401 Watson Avenue, Bronx, New York 10462, and identified as part of Block 3838, Lot 60 on the Tax Map for the Borough of Bronx (the "**Relocation Site**"), has offered the Relocation Site to the MTA/NYCT, and MTA/NYCT has confirmed, subject to the terms of this Agreement, that such property is suitable for its ParaTransit Facility;

WHEREAS, the Relocation Site contains contamination in the soils present on the site requiring remediation pursuant to a Consent Order (hereinafter defined) between the City and the New York State Department of Environmental Conservation ("**NYSDEC**");

WHEREAS, NYCT intends to utilize the Relocation Site for its ParaTransit Facility substantially similar to those operations presently undertaken at the Commercial Street Site, which operations are, among others, the storage, maintenance and refueling of ParaTransit vehicles, and for conducting training classes;

WHEREAS, subject to the terms and conditions of this Agreement, the City agrees to be responsible for the construction of the Relocation Site and performance of the Environmental Remediation and Improvement Work (as more fully described and defined below), and NYCT will agree to surrender its interest in and vacate the ParaTransit Area.

NOW THEREFORE, in consideration of the covenants and conditions herein contained, the Parties agree as follows:

1. Agreement to Relocate.

(a) NYCT shall vacate the ParaTransit Area within thirty (30) days after the earlier of (i) the date on which the City delivers the Relocation Site to NYCT with the Improvement Work (as hereinafter defined) Substantially Completed (as hereinafter defined) along with a temporary certificate of occupancy issued by the New York City Department of Buildings, or (ii) the date on which NYCT takes possession of the Relocation Site (the earlier of (i) and (ii) being referred to herein as the "**Occupancy Date**"). Except as may be otherwise agreed by the Parties, NYCT's obligation to vacate the ParaTransit Area by the Occupancy Date shall not be affected by any delay by or failure of NYCT to respond within any time periods contemplated herein and/or any construction that NYCT intends to perform at the Relocation Site.

(b) On the Occupancy Date, MTA/NYCT shall surrender the ParaTransit Area (inclusive of any improvements made by MTA/NYCT, any fixtures and personal property remaining thereat) to the City on an "as is" basis, and MTA/NYCT shall thereafter have no interest in, nor any liability for, the ParaTransit Area or any conditions thereat, environmental or otherwise; and the City shall defend and indemnify MTA/NYCT for any claims arising from injuries occurring after the Occupancy Date. Upon request of MTA/NYCT, the City shall provide the metes and bounds description of the ParaTransit Area for NYCT's records. On the date that MTA/NYCT surrenders the ERU Area (inclusive of any improvements made by MTA/NYCT, any fixtures and personal property remaining thereat) to the City, MTA/NYCT shall surrender the ERU Area on an "as is" basis, and MTA/NYCT shall thereafter have no interest in, nor any

liability for, the ERU Area or any conditions thereat, environmental or otherwise; and the City shall defend and indemnify MTA/NYCT for any claims arising from injuries occurring after such surrender date.

(c) On the Occupancy Date, the Relocation Site shall be deemed indentured to the Master Lease. Upon request of MTA/NYCT, the City shall provide the metes and bounds description of the Relocation Site for NYCT's records.

2. Approvals. MTA/NYCT shall obtain all necessary approvals (i) in accordance with the Master Lease, (ii) from its Board, and (iii) from any local, state and federal governmental authorities to surrender the ParaTransit Area and relocate to the Relocation Site, provided, however, that the City shall be responsible to apply for and obtain any required City approvals, permits, etc., with respect to performance of the Improvement Work and for NYCT to gain occupancy of the Relocation Site.

3. Environmental Remediation.

(a) The City has entered into an "Order on Consent and Administrative Settlement" a copy of which is annexed hereto as Exhibit B ("Consent Order") and made a part hereof, with respect to the Relocation Site. Except as otherwise provided for in subparagraph (b) below, the City shall perform all removal and/or remedial work required by the Consent Order at its sole cost and expense prior to the Occupancy Date to the satisfaction of NYSDEC, including but not limited to: 1) submission and implementation of any NYSDEC approved work plans; 2) submission of work plans and engineering reports and site management plans; 3) obtaining NYSDEC approval of final engineering reports and site management plans; 4) execution of any environmental easements on the Relocation Site required by the Order; and 5) payment to NYSDEC of costs incurred in overseeing the Consent Order.

(b) The City shall provide NYCT with copies of all documents submitted to NYSDEC pursuant to the Consent Order, and NYCT shall be permitted to submit comments to NYSDEC with respect to the adequacy of said documents, work plans, and proposed remedial and post-remedial work within 14 days after NYCT's receipt of any such document. The City shall also provide NYCT with copies of all reports and comments of the NYSDEC.

(c) After the Occupancy Date, MTA/NYCT shall conduct all activities on the Site in compliance with any NYSDEC-approved site management plans (including provide prior notice to NYSDEC and obtain prior NYSDEC approval for any activities requiring such prior notice and/or approval pursuant to any NYSDEC approved site management plans).

(d) After the Occupancy Date, MTA/NYCT shall at its sole cost and expense, (i) maintain any and all NYSDEC-approved engineering controls installed by the City as required by the Consent Order; (ii) prepare reports ("Annual Reports") for NYSDEC as required by the Consent Order or any DEC-approved site management plans and submit such Annual Reports to the City; and (iii) reimburse NYSDEC for costs incurred in overseeing the Consent Order. Notwithstanding anything to the contrary set forth in this

subparagraph (c), if in any year, such costs and expenses incurred by MTA/NYCT exceed the sum of $15,000, the City shall reimburse MTA/NYCT for costs and expenses above $15,000.

(e) MTA/NYCT shall allow, upon reasonable notice under the circumstances presented, NYSDEC and/or the City to enter upon the Relocation Site, by any duly designated officer or employee of NYSDEC, the City, or any New York State agency having jurisdiction with respect to matters addressed pursuant to the Consent Order, and by any agent, consultant, contractor, or other person so authorized by NYSDEC, the City or any State agency having jurisdiction thereof, for inspecting, sampling, copying records related to the contamination at the Relocation Site, testing, and any other activities necessary to ensure compliance with the Consent Order. Upon request, MTA/NYCT shall (i) provide NYSDEC with suitable work space at the Site, including access to a telephone, to the extent available, and (ii) permit NYSDEC full access to all non-privileged records relating to matters addressed by the Consent Order, including any and all any raw data (raw data may not be considered privileged). Copies of any data and records provided to NYSDEC shall also be submitted to the City.

(f) The City shall cause its Contractor(s) to procure and maintain Pollution Liability Insurance with respect to the Improvement Work (defined below) and activities of the City, its Contractors or subcontractors, including but not limited to handling, transporting or disposing of any hazardous substances and/or environmentally regulated materials and any sudden and/or non-sudden pollution or impairment of the environment, including clean-up costs and defense. The policy shall have limits of liability of not less than $5,000,000. The Pollution Liability Insurance shall be in effect from the time the Improvement Work commences as it relates to the hazardous substances or other environmentally regulated substances and materials through Final Completion (as defined below). The City's Contractor(s) shall comply with all federal, state, and/or local laws, rules and regulations and shall obtain any additional coverage required by federal, state, or local government agencies.

4. Construction.

(a) The City, at its sole cost and expense, shall perform the scope of work to the Relocation Site as shown on the plans and specifications, to be concurred in by MTA/NYCT (hereinafter referred to as the "**Plans and Specifications**"), such work as shown on the Plans and Specifications being hereinafter referred to as the "**Improvement Work**".

(b) The City shall not commence the performance of the Improvement Work at the Relocation Site until NYCT issues a notice of its concurrence with the Plans and Specifications. After NYCT provides such notice, the City shall commence the performance of the Improvement Work as soon as reasonably practicable, and to prosecute the same with due diligence, in accordance with the City's schedule for the construction of the Improvement Work ("**Construction Schedule**") to be provided to NYCT at the commencement of the Improvement Work. The City shall have monthly meetings to update NYCT on each stage of the process of the Improvement Work, and any design changes, change orders or scheduling changes (collectively, "**Changes**"), including but not limited to Changes necessary due to unforeseen changes in local, state or federal laws, codes or regulations taking effect during the

construction of the Improvement Work or unforeseen field conditions, to provide NYCT with a reasonable period of time to review and confirm that such Changes are consistent with the approved Plans and Specifications. During each meeting, the City's Consultants shall provide an update on the construction of Improvement Work ("Update Report") to NYCT and NYCT shall review the Update Report and, within 14 days of the meeting, provide the City with its comments to the Update Report. If NYCT does not attend meetings or submit comments within the time periods set forth herein, it shall be deemed to have waived its right to do so, unless NYCT reasonably requests to be excused from such meeting(s) or an extension of time to submit comments to the Update Report(s). NYCT shall be responsible for any changes or alterations to the Improvement Work that may be necessary as a result of its failure to attend meetings or submit comments within the time periods set forth herein, unless NYCT reasonably requests that such meeting(s) be rescheduled or an extension of time to submit comments to the Update Report(s). The City shall permit NYCT and its representatives to inspect the Improvement Work as it progresses at NYCT's cost and expense. For the avoidance of doubt, MTA/NYCT's concurrence and/or approval of the Plans and Specifications is not required in connection with the remediation work required by the Consent Order, and nothing herein shall prevent the City from commencing the remediation work required by the Consent Order.

(c) If there is a disagreement with respect to the Changes and/or Update Report, the Parties shall endeavor to expeditiously resolve such dispute. However, any agreed-upon resolution shall be subject to the architect's or engineer's approval. If the Parties are unable to resolve any dispute within 14 days, the dispute shall be forwarded to the chief engineer of each Party for discussion and resolution.

(d) After the Occupancy Date, the City shall require that its Contractors add the Metropolitan Transportation Authority and the New York City Transit Authority and their subsidiaries and affiliates as additional insureds to any insurance policy required by the City for the Improvement Work.

5. Completion of Work, Warranties; Indemnification.

(a) For the purposes of this Agreement, (i) the terms **"Substantial Completion"** or **"Substantially Completed"** or words of like import shall mean that (1) the Improvement Work at the Relocation Site has been sufficiently completed in accordance with the final approved Plans and Specifications, such that the Relocation Site may be occupied and used by NYCT for its intended purpose, as determined by NYCT in the exercise of its reasonable judgment after an inspection of the Improvement Work at the Relocation Site, notwithstanding the non-completion of minor items that will not interfere with the intended use and operation of the Relocation Site, (2) such minor items, if any, have been reasonably determined and enumerated by the City in a punch list approved by NYCT, and (3) that NYCT has accepted the City's determination that the Improvement Work has been Substantially Completed. As a condition for the NYCT agreeing that the Improvement Work is Substantially Completed, the City shall provide to NYCT a certificate signed by the engineer in charge of the Improvement Work stating that the Improvement Work has been Substantially Completed in accordance with the Plans and Specifications. Substantial Completion shall include completion of all

removal and/or remedial work required by the Consent Order, the successful testing and operation of all remedial equipment and engineering controls to be installed under NYSDEC-approved work plans, and NYSDEC's approval of the site management plans.

(b) The terms "**Final Completion**" or "**Finally Completed**" or words of like import shall mean that (1) the Improvement Work at the Relocation Site (including any and all punch list work) has been fully and properly completed in accordance with the Plans and Specifications, as represented by the City in the Certificate of Final Completion, and (2) the NYCT has accepted the City's representation that the Improvement Work has been Finally Completed by indicating its acceptance on the Certificate of Final Completion.

(c) Within thirty (30) days after NYCT has agreed that the Improvement Work has been Substantially Completed as evidenced by NYCT/MTA's countersignature on the Certificate of Substantial Completion, the City shall deliver to the City's Department of Buildings ("**DOB**") a statement in the form of Exhibit C ("**Certificate of Substantial Completion**"), so that DOB may issue a temporary certificate of occupancy for the Relocation Site. No later than at the time of Substantial Completion, the City shall deliver to NYCT all maintenance and operation manuals pertinent to the systems, facilities and installations located at the Relocation Site.

(d) Within 30 days after NYCT/MTA accepts the Improvement Work as evidenced by its countersignature on the form annexed hereto as Exhibit D ("**Certificate of Final Completion**"), the City shall submit to DOB the Certificate of Final Completion. Thereafter, the City shall diligently pursue the procurement of a permanent certificate of occupancy from DOB. No later than the time that NYCT/MTA's executes the Certificate of Final Completion, the City shall deliver to NYCT's Chief Engineer/Senior Vice President Capital Management Program one set of reproducible vellums and three sets of 35 mm microfilms, or (at NYCT's option) an electronically reproducible set compatible with NYCT's format, of the Plans and Specifications updated to reflect the final, approved as-built condition of the Relocation Site, accompanied by a certification by the City's architect that the Improvement Work has been fully completed in accordance with the Plans and Specifications.

(e) For a period of one year from the date of Substantial Completion, the City warrants, and shall cause its Contractors to warrant, that the Improvement Work conforms to the Plans and Specifications and other requirements specified in such contracts and is free of any latent defect of material or workmanship. The City's (and its contractors') obligation under this warranty shall be, at its/their own cost and expense, promptly to repair or replace (including the cost of removal and reinstallation), any item or part or component thereof which proves defective or fails to comply with the Plans and Specifications within the warranty period, such that it complies therewith. For purposes hereof, NYCT is specified as an intended third-party beneficiary in any construction contract(s) the City awards with respect to the Improvement Work.

(f) The City and its Contractor(s) shall indemnify, defend and hold harmless NYCT and/or MTA, their affiliates and subsidiaries, and their respective officers, employees or members, from and

against any and all liability, loss and expense (including without limitation, reasonable attorneys' fees and disbursements) arising from injury (including death) to persons, including but not limited to employees of NYCT or MTA, or damage to or destruction of property, including but not limited to property of NYCT or MTA, including any claims arising from the performance of the Improvement Work, caused in whole or in part by the acts or omissions of the City, its employees, or agents, or Contractors occurring by reason of or in connection with the Improvement Work, except to the extent such injury or damage may be caused by the gross negligence or willful acts of NYCT or MTA, their officers, employees, members or agents. The foregoing indemnification obligation shall survive the expiration of this Agreement and the Final Completion of the Improvement Work.

(g) The City shall defend, indemnify and hold harmless MTA and/or NYCT and their affiliates and subsidiaries from any and all costs (including without limitation, reasonable attorneys' fees and disbursements), claims, actions or proceedings related to environmental conditions at the Relocation Site, which conditions existed prior to the Occupancy Date whether brought by private parties or governmental entities. The foregoing indemnification obligations shall survive the expiration of this Agreement and the Final Completion of Improvement Work; and shall include any defect in design and construction of the remedial work required by the Consent Order. After the Occupancy Date, the City shall defend, indemnify MTA and/or NYCT and their affiliates and subsidiaries from any and all costs (including without limitation, reasonable attorneys' fees and disbursements), claims, actions or proceedings related to environmental conditions at the Commercial Street Site whether brought by private parties or governmental entities.

(h) Each Party hereto waives any right to collect from the other Party hereto, in any action or proceeding arising under this Agreement, in connection with any indemnification obligation hereunder or arising out of the performance of or failure to perform any work required to be performed by any party hereunder, any indirect, consequential, special or punitive damages whatsoever, whether or not such other party was or should have been aware of the probability or magnitude of such damages.

6. Relocation Costs. NYCT shall be responsible for all costs in connection with relocating from the ParaTransit Area to the Relocation Site. For purposes of this section, "relocation costs" shall mean all furniture, fixtures and equipment to be removed from the ParaTransit Area and installed on the Relocation Site. NYCT shall be responsible for (i) all utilities at the ParaTransit Area prior to the Occupancy Date; however the City shall be responsible for the procurement and installation of all utilities at the Relocation Site prior to the Occupancy Date.

7. Force Majeure. For purposes of this Agreement, "Force Majeure" means an unforeseeable event beyond the control of, and not caused by the fault or negligence of, the affected party, including, but not limited to: acts of God; acts of civil or military authority; acts of public enemies; war; insurrection; non-City governmental action; fires; floods; explosions; epidemics; earthquakes; quarantine restrictions; strikes or other work stoppages; or loss or interruption of electrical power or other public utility. If an event of Force Majeure results in a Party's being unable to perform in full or in part its obligations under this Agreement, that Party shall be excused from whatever performance is

affected by the Force Majeure event to the extent so affected and to the extent the affected Party used its best efforts, consistent with prudent practices, to perform its obligations under this Agreement and to mitigate the losses to the other party arising from the event of Force Majeure.

8. The ERU Area. The City shall not adversely affect the ERU Area or impede the operations of the ERU. The City shall ensure that the construction that it performs on the ParaTransit Area will not interfere with ERU vehicles use of the ERU Area, and that ERU vehicles will have access, ingress and egress to and from the ERU Area. Environmental remediation to the ParaTransit Area, if any, shall be performed without harm or injury to NYCT's employees located on the ERU Area. During any environmental remediation on the ParaTransit Area, the City and/or its contractors will abide by any regulatory agency's (with jurisdiction over such environmental remediation work) directives and recommendations for clean-up, protection of workers and protection of adjacent facilities and protection of future users of the park.

9. Any notice to be given or made pursuant to this Agreement shall be in writing, and either (a) delivered by hand, (b) mailed by certified mail, postage prepaid, return receipt requested, or (c) sent by a reputable overnight courier service, in each case to the following representatives of the intended recipients addressed as follows:

To the City:

New York City Economic Development Corporation
110 William Street
New York, New York 10038
Attention: General Counsel

With a copy to:

New York City Law Department
100 Church Street
New York, New York 10007
Attention: Chief, Economic Development

To MTA/NYCTA:

Metropolitan Transportation Authority
2 Broadway, 4th Floor
New York, NY 10004
Attention: Director of Real Estate

With a copy to each of:

Metropolitan Transportation Authority
2 Broadway, 20th Floor
New York, NY 10004

Attention: General Counsel

and

New York City Transit Authority
130 Livingston Street
Brooklyn, NY 11201
Attention: General Counsel

Any notice so addressed shall be effective and be deemed properly given when actually delivered to or received by the intended recipient or when delivery or receipt is refused. Any party may designate different representatives and/or a change of address by written notice to each other party in accordance with this Paragraph 9.

10. Entire Agreement. This Agreement represents the entire understanding of the Parties with respect to the subject matter hereof and all prior or contemporaneous understandings or agreements, whether written or oral, are merged into this Agreement. This Agreement may not be amended except in a writing signed by each Party.

11. Counterparts. This Agreement may be executed in any number of counterparts and all of such counterparts taken together shall be deemed to constitute one and the same instrument.

NO FURTHER TEXT – SIGNATURE PAGES FOLLOW

IN WITNESS WHEREOF, the Parties have signed below as of the date first above written.

METROPOLITAN TRANSPORTATION AUTHORITY

By: _____ 02/17/16
Name: Jeffrey B. Rosen
Title: Director, Real Estate

THE CITY OF NEW YORK

By: _____
Name: _____
Title: Andrew Schwartz
Deputy Commissioner

NEW YORK CITY TRANSIT AUTHORITY

By: _____ 02/17/16
Name: Jeffrey B. Rosen
Title: Director, Real Estate

APPROVED AS TO FORM:

_____
Acting Corporation Counsel

EXHIBIT A

ERU Area and ParaTransit Area

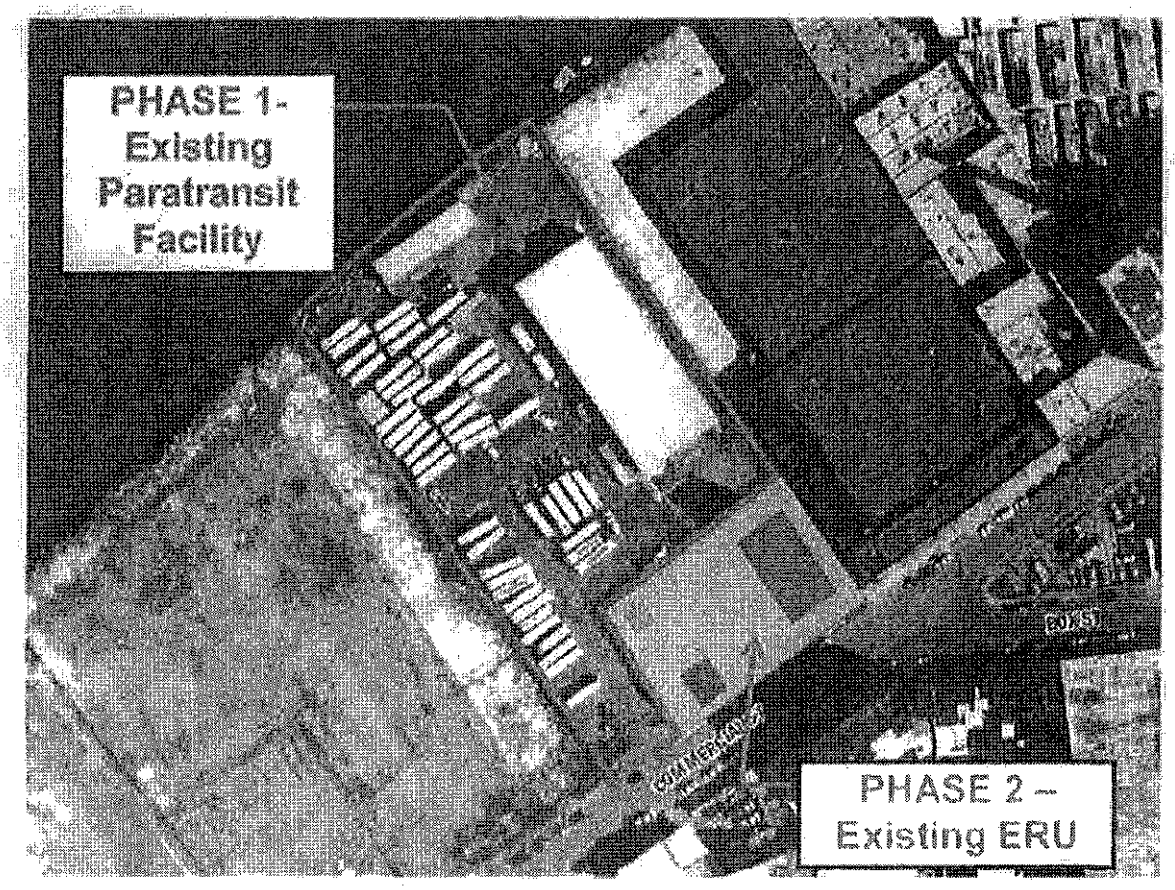


EXHIBIT B

ORDER ON CONSENT and ADMINISTRATIVE SETTLEMENT

(See Attached)

NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

In the Matter of the Development and Implementation of a Remedial Program for an Inactive Hazardous Waste Disposal Site under Article 27, Title 13 of the Environmental Conservation Law by THE CITY OF NEW YORK Respondent. DEC Site Name: 1100 Commerce Ave.	**ORDER ON CONSENT and ADMINISTRATIVE SETTLEMENT** Index # R2-20150206-62 Site # 203074

WHEREAS,

I. A. The New York State Department of Environmental Conservation ("Department") is responsible for inactive hazardous waste disposal site remedial programs pursuant to Article 27, Title 13 of the Environmental Conservation Law ("ECL") and Part 375 of Title 6 of the Official Compilation of Codes, Rules and Regulations ("6 NYCRR") and may issue orders consistent with the authority granted to the Commissioner by such statute.

B. The Department is responsible for carrying out the policy of the State of New York to conserve, improve and protect its natural resources and environment and control water, land, and air pollution consistent with the authority granted to the Department and the Commissioner by Article 1, Title 3 of the ECL.

C. This Order is issued pursuant to the Department's authority under, *inter alia*, ECL Article 27, Title 13 and ECL 3-0301, and resolves Respondent's liability to the State as provided at 6 NYCRR 375-1.5(b)(5).

2. The City of New York, acting by and through the New York City Department of Small Business Services ("City" or "Respondent") is the current owner of property located at 1100 Commerce Avenue, Bronx, New York, Block 3838, a portion of Lot 60 (hereinafter the "Site"). Exhibit "A" is a map of the Site showing its location.

3. The Site is not currently listed in the *Registry of Inactive Hazardous Waste Disposal Sites in New York State*.

4. Respondent consents to the issuance of this Order without (i) an admission or finding of liability, fault, wrongdoing, or violation of any law, regulation, permit, order, requirement, or standard of care of any kind whatsoever; (ii) an acknowledgment that there has been a release or

threatened release of hazardous waste at or from the Site; and/or (iii) an acknowledgment that a release or threatened release of hazardous waste at or from the Site constitutes a significant threat to the public health or environment.

5. Solely with regard to the matters set forth below, Respondent hereby waives any right to a hearing as may be provided by law, consents to the issuance and entry of this Order, and agrees to be bound by its terms. Respondent consents to and agrees not to contest the authority or jurisdiction of the Department to issue or enforce this Order, and agrees not to contest the validity of this Order or its terms or the validity of data submitted to the Department by Respondent pursuant to this Order.

NOW, having considered this matter and being duly advised, **IT IS ORDERED THAT**:

I. Citizen Participation Plan

Within twenty (20) days of Department's classification decision and listing on the Registry, if any, Respondent shall submit for review and approval a written citizen participation plan prepared in accordance with the requirements of ECL §27-1417 and 6 NYCRR sections 375-1.10 and 375-3.10. Upon approval, the Citizen Participation Plan shall be deemed to be incorporated into and made a part of this Order.

II. Initial Submittal

Within thirty (30) Days after the effective date of this Order, Respondent shall submit to the Department a **Records Search Report** prepared in accordance with Exhibit "B" attached hereto. The Records Search Report can be limited if the Department notifies Respondent that prior submissions satisfy specific items required for the Records Search Report.

III. Development, Performance, and Reporting of Work Plans

A. Work Plans

All activities at the Site that comprise any element of an Inactive Hazardous Waste Disposal Site Remedial Program shall be conducted pursuant to one or more Department-approved work plans ("Work Plan" or "Work Plans") and this Order and all activities shall be consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300, as required under CERCLA, 42 U.S.C. § 9600 *et seq.* The Work Plan(s) under this Order shall address both on-Site and off-Site conditions and shall be developed and implemented in accordance with 6 NYCRR § 375-1.6(a). All Department-approved Work Plans shall be incorporated into and become enforceable parts of this Order. Upon approval of a Work Plan by the Department, Respondent shall implement such Work Plan in accordance with the schedule contained therein. Nothing in this Subparagraph shall mandate that any particular Work Plan be submitted.

Each Work Plan submitted shall use one of the following captions on the cover page:

1. Site Characterization ("SC") Work Plan: a Work Plan whose objective is to identify the presence of any hazardous waste disposal at the Site;

2. Remedial Investigation/Feasibility Study ("RI/FS") Work Plan: a Work Plan whose objective is to perform a Remedial Investigation and a Feasibility Study;

3. Interim Remedial Measure ("IRM") Work Plan: a Work Plan whose objective is to provide for an Interim Remedial Measure;

4. Remedial Design/Remedial Action ("RD/RA") Work Plan: a Work Plan whose objective is to provide for the development and implementation of final plans and specifications for implementing the remedial alternative set forth in the ROD; or

5. Site Management Plan: a Work Plan whose objective is to identify and implement the institutional and engineering controls required for the Site, as well as any necessary monitoring and/or operation and maintenance of the remedy.

B. Submission/Implementation of Work Plans

1. (a) The **Site Characterization Work Plan** shall be submitted to the Department within sixty (60) Days after the effective date of this Order.

(b) The Department may request that Respondent submit additional or supplemental Work Plans for the Site. Within thirty (30) Days after the Department's written request, Respondent shall advise the Department in writing whether it will submit and implement the requested additional or supplemental Work Plan or whether it elects to terminate this Order pursuant to Paragraph XIV. If Respondent elects to submit and implement such Work Plan, Respondent shall submit the requested Work Plan within sixty (60) Days after such election. If Respondent elects to terminate this Order or fails to make a timely election, this Order shall terminate pursuant to Paragraph XIV.

(c) Respondent may opt to propose one or more additional or supplemental Work Plans (including one or more IRM Work Plans) at any time, which the Department shall review for appropriateness and technical sufficiency.

(d) Any request made by the Department under Subparagraph III.B.1 (b) shall be subject to dispute resolution pursuant to Paragraph XIII.

2. A Professional Engineer must stamp and sign all Work Plans other than SC or RI/FS Work Plans.

3. During all field activities conducted under this Order, Respondent shall have on-Site a representative who is qualified to supervise the activities undertaken. Such representative may be an employee or a consultant retained by Respondent to perform such supervision as set forth in 6 NYCRR Part 375-1.6(a)(3).

C. Modifications to Work Plans

The Department shall notify Respondent in writing if the Department determines that any element of a Department-approved Work Plan needs to be modified in order to achieve the objectives of the Work Plan as set forth in Subparagraph III.A or to ensure that the Remedial Program otherwise protects human health and the environment. Upon receipt of such notification, Respondent shall, subject to Respondent's right to terminate pursuant to Paragraph XIV, provide written notification as provided at 6 NYCRR 375-1.6(d)(3)as to whether it will modify the Work Plan, or invoke dispute resolution.

D. Submission of Final Reports and Annual Reports

1. In accordance with the schedule contained in a Work Plan, Respondent shall submit a final report as provided at 6 NYCRR 375-1.6(b) and a final engineering report as provided at 6 NYCRR 375-1.6(c).

2. Any final report or final engineering report that includes construction activities shall include "as built" drawings showing any changes made to the remedial design or the IRM.

3. In the event that the final engineering report for the Site requires Site management, Respondent shall submit an annual report by the 1st Day of the month following the anniversary of the start of the Site management. Such annual report shall be signed by a Professional Engineer or by such other qualified environmental professional as the Department may find acceptable and shall contain a certification as provided at 6 NYCRR 375-1.8(h)(3). Respondent may petition the Department for a determination that the institutional and/or engineering controls may be terminated. Such petition must be supported by a statement by a Professional Engineer that such controls are no longer necessary for the protection of public health and the environment. The Department shall not unreasonably withhold its approval of such petition.

E. Review of Submittals other than Progress Reports and Health and Safety Plans

1. The Department shall make a good faith effort to review and respond in writing to each submittal Respondent makes pursuant to this Order within sixty (60) Days. The Department's response shall include an approval or disapproval of the submittal, in whole or in

part. All Department-approved submittals shall be incorporated into and become an enforceable part of this Order.

2. If the Department disapproves a submittal, it shall specify the reasons for its disapproval. Within fifteen (15) Days after the date of the Department's written notice that Respondent's submittal has been disapproved, Respondent shall, subject to Respondent's right to terminate pursuant to Paragraph XIV in the event the rejected submittal is a Work Plan submitted prior to the Department's approval of the RD/RA Work Plan, elect as provided at 6 NYCRR 375-1.6(d) (4). If Respondent elects to modify the submittal, Respondent shall, within thirty (30) Days after such election, make a revised submittal that addresses all of the Department's stated reasons for disapproving the first submittal. In the event that Respondent's revised submittal is disapproved, the Department shall set forth its reasons for such disapproval in writing and Respondent shall be in violation of this Order unless it invokes dispute resolution pursuant to Paragraph XIII and its position prevails. Failure to make an election or failure to comply with the election is a violation of this Order.

3. Within thirty (30) Days after the Department's approval of a final report, Respondent shall submit such final report, as well as all data gathered and drawings and submittals made pursuant to such Work Plan, in an electronic format acceptable to the Department. If any document cannot be converted into electronic format, Respondent shall submit such document in an alternative format acceptable to the Department.

F. Department's Issuance of a ROD

Respondent shall cooperate with the Department and provide reasonable assistance, consistent with the Citizen Participation Plan, in soliciting public comment on the proposed remedial action plan ("PRAP"), if any. After the close of the public comment period, the Department shall select a final remedial alternative for the Site in a ROD. Nothing in this Order shall be construed to abridge any rights of Respondent, as provided by law, to judicially challenge the Department's ROD.

G. Release and Covenant Not to Sue

Upon the Department's issuance of a Certificate of Completion as provided at 6 NYCRR 375-1.9 and 375-2.9, Respondent shall obtain the benefits conferred by such provisions, subject to the terms and conditions described therein.

IV. Progress Reports

Respondent shall submit written progress reports to the parties identified in Subparagraph XII.A.1 by the 10th Day of each month commencing with the month subsequent to the approval of the first Work Plan and ending with the Termination Date, unless a different frequency is set forth in an approved Work Plan. Such reports shall, at a minimum, include: all actions taken

pursuant to this Order during the reporting period and those anticipated for the upcoming reporting period; all approved modifications to work plans and/or schedules; all results of sampling and tests and all other data received or generated by or on behalf of Respondent in connection with the Site during the reporting period, including quality assurance/quality control information; information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule, and efforts made to mitigate such delays; and information regarding activities undertaken in support of the Citizen Participation Plan during the reporting period and those anticipated for the upcoming reporting period.

V. Penalties

A. 1. Respondent's failure to comply with any term of this Order constitutes a violation of this Order, the ECL, and 6 NYCRR 375-2.11(a) (4). Nothing herein abridges Respondent's right to contest any allegation that it has failed to comply with this Order.

2. Payment of any penalties shall not in any way alter Respondent's obligations under this Order.

B. 1. Respondent shall not suffer any penalty or be subject to any proceeding or action in the event it cannot comply with any requirement of this Order as a result of any Force Majeure Event as provided at 6 NYCRR 375-1.5(b)(4). Respondent must use best efforts to anticipate the potential Force Majeure Event, best efforts to address any such event as it is occurring, and best efforts following the Force Majeure Event to minimize delay to the greatest extent possible. "Force Majeure" does not include Respondent's economic inability to comply with any obligation, the failure of Respondent to make complete and timely application for any required approval or permit, and non-attainment of the goals, standards, and requirements of this Order.

2. Respondent shall notify the Department in writing within seven (7) Days of the onset of any Force Majeure Event. Failure to give such notice within such seven (7) Day period constitutes a waiver of any claim that a delay is not subject to penalties. Respondent shall be deemed to know of any circumstance which it, any entity controlled by it, or its contractors knew or should have known.

3. Respondent shall have the burden of proving by a preponderance of the evidence that (i) the delay or anticipated delay has been or will be caused by a Force Majeure Event; (ii) the duration of the delay or the extension sought is warranted under the circumstances; (iii) best efforts were exercised to avoid and mitigate the effects of the delay; and (iv) Respondent complied with the requirements of Subparagraph V.B.2 regarding timely notification.

4. If the Department agrees that the delay or anticipated delay is attributable to a Force Majeure Event, the time for performance of the obligations that are affected by the

Force Majeure Event shall be extended for a period of time equivalent to the time lost because of the Force majeure event, in accordance with 375-1.5(4).

5. If the Department rejects Respondent's assertion that an event provides a defense to non-compliance with this Order pursuant to Subparagraph V.B, Respondent shall be in violation of this Order unless it invokes dispute resolution pursuant to Paragraph XIII and Respondent's position prevails.

VI. Entry upon Site

A. Respondent hereby consents, upon reasonable notice under the circumstances presented, to entry upon the Site (or areas in the vicinity of the Site which may be under the control of Respondent) by any duly designated officer or employee of the Department or any State agency having jurisdiction with respect to matters addressed pursuant to this Order, and by any agent, consultant, contractor, or other person so authorized by the Commissioner, all of whom shall abide by the health and safety rules in effect for the Site, for inspecting, sampling, copying records related to the contamination at the Site, testing, and any other activities necessary to ensure Respondent's compliance with this Order. Upon request, Respondent shall (i) provide the Department with suitable work space at the Site, including access to a telephone, to the extent available, and (ii) permit the Department full access to all non-privileged records relating to matters addressed by this Order. Raw data is not considered privileged and that portion of any privileged document containing raw data must be provided to the Department. In the event Respondent is unable to obtain any authorization from third-party property owners necessary to perform its obligations under this Order, the Department may, consistent with its legal authority, assist in obtaining such authorizations.

B. The Department shall have the right to take its own samples and scientific measurements and the Department and Respondent shall each have the right to obtain split samples, duplicate samples, or both, of all substances and materials sampled. The Department shall make the results of any such sampling and scientific measurements available to Respondent.

VII. Payment of State Costs

A. Following the effective date of this Order, and after receipt of an itemized invoice from the Department, Respondent shall pay to the Department a sum of money which shall represent reimbursement for past State Costs, if any, as provided at 6 NYCRR 375-1.5(b)(3).

B. Within forty-five (45) Days after receipt of an itemized invoice from the Department, Respondent shall pay to the Department a sum of money which shall represent reimbursement for State Costs, other than those identified in Subparagraph VI.A, for work performed at or in connection with the Site through and including the Termination Date, as provided at 6 NYCRR 375-1.5(b)(3).

C. Personal service costs shall be documented as provided by 6 NYCRR 375-1.5(b)3(ii). The Department shall not be required to provide any other documentation of costs, provided however, that the Department's records shall be available consistent with, and in accordance with, Article 6 of the Public Officers Law.

D. Such invoice shall be sent to Respondent at the following address:

Tracy Bell
Vice President
New York City Department of Economic Development
110 William Street
New York, New York, 10038
tbell@edc.nyc

E. Each such payment shall be made payable to the Department of Environmental Conservation and shall be sent to:

Bureau of Program Management
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7012

F. Each party shall provide written notification to the other within ninety (90) Days of any change in the foregoing addresses.

G. Respondent may contest invoiced costs as provided at 6 NYCRR 375-1.5(b) (3) (v) and (vi).

VIII. Reservation of Rights

A. Except as provided at 6 NYCRR 375-1.9 and 375-2.9, nothing contained in this Order shall be construed as barring, diminishing, adjudicating, or in any way affecting any of the Department's rights or authorities, including, but not limited to, the right to require performance of further investigations and/or response action(s), to recover natural resource damages, and/or to exercise any summary abatement powers with respect to any person, including Respondent.

B. Except as otherwise provided in this Order, Respondent specifically reserves all rights and defenses under applicable law respecting any Departmental assertion of remedial liability and/or natural resource damages against Respondent, and further reserves all rights respecting the enforcement of this Order, including the rights to notice, to be heard, to appeal, and to any other due process. The existence of this Order or Respondent's compliance with it

shall not be construed as an admission of liability, fault, wrongdoing, or breach of standard of care by Respondent, and shall not give rise to any presumption of law or finding of fact, or create any rights, or grant any cause of action, which shall inure to the benefit of any third party. Further, Respondent reserves such rights as it may have to seek and obtain contribution, indemnification, and/or any other form of recovery from its insurers and from other potentially responsible parties or their insurers for past or future response and/or cleanup costs or such other costs or damages arising from the contamination at the Site as may be provided by law, including but not limited to rights of contribution under section 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B).

IX. Indemnification

Respondent shall indemnify and hold the Department, the State of New York, the Trustee of the State's natural resources, and their representatives and employees harmless as provided by 6 NYCRR 375-2.5(a)(3)(i).

X. Public Notice

A. Within thirty (30) Days after the effective date of this Order, Respondent shall provide notice as required by 6 NYCRR 375-1.5(a). Within sixty (60) Days of such filing, (or such longer period of time as may be required to obtain a certified copy, provided the City advises the Department of the status of its efforts to obtain same within such sixty (60) days) Respondent shall provide the Department with a copy of such instrument certified by the recording officer to be a true and faithful copy.

B. Within thirty (30) Days after the effective date of this Order, Respondent shall provide written notice of this Order to all tenants, subtenants, occupants, lessees, and sublessees of the Site and to any other person or entity who owns any interest in the Site. Within sixty (60) Days of such notice, Respondent shall provide the Department with proof of such notice.

C. If Respondent proposes to transfer by sale or lease the whole or any part of Respondent's interest in the Site, or becomes aware of such transfer, or becomes aware of any new tenants, occupants or sublessees of the Site, Respondent shall, not fewer than forty-five (45) Days before the date of transfer, or before the new tenants, occupants or sublessees take possession, or within forty-five (45) Days after becoming aware of such conveyance, new tenants, occupants or sublessees, notify the Department in writing of the identity of the transferee, new tenants, occupants or sublessees and of the nature and proposed or actual date of the conveyance or possession, and shall notify the transferee, new tenants, occupants or sublessees in writing, with a copy to the Department, of the applicability of this Order. However, such obligation shall not extend to a conveyance by means of a corporate reorganization or merger or the granting of any rights under any mortgage, deed, trust, assignment, judgment, lien, pledge, security agreement, lease, or any other right accruing to a person not affiliated with Respondent to secure the repayment of money or the performance of a duty or obligation.

XI. Environmental Easement

A. If a Department-approved final engineering report for the Site relies upon one or more institutional and/or engineering controls, Respondent (or the owner of the Site) shall submit to the Department for approval an Environmental Easement to run with the land in favor of the State which complies with the requirements of ECL Article 71, Title 36, and 6 NYCRR 375-1.8(h)(2). Upon acceptance of Environmental Easement by the State, Respondent shall comply with the requirements of 6 NYCRR 375-1.8(h) (2).

B. If the ROD provides for no action other than implementation of one or more institutional controls, Respondent shall cause an environmental easement to be recorded under the provisions of Subparagraph XI.A. If Respondent does not cause such environmental easement to be recorded in accordance with 6 NYCRR 375-1.8(h) (2), Respondent will not be entitled to the benefits conferred by 6 NYCRR 375-1.9 and 375-2.9.

C. The City or the Owner of the Site may petition the Department to modify or extinguish the Environmental Easement filed pursuant to Subparagraph X.A.1 at such time as it can certify that the Site is protective of human health and the environment without reliance upon the restrictions set forth in such instrument. Such certification shall be made by a Professional Engineer or other expert as approved by the Department and the Department will not unreasonably without its consent.

XII. Communications

A. All written communications required by this Order shall be transmitted by United States Postal Service, by private courier service, or hand delivered as follows:

1. Communication from Respondent shall be sent to:

Ralph Keating, P.E.
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
e-mail: Ralph.Keating@dec.ny.gov

(Note: One hard copy (double-sided, unbound) of work plans, reports, and correspondence is required, as well as one electronic copy unless otherwise specified by the Project Manager)

with copies to:

(Electronic Copy Only)
Krista Anders
Bureau of Environmental Exposure Investigation
New York State Department of Health
Flanigan Square
547 River Street
Troy, New York 12180-2216
Krista.Anders@health.ny.gov

Karen Mintzer *(Correspondence only)*
Regional Attorney
New York State Department of Environmental Conservation
47-40 21st Street
Long Island City, NY 11101
Karen.Mintzer@dec.ny.gov

2. Communication to be made from the Department shall be sent to:

Tracy Bell
Vice President
New York City Department of Economic Development
110 William Street
New York, New York, 10038
tbell@edc.nyc

With copies to:

Christopher Gene King
Assistant Corporation Counsel
New York City Law Department
100 Church Street, Room 6-143
New York, New York, 10007
CKing@law.nyc.gov

B. The Department and Respondent reserve the right to designate additional or different addressees for communication upon written notice to the other.

C. Each party shall notify the other within ninety (90) Days after any change in the addresses in this Paragraph XII or in Paragraph VII.

XIII. Dispute Resolution

In the event disputes arise under this Order, Respondent may, within fifteen (30) Days after Respondent knew or should have known of the facts which are the basis of the dispute, initiate dispute resolution in accordance with the provisions of 6 NYCRR 375-1.5(b)(2). Nothing contained in this Order shall be construed to authorize Respondent to invoke dispute resolution with respect to the remedy selected by the Department in the ROD or any element of such remedy, nor to impair any right of Respondent to seek judicial review of the Department's selection of any remedy.

XIV. Termination of Order

A. This Order will terminate upon the earlier of the following events:

1. Respondent's election to terminate pursuant to Subparagraphs III.B.1.b, III.C or III.E.2 so long as such election is made prior to the Department's approval of the RD/RA Work Plan. In the event of termination in accordance with this Subparagraph XIV.A.1, this Order shall terminate effective the 5th Day after the Department's receipt of the written notification terminating this Order or the 5th Day after the time for Respondent to make its election has expired, whichever is earlier, provided, however, that if there are one or more Work Plan(s) for which a final report has not been approved at the time of Respondent's notification of its election to terminate this Order pursuant to Subparagraphs III.B.1.b or III.E.2 or its failure to timely make such an election pursuant to Subparagraphs III.B.1.b or III.E.2, Respondent shall promptly complete the activities required by such previously approved Work Plan(s)consistent with the schedules contained therein. Thereafter, this Order shall terminate effective the 5th Day after the Department's approval of the final report for all previously approved Work Plans; or

2. The Department's written determination that Respondent has completed all phases of the Remedial Program (including Site Management), in which event the termination shall be effective on the 5th Day after the date of the Department's approval of the final report relating to the final phase of the Remedial Program.

B. Notwithstanding the foregoing, the provisions contained in Paragraphs VII and IX shall survive the termination of this Order and any violation of such surviving Paragraphs shall be a violation of this Order, the ECL, and 6 NYCRR 375-2.11(a) (4), subjecting Respondent to penalties as provided under Paragraph V so long as such obligations accrued on or prior to the Termination Date.

C. If the Order is terminated pursuant to Subparagraph XIV.A.1, neither this Order nor its termination shall affect any liability of Respondent for remediation of the Site and/or for payment of State Costs, including implementation of removal and remedial actions, interest, enforcement, and any and all other response costs as defined under CERCLA, nor shall it affect any defenses to such liability that may be asserted by Respondent. Respondent shall also ensure

that it does not leave the Site in a condition, from the perspective of human health and environmental protection, worse than that which existed before any activities under this Order were commenced. Further, the Department's efforts in obtaining and overseeing compliance with this Order shall constitute reasonable efforts under law to obtain a voluntary commitment from Respondent for any further activities to be undertaken as part of a Remedial Program for the Site.

XV. Miscellaneous

A. Respondent agrees to comply with and be bound by the provisions of 6 NYCRR Subparts 375-1 and 375-2; the provisions of such Subparts that are referenced herein are referenced for clarity and convenience only and the failure of this Order to specifically reference any particular regulatory provision is not intended to imply that such provision is not applicable to activities performed under this Order.

B. The Department may exempt Respondent from the requirement to obtain any state or local permit or other authorization for any activity conducted pursuant to this Order in accordance with 6 NYCRR 375-1.12(b), (c), and (d).

C. 1. Respondent shall use best efforts to obtain all Site access, permits, easements, approvals, institutional controls, and/or authorizations necessary to perform Respondent's obligations under this Order, including all Department-approved Work Plans and the schedules contained therein. If, despite Respondent's best efforts, any access, permits, easements, approvals, institutional controls, or authorizations cannot be obtained, Respondent shall promptly notify the Department and include a summary of the steps taken. The Department may, as it deems appropriate and within its authority, assist Respondent in obtaining same.

2. If an interest in property is needed to implement an institutional control required by a Work Plan and such interest cannot be obtained, the Department may require Respondent to modify the Work Plan pursuant to 6 NYCRR 375-1.6(d)(3) to reflect changes necessitated by Respondent's inability to obtain such interest.

D. The paragraph headings set forth in this Order are included for convenience of reference only and shall be disregarded in the construction and interpretation of any provisions of this Order.

E. 1. The terms of this Order shall constitute the complete and entire agreement between the Department and Respondent concerning the implementation of the activities required by this Order. No term, condition, understanding, or agreement purporting to modify or vary any term of this Order shall be binding unless made in writing and subscribed by the party to be bound. No informal advice, guidance, suggestion, or comment by the Department shall be construed as relieving Respondent of Respondent's obligation to obtain such formal approvals as may be required by this Order. In the event of a conflict between the terms of this

Order and any Work Plan submitted pursuant to this Order, the terms of this Order shall control over the terms of the Work Plan(s). Respondent consents to and agrees not to contest the authority and jurisdiction of the Department to enter into or enforce this Order.

2. i. Except as set forth herein, if Respondent desires that any provision of this Order be changed, Respondent shall make timely written application to the Commissioner with copies to the parties listed in Subparagraph XII.A.1.

ii. If Respondent seeks to modify an approved Work Plan, a written request shall be made to the Department's project manager, with copies to the parties listed in Subparagraph XII.A.1.

iii. Requests for a change to a time frame set forth in this Order shall be made in writing to the Department's project attorney and project manager; such requests shall not be unreasonably denied and a written response to such requests shall be sent to Respondent promptly.

F. 1. If there are multiple parties signing this Order, the term "Respondent" shall be read in the plural, the obligations of each such party under this Order are joint and several, and the insolvency of or failure by any Respondent to implement any obligations under this Order shall not affect the obligations of the remaining Respondent(s) under this Order.

2. If Respondent is a partnership, the obligations of all general partners (including limited partners who act as general partners) under this Order are joint and several and the insolvency or failure of any general partner to implement any obligations under this Order shall not affect the obligations of the remaining partner(s) under this Order.

3. Notwithstanding the foregoing Subparagraphs XV.F.1 and 2, if multiple parties sign this Order as Respondents but not all of the signing parties elect to implement a Work Plan, all Respondents are jointly and severally liable for each and every obligation under this Order through the completion of activities in such Work Plan that all such parties consented to; thereafter, only those Respondents electing to perform additional work shall be jointly and severally liable under this Order for the obligations and activities under such additional Work Plan(s). The parties electing not to implement the additional Work Plan(s) shall have no obligations under this Order relative to the activities set forth in such Work Plan(s). Further, only those Respondents electing to implement such additional Work Plan(s) shall be eligible to receive the Release and Covenant Not to Sue referenced in Paragraph III.G.

G. Respondent shall be entitled to receive contribution protection and/or to seek contribution to the extent authorized by ECL 27-1421(6) and 6 NYCRR 375-1.5(b)(5), 42 U.S.C § 9613, New York General Obligations Law § 15-108 and any other applicable law.

H. Unless otherwise expressly provided herein, terms used in this Order which are defined in ECL Article 27 or in regulations promulgated there under shall have the meaning assigned to them under said statute or regulations.

I. Respondent's obligations under this Order represent payment for or reimbursement of response costs, and shall not be deemed to constitute any type of fine or penalty.

J. Respondent and Respondent's successors and assigns shall be bound by this Order. Any change in ownership or corporate status of Respondent shall in no way alter Respondent's responsibilities under this Order.

K. This Order may be executed for the convenience of the parties hereto, individually or in combination, in one or more counterparts, each of which shall be deemed to have the status of an executed original and all of which shall together constitute one and the same.

L. The effective date of this Order is the 10th Day after it is signed by the Commissioner or the Commissioner's designee.

DATED:

JOSEPH J. MARTENS
Commissioner
New York State Department of
Environmental Conservation

By: _____
Robert W. Schick, P.E., Director
Division of Environmental Remediation

CONSENT BY RESPONDENT

Respondent, **The City of New York**, hereby consents to the issuing and entering of this Order, waives Respondent's right to a hearing herein as provided by law, and agrees to be bound by this Order.

The City of New York

By [signature]: _____

Print Name: _____

Title: _____

Date: _____

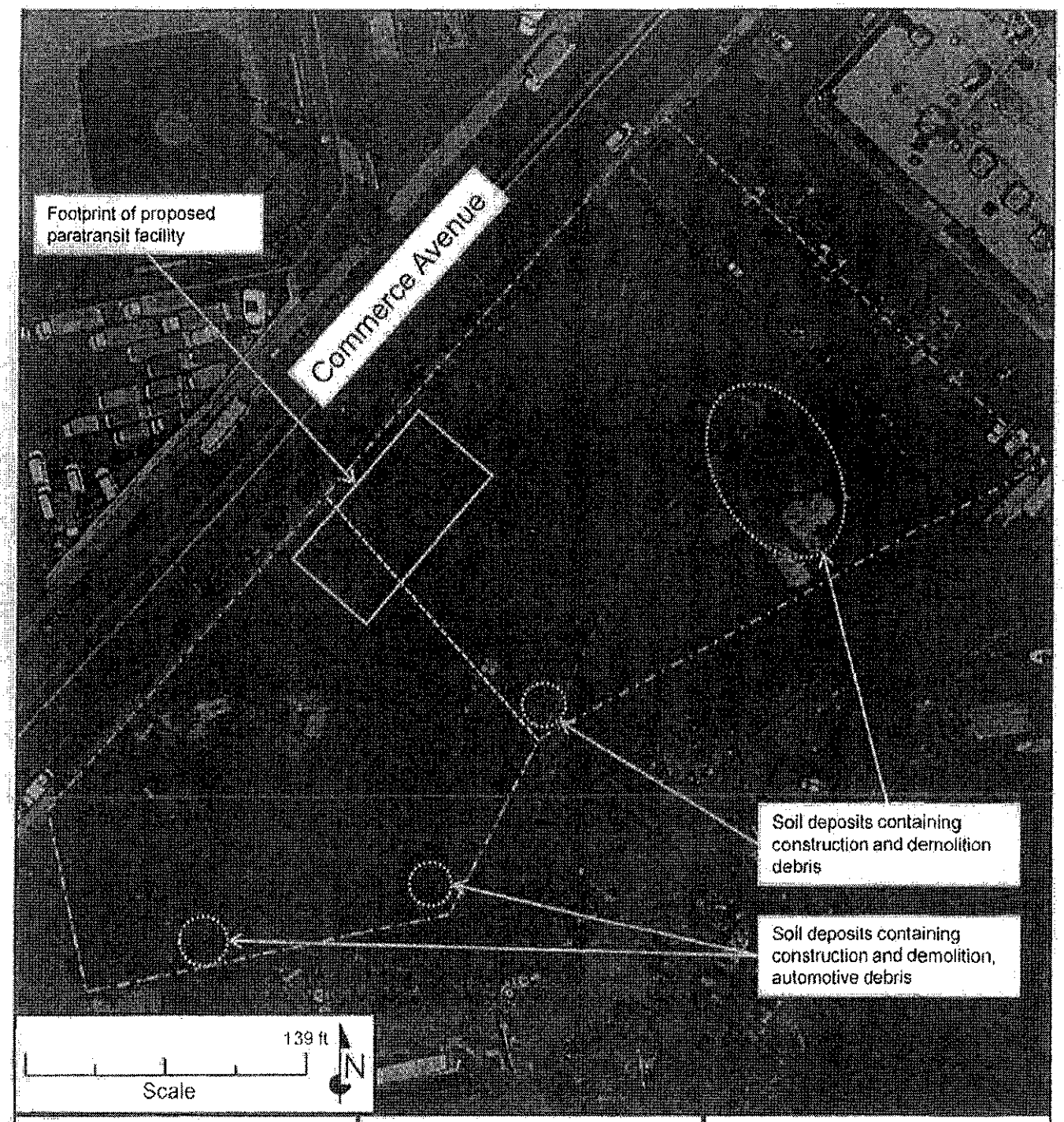
STATE OF)
) ss:
COUNTY OF)

On the _____ day of _____, in the year 2015, before me, the undersigned, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____
Signature and Office of individual
taking acknowledgment

EXHIBIT "A":

SITE MAP



Legend

Proposed development boundary

Subject Property boundary

Chain-linked fence

Prepared for:
McLaren Engineering Group
100 Snake Hill Road
West Nyack, NY 10994

Prepared by:
ENVIRONMENTAL PLANNING & MANAGEMENT, INC.
EPM

Figure 2:
Detailed Site Plan

Commerce Avenue
Bronx, NY 10462

EPM Project Number 13033

EXHIBIT "B"

RECORDS SEARCH REPORT

1. Detail all environmental data and information within Respondent's or Respondent's agents' or consultant's possession or control regarding environmental conditions at or emanating from the Site.

2. A comprehensive list of all existing relevant reports with titles, authors, and subject matter, as well as a description of the results of all previous investigations of the Site and of areas immediately surrounding the Site which are or might be affected by contamination at the Site, including all available topographic and property surveys, engineering studies, and aerial photographs.

3. A concise summary of information held by Respondent and Respondent's attorneys and consultants with respect to:

(i) a history and description of the Site, including the nature of operations;

(ii) the types, quantities, physical state, locations, methods, and dates of disposal or release of hazardous waste at or emanating from the Site;

(iii) a description of current Site security (i.e. fencing, posting, etc.); and

(iv) the names and addresses of all persons responsible for disposal of hazardous waste, including the dates of such disposal and any proof linking each such person responsible with the hazardous wastes identified.

EXHIBIT C

CERTIFICATE OF SUBSTANTIAL COMPLETION OF
RELOCATION SITE

(NYCT Letterhead)

(Date)

TO: NYCT/MTA
Buildings Department

Pursuant to Article _____ of the Agreement ("Agreement") dated as of _____, 20__, by and between the City, MTA and NYCT, the City hereby certifies that the Improvement Work has been Substantially Completed. The Department of Buildings is hereby advised that a temporary certificate of occupancy may be issued to all or any portion of the Improvement Work.

All defined terms used herein shall have the meanings ascribed thereto in the Agreement.

ISSUED:

City of New York
Department of Small Business Services

By: _____

ACCEPTED AND AGREED:

New York City Transit Authority

By: _____

Title: _____

Date: _____

[Add acknowledgment for recording]

EXHIBIT D

CERTIFICATE OF FINAL COMPLETION AND ACCEPTANCE OF RELOCATION SITE

(NYCT Letterhead)

(Date)

TO: The City
Buildings Department

Pursuant to Article _____ of the Agreement ("Agreement") dated as of _____, 20__, by and between the City, MTA and NYCT, the City hereby certifies that the Improvement Work to the Relocation Site has been Finally Completed. NYCT's execution of this letter below shall constitute its acceptance of the Relocation Site as Finally Complete. The Department of Building's is hereby advised that a permanent certificate of occupancy permitting occupancy may be issued for all or any portion of the Improvement Work.

All defined terms used herein shall have the meanings ascribed thereto in the Agreement.

ISSUED:

City of New York
Department of Small Business Services

By: _____

_____

ACCEPTED AND AGREED:

New York City Transit Authority

By:

Title: _____

Date: _____

[Add acknowledgments for recording]

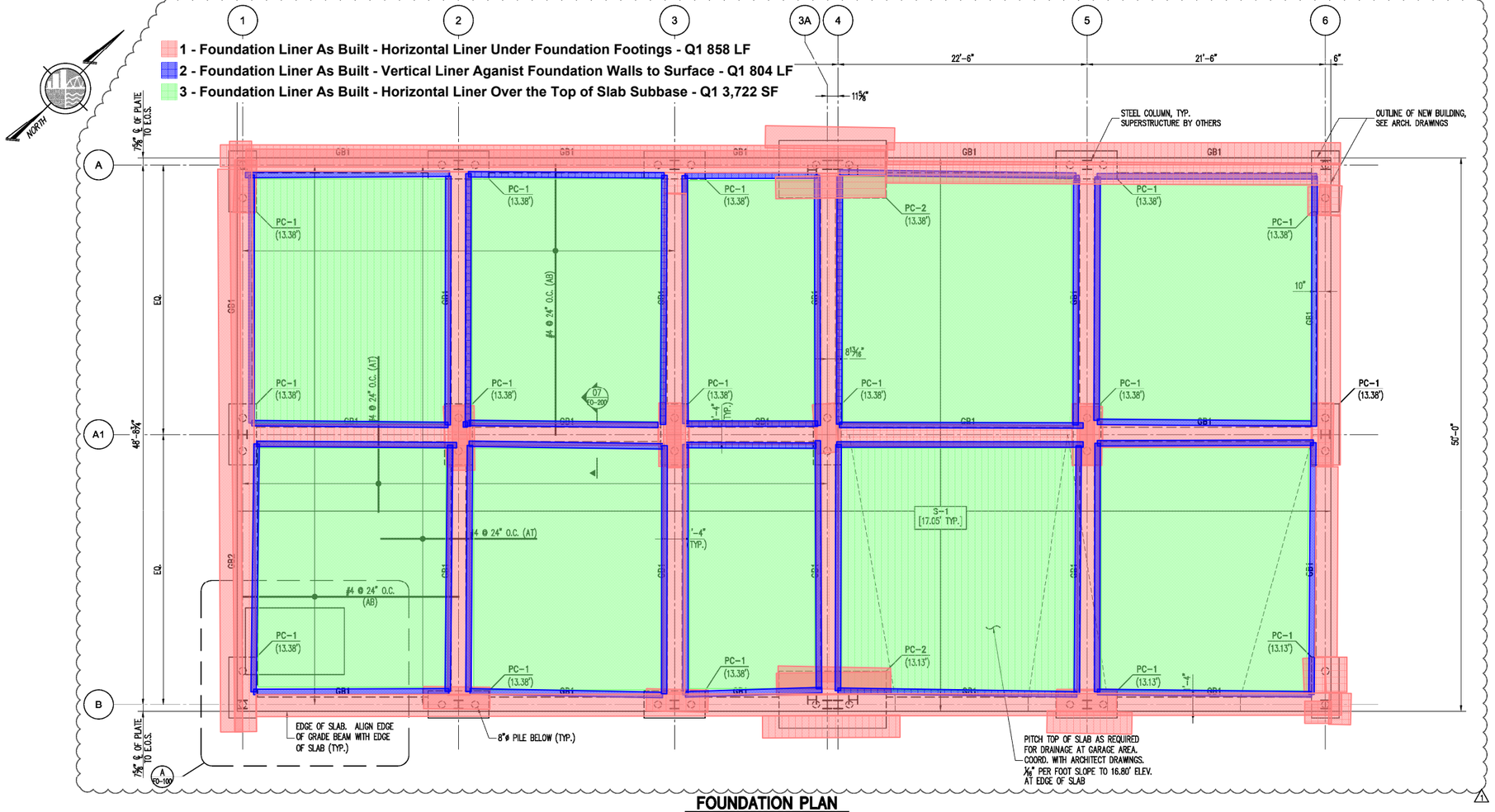
APPENDIX C

AS-BUILT SURVEYS AND RECORD DRAWINGS

1 - Foundation Liner As Built - Horizontal Liner Under Foundation Footings - Q1 858 LF

2 - Foundation Liner As Built - Vertical Liner Aganist Foundation Walls to Surface - Q1 804 LF

3 - Foundation Liner As Built - Horizontal Liner Over the Top of Slab Subbase - Q1 3,722 SF



FOUNDATION PLAN

3/16" = 1'-0"

NOTES:

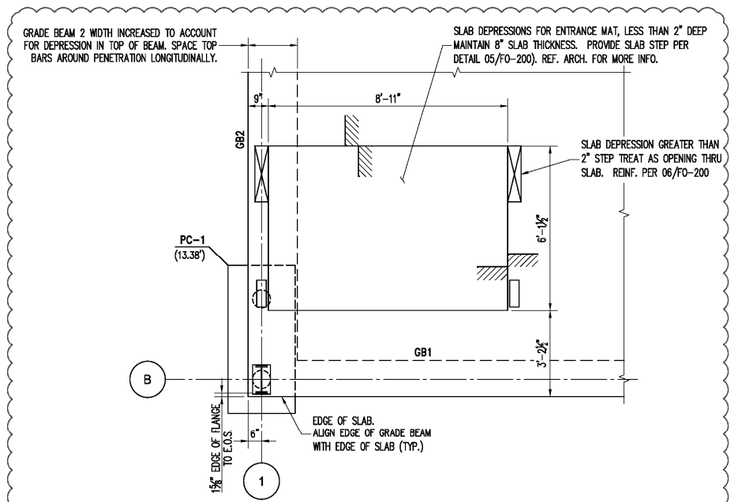
1. SEE ARCHITECT DRAWINGS FOR ALL WATERPROOFING, FLASHING, INSULATION, FIREPROOFING AND FINISHES.
2. BUILDING SUPERSTRUCTURE BY OTHERS. COORDINATE COLUMN BASE DETAIL, SLAB DIMENSIONS, EDGE DETAILS, ETC. WITH OTHERS.
3. COORDINATE WITH ARCHITECT FOR ALL ARCHITECTURALLY EXPOSED CONCRETE REQUIREMENTS.
4. PILE DESIGN BASED ON GEOTECHINICAL REPORT BY MCLAREN ENGINEERING GROUP DATED 5/17/2013. ALL GEOTECH INFORMATION TO BE VERIFIED PRIOR TO CONSTRUCTION.
5. SUB-GRADE AT ALL SLABS, GRADE BEAMS AND PILE CAPS TO BE EXCAVATED, PREPARED, FILLED, PROOFROLLED, PROTECTED, ETC. AS SPECIFIED IN GEOTECH REPORT DATED 5/17/2013.
6. ALL SHEETING, SHORING AND OTHER SIMILAR CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND HIS/HER PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK AND SHALL BE SUBJECT TO SPECIAL INSPECTIONS AS REQUIRED BY THE NEW YORK CITY BUILDING CODE.
7. THE CONTRACTOR IS TO SUBMIT ALL PILE DESIGNS AND PROCEDURES, SIGNED AND SEALED BY HIS/HER PROFESSIONAL ENGINEER TO THE GEOTECHNICAL ENGINEER FOR REVIEW. SEE GENERAL EXCAVATION NOTES AND PILE NOTES FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
8. SCOPE NATURE AND EXTENT OF ALL NEW FOUNDATION WORK TO BE DETERMINED AFTER ALL EXISTING CONDITIONS HAVE BEEN FIELD VERIFIED BY THE PROJECT GEOTECHNICAL ENGINEER. FOUNDATION ELEMENTS SHOWN MAY NEED TO BE MODIFIED AFTER GEOTECHNICAL ENGINEER REVIEW AND RECOMMENDATIONS.
9. SEE DETAILS ON FO-200, FO-210 AND NOTES ON FO-300 FOR ADDITIONAL INFORMATION.

LEGEND:

1. ⬡ INDICATES 8"ø, ⅜" THICK STEEL PILES, FILLED WITH CONCRETE (f'c = 5,000 PSI) 40T CAPACITY. SEE GEOTECH REPORT PREPARED BY MCLAREN ENGINEERING GROUP DATED 5/17/2013. (13.38') ELEVATION INDICATES TYPICAL BOTTOM OF PILE CAP ELEVATION.
2. S-1 DENOTES 8" THICK CONCRETE SLAB (f'c = 4,000 PSI) REINFORCED WITH #4 @ 12" O.C. EACH WAY TOP AND BOTTOM. ADDITIONAL TOP BARS SHOWN ON PLAN. SLAB IS A STRUCTURAL SLAB. DO NOT PROVIDE CONTROL JOINTS. PROVIDE 6" CRUSHED STONE AND 10 MIL VAPOR BARRIER (GRACE W.R. & CO. PREPRUFE 300R OR EQUAL) BELOW SLAB, GRADE BEAMS, AND PILE CAPS. TOP OF SLAB IS 17.05' TYPICAL. REFER TO ARCHITECT FOR MINOR SLOPES AND STEPS IN SLAB.
3. —— DENOTES ADDITIONAL SLAB REINFORCEMENT.

GRADE BEAM SCHEDULE

MARK	SIZE		REINFORCEMENT		STIRRUPS		REMARKS
			TOP-BARS	BOTTOM-BARS	SIZE	SPACING EA. END 1 @ 2", BALANCE SEE BELOW	
	W	D	CONT.	CONT.			
GB1	16"	36"	(3) #8	(3) #8	#3	10" O.C. – 2 LEGS	
GB2	22"	36"	(4) #8	(4) #8	#3	10" O.C. – 2 LEGS	SEE A/FO-200 FOR NOTE REGARDING GB2



A ENTRANCE MAT PART PLAN

FO-100

3/8" = 1'-0"

CONSULTING ENGINEERS
141 WEST 28TH STREET, 8TH FL TEL: 212.695.5313
NEW YORK, NY 10001 FAX: 212.695.5170

CLIENT

HUNTER ROBERTS CONSTRUCTION GROUP

2 World Financial Center, 6th Floor
New York NY 10281

CLIENT

NEW YORK CITY ECONOMIC AND DEVELOPMENT CORP.

110 William St.
New York, NY 10038

CIVIL / STRUCTURAL ENGINEER

MCLAREN ENGINEERING GROUP

100 Snake Hill Road
West Nyack, NY 10994

NO.	SUBMISSIONS / REVISIONS	DATE
1	PAA NO. 1	01/08/18
-	DOB FILING REVISION	01/20/17
-	DOB FILING REVISION	01/12/17
-	ISSUED TO DOB	09/23/16

PROJECT NORTH

REFERENCE BAR SEE DRAWINGS FOR SCALE DESIGNATION

PROJECT

RELOCATED MTA PARATRANSIT FACILITY

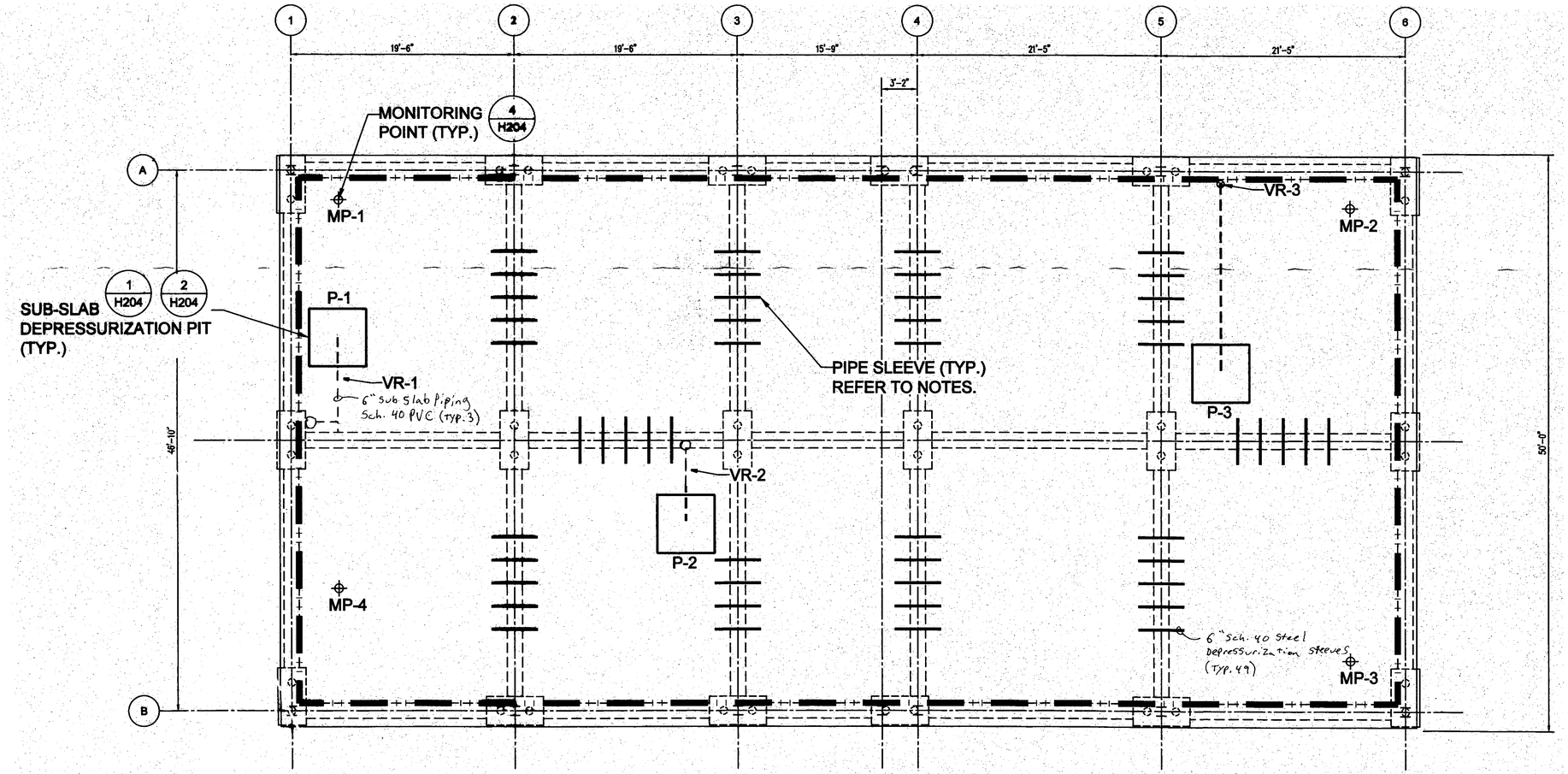
1120 COMMERCE AVE BRONX, NY 10462

FOUNDATION PLAN

SEAL & SIGNATURE

DATE:	12/20/13
PROJECT No:	MEG: 151311
SCALE:	AS SHOWN
DRAWING BY:	ORR
CHECKED BY:	SLG
DWG No:	FO-100.01
SHEET No:	1 OF 4

FILE NAME: P:\Proj\20\120536.05\10_Dwgs\CAD\FO-100.00 Foundation Plan.dwg PLOT TIME: Tue, 09 Jan 2018 – 7:52pm LAST SAVE: Tue, 09 Jan 2018 – 7:50pm BY: dbryant



SUB-SLAB PLAN

3/16" = 1'

SSDS AS-BUILT DRAWING

E P H

MTA PARATRANSIT BUILDING
1120 COMMERCE AVENUE
BRONX, NEW YORK 10462

DRAWNG PREPARED BY:
ECONOMY PLUMBING AND HEATING CO., INC.
54-15 46TH STREET
MASPETH, N.Y. 11378

DRAWINGS PREPARED FOR:
HUNTER ROBERTS
9 SOUTH STREET
NEW YORK, N.Y.

SSDS AS-BUILT

DRAWN BY:	DATE:	CHECKED BY:	DATE:
H. CHUMSKY	11/22/2019	A. CHUMSKY	11/22/2019

ALL DETAILS CHECKED FOR ACCURACY:

11/22/2019
SIGNATURE DATE

ACCEPTED BY:

SIGNATURE DATE

DRAWING NO.

H1

TJERNLUND PRODUCTS, INC.

1601 Ninth Street • White Bear Lake, MN 55110-6794
PHONE (800) 255-4208 • (651) 426-2993 • FAX (651) 426-9547
Visit our web site • www.tjernlund.com

RA1 Radon Fan Failure Alarm

READ OWNERS INSTRUCTIONS CAREFULLY PRIOR TO INSTALLATION. DO NOT DESTROY.

DESCRIPTION

Tjernlund's Fan Failure Alarm alerts homeowners of a radon fan failure or ice induced pipe blockage. Alarm sounds when loss of exhaust flow is detected. Secondary gauge port allows installer to measure actual system pressure. Large bright indicator lights are easily visible. Mounts to any flat surface or PVC piping. Includes low voltage power supply, sensing tubing and mounting hardware. Compatible with all Active Sub-Slab Depressurization (ASD) systems that can generate -0.10" water column (w.c.) static pressure.

INSTALLATION

The RA1 must be installed by a qualified installer in accordance with these instructions and all local codes or in their absence in accordance with the latest editions of the International Residential Code and International Electrical Code. Improper installation can create a hazardous condition such as fire, electric shock or personal injury. To reduce these risks significantly, use this unit only in the manner intended by the manufacturer. If you have questions, contact Tjernlund Products. Always disconnect the RA1 from its power source before installation and servicing. Tjernlund recommends performing radon testing annually to ensure acceptable levels are maintained.

NOTE: RA1 must be located on the negative pressure side of the system (between the subslab penetration and the inlet of the fan). Locate the sensing tube as close the inlet side of the fan as possible for best results. Consider possible mounting location and electrical access when determining the alarm location.

1. Use the included wall anchors and screws to mount the back of the unit to a wall or joist or use the included zip ties to secure the unit to the PVC pipe of the radon system. Alarm must be mounted so that the alarm's label runs perpendicular to the floor (label cannot face the floor or face the ceiling).

2. Make a 5/16" hole in the pipe and insert one end of the sensing tube in the hole. Secure and seal the tube in the pipe with silicone if desired.

3. Attach the other end of the sensing tube to the alarm's sensing port (below the label). The gauge port (above the label) must be capped with the included cap. For installers seeking to determine the exact pressure of the system remove the cap and attach a magnehelic gauge to the gauge port to determine the system pressure. Recap once measurement is complete.

4. Insert low voltage plug into the RA1 control box and plug the power supply into a 115 VAC outlet.

OPERATION

When **no power** is supplied to the RA1 **no lights** will appear.

When power is supplied and the **system pressure is equal to or greater than -0.10" w. c. the green light** will be activated.

When power is supplied and the **system pressure is less than -0.10" w.c. the red light** will be activated and **alarm will sound**.

If fan is on, but the red light is activated and alarm is on then the system is not creating -0.10" w.c. of static pressure at the location of the sensing tube. Relocate sensing tube closer to fan inlet or improve system/fan performance.

WARRANTY

TJERNLUND LIMITED 1 YEAR WARRANTY

Tjernlund Products, Inc. warrants to the original purchaser of this product that the product will be free from defects due to faulty material or workmanship for a period of (1) year from the date of original purchase or delivery to the original purchaser, whichever is earlier. Remedies under this warranty are limited to repairing or replacing, at our option, any product which shall, within the above stated warranty period, be returned to Tjernlund Products, Inc. at the address listed below, postage prepaid. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF, AND TJERNLUND PRODUCTS, INC. EXPRESSLY DISCLAIMS LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OF THIS PRODUCT. THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS WARRANTIES AND NO AGENT IS AUTHORIZED TO ASSUME FOR US ANY LIABILITY ADDITIONAL TO THOSE SET FORTH IN THIS LIMITED WARRANTY. IMPLIED WARRANTIES ARE LIMITED TO THE STATED DURATION OF THIS LIMITED WARRANTY. Some states do not allow limitation on how long an implied warranty lasts, so that limitation may not apply to you. In addition, some states do not allow the exclusion or limitation of incidental or consequential damages, so that above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which may vary from state to state. Send all inquiries regarding warranty work to Tjernlund Products, Inc. 1601 9th Street, White Bear Lake, MN 55110-6794. Phone (651) 426-2993 • (800) 255-4208 • Fax (651) 426-9547 • Email fanmail@tjfans.com.

P/N: 8504197

The models O6D and O6E are built in two different widths. If you find that the fan is either too wide or too narrow you should reform the legs to the correct size. This should be done before mounting to prevent the possibility of premature leg failure due to operating under stress.

Low temperature O6D and O6E compressors are supplied with mounting studs already installed.

Model	Voltage	For Compressor Models	Adapter Kit #
COPELAND			
C-2	208-230/1/60	MR-MD-2D	
C-24	460/1/60	MR-MD-2D	
C-3	208-230/1/60	9R-3D	
		MR-MD-2D	C-3M
		L & N	C-3N
C-34	460/1/60	9R - 3D	
		MR-MD-2D	C-3M
		L & N	C-3N
C-4	208-230/1/60	4R-4RL-4D	
C-4A	208-230/1/60	4D*3	
C-44	460/1/60	4R-4RL-4D	
C-44A	460/1/60	4D*3	
C-6	208-230/1/60	6R-6RL Old Style	
C-64	460/1/60	6R-6RL Old Style	
C-61	208-230/1/60	6R-6RL-6D New Style	
C-614	460/1/60	6R-6RL-6D New Style	

Model	Voltage	For Compressor Models
CARLYLE		
CA-6D2	208-230/1/60	O6D
CA-6D4	460/1/60	O6D
CA-6E2	208-230/1/60	O6E
CA-6E4	460/1/60	O6E

MOTOR SPECIFICATIONS						FAN SPECIFICATIONS			
HP	VOLTS	RLA	RPM	ROTATION	SHAFT	DIAMETER	BORE	PITCH	ROTATION
1/15	208-230/1/60	1.2	1550	CCW	.375 X 1.5	11	3/8	36o	CW
1/15	460/1/60	.60	1550	CCW	.375 X 1.5				
Rotation from opposite shaft end. All motors thermally protected.									

SERVICING

1. To service motor or blade, remove four (4) nuts, washers and retaining clips from the side of the main housing and lift the top assembly off. It is not necessary to remove the lower assembly from the compressor.

2. To remove the motor, first remove the blade and bolt from the motor mount. If the motor does not lift out freely, pry with a screw driver from below.

3. When replacing, be sure the motor seats all the way down before installing the mounting bolt. It may require twisting the motor in its mounting so that motor bolt heads clear the stops.

4. Blades should be mounted so that they run midway in the guard. On original equipment motors, the shaft should protude slightly past the counterbored surface of the hub.

NOTE: The motor has a 3/8" shaft so alternate motors can be used if the exact replacement is unavailable. The motor diameter is 4 7/8". When a Copeland, Carlyle or other 1/2" shafted motor is used for replacement, the blade must also be changed.

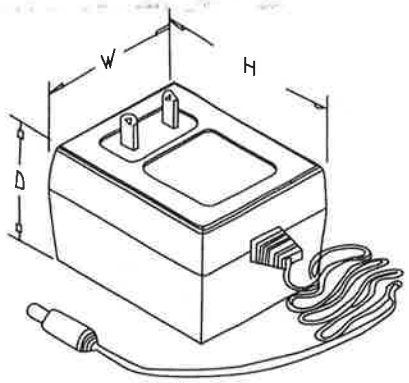
TRIAD
MAGNETICS

WALL PLUG-INS

WALLS PLUG-INS

80046 Rev. E

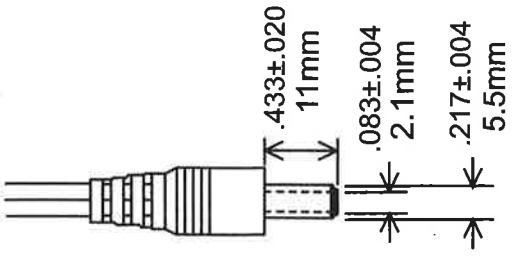
DESCRIPTION : TRIAD prepackaged wall plug-in power supplies decrease product design time. These plug-in power sources eliminate the need for internal power supply cooling devices, thereby reducing the noise level, size & weight of the end product. In addition, these compact power sources keep heat away from sensitive circuits, & supply a safer lower power output to the end product. Wall plug-in power sources are completely enclosed to prevent tampering. And since they carry many required agency listings, their use aids in gaining agency approvals. Offered in a wide range of popular voltages, the plug-in power sources are available in AC/DC AC/AC unregulated models with generous six foot cord lengths. Available in 60Hz only.



UL Class 2
CUL

TECHNICAL NOTES :

1.Inside (tip) - positive (+), outside - negative (-)



999-8000-046

TRIAD MAGNETICS

WALL PLUG-INS

80046 Rev. E

Wall Plug-Ins (All UL/CUL) Class 2

NOTE: AC/DC AC/AC

TYPE NO.	INPUT		OUPUT		TYPE	DIMENSIONS(mm)		
	VAC	WATTS	VDC	IDC		H	W	D
WDU6-200	120	3	6.0	0.2	AC/DC Unreg.	60	43	39
WDU6-300	120	4.5	6.0	0.3	AC/DC Unreg.	60	43	39
WDU6-600	120	7.5	6.0	0.6	AC/DC Unreg.	70	50	41
WDU6-800	120	10	6.0	0.8	AC/DC Unreg.	70	50	41
WDU6-1000	120	12	6.0	1	AC/DC Unreg.	70	50	41
WDU6-1200	120	15	6.0	1.2	AC/DC Unreg.	70	50	41
WDU75-200	120	3.5	7.5	0.2	AC/DC Unreg.	60	43	39
WDU75-300	120	4.5	7.5	0.3	AC/DC Unreg.	60	43	39
WDU75-800	120	11.5	7.5	0.8	AC/DC Unreg.	70	50	41
WDU9-100	120	2.3	9.0	0.1	AC/DC Unreg.	60	43	39
WDU9-300	120	5	9.0	0.3	AC/DC Unreg.	60	43	39
WDU9-500	120	8.5	9.0	0.5	AC/DC Unreg.	70	50	41
WDU9-1000	120	15.5	9.0	1	AC/DC Unreg.	80	60	48
WDU9-1200	120	18.5	9.0	1.2	AC/DC Unreg.	80	60	48
WDU9-2300	120	33	9.0	2.3	AC/DC Unreg.	85	68	55
WDU12-100	120	2.8	12.0	0.1	AC/DC Unreg.	60	43	39
WDU12-300	120	6.5	12.0	0.3	AC/DC Unreg.	70	50	41
WDU12-600	120	12.5	12.0	0.6	AC/DC Unreg.	80	60	48
WDU12-1200	120	23.5	12.0	1.2	AC/DC Unreg.	80	60	48
WDU12-1900	120	33	12.0	1.9	AC/DC Unreg.	85	68	55
WDU15-200	120	5	15.0	0.2	AC/DC Unreg.	60	43	39
WDU15-600	120	15	15.0	0.6	AC/DC Unreg.	80	60	48
WDU15-1000	120	24	15.0	1	AC/DC Unreg.	80	60	48
WDU15-1700	120	37	15.0	1.7	AC/DC Unreg.	85	68	55
WDU18-200	120	6.5	18.0	0.2	AC/DC Unreg.	70	50	41
WDU18-300	120	9	18.0	0.3	AC/DC Unreg.	70	50	41
WDU18-600	120	17	18.0	0.6	AC/DC Unreg.	80	60	48
WDU18-1000	120	27.5	18.0	1	AC/DC Unreg.	80	60	48
WDU18-1400	120	34	18.0	1.4	AC/DC Unreg.	85	68	55
WDU24-200	120	9	24.0	0.2	AC/DC Unreg.	60	43	39
WDU24-300	120	11.8	24.0	0.3	AC/DC Unreg.	70	50	41
WDU24-500	120	18	24.0	0.5	AC/DC Unreg.	80	60	48
WDU24-800	120	28.5	24.0	0.8	AC/DC Unreg.	80	60	48
WDU24-1200	120	38	24.0	1.2	AC/DC Unreg.	85	68	55

TYPE NO.	INPUT		OUPUT		TYPE	DIMENSIONS(mm)		
	VAC	WATTS	VAC	IAC		H	W	D
WAU12-200	120	4	12.0	0.2	AC/AC Unreg.	60	43	39
WAU12-500	120	8.8	12.0	0.5	AC/AC Unreg.	70	50	41
WAU12-1000	120	17	12.0	1	AC/AC Unreg.	70	50	41
WAU12-1500	120	24	12.0	1.5	AC/AC Unreg.	80	60	48
WAU12-2000	120	33	12.0	2	AC/AC Unreg.	80	60	48
WAU12-2500	120	38	12.0	2.5	AC/AC Unreg.	85	68	55
WAU16-400	120	9	16.0	0.4	AC/AC Unreg.	70	50	41
WAU16-500	120	11.2	16.0	0.5	AC/AC Unreg.	80	60	48
WAU16-1000	120	21.5	16.0	1	AC/AC Unreg.	80	60	48
WAU16-2400	120	47	16.0	2.4	AC/AC Unreg.	85	68	55
WAU20-200	120	6	20.0	0.2	AC/AC Unreg.	70	50	41
WAU20-500	120	13.5	20.0	0.5	AC/AC Unreg.	80	60	48
WAU20-2000	120	48	20.0	2	AC/AC Unreg.	85	68	55
WAU24-200	120	7.2	24.0	0.2	AC/AC Unreg.	70	50	41
WAU24-450	120	15	24.0	0.45	AC/AC Unreg.	70	50	41
WAU24-750	120	23.5	24.0	0.75	AC/AC Unreg.	80	60	48
WAU24-800	120	26.5	24.0	0.8	AC/AC Unreg.	80	60	48
WAU24-1000	120	32	24.0	1	AC/AC Unreg.	80	60	48
WAU24-1800	120	52.5	24.0	1.8	AC/AC Unreg.	85	68	55

APPENDIX D
EXCAVATION WORK PLAN

EXCAVATION WORK PLAN (EWP)

Notification

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the Site owner or their representative will notify the NYSDEC. Currently, this notification will be made to:

Kyle Forster, Project Manager and Sarah Quandt, Section Chief
New York State Department of Environmental Conservation
Division of Environmental Remediation
47-40 21st Street
Long Island City, NY 11101-5401

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control;
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120;
- A copy of the contractor's health and safety plan, in electronic format, if it differs from the HASP provided in Appendix E of this document;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

Soil Screening Methods

Visual, olfactory, and instrument-based soil screening will be performed by a qualified environmental professional during all remedial and development excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed regardless of when the 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.

Soil will be segregated based on previous environmental data and screening results into material that requires off-site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil.

Stockpile 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.

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 NYSDEC.

Materials Excavation and Load Out

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and its contractors are solely 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.

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).

A truck wash will be operated on-site if deemed appropriate by NYSDEC. 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.

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.

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 tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

All trucks will be washed prior to leaving the Site. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Truck transport routes are described as follows:

For Trucks Heading North: Head south 0.3 mile on Zerega Avenue and turn left onto Bruckner Boulevard to Hutchinson River Parkway North.

For Trucks Heading South: Head south 0.3 mile on Zerega Avenue to Bruckner Boulevard to Hutchinson River Parkway South.

This is the most appropriate route and considers: (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; (f) overall safety in transport; and (g) community input.

All trucks loaded with Site materials will exit the vicinity of the Site using these truck routes; however, the truck route is subject to change depending on available truck routes at the time of the work (pending road closures, etc.), and trucking company input related to the allowable truck routes.

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 to the extent practicable to minimize off-site disturbance. Off-site queuing will be prohibited.

Materials Disposal Off-Site

All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6 NYCRR Part 360) and Federal regulations. If disposal of soil/fill 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. Unregulated off-site management of materials from this Site will not occur without formal NYSDEC 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, i.e., hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, Construction and Demolition (C&D) debris recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6 NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6 NYCRR Part 360-16 Registration Facility).

Materials Reuse On-Site

Chemical criteria for on-site reuse of material will meet the NYSDEC Part 375 industrial use SCOs and can be used only as backfill beneath the site cover system for the approved use of the Site consistent with the Environmental Easement. The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for re-use on-site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

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 will not be reused on-site.

Fluids Management

All liquids to be removed from the Site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported, and disposed 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 but will be managed off-site.

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.

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 this SMP and the CoC. An appropriate demarcation layer 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), 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 PRR and in any updates to the SMP.

Backfill from Off-Site Sources

All materials proposed for import onto the Site will be approved by the qualified environmental professional and will follow provisions in this SMP prior to receipt at the Site.

Material from industrial sites, spill sites, or 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). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards to be used at the Site are listed in Table 1 (included in Section 1 of this SMP). Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. 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.

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 NYSDEC. All necessary repairs shall be made immediately.

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

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.

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.

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 full a full list of analytes (TAL metals, TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will be reported to the NYSDEC spills hotline. These findings will be also included in the periodic reports prepared pursuant to Section 7 of the SMP.

Community Air Monitoring Plan

During any excavation activity initiated under the SMP, air monitoring will be conducted in accordance with the Community Air Monitoring Plan (CAMP) included as Appendix E of this SMP. Work zone monitoring will be performed for the health and safety of workers during interior intrusive work activities in accordance with action levels and guidance outlined in the Site-specific HASP. In summary, CAMP calls for real-time monitoring for VOCs and particulates (i.e., dust) at the downwind perimeter of each designated work area when intrusive activities are in progress at the Site. Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas. Continuous monitoring is required for all ground intrusive activities to the extent practicable (e.g., air monitoring may not be conducted during precipitation events).

VOC and particulate monitoring equipment will consist of a photoionization detector (PID) capable of detecting the VOCs found in the excavated soil and real-time aerosol or particulate monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM_{10}). VOC monitoring equipment will be calibrated, and the particulate monitoring equipment zeroed, on a daily basis and documented in a dedicated field logbook. Both VOC and particulate monitoring equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the prescribed action levels.

If VOC monitoring results in the ambient air concentration of total organic vapors in excess of 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases below 5 ppm over background, work activities can resume with measures taken to reduce vapors and continue monitoring. If total organic vapor levels persist at levels in excess of 5 ppm over background, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. If the organic vapor level is repeatedly over 25 ppm above background, activities will be shut down and the engineering controls and the Site work plan re-evaluated.

If particulate monitoring results in a 15-minute average concentration measurement that is between 100 $\mu g/m^3$ and 150 $\mu g/m^3$ above the background level, additional dust suppression techniques will be implemented to reduce the generation of fugitive dust and corrective action taken to protect Site personnel and reduce the potential for contaminant migration. Should dust suppression measures being utilized not lower particulates to an acceptable level (e.g., below 150 $\mu g/m^3$ above the background level, and no visible dust from the work area), work will be suspended until appropriate corrective measures are implemented to remedy the situation.

Details regarding work zone and community air monitoring are outlined in the HASP attached as Appendix C. Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors off-Site. Specific odor control methods to be used on a routine basis will include (a) through (f), as outlined in the following paragraph. 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 property owner's QEP, 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 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 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.

Dust Control Plan

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

- Dust suppression will be achieved by 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.
- Clearing and grubbing of larger Sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on unpaved roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water truck sprinkling.

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.

APPENDIX E

HEALTH AND SAFETY PLAN AND COMMUNITY AIR MONITORING PLAN

MTA PARATRANSIT RELOCATION FACILITY
1120 COMMERCE AVENUE
(AKA 2401 WATSON AVENUE)
BRONX, NEW YORK

Health and Safety Plan and Community Air Monitoring Plan

NYSDEC Order on Consent Index #: R2-20150206-62
NYSDEC Hazardous Waste Site #: 203074

Prepared for:

NYC/EDC

NYC Economic Development Corporation
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AKRF

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SEPTEMBER 2021

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INTRODUCTION

This Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) describes the protocols and procedures that will be followed during implementation of the Site Management Plan (SMP) at the MTA Paratransit Relocation Facility site (hereafter referred to as the "Site"). The Site is an approximately 94,958-square-foot (sf) property located at 1100 Commerce Avenue in the Bronx, New York (hereinafter referred to as the "Site"). The Site is also identified as a portion of New York City Tax Block 3838, Lot 60. The New York City Economic Development Corporation (NYCEDC) entered into an Order on Consent (Index Number R2-20150206-62; Site Number 203074) with the New York State Department of Environmental Conservation (NYSDEC) at the Site in April 2015.

The MTA Paratransit Relocation Facility comprises an approximately 5,000-sf building that includes a training room, administrative offices, and other back house areas, constructed at grade. The remainder of the Site is completed as paved parking. Limited excavations were required to remove existing subsurface structures, and to construct foundations and stormwater control features for the building and parking areas. A vapor barrier was installed beneath the entire foundation of the building, and a sub-slab depressurization system (SSDS) remains active. Historical uses of Lot 60 and areas adjacent to the Site include commercial and industrial bulk fuel and coal storage, metal works, and automotive repair.

The Site is abutted by Commerce Avenue to the northwest, an industrial building to the northeast, Westchester Creek to the southeast, and a parking lot/industrial building to the southwest. The newly constructed Metropolitan Transportation Authority (MTA) Paratransit Relocation Facility (constructed as part of the overall remedy) is north-adjacent to the northwestern portion of the Site.

The findings from the Remedial Investigation (RI) identified contaminated soil, groundwater, and soil vapor at the Site. The primary contaminants of concern (COCs) at the Site include semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and metals in soil/fill, VOCs and metals in groundwater, and petroleum- and- chlorinated solvent-related VOCs in soil vapor.

This HASP and CHASP does not discuss other routine health and safety issues common to general construction and excavation, including but not limited to slips, trips, falls, shoring, and other physical hazards. All AKRF employees are directed that all work must be performed in accordance with AKRF's Generic HASP and all Occupation Safety and Health Administration (OSHA) applicable regulations for the work activities required for the project. All project personnel are furthermore directed that they are not permitted to enter Permit-Required Confined Spaces (as defined by OSHA). For issues unrelated to contaminated materials, all non-AKRF employees are to be bound by all applicable OSHA regulations as well as any more stringent requirements specified by their employer in their corporate HASP or otherwise. AKRF is not responsible for providing oversight for issues unrelated to contaminated materials for non-employees. This oversight shall be the responsibility of the employer of that worker or other official designated by that employer.

1.0 HEALTH AND SAFETY GUIDELINES AND PROCEDURES

1.1 Hazard Evaluation

1.1.1 Hazards of Concern

Table 1
Hazards of Concern

Check all that apply		
(**X**) Organic Chemicals	(**X**) Inorganic Chemicals	( ) Radiological
( ) Biological	( ) Explosive/Flammable	( ) Oxygen Deficient Atm
(**X**) Heat Stress	(**X**) Cold Stress	( ) Carbon Monoxide
Comments: No personnel are permitted to enter permit confined spaces.		

1.1.2 Physical Characteristics

Table 2
Physical Characteristics

Check all that apply		
(**X**) Liquid	(**X**) Solid	(**X**) Sludge
(**X**) Vapors	( ) Unknown	( ) Other
Comments:		

1.1.3 Hazardous Materials

Table 3
Hazardous Materials

Check all that apply					
Chemicals	**Solids**	**Sludges**	**Solvents**	**Oils**	**Other**
( ) Acids	(**X**) Ash	( ) Paints	( ) Halogens	( ) Transformer	( ) Lab
( ) Caustics	( ) Asbestos	(**X**) Metals	(**X**) Petroleum	( ) Other DF	( ) Pharm
( ) Pesticides	( ) Tailings	( ) POTW	(**X**) Chlorinated solvents	(**X**) Motor or Hydraulic Oil	( ) Hospital
(**X**) Petroleum	(**X**) Other	(**X**)Other: VOCs & SVOCs		(**X**) Gasoline	( ) Rad
( ) Inks	Fill material			(**X**) Fuel Oil	( ) MGP
(**X**) PCBs					( ) Mold
(**X**) Metals					( ) Cyanide

Check all that apply					
Chemicals	**Solids**	**Sludges**	**Solvents**	**Oils**	**Other**
(**X**)Other: VOCs & SVOCs					

1.1.4 Chemicals of Concern

Table 4
Chemicals of Concern

Chemicals	REL/PEL/STEL	Health Hazards
Arsenic	REL = 0.002 mg/m^3 PEL = TWA 0.010 mg/m^3	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin, potential occupational carcinogen
Barium	PEL = 0.5 mg/m^3 REL = 0.5 mg/m^3	Irritation eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse, extrasystoles; hypokalemia.
Benzene	REL = TWA 0.1 ppm PEL = TWA 1 ppm	Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression.
Beryllium	REL = 0.0005 mg/m^3 PEL = TWA 0.002 mg/m^3	Berylliosis (chronic exposure): anorexia, weight loss, lassitude (weakness, exhaustion), chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irritation eyes; dermatitis; [potential occupational carcinogen].
Cadmium	PEL = TWA 0.005 mg/m^3	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].
Chloroform	REL = 2 ppm PEL = 50 ppm	Irritation eyes, skin; dizziness, mental dullness, nausea, confusion; headache, lassitude (weakness, exhaustion); anesthesia; enlarged liver; [potential occupational carcinogen].
Chromium	TWA = 1 mg/mg^3	Irritation eyes, skin; lung fibrosis (histologic)
Chrysene	REL = TWA 0.1 mg/m^3 PEL = TWA 0.2 mg/m^3	Dermatitis, bronchitis, [potential occupational carcinogen].
Copper	REL = 1 mg/m^3 PEL = 1 mg/m^3	Irritation eyes, nose, pharynx; nasal septum perforation; metallic taste; dermatitis; in animals: lung, liver, kidney damage; anemia
Diethyl Phthalate	REL = TWA 5 mg/m^3	Irritation eyes, skin, nose, throat; headache, dizziness, nausea; lacrimation (discharge of tears); possible polyneuropathy, vestibular dysfunc; pain, numb, lassitude (weakness, exhaustion), spasms in arms & legs
Ethyl Benzene	REL = TWA 100 ppm PEL = TWA 100 ppm	Irritation eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma.
Iron	REL = TWA 5 mg/m^3 PEL = TWA 10 mg/m^3	Benign pneumoconiosis with X-ray shadows indistinguishable from fibrotic pneumoconiosis (siderosis)
Lead	REL = 0.05 mg/m^3 PEL = 0.05 mg/m^3	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.
Manganese	REL = 1 mg/m^3 PEL = 0.2 mg/m^3	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.

Chemicals	REL/PEL/STEL	Health Hazards
Methylene Chloride	PEL = TWA 25 ppm	Irritation eyes, skin; lassitude (weakness, exhaustion), drowsiness, dizziness; numb, tingle limbs; nausea.
Methyl Ethyl Ketone (2-Butanone)	REL = TWA 200 ppm PEL = TWA 200 ppm	Irritation eyes, skin, nose; headache; dizziness; vomiting; dermatitis.
Methyl tert-butyl ether (MTBE)	TLV = TWA 50 ppm	Headaches, nausea, dizziness, irritation of the nose or throat, and feelings of spaciness or confusion.
Mercury	REL = 0.1 mg/m^3 PEL = 0.05 mg/m^3	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.
Naphthalene	REL = TWA 10 ppm PEL = TWA 10 ppm	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.
Nickel	REL = TWA 0.015 mg/m^3 PEL = TWA 1 mg/m^3	Sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen].
Phenol	REL = TWA 5 ppm (19 mg/m^3) [skin] PEL = TWA 5 ppm (19 mg/m^3) [skin]	Irritation eyes, nose, throat; anorexia, weight loss; lassitude (weakness, exhaustion), muscle ache, pain; dark urine; cyanosis; liver, kidney damage; skin burns; dermatitis; ochronosis; tremor, convulsions, twitching
Polychlorinated Biphenyls (PCBs)	REL = 0.001 mg/m^3 PEL = 0.5 mg/m^3 (skin)	Irritation eyes, chloracne; liver damage; reproductive effects; [potential occupational carcinogen].
Polycyclic Aromatic Hydrocarbons (PAHs)	PEL = 5 mg/m^3	Harmful effects to skin, bodily fluids, and ability to fight disease, reproductive problems; potential carcinogen.
Selenium	REL = TWA 0.2 mg/m^3 PEL = TWA 0.2 mg/m^3	Irritation eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye, skin burns
Silver	REL = TWA 0.01 mg/m^3 PEL = TWA 0.01 mg/m^3	Blue-gray eyes, nasal septum, throat, skin; irritation, ulceration skin; gastrointestinal disturbance.
Sodium	REL = 2 mg/m3 PEL = TWA 2 mg/m3	Irritation eyes, skin, mucous membrane; pneumonitis; eye, skin burns; temporary loss of hair
Toluene	PEL = TWA 200 ppm (750 mg/m^3)	Central nervous system depression, causing fatigue, headache, confusion, paresthesia, dizziness, and muscular incoordination, irritation of the eyes, mucous membranes, and upper respiratory tract.
Tetrachloroethylene (PCE)	REL = Lowest possible PEL = 100 ppm STEL = 100 ppm	Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination, headache, drowsiness, skin erythema (skin redness), and liver damage.
Trichloroethylene (TCE)	PEL = TWA 100 ppm	Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen].
Xylenes	REL = TWA 435 mg/m^3 PEL = TWA 435 mg/m^3	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis
Zinc	REL = TWA 5 mg/m^3 PEL = TWA 5 mg/m^3	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.

Comments:
REL = National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit
PEL = OSHA Permissible Exposure Limit
STEL = OSHA Short Term Exposure Limit

The potential health effects from the on-site contaminants listed above are further described in Attachment A.

1.2 Designated Personnel

AKRF will appoint one of its on-site personnel as the Site Safety Officer (SSO). This individual will be responsible for the implementation of this HASP. The SSO will work under the direction of a Qualified Environmental Professional (QEP) and will be experienced in the implementation of air monitoring and hazardous materials sampling programs. Health and safety training required for the SSO and all field personnel is outlined in Section 2.3 of this HASP.

1.3 Training

All personnel who enter the "work zone" (defined as the area on-site where remediation and/or construction activities are occurring) while intrusive activities are being performed will have completed a 40-hour training course that meets OSHA requirements of 29 CFR Part 1910, Occupational Safety and Health Standards. In addition, all personnel will have up-to-date 8-hour refresher training. The training will allow personnel to recognize and understand the potential hazards to health and safety. All field personnel must attend a training program, whose purpose is to:

- Make them aware of the potential hazards they may encounter;
- Provide the knowledge and skills necessary for them to perform the work with minimal risk to health and safety;
- Make them aware of the purpose and limitations of safety equipment; and
- Ensure that they can safely avoid or escape from emergencies.

Each member of the field crew will be instructed in these objectives before he/she goes onto the Site. A Site safety meeting will be conducted at the start of the project. Additional meetings shall be conducted, as necessary, for new personnel working at the Site.

1.4 Medical Surveillance Program

All AKRF and subcontractor personnel performing field work involving subsurface disturbance at the Site are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120 (f). A physician's medical release for work will be confirmed by the SSO before an employee can begin Site activities. The medical release shall consider the type of work to be performed and the required personal protective equipment (PPE). The medical examination will, at a minimum, be provided annually and upon termination of hazardous waste Site work.

1.5 Site Work Zones

During any activities involving subsurface disturbance, the work area must be divided into various zones to prevent the spread of contamination, ensure that proper protective equipment is donned, and provide an area for decontamination.

The Exclusion Zone is defined as the area where exposure to impacted media could be encountered. The Contamination Reduction Zone (CRZ) is the area where decontamination procedures take place and is located next to the Exclusion Zone. The Support Zone is the area where support facilities such as vehicles, fire extinguisher, and first aid supplies are located. The emergency staging area (part of the Support Zone) is the area where all workers on-site would assemble in the event of an emergency. A summary of these areas is provided below. These zones may be changed

by the SSO, depending on that day's activities. All field personnel will be informed of the location of these zones before work begins.

Appropriate barriers will be set up to secure the area and prevent any unauthorized personnel from approaching within 15 feet of the work area.

Table 5
Site Work Zones

Task	Exclusion Zone	CRZ	Support Zone
Soil Excavation and Removal Areas (if any)	15 feet from excavation border and excavation equipment or vehicles	15 feet from excavation border and excavation equipment or vehicles	As Needed
Groundwater Treatment (if any)	25 feet from injection point and chemical storage	30 feet from injection point and chemical storage	As Needed

1.6 Air Monitoring Program

The purpose of the air monitoring program is to identify any exposure of the field personnel to potential environmental hazards in the soil and soil vapor. Results of the air monitoring will be used to determine the appropriate response action, if needed.

Site-wide monitoring for particulates and VOCs will be conducted during remedial excavation in conformance with the NYSDOH Generic CAMP (Attachment B). Real-time air monitoring for VOCs and particulate levels will be performed at the perimeter of the work area during ground intrusive activities, and during the handling of contaminated or potentially contaminated media. Ground intrusive activities include, but are not limited to, remedial excavation, site grading, stockpiling soil/fill, and/or loading trucks for off-site disposal.

When the remedial excavation work area is within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates will reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. Engineering controls such as temporary vapor/dust barriers, temporary negative-pressure enclosures, and/or special ventilation devices will be considered to prevent exposures related to the work activities and to control dust and odors, if necessary. Consideration will also 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 necessary.

1.6.1 Work Zone Air Monitoring

Real time air monitoring of volatile organic compounds (VOCs) and particulates will be performed in the work zone during all intrusive Site activities. Work zone air monitoring for VOCs will be performed with a photoionization detector (PID). The PID will be calibrated with 100 parts per million (ppm) isobutylene standard in accordance with the manufacturer's instructions at the start of each work day. Work zone air monitoring for particulates will be conducted using a MIE 1000 Personal DataRam or equivalent to

measure the concentration of airborne respirable particulates less than 10 micrometers in size (PM_{10}).

The SSO shall set up the equipment and confirm that it is working properly. His/her designee may oversee the air measurements during the day. Measurements will be taken prior to commencement of work and continuously during the work. Measurements will be made as close to the workers as practicable and at the breathing height of the workers. The action levels and required responses are listed in the following table:

Table 6
Work Zone Air Monitoring Action Levels

Instrument	Action Level	Response Action
PID	Less than 5 ppm in breathing zone	Level D or D-Modified
	Between 5 ppm and 10 ppm	Level C
	More than 10 ppm	Stop work. Resume work when readings are less than 50 ppm
Particulate Monitor (MIE 1000 Personal DataRam™ or equivalent)	Less than 1.25 µg/m^3 above background in breathing zone	Level D or D-Modified
	More than 1.25 µg/m^3 above background in breathing zone	Stop work. Resume work when readings are less than 1.25 µg/m^3.
Notes: µg/m^3 = micrograms per cubic meter; ppm = parts per million		

1.6.2 Community Air Monitoring Plan

Community air monitoring will be conducted during all intrusive Site activities in compliance with the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP), and Site-Specific CAMP. Real-time air monitoring for VOCs and dust at the perimeter of the exclusion zone will be performed as described below. Exceedances of CAMP action levels will be immediately reported to NYSDEC and NYSDOH project managers and CAMP reports will be included in the daily reports submitted to NYSDEC and NYSDOH.

1.6.2.1. Roving Air Monitoring

VOC Monitoring

Continuous monitoring for VOCs will be conducted during all ground intrusive activities, including excavation and tank removal activities. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background concentrations. VOCs will be monitored continuously at the downwind perimeter of the exclusion zone. Monitoring will be conducted with a PID equipped with a 10.7 electron Volt (eV) lamp capable of calculating 15-minute running average concentrations.

Periodic monitoring for VOCs will be conducted during non-intrusive activities such as the collection of excavation endpoint soil samples. Periodic monitoring may include obtaining measurements upon arrival at a location and upon leaving the location.

More frequent intervals of monitoring will be conducted if required as determined by the SSO. All PID readings will be recorded and available for NYSDEC and NYSDOH personnel to review. Instantaneous readings, if any, will also be recorded.

Particulate Monitoring

Continuous monitoring for particulates will be conducted during all ground intrusive activities, which will involve the measurement of respirable dust. Community air monitoring for dust particulates will be conducted using a MIE 1000 Personal DataRam or equivalent to measure the concentration of airborne respirable particulates less than 10 micrometers in size (PM_{10}). The dust monitor will be capable of calculating 15-minute running average concentrations and equipped with an audible alarm to indicate exceedance of action levels. Background readings and any readings that trigger response actions will be recorded in the project logbook, which will be available on site for NYSDOH and/or NYSDEC review.

1.6.2.2. Fixed Air Monitoring Stations

Three fixed air monitoring stations will be operated at the Site during soil disturbing activities. Two fixed air monitoring stations will be set up at the upwind and downwind perimeters of the exclusion zone during all ground intrusive activities and will continuously log VOC and particulate levels. A third fixed air monitoring station will be placed between the work area and the walls of the northeast-adjacent occupied structure. Each fixed monitoring station will be fully enclosed and equipped with the following:

- A PID equipped with a 10.6 eV lamp capable of calculating 15-minute running average VOC concentrations;
- A TSI 8530 DustTrak II or equivalent dust monitor capable of measuring the concentration of airborne respirable particulates less than 10 micrometers in size (PM_{10}) and calculating 15-minute running average particulate concentrations; and
- A Netronix™ Thiamus™ ICU-820 or equivalent Global System for Mobile Communication (GSM)/Global Positioning System (GPS) device capable of recording air monitoring and location data.

Each monitoring station will be capable of sending e-mail alerts to the SSO to indicate an exceedance of action levels. Additionally, the SSO will conduct an inspection of the monitoring stations on at least an hourly basis. Upon completion of Site activities, all air monitoring data will be available to download via the iEnvironet® website. All air monitoring data recorded at the fixed monitoring stations will be available for NYSDOH and/or NYSDEC review and will be included in the Final Engineering Report (FER).

Since work areas at this Site may be within 20 feet of potentially exposed populations, additional Site-Specific CAMP air monitoring provisions will be implemented (as necessary) to ensure that residents of the northeast-adjacent adjacent structure are not exposed to site-related contaminants during construction activities. The additional CAMP provisions include:

1. Use of engineering controls such as vapor/dust barriers or special ventilation devices will be considered;
2. Special consideration will be given to implementing planned activities when potentially exposed populations are at a minimum;

1.6.2.3. Community Air Monitoring Action Levels

VOC Action Levels

The following actions will be taken based on organic vapor levels measured:

- If total organic vapor levels exceed 5 ppm above background for the 15-minute average at the exclusion zone perimeter, work activities will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 5 ppm above background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the exclusion zone persist at levels in excess of 5 ppm above background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the hot zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less – but in no case less than 20 feet – is below 5 ppm above background for the 15-minute average.
- If the total organic vapor level is above 25 ppm at the perimeter of the exclusion zone, activities will be shutdown.

Particulate Action Levels

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

- If the downwind particulate concentrations are greater than 100 micrograms per cubic meter ($\mu g/m^3$) above background (upwind concentrations), and no other obvious source is apparent, then it will be assumed that the elevated particulate concentrations are a result of site activities. In such instances, dust suppression measures will be implemented and monitoring will be continued. Work will be allowed to continue with dust suppression if downwind particulate levels do not exceed 150 $\mu g/m^3$ above the background (upwind concentration) and provided that no visible dust is migrating from the work area.
- If particulate levels persist at 150 $\mu g/m^3$ above the background, work must be stopped until dust suppression measures bring particulate levels to below 150 $\mu g/m^3$ above background.

The following Site-Specific CAMP provisions will be implemented at the Site, as necessary:

1. If total VOC concentrations near the outside walls or next to intake vents of northeast-adjacent occupied structure (from the third fixed air monitoring station) exceed 1 ppm, air monitoring should occur within the occupied structure; and
2. If total particulate concentrations near the outside walls or next to intake vents of the northeast-adjacent occupied structure (from the third fixed air monitoring

station) exceed 150 µg/m^3, work activities should be suspended until controls are implemented.

Major Vapor Emission Response Plan

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the work Site, or half the distance to the nearest residential or commercial property, whichever is less, all work activities must be halted or vapor controls must be implemented.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the exclusion zone, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 foot zone).

If either of the following criteria is exceeded in the 20 Foot Zone, then the Major Vapor Emission Response Plan shall automatically be implemented:

- Sustained organic vapor levels approaching 1 ppm above background for a period of more than 30 minutes; or
- Organic vapor levels greater than 5 ppm above background for any time period.

Upon activation, the following activities shall be undertaken as part of the Major Vapor Emission Response Plan:

- The NYSDEC, NYSDOH, and local police authorities will be immediately contacted by the SSO and advised of the situation;
- Frequent air monitoring will be conducted at 30-minute intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Site Health and Safety Officer; and
- All Emergency contacts will go into effect as appropriate.

All readings will be recorded and be available for NYSDEC and NYSDOH personnel to review.

1.6.3 Personal Protection Equipment (PPE)

The PPE required for various kinds of Site investigation tasks are based on 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response, Appendix B, "General Description and Discussion of the Levels of Protection and Protective Gear."

AKRF field personnel and other Site personnel shall wear, at a minimum, Level D PPE. The protection will be based on the air monitoring described in this section.

Table 7
Personal Protection Equipment Requirements

LEVEL OF PROTECTION & PPE		All Tasks
Level D (**X**) Steel Toe Shoes (**X**) Hard Hat	(**X**) Safety Glasses ( ) Face Shield (**X**) Ear Plugs (within 25 ft. of	Yes

Table 7
Personal Protection Equipment Requirements

LEVEL OF PROTECTION & PPE		All Tasks
(within 25 ft. of excavator) (**X**) Work Gloves	excavator) (**X**) Nitrile Gloves (**X**) Tyvek for tank contractor if NAPL present	
Level C ***(in addition to Level D)*** (**X**) Half-Face Respirator (**X**) Full Face Respirator ( ) Full-Face PAPR	( ) Particulate Cartridge ( ) Organic Cartridge (**X**) Dual Organic/ Particulate Cartridge	If PID > 10 ppm or particulate > 5 µg/m^3 in breathing zone
Comments: Cartridges to be changed out at least once per shift unless warranted beforehand (e.g., more difficult to breath or any odors detected). PAPR = powered air purifying respirator		

1.7 General Work Practices

To protect their health and safety, all field personnel will adhere to the guidelines listed below during activities involving subsurface disturbance:

- Eating, drinking, chewing gum or tobacco, and smoking are prohibited except in designated areas on the Site. These areas will be designated by the SSO.
- Workers must wash their hands thoroughly on leaving the work area and before eating, drinking, or any other such activity.
- The workers should shower as soon as possible after leaving the Site. Contact with contaminated or suspected surfaces should be avoided.
- The buddy system should always be used; each buddy should watch for signs of fatigue, exposure, and heat/cold stress.

2.0 EMERGENCY PROCEDURES AND EMERGENCY RESPONSE PLAN

The field crew will be equipped with emergency equipment, such as a first aid kit and disposable eye washes. In the case of a medical emergency, the SSO will determine the nature of the emergency and he/she will have someone call for an ambulance, if needed. If the nature of the injury is not serious, i.e., the person can be moved without expert emergency medical personnel, he/she should be driven to Wyckoff Heights Medical Center by on-site personnel. Directions to the hospital are provided below, and a hospital route map is provided as Figure 2. Report forms are provided in Attachment C. Emergency hand signals are provided in Attachment D.

2.1 Hospital Directions

Table 8
Hospital Directions

Hospital Name:	St. Barnabas Hospital
Phone Number:	718-960-9000
Address:	4422 Third Avenue, Bronx, NY 10457
Directions:	1. Head southwest on Commerce Avenue. 2. Continue onto Haviland Avenue. 3. Turn right onto Cross Bronx Expressway. 4. Merge onto I-95 South/Cross Bronx Expressway. 5. Take Exit 3 toward 3rd Avenue. 6. Turn right onto Firefighters Boulevard. 7. Destination will be on the right.

2.2 Emergency Contacts

Table 9
Emergency Contacts

Company	Individual Name	Title	Contact Number
AKRF	Rebecca Kinal, P.E.	Project Director	914-922-2362 (office)
	Dustin Kapson, LSRP	Project Manager	646-388-9767 (office)
	Tara Simmons, EIT	SSO	828-550-2612 (cell)
NYCEDC	Tracey Bell	VP/Client Representative	212-721-6032
NYSDEC	Kyle Forster.	Project Manager	(518) 402-8644
Ambulance, Fire Department & Police Department	-	-	911
Medical, Fire, Police			
One-Call Center			(800) 272-4480
Poison Control			(800) 222-1222
Pollution/Toxic/Chemical/Oil Spills			(800) 424-8802
NYSDEC Spills Hotline			(800) 457-7362

APPROVAL & ACKNOWLEDGMENTS OF HASP

Signed: _____ Date: _____

AKRF Project Manager

Signed: _____ Date: _____

AKRF Health and Safety Officer

Below is an affidavit that must be signed by all workers who enter the site. A copy of the HASP must be on-site at all times and will be kept by the SSO.

AFFIDAVIT

I,_____(name), of_____(company name), have read the Health and Safety Plan (HASP) for MTA Paratransit Relocation Facility located at 1100 Commerce Avenue in the Bronx, New York. I agree to conduct all on-site work in accordance with the requirements set forth in this HASP and understand that failure to comply with this HASP could lead to my removal from the Site.

Signed: _____ Company: _____ Date: _____
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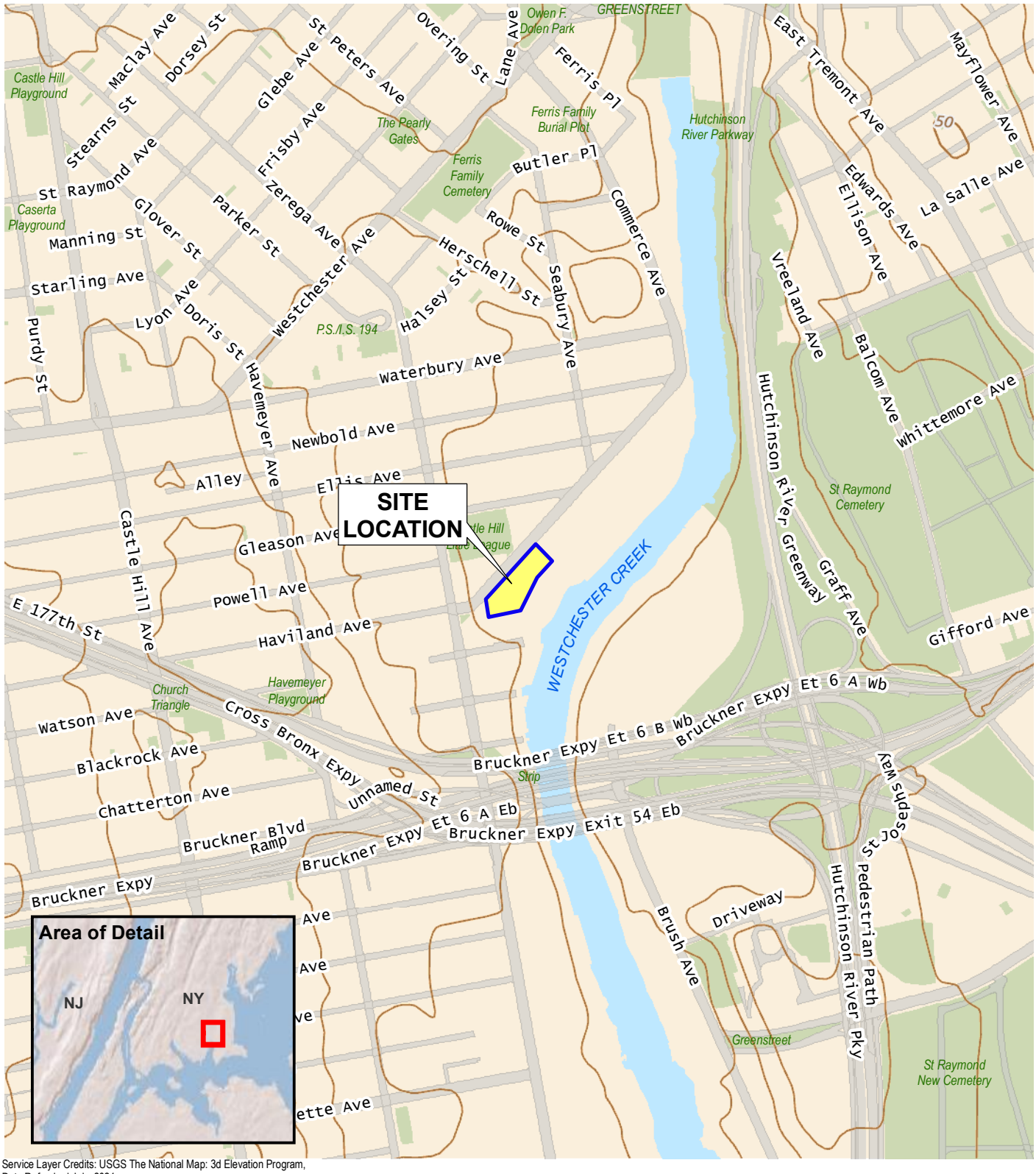
FIGURES



Service Layer Credits: USGS The National Map: 3d Elevation Program, Data Refreshed July, 2021

AKRF
440 Park Avenue South, New York, NY 10016

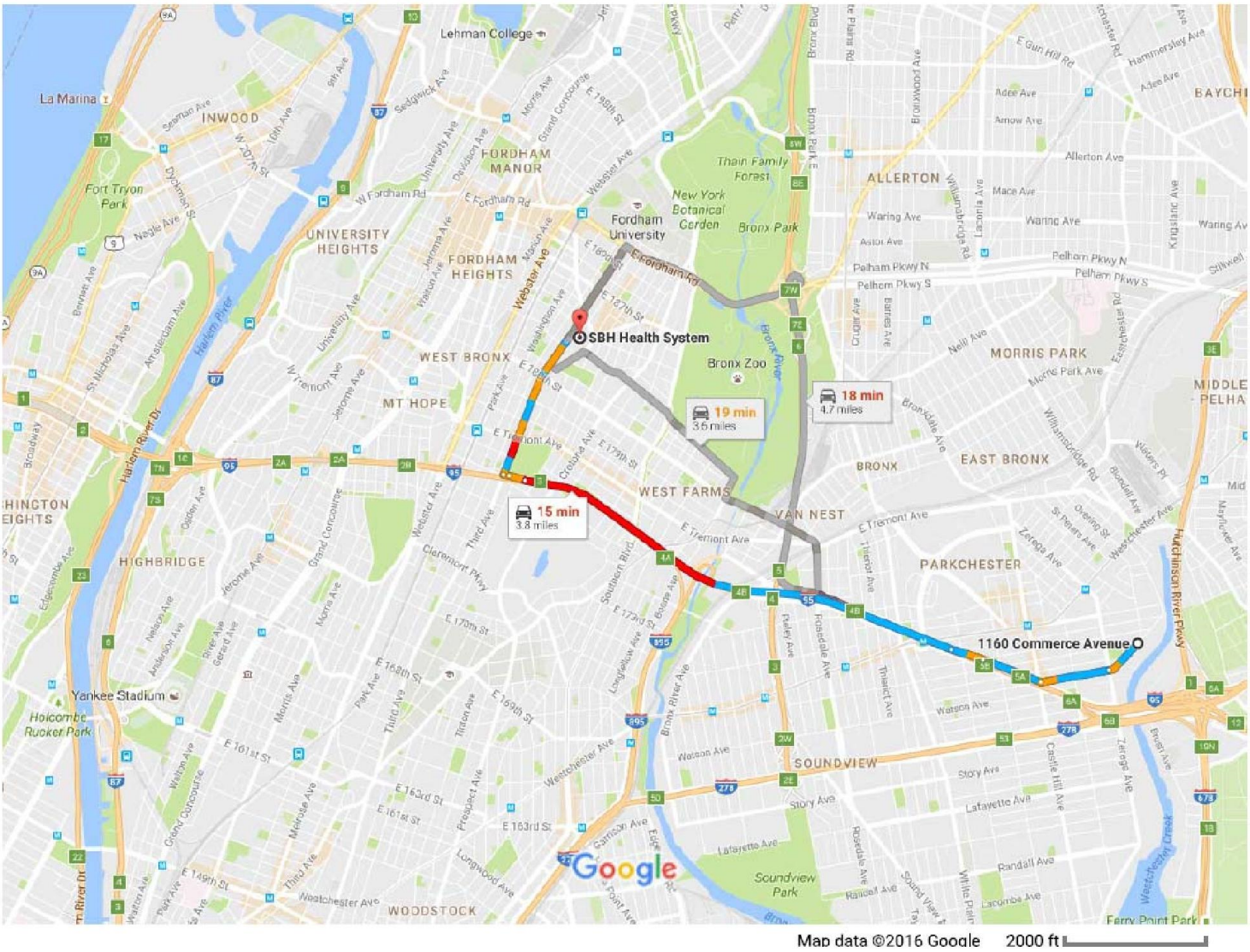
MTA-Paratransit Relocation Facility
Bronx, New York

SITE LOCATION

DATE
5/12/2021

PROJECT NO.
80612

FIGURE
1



1. Head southwest on Commerce Avenue toward Zerega Avenue
2. Continue onto Haviland Avenue
3. Slight right onto Cross Bronx Expressway, then use the left lane to merge onto I-95 S/Cross Bronx Expressway via the ramp to the George Washington Bridge
4. Stay on I-95S for approximately 2.2 miles; take Exit 3 for 3rd Avenue
5. Continue onto Cross Bronx Expressway
6. Turn right onto Firefighters Blvd/Third Avenue

AKRF
440 Park Avenue South, New York, NY 10016

MTA Paratransit Relocation Facility
1120 Commerce Avenue, Bronx, NY

HOSPITAL ROUTE MAP

DATE
5/21/2021
PROJECT NO.
80612
FIGURE
2

TABLE

Table 1
Air Monitoring Summary

Monitoring Device	Monitoring Location/Personnel	Monitoring Frequency	Action Level	Action
PID	Interior of the Building adjacent to planned excavation during intrusive work Perimeter of Work Area During Loading Activities or adjacent to any exterior intrusive work	Periodic during all interior and exterior disturbance and/or exterior loading activities Background is the most recent upwind 15-minute average reading	<u>Interior of Building</u> < 10 ppm above background in breathing zone >10 ppm but < 250 ppm in breathing zone > 250 ppm above background in breathing zone <u>Exterior of Building</u> < 5 ppm above background at the downwind perimeter of the work zone (15-min TWA) > 5 ppm but < 25 ppm above background at the downwind perimeter of the work zone (15-min TWA) > 25 ppm above background at the downwind perimeter of the work zone (15-min TWA)	Level D or D-Modified PPE Level C PPE Shut down operations and reevaluate work and controls Continue normal operations Suspend operations until readings indicate < 5 ppm for 15-minute TWA. Take steps to abate emissions* Shut down operations and reevaluate work and controls
PM-10 Aerosol/ Particulate Air Monitoring Unit with Audible Alarm	Perimeter of Work Area	Periodic during interior and exterior Site activities including the loading or staging of excavated soil prior to transportation and off-site disposal Background is the most recent upwind 15-minute average reading	< 100 µg/m^3 above background at the downwind perimeter of the work zone (15-min TWA) > 100 µg/m^3 above background at the downwind perimeter of the work zone (15-min TWA), or visible dust leaving the excavation area > 150 µg/m^3 above upwind background level downwind perimeter of the work zone (15-min TWA)	Continue normal operations Implement dust control measures* Halt all soil disturbance work until downwind perimeter of excavation area reading is <150 µg/m^3 above background (upwind perimeter).
Olfactory	Perimeter of Work Area	Continuously during all disturbance activities and loading or staging activities	Perceptible odors outside work zone, adjacent to receptor, or complaint	Suspend operations until odor condition abated. Take steps to abate odor*

<u>NOTES:</u>
*See VOC, dust and odor control measures in Section 3.0 of this CAMP
TWA - Time weighted average
PID – Photoionization detector
µg/m^3 – Microgram per cubic meter
ppm – Parts per million

ATTACHMENT A

POTENTIAL HEALTH EFFECTS FROM ON-SITE CONTAMINANTS

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

ARSENIC
CAS # 7440-38-2

Division of Toxicology and Environmental Medicine ToxFAQs™ **September 2005**

This fact sheet answers the most frequently asked health questions (FAQs) about arsenic. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to higher than average levels of arsenic occur mostly in the workplace, near hazardous waste sites, or in areas with high natural levels. At high levels, inorganic arsenic can cause death. Exposure to lower levels for a long time can cause a discoloration of the skin and the appearance of small corns or warts. Arsenic has been found in at least 784 of the 1,662 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is arsenic?

Arsenic is a naturally occurring element widely distributed in the earth's crust. In the environment, arsenic is combined with oxygen, chlorine, and sulfur to form inorganic arsenic compounds. Arsenic in animals and plants combines with carbon and hydrogen to form organic arsenic compounds.

Inorganic arsenic compounds are mainly used to preserve wood. Copper chromated arsenic (CCA) is used to make "pressure-treated" lumber. CCA is no longer used in the U.S. for residential uses; it is still used in industrial applications. Organic arsenic compounds are used as pesticides, primarily on cotton plants.

What happens to arsenic when it enters the environment?

❑ Arsenic occurs naturally in soil and minerals and it therefore may enter the air, water, and land from wind-blown dust and may get into water from runoff and leaching.
❑ Arsenic cannot be destroyed in the environment. It can only change its form.
❑ Rain and snow remove arsenic dust particles from the air.
❑ Many common arsenic compounds can dissolve in water. Most of the arsenic in water will ultimately end up in soil or sediment.
❑ Fish and shellfish can accumulate arsenic; most of this arsenic is in an organic form called arsenobetaine that is much less harmful.

How might I be exposed to arsenic?

❑ Ingesting small amounts present in your food and water or breathing air containing arsenic.
❑ Breathing sawdust or burning smoke from wood treated with arsenic.
❑ Living in areas with unusually high natural levels of arsenic in rock.
❑ Working in a job that involves arsenic production or use, such as copper or lead smelting, wood treating, or pesticide application.

How can arsenic affect my health?

Breathing high levels of inorganic arsenic can give you a sore throat or irritated lungs.

Ingesting very high levels of arsenic can result in death. Exposure to lower levels can cause nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, and a sensation of "pins and needles" in hands and feet.

Ingesting or breathing low levels of inorganic arsenic for a long time can cause a darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso.

Skin contact with inorganic arsenic may cause redness and swelling.

ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html

Organic arsenic compounds are less toxic than inorganic arsenic compounds. Exposure to high levels of some organic arsenic compounds may cause similar effects as inorganic arsenic.

How likely is arsenic to cause cancer?

Several studies have shown that ingestion of inorganic arsenic can increase the risk of skin cancer and cancer in the lungs, bladder, liver, kidney and prostate. Inhalation of inorganic arsenic can cause increase risk of lung cancer. The Department of Health and Human Services (DHHS) has determined that inorganic arsenic is a known carcinogen. The International Agency for Research on Cancer (IARC), and the EPA have determined that inorganic arsenic is carcinogenic to humans.

How can arsenic affect children?

There is also some evidence that suggests that long-term exposure to arsenic in children may result in lower IQ scores. There is some information suggesting that children may be less efficient at converting inorganic arsenic to the less harmful organic forms. For this reason, children may be more susceptible to health effects from inorganic arsenic than adults.

There is some evidence that inhaled or ingested arsenic can injure pregnant women or their unborn babies, although the studies are not definitive. Studies in animals show that large doses of arsenic that cause illness in pregnant females can also cause low birth weight, fetal malformations, and even fetal death. Arsenic can cross the placenta and has been found in fetal tissues. Arsenic is found at low levels in breast milk.

How can families reduce the risks of exposure to arsenic?

❑ If you use arsenic-treated wood in home projects, you should wear dust masks, gloves, and protective clothing to decrease exposure to sawdust.

❑ If you live in an area with high levels of arsenic in water or soil, you should use cleaner sources of water and limit contact with soil.

Is there a medical test to determine whether I've been exposed to arsenic?

There are tests available to measure arsenic in your blood, urine, hair, and fingernails. The urine test is the most reliable test for arsenic exposure within the last few days. Tests on hair and fingernails can measure exposure to high levels of arsenic over the past 6-12 months. These tests can determine if you have been exposed to above-average levels of arsenic. They cannot predict how the arsenic levels in your body will affect your health.

Has the federal government made recommendations to protect human health?

The EPA has set limits on the amount of arsenic that industrial sources can release to the environment and has restricted or cancelled many of the uses of arsenic in pesticides. EPA has set a limit of 0.01 parts per million (ppm) for arsenic in drinking water.

The Occupational Safety and Health Administration (OSHA) has set a permissible exposure limit (PEL) of 10 micrograms of arsenic per cubic meter of workplace air (10 $\mu g/m^3$) for 8 hour shifts and 40 hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2005. Toxicological Profile for Arsenic (Draft for Public Comment). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

Di(2-ethylhexyl) phthalate (DEHP)

CAS # 117-81-7

This fact sheet answers the most frequently asked health questions (FAQs) about di(2-ethylhexyl) phthalate (DEHP). For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Di(2-ethylhexyl) phthalate (DEHP) is found in many plastics. Exposure to DEHP is generally very low. Increased exposures may come from intravenous fluids delivered through plastic tubing, and from ingesting contaminated foods or water. DEHP is not toxic at the low levels usually present in the environment. In animals, high levels of DEHP damaged the liver and kidney and affected the ability to reproduce. DEHP has been found in at least 733 of the 1,613 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is di(2-ethylhexyl) phthlate?

Di(2-ethylhexyl) phthlate (DEHP) is a manufactured chemical that is commonly added to plastics to make them flexible. DEHP is a colorless liquid with almost no odor.

DEHP is present in plastic products such as wall coverings, tablecloths, floor tiles, furniture upholstery, shower curtains, garden hoses, swimming pool liners, rainwear, baby pants, dolls, some toys, shoes, automobile upholstery and tops, packaging film and sheets, sheathing for wire and cable, medical tubing, and blood storage bags.

What happens to DEHP when it enters the environment?

❏ DEHP is everywhere in the environment because of its use in plastics, but it does not evaporate easily or dissolve in water easily.
❏ DEHP can be released in small amounts to indoor air from plastic materials, coatings, and flooring.
❏ It dissolves faster in water if gas, oil, or paint removers are present.
❏ It attaches strongly to soil particles.
❏ DEHP in soil or water can be broken down by microorganisms into harmless compounds.
❏ DEHP does not break down easily when it is deep in the soil or at the bottom of lakes or rivers.
❏ It is in plants, fish, and other animals, but animals high on the food chain are able to break down DEHP, so tissue levels are usually low.

How might I be exposed to DEHP?

DEHP is usually present at very low levels in:
❏ Medical products packaged in plastic such as blood products.
❏ Some foods packaged in plastics, especially fatty foods like milk products, fish or seafood, and oils.
❏ Well water near waste sites.
❏ Workplace air or indoor air where DEHP is released, but usually not at levels of concern.
❏ Fluids from plastic intravenous tubing if used extensively as for kidney dialysis.

How can DEHP affect my health?

At the levels found in the environment, DEHP is not expected to cause harmful health effects in humans. Most of what we know about the health effects of DEHP comes from studies of rats and mice given high amounts of DEHP.

Di(2-ethylhexyl) phthalate (DEHP)
CAS # 117-81-7

Harmful effects in animals generally occurred only with high amounts of DEHP or with prolonged exposures. Moreover, absorption and breakdown of DEHP in humans is different than in rats or mice, so the effects seen in rats and mice may not occur in humans.

Rats that breathed DEHP in the air showed no serious harmful effects. Their lifespan and ability to reproduce were not affected.

Brief oral exposure to very high levels of DEHP damaged sperm in mice. Although the effect reversed when exposure ceased, sexual maturity was delayed in the animals.

High amounts of DEHP damaged the liver of rats and mice. Whether or not DEHP contributes to human kidney damage is unclear.

Skin contact with products containing DEHP will probably cause no harmful effects because it cannot be taken up easily through the skin.

How likely is DEHP to cause cancer?

The Department of Health and Human Services (DHHS) has determined that DEHP may reasonably be anticipated to be a human carcinogen. The EPA has determined that DEHP is a probable human carcinogen. These determinations were based entirely on liver cancer in rats and mice. The International Agency for Research on Cancer (IARC) has stated that DEHP cannot be classified as to its carcinogenicity to humans.

How can DEHP affect children?

Children can be exposed to DEHP in the same manner as adults. In addition, small children can be exposed by sucking on or skin contact with plastic toys and pacifiers that contain DEHP, but there is no conclusive evidence of adverse health effects after such exposures. Nonetheless, because of concern for children's health, many toy manufacturers have discontinued use of DEHP in their products. In pregnant rats and mice exposed to high amounts of DEHP, researchers observed birth defects and fetal deaths.

How can families reduce the risk of exposure to DEHP?

❑ It is almost impossible to completely avoid contact with some DEHP because it is commonly found in plastics.
❑ Prevent babies and small children from chewing on plastic objects not designed for that purpose.

Is there a medical test to show whether I've been exposed to DEHP?

There is a test available that measures a breakdown product of DEHP called mono(2-ethylhexyl) phthalate (MEHP) in your urine or blood. This test can only detect recent exposure because DEHP is rapidly broken down and eliminated from your body. This test is not routinely available at the doctor's office because it requires special equipment.

Has the federal government made recommendations to protect human health?

The EPA limits the amount of DEHP that may be present in drinking water to 6 parts of DEHP per billion parts of water (6 ppb).

The Occupational Safety and Health Administration (OSHA) sets a maximum average of 5 milligrams of DEHP per cubic meter of air (5 mg/m^3) in the workplace during an 8-hour shift. The short-term (15-minute) exposure limit is 10 mg/m^3.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2002. Toxicological Profile for Di(2-ethylhexyl) phthlate (Update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

XYLENE
CAS # 1330-20-7

This fact sheet answers the most frequently asked health questions (FAQs) about xylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to xylene occurs in the workplace and when you use paint, gasoline, paint thinners and other products that contain it. People who breathe high levels may have dizziness, confusion, and a change in their sense of balance. This substance has been found in at least 658 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is xylene?

(Pronounced zī′lēn)

Xylene is a colorless, sweet-smelling liquid that catches on fire easily. It occurs naturally in petroleum and coal tar and is formed during forest fires. You can smell xylene in air at 0.08–3.7 parts of xylene per million parts of air (ppm) and begin to taste it in water at 0.53–1.8 ppm.

Chemical industries produce xylene from petroleum. It's one of the top 30 chemicals produced in the United States in terms of volume.

Xylene is used as a solvent and in the printing, rubber, and leather industries. It is also used as a cleaning agent, a thinner for paint, and in paints and varnishes. It is found in small amounts in airplane fuel and gasoline.

What happens to xylene when it enters the environment?

- Xylene has been found in waste sites and landfills when discarded as used solvent, or in varnish, paint, or paint thinners.
- It evaporates quickly from the soil and surface water into the air.
- In the air, it is broken down by sunlight into other less harmful chemicals.
- It is broken down by microorganisms in soil and water.
- Only a small amount of it builds up in fish, shellfish, plants, and animals living in xylene-contaminated water.

How might I be exposed to xylene?

- Breathing xylene in workplace air or in automobile exhaust.
- Breathing contaminated air.
- Touching gasoline, paint, paint removers, varnish, shellac, and rust preventatives that contain it.
- Breathing cigarette smoke that has small amounts of xylene in it.
- Drinking contaminated water or breathing air near waste sites and landfills that contain xylene.
- The amount of xylene in food is likely to be low.

How can xylene affect my health?

Xylene affects the brain. High levels from exposure for short periods (14 days or less) or long periods (more than 1 year) can cause headaches, lack of muscle coordination, dizziness, confusion, and changes in one's sense of balance. Exposure of

people to high levels of xylene for short periods can also cause irritation of the skin, eyes, nose, and throat; difficulty in breathing; problems with the lungs; delayed reaction time; memory difficulties; stomach discomfort; and possibly changes in the liver and kidneys. It can cause unconsciousness and even death at very high levels.

Studies of unborn animals indicate that high concentrations of xylene may cause increased numbers of deaths, and delayed growth and development. In many instances, these same concentrations also cause damage to the mothers. We do not know if xylene harms the unborn child if the mother is exposed to low levels of xylene during pregnancy.

How likely is xylene to cause cancer?

The International Agency for Research on Cancer (IARC) has determined that xylene is not classifiable as to its carcinogenicity in humans.

Human and animal studies have not shown xylene to be carcinogenic, but these studies are not conclusive and do not provide enough information to conclude that xylene does not cause cancer.

Is there a medical test to show whether I've been exposed to xylene?

Laboratory tests can detect xylene or its breakdown products in exhaled air, blood, or urine. There is a high degree of agreement between the levels of exposure to xylene and the levels of xylene breakdown products in the urine. However, a urine sample must be provided very soon after exposure ends because xylene quickly leaves the body. These tests are not routinely available at your doctor's office.

Has the federal government made recommendations to protect human health?

The EPA has set a limit of 10 ppm of xylene in drinking water.

The EPA requires that spills or accidental releases of xylenes into the environment of 1,000 pounds or more must be reported.

The Occupational Safety and Health Administration (OSHA) has set a maximum level of 100 ppm xylene in workplace air for an 8-hour workday, 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) and the American Conference of Governmental Industrial Hygienists (ACGIH) also recommend exposure limits of 100 ppm in workplace air.

NIOSH has recommended that 900 ppm of xylene be considered immediately dangerous to life or health. This is the exposure level of a chemical that is likely to cause permanent health problems or death.

Glossary

Evaporate: To change from a liquid into a vapor or a gas.

Carcinogenic: Having the ability to cause cancer.

CAS: Chemical Abstracts Service.

ppm: Parts per million.

Solvent: A liquid that can dissolve other substances.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for xylenes (update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone:1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

TOLUENE
CAS # 108-88-3

Division of Toxicology ToxFAQs™ **February 2001**

This fact sheet answers the most frequently asked health questions (FAQs) about toluene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to toluene occurs from breathing contaminated workplace air, in automobile exhaust, some consumer products paints, paint thinners, fingernail polish, lacquers, and adhesives. Toluene affects the nervous system. Toluene has been found at 959 of the 1,591 National Priority List sites identified by the Environmental Protection Agency

What is toluene?

Toluene is a clear, colorless liquid with a distinctive smell. Toluene occurs naturally in crude oil and in the tolu tree. It is also produced in the process of making gasoline and other fuels from crude oil and making coke from coal.

Toluene is used in making paints, paint thinners, fingernail polish, lacquers, adhesives, and rubber and in some printing and leather tanning processes.

What happens to toluene when it enters the environment?

❑ Toluene enters the environment when you use materials that contain it. It can also enter surface water and groundwater from spills of solvents and petrolieum products as well as from leasking underground storage tanks at gasoline stations and other facilities.

❑ When toluene-containing products are placed in landfills or waste disposal sites, the toluene can enter the soil or water near the waste site.

❑ Toluene does not usually stay in the environment long.

❑ Toluene does not concentrate or buildup to high levels in animals.

How might I be exposed to toluene?

❑ Breathing contaminated workplace air or automobile exhaust.

❑ Working with gasoline, kerosene, heating oil, paints, and lacquers.

❑ Drinking contaminated well-water.

❑ Living near uncontrolled hazardous waste sites containing toluene products.

How can toluene affect my health?

Toluene may affect the nervous system. Low to moderate levles can cause tiredness, confusion, weakness, drunken-type actions, memory loss, nausea, loss of appetite, and

hearing and color vision loss. These symptoms usually disappear when exposure is stopped.

Inhaling High levels of toluene in a short time can make you feel light-headed, dizzy, or sleepy. It can also cause unconsciousness, and even death.

High levels of toluene may affect your kidneys.

How likely is toluene to cause cancer?

Studies in humans and animals generally indicate that toluene does not cause cancer.

The EPA has determined that the carcinogenicity of toluene can not be classified.

How can toluene affect children?

It is likely that health effects seen in children exposed to toluene will be similar to the effects seen in adults. Some studies in animals suggest that babies may be more sensitive than adults.

Breathing very high levels of toluene during pregnancy can result in children with birth defects and retard mental abilities, and growth. We do not know if toluene harms the unborn child if the mother is exposed to low levels of toluene during pregnancy.

How can families reduce the risk of exposure to toluene?

❑ Use toluene-containing products in well-ventilated areas.

❑ When not in use, toluene-containing products should be tightly covered to prevent evaporation into the air.

Is there a medical test to show whether I've been exposed to toluene?

There are tests to measure the level of toluene or its breakdown products in exhaled air, urine, and blood. To determine if you have been exposed to toluene, your urine or blood must be checked within 12 hours of exposure. Several other chemicals are also changed into the same breakdown products as toluene, so some of these tests are not specific for toluene.

Has the federal government made recommendations to protect human health?

EPA has set a limit of 1 milligram per liter of drinking water (1 mg/L).

Discharges, releases, or spills of more than 1,000 pounds of toluene must be reported to the National Response Center.

The Occupational Safety and Health Administration has set a limit of 200 parts toluene per million of workplace air (200 ppm).

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2000. Toxicological Profile for Toluene. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html . ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

TRICHLOROETHYLENE

CAS # 79-01-6

Division of Toxicology ToxFAQs™ **July 2003**

This fact sheet answers the most frequently asked health questions (FAQs) about trichloroethylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Trichloroethylene is a colorless liquid which is used as a solvent for cleaning metal parts. Drinking or breathing high levels of trichloroethylene may cause nervous system effects, liver and lung damage, abnormal heartbeat, coma, and possibly death. Trichloroethylene has been found in at least 852 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is trichloroethylene?

Trichloroethylene (TCE) is a nonflammable, colorless liquid with a somewhat sweet odor and a sweet, burning taste. It is used mainly as a solvent to remove grease from metal parts, but it is also an ingredient in adhesives, paint removers, typewriter correction fluids, and spot removers.

Trichloroethylene is not thought to occur naturally in the environment. However, it has been found in underground water sources and many surface waters as a result of the manufacture, use, and disposal of the chemical.

What happens to trichloroethylene when it enters the environment?

- Trichloroethylene dissolves a little in water, but it can remain in ground water for a long time.
- Trichloroethylene quickly evaporates from surface water, so it is commonly found as a vapor in the air.
- Trichloroethylene evaporates less easily from the soil than from surface water. It may stick to particles and remain for a long time.
- Trichloroethylene may stick to particles in water, which will cause it to eventually settle to the bottom sediment.
- Trichloroethylene does not build up significantly in plants and animals.

How might I be exposed to trichloroethylene?

- Breathing air in and around the home which has been contaminated with trichloroethylene vapors from shower water or household products such as spot removers and typewriter correction fluid.
- Drinking, swimming, or showering in water that has been contaminated with trichloroethylene.
- Contact with soil contaminated with trichloroethylene, such as near a hazardous waste site.
- Contact with the skin or breathing contaminated air while manufacturing trichloroethylene or using it at work to wash paint or grease from skin or equipment.

How can trichloroethylene affect my health?

Breathing small amounts may cause headaches, lung irritation, dizziness, poor coordination, and difficulty concentrating.

Breathing large amounts of trichloroethylene may cause impaired heart function, unconsciousness, and death. Breathing it for long periods may cause nerve, kidney, and liver damage.

ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html

Drinking large amounts of trichloroethylene may cause nausea, liver damage, unconsciousness, impaired heart function, or death.

Drinking small amounts of trichloroethylene for long periods may cause liver and kidney damage, impaired immune system function, and impaired fetal development in pregnant women, although the extent of some of these effects is not yet clear.

Skin contact with trichloroethylene for short periods may cause skin rashes.

How likely is trichloroethylene to cause cancer?

Some studies with mice and rats have suggested that high levels of trichloroethylene may cause liver, kidney, or lung cancer. Some studies of people exposed over long periods to high levels of trichloroethylene in drinking water or in workplace air have found evidence of increased cancer. Although, there are some concerns about the studies of people who were exposed to trichloroethylene, some of the effects found in people were similar to effects in animals.

In its 9th Report on Carcinogens, the National Toxicology Program (NTP) determined that trichloroethylene is "reasonably anticipated to be a human carcinogen." The International Agency for Research on Cancer (IARC) has determined that trichloroethylene is "probably carcinogenic to humans."

Is there a medical test to show whether I've been exposed to trichloroethylene?

If you have recently been exposed to trichloroethylene, it can be detected in your breath, blood, or urine. The breath test, if it is performed soon after exposure, can tell if you have been exposed to even a small amount of trichloroethylene.

Exposure to larger amounts is assessed by blood and urine tests, which can detect trichloroethylene and many of its breakdown products for up to a week after exposure. However, exposure to other similar chemicals can produce the same breakdown products, so their detection is not absolute proof of exposure to trichloroethylene. This test isn't available at most doctors' offices, but can be done at special laboratories that have the right equipment.

Has the federal government made recommendations to protect human health?

The EPA has set a maximum contaminant level for trichloroethylene in drinking water at 0.005 milligrams per liter (0.005 mg/L) or 5 parts of TCE per billion parts water.

The EPA has also developed regulations for the handling and disposal of trichloroethylene.

The Occupational Safety and Health Administration (OSHA) has set an exposure limit of 100 parts of trichloroethylene per million parts of air (100 ppm) for an 8-hour workday, 40-hour workweek.

Glossary

Carcinogenicity: The ability of a substance to cause cancer.
CAS: Chemical Abstracts Service.
Evaporate: To change into a vapor or gas.
Milligram (mg): One thousandth of a gram.
Nonflammable: Will not burn.
ppm: Parts per million.
Sediment: Mud and debris that have settled to the bottom of a body of water.
Solvent: A chemical that dissolves other substances.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Trichloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html . ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

TETRACHLOROETHYLENE
CAS # 127-18-4

Agency for Toxic Substances and Disease Registry ToxFAQs **September 1997**

This fact sheet answers the most frequently asked health questions (FAQs) about tetrachloroethylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Tetrachloroethylene is a manufactured chemical used for dry cleaning and metal degreasing. Exposure to very high concentrations of tetrachloroethylene can cause dizziness, headaches, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death. Tetrachloroethylene has been found in at least 771 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is tetrachloroethylene?

(Pronounced tĕt′rə-klôr′ ō-ĕth′ə-lēn′)

Tetrachloroethylene is a manufactured chemical that is widely used for dry cleaning of fabrics and for metal-degreasing. It is also used to make other chemicals and is used in some consumer products.

Other names for tetrachloroethylene include perchloroethylene, PCE, and tetrachloroethene. It is a nonflammable liquid at room temperature. It evaporates easily into the air and has a sharp, sweet odor. Most people can smell tetrachloroethylene when it is present in the air at a level of 1 part tetrachloroethylene per million parts of air (1 ppm) or more, although some can smell it at even lower levels.

What happens to tetrachloroethylene when it enters the environment?

- Much of the tetrachloroethylene that gets into water or soil evaporates into the air.
- Microorganisms can break down some of the tetrachloroethylene in soil or underground water.
- In the air, it is broken down by sunlight into other chemicals or brought back to the soil and water by rain.
- It does not appear to collect in fish or other animals that live in water.

How might I be exposed to tetrachloroethylene?

- When you bring clothes from the dry cleaners, they will release small amounts of tetrachloroethylene into the air.
- When you drink water containing tetrachloroethylene, you are exposed to it.

How can tetrachloroethylene affect my health?

High concentrations of tetrachloroethylene (particularly in closed, poorly ventilated areas) can cause dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death.

Irritation may result from repeated or extended skin contact with it. These symptoms occur almost entirely in work (or hobby) environments when people have been accidentally exposed to high concentrations or have intentionally used tetrachloroethylene to get a "high."

In industry, most workers are exposed to levels lower than those causing obvious nervous system effects. The health effects of breathing in air or drinking water with low levels of tetrachloroethylene are not known.

Results from some studies suggest that women who work in dry cleaning industries where exposures to tetrachloroethyl-

ene can be quite high may have more menstrual problems and spontaneous abortions than women who are not exposed. However, it is not known if tetrachloroethylene was responsible for these problems because other possible causes were not considered.

Results of animal studies, conducted with amounts much higher than those that most people are exposed to, show that tetrachloroethylene can cause liver and kidney damage. Exposure to very high levels of tetrachloroethylene can be toxic to the unborn pups of pregnant rats and mice. Changes in behavior were observed in the offspring of rats that breathed high levels of the chemical while they were pregnant.

How likely is tetrachloroethylene to cause cancer?

The Department of Health and Human Services (DHHS) has determined that tetrachloroethylene may reasonably be anticipated to be a carcinogen. Tetrachloroethylene has been shown to cause liver tumors in mice and kidney tumors in male rats.

Is there a medical test to show whether I've been exposed to tetrachloroethylene?

One way of testing for tetrachloroethylene exposure is to measure the amount of the chemical in the breath, much the same way breath-alcohol measurements are used to determine the amount of alcohol in the blood.

Because it is stored in the body's fat and slowly released into the bloodstream, tetrachloroethylene can be detected in the breath for weeks following a heavy exposure.

Tetrachloroethylene and trichloroacetic acid (TCA), a breakdown product of tetrachloroethylene, can be detected in the blood. These tests are relatively simple to perform. These tests aren't available at most doctors' offices, but can be performed at special laboratories that have the right equipment.

Because exposure to other chemicals can produce the same breakdown products in the urine and blood, the tests for breakdown products cannot determine if you have been exposed to tetrachloroethylene or the other chemicals.

Has the federal government made recommendations to protect human health?

The EPA maximum contaminant level for the amount of tetrachloroethylene that can be in drinking water is 0.005 milligrams tetrachloroethylene per liter of water (0.005 mg/L).

The Occupational Safety and Health Administration (OSHA) has set a limit of 100 ppm for an 8-hour workday over a 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends that tetrachloroethylene be handled as a potential carcinogen and recommends that levels in workplace air should be as low as possible.

Glossary

Carcinogen: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Milligram (mg): One thousandth of a gram.

Nonflammable: Will not burn.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Tetrachloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone:1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)

Agency for Toxic Substances and Disease Registry ToxFAQs **September 1996**

This fact sheet answers the most frequently asked health questions (FAQs) about polycyclic aromatic hydrocarbons (PAHs). For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to polycyclic aromatic hydrocarbons usually occurs by breathing air contaminated by wild fires or coal tar, or by eating foods that have been grilled. PAHs have been found in at least 600 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What are polycyclic aromatic hydrocarbons?

(Pronounced pŏl′ĭ-sī′klĭk ăr′ə-măt′ĭk hī′drə-kar′bənz)

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

Some PAHs are manufactured. These pure PAHs usually exist as colorless, white, or pale yellow-green solids. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides.

What happens to PAHs when they enter the environment?

- PAHs enter the air mostly as releases from volcanoes, forest fires, burning coal, and automobile exhaust.
- PAHs can occur in air attached to dust particles.
- Some PAH particles can readily evaporate into the air from soil or surface waters.
- PAHs can break down by reacting with sunlight and other chemicals in the air, over a period of days to weeks.
- PAHs enter water through discharges from industrial and wastewater treatment plants.
- Most PAHs do not dissolve easily in water. They stick to solid particles and settle to the bottoms of lakes or rivers.
- Microorganisms can break down PAHs in soil or water after a period of weeks to months.
- In soils, PAHs are most likely to stick tightly to particles; certain PAHs move through soil to contaminate underground water.
- PAH contents of plants and animals may be much higher than PAH contents of soil or water in which they live.

How might I be exposed to PAHs?

- Breathing air containing PAHs in the workplace of coking, coal-tar, and asphalt production plants; smokehouses; and municipal trash incineration facilities.
- Breathing air containing PAHs from cigarette smoke, wood smoke, vehicle exhausts, asphalt roads, or agricultural burn smoke.
- Coming in contact with air, water, or soil near hazardous waste sites.
- Eating grilled or charred meats; contaminated cereals, flour, bread, vegetables, fruits, meats; and processed or pickled foods.
- Drinking contaminated water or cow's milk.

ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html

- Nursing infants of mothers living near hazardous waste sites may be exposed to PAHs through their mother's milk.

How can PAHs affect my health?

Mice that were fed high levels of one PAH during pregnancy had difficulty reproducing and so did their offspring. These offspring also had higher rates of birth defects and lower body weights. It is not known whether these effects occur in people.

Animal studies have also shown that PAHs can cause harmful effects on the skin, body fluids, and ability to fight disease after both short- and long-term exposure. But these effects have not been seen in people.

How likely are PAHs to cause cancer?

The Department of Health and Human Services (DHHS) has determined that some PAHs may reasonably be expected to be carcinogens.

Some people who have breathed or touched mixtures of PAHs and other chemicals for long periods of time have developed cancer. Some PAHs have caused cancer in laboratory animals when they breathed air containing them (lung cancer), ingested them in food (stomach cancer), or had them applied to their skin (skin cancer).

Is there a medical test to show whether I've been exposed to PAHs?

In the body, PAHs are changed into chemicals that can attach to substances within the body. There are special tests that can detect PAHs attached to these substances in body tissues or blood. However, these tests cannot tell whether any health effects will occur or find out the extent or source of your exposure to the PAHs. The tests aren't usually available in your doctor's office because special equipment is needed to conduct them.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set a limit of 0.2 milligrams of PAHs per cubic meter of air (0.2 mg/m^3). The OSHA Permissible Exposure Limit (PEL) for mineral oil mist that contains PAHs is 5 mg/m^3 averaged over an 8-hour exposure period.

The National Institute for Occupational Safety and Health (NIOSH) recommends that the average workplace air levels for coal tar products not exceed 0.1 mg/m^3 for a 10-hour workday, within a 40-hour workweek. There are other limits for workplace exposure for things that contain PAHs, such as coal, coal tar, and mineral oil.

Glossary

Carcinogen: A substance that can cause cancer.

Ingest: Take food or drink into your body.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for polycyclic aromatic hydrocarbons. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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MERCURY
CAS # 7439-97-6

This fact sheet answers the most frequently asked health questions (FAQs) about mercury. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to mercury occurs from breathing contaminated air, ingesting contaminated water and food, and having dental and medical treatments. Mercury, at high levels, may damage the brain, kidneys, and developing fetus. This chemical has been found in at least 714 of 1,467 National Priorities List sites identified by the Environmental Protection Agency.

What is mercury?

(Pronounced mŭr′kyə-rē)

Mercury is a naturally occurring metal which has several forms. The metallic mercury is a shiny, silver-white, odorless liquid. If heated, it is a colorless, odorless gas.

Mercury combines with other elements, such as chlorine, sulfur, or oxygen, to form inorganic mercury compounds or "salts," which are usually white powders or crystals. Mercury also combines with carbon to make organic mercury compounds. The most common one, methylmercury, is produced mainly by microscopic organisms in the water and soil. More mercury in the environment can increase the amounts of methylmercury that these small organisms make.

Metallic mercury is used to produce chlorine gas and caustic soda, and is also used in thermometers, dental fillings, and batteries. Mercury salts are sometimes used in skin lightening creams and as antiseptic creams and ointments.

What happens to mercury when it enters the environment?

- Inorganic mercury (metallic mercury and inorganic mercury compounds) enters the air from mining ore deposits, burning coal and waste, and from manufacturing plants.
- It enters the water or soil from natural deposits, disposal of wastes, and volcanic activity.
- Methylmercury may be formed in water and soil by small organisms called bacteria.
- Methylmercury builds up in the tissues of fish. Larger and older fish tend to have the highest levels of mercury.

How might I be exposed to mercury?

- Eating fish or shellfish contaminated with methylmercury.
- Breathing vapors in air from spills, incinerators, and industries that burn mercury-containing fuels.
- Release of mercury from dental work and medical treatments.
- Breathing contaminated workplace air or skin contact during use in the workplace (dental, health services, chemical, and other industries that use mercury).
- Practicing rituals that include mercury.

How can mercury affect my health?

The nervous system is very sensitive to all forms of mercury. Methylmercury and metallic mercury vapors are more harmful than other forms, because more mercury in these forms reaches the brain. Exposure to high levels of metallic, inorganic, or organic mercury can permanently damage the brain, kidneys, and developing fetus. Effects on brain functioning may result in irritability, shyness, tremors, changes in vision or hearing, and memory problems.

Short-term exposure to high levels of metallic mercury vapors may cause effects including lung damage, nausea,

vomiting, diarrhea, increases in blood pressure or heart rate, skin rashes, and eye irritation.

How likely is mercury to cause cancer?

There are inadequate human cancer data available for all forms of mercury. Mercuric chloride has caused increases in several types of tumors in rats and mice, and methylmercury has caused kidney tumors in male mice. The EPA has determined that mercuric chloride and methylmercury are possible human carcinogens.

How can mercury affect children?

Very young children are more sensitive to mercury than adults. Mercury in the mother's body passes to the fetus and may accumulate there. It can also can pass to a nursing infant through breast milk. However, the benefits of breast feeding may be greater than the possible adverse effects of mercury in breast milk.

Mercury's harmful effects that may be passed from the mother to the fetus include brain damage, mental retardation, incoordination, blindness, seizures, and inability to speak. Children poisoned by mercury may develop problems of their nervous and digestive systems, and kidney damage.

How can families reduce the risk of exposure to mercury?

Carefully handle and dispose of products that contain mercury, such as thermometers or fluorescent light bulbs. Do not vacuum up spilled mercury, because it will vaporize and increase exposure. If a large amount of mercury has been spilled, contact your health department. Teach children not to play with shiny, silver liquids.

Properly dispose of older medicines that contain mercury. Keep all mercury-containing medicines away from children.

Pregnant women and children should keep away from rooms where liquid mercury has been used.

Learn about wildlife and fish advisories in your area from your public health or natural resources department.

Is there a medical test to show whether I've been exposed to mercury?

Tests are available to measure mercury levels in the body. Blood or urine samples are used to test for exposure to metallic mercury and to inorganic forms of mercury. Mercury in whole blood or in scalp hair is measured to determine exposure to methylmercury. Your doctor can take samples and send them to a testing laboratory.

Has the federal government made recommendations to protect human health?

The EPA has set a limit of 2 parts of mercury per billion parts of drinking water (2 ppb).

The Food and Drug Administration (FDA) has set a maximum permissible level of 1 part of methylmercury in a million parts of seafood (1 ppm).

The Occupational Safety and Health Administration (OSHA) has set limits of 0.1 milligram of organic mercury per cubic meter of workplace air (0.1 mg/m^3) and 0.05 mg/m^3 of metallic mercury vapor for 8-hour shifts and 40-hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Toxicological profile for mercury. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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LEAD
CAS # 7439-92-1

This fact sheet answers the most frequently asked health questions (FAQs) about lead. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to lead can happen from breathing workplace air or dust, eating contaminated foods, or drinking contaminated water. Children can be exposed from eating lead-based paint chips or playing in contaminated soil. Lead can damage the nervous system, kidneys, and reproductive system. Lead has been found in at least 1,026 of 1,467 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is lead?

(Pronounced lĕd)

Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. Lead can be found in all parts of our environment. Much of it comes from human activities including burning fossil fuels, mining, and manufacturing.

Lead has many different uses. It is used in the production of batteries, ammunition, metal products (solder and pipes), and devices to shield X-rays.

Because of health concerns, lead from gasoline, paints and ceramic products, caulking, and pipe solder has been dramatically reduced in recent years.

What happens to lead when it enters the environment?

- Lead itself does not break down, but lead compounds are changed by sunlight, air, and water.
- When lead is released to the air, it may travel long distances before settling to the ground.
- Once lead falls onto soil, it usually sticks to soil particles.
- Movement of lead from soil into groundwater will depend on the type of lead compound and the characteristics of the soil.
- Much of the lead in inner-city soils comes from old houses painted with lead-based paint.

How might I be exposed to lead?

- Eating food or drinking water that contains lead.
- Spending time in areas where lead-based paints have been used and are deteriorating.
- Working in a job where lead is used.
- Using health-care products or folk remedies that contain lead.
- Engaging in certain hobbies in which lead is used (for example, stained glass).

How can lead affect my health?

Lead can affect almost every organ and system in your body. The most sensitive is the central nervous system, particularly in children. Lead also damages kidneys and the reproductive system. The effects are the same whether it is breathed or swallowed.

At high levels, lead may decrease reaction time, cause weakness in fingers, wrists, or ankles, and possibly affect the memory. Lead may cause anemia, a disorder of the blood. It can also damage the male reproductive system. The connection between these effects and exposure to low levels of lead is uncertain.

How likely is lead to cause cancer?

The Department of Health and Human Services has determined that lead acetate and lead phosphate may reasonably

be anticipated to be carcinogens based on studies in animals. There is inadequate evidence to clearly determine lead's carcinogenicity in people.

How can lead affect children?

Small children can be exposed by eating lead-based paint chips, chewing on objects painted with lead-based paint, or swallowing house dust or soil that contains lead.

Children are more vulnerable to lead poisoning than adults. A child who swallows large amounts of lead may develop blood anemia, severe stomachache, muscle weakness, and brain damage. A large amount of lead might get into a child's body if the child ate small pieces of old paint that contained large amounts of lead. If a child swallows smaller amounts of lead, much less severe effects on blood and brain function may occur. Even at much lower levels of exposure, lead can affect a child's mental and physical growth.

Exposure to lead is more dangerous for young and unborn children. Unborn children can be exposed to lead through their mothers. Harmful effects include premature births, smaller babies, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. These effects are more common if the mother or baby was exposed to high levels of lead.

How can families reduce the risk of exposure to lead?

Avoid exposure to sources of lead. Do not allow children to chew or mouth painted surfaces that may have been painted with lead-based paint (homes built before 1978). Run your water for 15 to 30 seconds before drinking or cooking with it. This will get rid of lead that may have leached out of pipes. Some types of paints and pigments that are used as make-up or hair coloring contain lead. Keep these kinds of products away from children. Wash children's hands and faces often to remove lead dusts and soil, and regularly clean the house of dust and tracked in soil.

Is there a medical test to show whether I've been exposed to lead?

A blood test is available to measure the amount of lead in your blood and to estimate the amount of your exposure to lead. Blood tests are commonly used to screen children for lead poisoning. Lead in teeth and bones can be measured with X-rays, but this test is not as readily available. Medical treatment may be necessary in children if the lead concentration in blood is higher than 45 micrograms per deciliter (45 µg/dL).

Has the federal government made recommendations to protect human health?

The Centers for Disease Control and Prevention (CDC) recommends that children ages 1 and 2 be screened for lead poisoning. Children who are 3 to 6 years old should be tested for lead if they have never been tested for lead before and if they receive services from public assistance programs; if they live in or regularly visit a building built before 1950; if they live in or visit a home built before 1978 that is being remodeled; or if they have a brother, sister, or playmate who has had lead poisoning. CDC considers children to have an elevated level of lead if the amount in the blood is 10 µg/dL.

The EPA requires lead in air not to exceed 1.5 micrograms per cubic meter (1.5 $\mu g/m^3$) averaged over 3 months. EPA limits lead in drinking water to 15 µg per liter.

The Occupational Health and Safety Administration (OSHA) develops regulations for workers exposed to lead. The Clean Air Act Amendments of 1990 banned the sale of leaded gasoline. The Federal Hazardous Substance Act bans children's products that contain hazardous amounts of lead.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Toxicological profile for lead. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

ETHYLBENZENE
CAS # 100-41-4

Agency for Toxic Substances and Disease Registry ToxFAQs **June 1999**

This fact sheet answers the most frequently asked health questions (FAQs) about ethylbenzene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Ethylbenzene is a colorless liquid found in a number of products including gasoline and paints. Breathing very high levels can cause dizziness and throat and eye irritation. Ethylbenzene has been found in at least 731 of the 1,467 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is ethylbenzene?

(Pronounced ĕth′ əl bĕn′ zēn′)

Ethylbenzene is a colorless, flammable liquid that smells like gasoline. It is found in natural products such as coal tar and petroleum and is also found in manufactured products such as inks, insecticides, and paints.

Ethylbenzene is used primarily to make another chemical, styrene. Other uses include as a solvent, in fuels, and to make other chemicals.

What happens to ethylbenzene when it enters the environment?

- Ethylbenzene moves easily into the air from water and soil.
- It takes about 3 days for ethylbenzene to be broken down in air into other chemicals.
- Ethylbenzene may be released to water from industrial discharges or leaking underground storage tanks.
- In surface water, ethylbenzene breaks down by reacting with other chemicals found naturally in water.
- In soil, it is broken down by soil bacteria.

How might I be exposed to ethylbenzene?

- Breathing air containing ethylbenzene, particularly in areas near factories or highways.
- Drinking contaminated tap water.
- Working in an industry where ethylbenzene is used or made.
- Using products containing it, such as gasoline, carpet glues, varnishes, and paints.

How can ethylbenzene affect my health?

Limited information is available on the effects of ethylbenzene on people's health. The available information shows dizziness, throat and eye irritation, tightening of the chest, and a burning sensation in the eyes of people exposed to high levels of ethylbenzene in air.

Animals studies have shown effects on the nervous system, liver, kidneys, and eyes from breathing ethylbenzene in air.

How likely is ethylbenzene to cause cancer?

The EPA has determined that ethylbenzene is not classifiable as to human carcinogenicity.

ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html

No studies in people have shown that ethylbenzene exposure can result in cancer. Two available animal studies suggest that ethylbenzene may cause tumors.

How can ethylbenzene affect children?

Children may be exposed to ethylbenzene through inhalation of consumer products, including gasoline, paints, inks, pesticides, and carpet glue. We do not know whether children are more sensitive to the effects of ethylbenzene than adults.

It is not known whether ethylbenzene can affect the development of the human fetus. Animal studies have shown that when pregnant animals were exposed to ethylbenzene in air, their babies had an increased number of birth defects.

How can families reduce the risk of exposure to ethylbenzene?

Exposure to ethylbenzene vapors from household products and newly installed carpeting can be minimized by using adequate ventilation.

Household chemicals should be stored out of reach of children to prevent accidental poisoning. Always store household chemicals in their original containers; never store them in containers children would find attractive to eat or drink from, such as old soda bottles. Gasoline should be stored in a gasoline can with a locked cap.

Sometimes older children sniff household chemicals, including ethylbenzene, in an attempt to get high. Talk with your children about the dangers of sniffing chemicals.

Is there a medical test to show whether I've been exposed to ethylbenzene?

Ethylbenzene is found in the blood, urine, breath, and some body tissues of exposed people. The most common way to test for ethylbenzene is in the urine. This test measures substances formed by the breakdown of ethylbenzene. This test needs to be done within a few hours after exposure occurs, because the substances leave the body very quickly.

These tests can show you were exposed to ethylbenzene, but cannot predict the kind of health effects that might occur.

Has the federal government made recommendations to protect human health?

The EPA has set a maximum contaminant level of 0.7 milligrams of ethylbenzene per liter of drinking water (0.7 mg/L).

The EPA requires that spills or accidental releases into the environment of 1,000 pounds or more of ethylbenzene be reported to the EPA.

The Occupational Safety and Health Administration (OSHA) has set an occupational exposure limit of 100 parts of ethylbenzene per million parts of air (100 ppm) for an 8-hour workday, 40-hour workweek.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Toxicological profile for ethylbenzene. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

1,2-DICHLOROETHENE
CAS # 540-59-0, 156-59-2, and 156-60-5

This fact sheet answers the most frequently asked health questions (FAQs) about 1,2-dichloroethene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to 1,2-dichloroethene occurs mainly in workplaces where it is made or used. Breathing high levels of 1,2-dichloroethene can make you feel nauseous, drowsy, and tired. *cis*-1,2-Dichloroethene has been found in at least 146 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA). *trans*-1,2-Dichloroethene was found in at least 563 NPL sites. 1,2-Dichloroethene was found at 336 sites, but the isomer (*cis*- or *trans*-) was not specified.

What is 1,2-dichloroethene?

(Pronounced 1,2-dī-klôr′ ō-ĕth′ēn)

1,2-Dichloroethene, also called 1,2-dichloroethylene, is a highly flammable, colorless liquid with a sharp, harsh odor. It is used to produce solvents and in chemical mixtures. You can smell very small amounts of 1,2-dichloroethene in air (about 17 parts of 1,2-dichloroethene per million parts of air [17 ppm]).

There are two forms of 1,2-dichloroethene; one is called *cis*-1,2-dichloroethene and the other is called *trans*-1,2-dichloroethene. Sometimes both forms are present as a mixture.

What happens to 1,2-dichloroethene when it enters the environment?

- 1,2-Dichloroethene evaporates rapidly into air.
- In the air, it takes about 5-12 days for half of it to break down.
- Most 1,2-dichloroethene in the soil surface or bodies of water will evaporate into air.
- 1,2-Dichloroethene can travel through soil or dissolve in water in the soil. It is possible that it can contaminate groundwater.
- In groundwater, it takes about 13-48 weeks to break down.
- There is a slight chance that 1,2-dichloroethene will break down into vinyl chloride, a different chemical which is believed to be more toxic than 1,2-dichloroethene.

How might I be exposed to 1,2-dichloroethene?

- Breathing 1,2-dichloroethene that has leaked from hazardous waste sites and landfills.
- Drinking contaminated tap water or breathing vapors from contaminated water while cooking, bathing, or washing dishes.
- Breathing 1,2-dichloroethene, touching it, or touching contaminated materials in the workplace.

How can 1,2-dichloroethene affect my health?

Breathing high levels of 1,2-dichloroethene can make you feel nauseous, drowsy, and tired; breathing very high levels can kill you.

When animals breathed high levels of *trans*-1,2-dichloroethene for short or longer periods of time, their livers and lungs were damaged and the effects were more severe with longer exposure times. Animals that breathed very high

levels of *trans*-1,2-dichloroethene had damaged hearts.

Animals that ingested extremely high doses of *cis*- or *trans*-1,2-dichloroethene died.

Lower doses of *cis*-1,2-dichloroethene caused effects on the blood, such as decreased numbers of red blood cells, and also effects on the liver.

The long-term (365 days or longer) human health effects after exposure to low concentrations of 1,2-dichloroethene aren't known. One animal study suggested that an exposed fetus may not grow as quickly as one that hasn't been exposed.

Exposure to 1,2-dichloroethene hasn't been shown to affect fertility in people or animals.

How likely is 1,2-dichloroethene to cause cancer?

The EPA has determined that *cis*-1,2-dichloroethene is not classifiable as to its human carcinogenicity.

No EPA cancer classification is available for *trans*-1,2-dichloroethene.

Is there a medical test to show whether I've been exposed to 1,2-dichloroethene?

Tests are available to measure concentrations of the breakdown products of 1,2-dichloroethene in blood, urine, and tissues. However, these tests aren't used routinely to determine whether a person has been exposed to this compound. This is because after you are exposed to 1,2-dichloroethene, the breakdown products in your body that are detected with these tests may be the same as those that come from exposure to other chemicals. These tests aren't available in most doctors' offices, but can be done at special laboratories that have the right equipment.

Has the federal government made recommendations to protect human health?

The EPA has set the maximum allowable level of *cis*-1,2-dichloroethene in drinking water at 0.07 milligrams per liter of water (0.07 mg/L) and *trans*-1,2-dichloroethene at 0.1 mg/L.

The EPA requires that any spills or accidental release of 1,000 pounds or more of 1,2-dichloroethene must be reported to the EPA.

The Occupational Health Safety and Health Administration (OSHA) has set the maximum allowable amount of 1,2-dichloroethene in workroom air during an 8-hour workday in a 40-hour workweek at 200 parts of 1,2-dichloroethene per million parts of air (200 ppm).

Glossary

Carcinogenicity: Ability of a substance to cause cancer.

CAS: Chemical Abstracts Service.

Fertility: Ability to reproduce.

Ingest: To eat or drink something.

Milligram (mg): One thousandth of a gram.

ppm: Parts per million.

Solvent: A chemical that can dissolve other substances.

References

This ToxFAQs information is taken from the 1996 Toxicological Profile for 1,2-Dichloroethene produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

BENZENE
CAS # 71-43-2

This fact sheet answers the most frequently asked health questions (FAQs) about benzene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Benzene is a widely used chemical formed from both natural processes and human activities. Breathing benzene can cause drowsiness, dizziness, and unconsciousness; long-term benzene exposure causes effects on the bone marrow and can cause anemia and leukemia. Benzene has been found in at least 813 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is benzene?

(Pronounced bĕn′zēn′)

Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities.

Benzene is widely used in the United States; it ranks in the top 20 chemicals for production volume. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke.

What happens to benzene when it enters the environment?

- Industrial processes are the main source of benzene in the environment.
- Benzene can pass into the air from water and soil.
- It reacts with other chemicals in the air and breaks down within a few days.
- Benzene in the air can attach to rain or snow and be carried back down to the ground.
- It breaks down more slowly in water and soil, and can pass through the soil into underground water.
- Benzene does not build up in plants or animals.

How might I be exposed to benzene?

- Outdoor air contains low levels of benzene from tobacco smoke, automobile service stations, exhaust from motor vehicles, and industrial emissions.
- Indoor air generally contains higher levels of benzene from products that contain it such as glues, paints, furniture wax, and detergents.
- Air around hazardous waste sites or gas stations will contain higher levels of benzene.
- Leakage from underground storage tanks or from hazardous waste sites containing benzene can result in benzene contamination of well water.
- People working in industries that make or use benzene may be exposed to the highest levels of it.
- A major source of benzene exposures is tobacco smoke.

How can benzene affect my health?

Breathing very high levels of benzene can result in death, while high levels can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Eating or drinking foods containing high levels of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death.

ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html

The major effect of benzene from long-term (365 days or longer) exposure is on the blood. Benzene causes harmful effects on the bone marrow and can cause a decrease in red blood cells leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance for infection.

Some women who breathed high levels of benzene for many months had irregular menstrual periods and a decrease in the size of their ovaries. It is not known whether benzene exposure affects the developing fetus in pregnant women or fertility in men.

Animal studies have shown low birth weights, delayed bone formation, and bone marrow damage when pregnant animals breathed benzene.

How likely is benzene to cause cancer?

The Department of Health and Human Services (DHHS) has determined that benzene is a known human carcinogen. Long-term exposure to high levels of benzene in the air can cause leukemia, cancer of the blood-forming organs.

Is there a medical test to show whether I've been exposed to benzene?

Several tests can show if you have been exposed to benzene. There is test for measuring benzene in the breath; this test must be done shortly after exposure. Benzene can also be measured in the blood, however, since benzene disappears rapidly from the blood, measurements are accurate only for recent exposures.

In the body, benzene is converted to products called metabolites. Certain metabolites can be measured in the urine. However, this test must be done shortly after exposure and is not a reliable indicator of how much benzene you have been exposed to, since the metabolites may be present in urine from other sources.

Has the federal government made recommendations to protect human health?

The EPA has set the maximum permissible level of benzene in drinking water at 0.005 milligrams per liter (0.005 mgL). The EPA requires that spills or accidental releases into the environment of 10 pounds or more of benzene be reported to the EPA.

The Occupational Safety and Health Administration (OSHA) has set a permissible exposure limit of 1 part of benzene per million parts of air (1 ppm) in the workplace during an 8-hour workday, 40-hour workweek.

Glossary

Anemia: A decreased ability of the blood to transport oxygen.

Carcinogen: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Chromosomes: Parts of the cells responsible for the development of hereditary characteristics.

Metabolites: Breakdown products of chemicals.

Milligram (mg): One thousandth of a gram.

Pesticide: A substance that kills pests.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Benzene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATTACHMENT B

NEW YORK STATE DEPARTMENT OF HEALTH GENERIC CAMP

New York State Department of Health
Generic Community Air Monitoring Plan

Overview

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

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

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

Community Air Monitoring Plan

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

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

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

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

VOC Monitoring, Response Levels, and Actions

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

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

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

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

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

Particulate Monitoring, Response Levels, and Actions

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

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

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

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

December 2009

ATTACHMENT C

REPORT FORMS

WEEKLY SAFETY REPORT FORM

Week Ending: _____ Project Name/Number: MTA Paratransit Relocation Facility

Report Date: _____ Project Manager Name: Dustin Kapson

Summary of any violations of procedures occurring that week:

Summary of any job related injuries, illnesses, or near misses that week:

Summary of air monitoring data that week (include and sample analyses, action levels exceeded, and actions taken):

Comments:

Name: _____ Company: _____

Signature: _____ Title: _____

INCIDENT REPORT FORM

Date of Report: _____

Injured: _____

Employer: _____

Site: MTA Paratransit Relocation Facility Site Location: 1100 Commerce Avenue, Bronx, NY

Report Prepared By: _____ _____
Signature Title

ACCIDENT/INCIDENT CATEGORY (check all that applies)

___Injury	___ Illness	___ Near Miss
__ Property Damage	___ Fire	___ Chemical Exposure
__ On-site Equipment	___ Motor Vehicle	___ Electrical
__ Mechanical	___ Spill	___ Other

DATE AND TIME OF ACCIDENT/INCIDENT: Narrative report of accident/incident: Identify: 1) actions leading to or contributing to the accident/incident; 2) the accident/incident occurrence; and 3) actions following the accident/incident.

_____

_____

_____

_____

_____

_____

_____

_____

_____

WITNESS TO ACCIDENT/INCIDENT:

Name:	_____	Company:	_____
Address:	_____	Address:	_____
Phone No.:	_____	Phone No.:	_____
Name:	_____	Company:	_____
Address:	_____	Address:	_____
Phone No.:	_____	Phone No.:	_____

INJURED - ILL:

Name: _____ SSN: _____

Address: _____ Age: _____

Length of Service: _____ Time on Present Job: _____

Time/Classification: _____

SEVERITY OF INJURY OR ILLNESS:

____ Disabling ___ Non-disabling ___ Fatality

____ Medical Treatment ___ First Aid Only

ESTIMATED NUMBER OF DAYS AWAY FROM JOB: _____

NATURE OF INJURY OR ILLNESS: _____

_____

_____

_____

CLASSIFICATION OF INJURY:

__ Abrasions _____ Dislocations ____ Punctures

__ Bites _____ Faint/Dizziness ____ Radiation Burns

__ Blisters _____ Fractures ____ Respiratory Allergy

__ Bruises _____ Frostbite ____ Sprains

__ Chemical Burns _____ Heat Burns ____ Toxic Resp. Exposure

__ Cold Exposure _____ Heat Exhaustion ____ Toxic Ingestion

__ Concussion _____ Heat Stroke ____ Dermal Allergy

__ Lacerations

Part of Body Affected: _____

Degree of Disability: _____

Date Medical Care was Received: _____

Where Medical Care was Received: _____

Address (if off-site): _____

(If two or more injuries, record on separate sheets)

PROPERTY DAMAGE:

Description of Damage: _____

_____

Cost of Damage: $ _____

ACCIDENT/INCIDENT LOCATION: _____

ACCIDENT/INCIDENT ANALYSIS: Causative agent most directly related to accident/incident (Object, substance, material, machinery, equipment, conditions)

_____

_____

_____

_____

Was weather a factor?:_____

_____

Unsafe mechanical/physical/environmental condition at time of accident/incident (Be specific):

_____

_____

_____

Personal factors (Attitude, knowledge or skill, reaction time, fatigue):

_____

_____

ON-SITE ACCIDENTS/INCIDENTS:

Level of personal protection equipment required in Site Safety Plan:

_____

_____

Modifications:

_____

Was injured using required equipment?:

_____

_____

If not, how did actual equipment use differ from plan?:

_____

_____

ACTION TAKEN TO PREVENT RECURRENCE: (Be specific. What has or will be done? When will it be done? Who is the responsible party to insure that the correction is made?

ACCIDENT/INCIDENT REPORT REVIEWED BY:

SSO Name Printed | SSO Signature

OTHERS PARTICIPATING IN INVESTIGATION:

Signature | Title

Signature | Title

Signature | Title

ACCIDENT/INCIDENT FOLLOW-UP: Date: _____

Outcome of accident/incident: _____

Physician's recommendations: _____

Date injured returned to work: _____

Follow-up performed by:

Signature | Title

ATTACH ANY ADDITIONAL INFORMATION TO THIS FORM

ATTACHMENT C

EMERGENCY HAND SIGNALS

EMERGENCY SIGNALS

In most cases, field personnel will carry portable radios for communication. If this is the case, a transmission that indicates an emergency will take priority over all other transmissions. All other site radios will yield the frequency to the emergency transmissions.

Where radio communications is not available, the following air-horn and/or hand signals will be used:

EMERGENCY HAND SIGNALS

OUT OF AIR, CAN'T BREATH!

Hand gripping throat

LEAVE AREA IMMEDIATELY, NO DEBATE!

(No Picture) Grip partner's wrist or place both hands around waist

NEED ASSISTANCE!

Hands on top of head

OKAY! – I'M ALL RIGHT!

- I UNDERSTAND!

Thumbs up

NO! - NEGATIVE!

Thumbs down

APPENDIX F

QUALITY ASSURANCE PROJECT PLAN

MTA PARATRANSIT RELOCATION FACILITY

1120 COMMERCE AVENUE

(AKA 2401 WATSON AVENUE)

BRONX, NEW YORK

Quality Assurance Project Plan

NYSDEC Order on Consent Index #: R2-20150206-62

NYSDEC Hazardous Waste Site #: 203074

Prepared for:

NYC Economic Development Corporation

One Liberty Plaza

New York, New York 10006

Prepared by:

AKRF, Inc.
440 Park Avenue South, 7th Floor
New York, New York 10016
(212) 696-0670

SEPTEMBER 2021

TABLE OF CONTENTS

TABLES

ATTACHMENT

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) describes the protocols and procedures that will be followed during implementation of the Site Management Plan (SMP) and associated appendices at the MTA Paratransit Relocation Facility site, hereinafter referred to as the "Site". The Site is located at 1100 Commerce Avenue in the Bronx, New York and is identified on the New York City Tax Map as Bronx Tax Block 3838, a portion of Lot 60. The New York City Economic Development Corporation entered into an Order on Consent (Index Number R2-20150206-62; Site Number 203074) with the New York State Department of Environmental Conservation (NYSDEC) for remediation of the Site in April 2015. The Site was remediated under the NYSDEC-approved Interim Remedial Measures Work Plan (IRMWP).

The objective of this QAPP is to provide for Quality Assurance (QA) and maintain Quality Control (QC) during sampling performed to evaluate the performance and effectiveness of the remedy to reduce or mitigate contamination at the Site. Adherence to the QAPP will ensure that defensible data will be obtained to confirm the successful operation and maintenance of remedial systems.

2.0 PROJECT TEAM

The project team will be drawn from AKRF professional and technical personnel and AKRF's subcontractors. All field personnel and subcontractors will have completed a 40-hour training course and updated 8-hour refresher course that meet the Occupational Safety and Health Administration (OSHA) requirements of 29 Code of Federal Regulation (CFR) Part 1910. The following sections describe the key project personnel and their responsibilities.

2.1 Project Director

The project director will be responsible for the general oversight of all aspects of the project, including scheduling, budgeting, data management, and decision-making regarding the field program. The project director will communicate regularly with all members of the AKRF project team and the New York State Department of Environmental Conservation (NYSDEC) to ensure a smooth flow of information between involved parties. Ms. Rebecca Kinal, P.E. will serve as the project director for the SMP. Ms. Kinal's resume is included in Attachment A.

2.2 Project Manager

The project manager will be responsible for directing and coordinating all elements of the SMP. The project manager will prepare reports and participate in meetings with the Site owner and/or the NYSDEC. Mr. Dustin Kapson, LSRP will serve as the project manager for the SMP. Mr. Kapson's resume is included in Attachment A.

2.3 Field Team Leader

The field team leader will be responsible for supervising the daily sampling and health and safety activities in the field and will ensure adherence to the Site Management Plan (SMP). The field team leader will report to the project manager on a regular basis regarding daily progress and any deviations from the SMP. The field team leader will be a qualified, responsible person, able to act professionally and promptly during required activities. The field team leader will be established for each task; however, Ms. Tara Simmons is expected to be a field team leader for much of the work under the SMP. Ms. Simmons's resume is included in Attachment A.

2.4 Project Quality Assurance/Quality Control (QA/QC) Officer

The QA/QC Officer will be responsible for adherence to this QAPP. The QA/QC officer will review the procedures with all personnel prior to commencing any fieldwork and will assess implementation of the required procedures. Ms. Rebecca Kinal, P.E. will serve as the QA/QC officer for the SMP. Ms. Kinal's resume is included in Attachment A.

2.5 Laboratory Quality Assurance/Quality Control (QA/QC) Officer

The laboratory QA/QC officer will be responsible for quality control procedures and checks in the laboratory and ensuring adherence to laboratory protocols. He/She will track the movement of samples from the time they are checked in at the laboratory to the time that analytical results are issued. The laboratory QA/QC officer will conduct a final check on the analytical calculations and sign off on the laboratory reports. The laboratory QA/QC officer will be determined upon selection of a contract laboratory(s) for the SMP.

3.0 STANDARD OPERATING PROCEDURES (SOPS)

The following sections describe the SOPs for the monitoring activities included in the SMP. During these operations, all field personnel will wear appropriate personal protective equipment (PPE) and safety monitoring will be performed as described in the Site-specific Health and Safety Plan (HASP) provided as Appendix C of the SMP. SMP implementation will include sampling associated with the operation and maintenance (O&M) of the sub-slab depressurization system (SSDS). The SMP also includes inspections of the SSDS, and the Site composite cover system, and an Excavation Work Plan (EWP) and other provisions and appropriate actions to be taken in the event that future renovation or redevelopment of the Site requires the breaching of the composite cover system and excavation/removal of underlying soil/fill.

In all instances, any atypical or unexpected findings noted during inspections, sampling events, or SMP-governed field work will be communicated immediately to the environmental professional managing the Site work and, as necessary, to the NYSDEC project manager or NYSDEC's successor agency.

3.1 Excavation and/or Site Composite Cover System Disturbance

The procedures for excavation and/or other invasive work that may disturb remaining contamination beneath the Site composite cover system will be as follows:

- Soil removal and/or other invasive activities will be completed as needed in accordance with the SMP and EWP.
- Following invasive work, the demarcation layer will be replaced to provide a visual reference to the top of the residual management zone (RMZ).
- The composite cover system will be replaced to restore the condition to that which existed prior to the excavation. In general, the restoration types must match or exceed the existing material and thickness conditions of the Site cover types presented in the SMP to maintain Site composite cover system integrity across the entire Site.
- Decontaminate all equipment used in composite cover system disturbance as described in Sections 3.2 and 3.3 of this QAPP.

3.2 Decontamination of Sampling Equipment

All sampling equipment (drilling rods and casing, macrocore samplers, probe rods, etc.) will be either dedicated or decontaminated between sampling locations. The decontamination procedure will be as follows:

1. Scrub using tap water/Alconox™ mixture and bristle brush.
2. Rinse with tap water.
3. Scrub again with tap water/Alconox™ and bristle brush.
4. Rinse with distilled water.
5. Air-dry the equipment, if possible.

Decontamination will be conducted within 55-gallon drums or on plastic sheeting (or equivalent) that is bermed to prevent discharge to the ground or drains.

3.3 Heavy Equipment Decontamination

Decontamination of chemically-contaminated heavy equipment (e.g., augers, excavator buckets) will be accomplished using high-pressure steam or dry decontamination with brushes and shovels. Decontamination will take place on a decontamination pad and all liquids used in the decontamination procedure will be collected. Vehicles or equipment brought into an exclusion zone will be treated as contaminated and will be decontaminated prior to removal. All liquids used in the decontamination procedure will be collected, stored and disposed of in accordance with federal, state, and local regulations. Personnel performing this task will wear the proper PPE as prescribed in the Site-Specific Health and Safety Plan (HASP).

A decontamination area will be established around the planned excavation area, adjacent to the environmental enclosure. The floor of the decontamination area will be covered with 6-mil plastic sheeting, as necessary, and bermed to prevent spreading of decontamination fluids or potential discharge to the ground surface.

All equipment in direct contact with known or potentially contaminated material will be either dedicated or decontaminated prior to handling less contaminated material or removal from the Site. Decontamination of chemically contaminated heavy equipment will be accomplished using high-pressure steam or by dry decontamination with brushes and shovels. All liquids used in the decontamination procedure will be collected, stored, and disposed of in accordance with federal, state, and local regulations.

3.4 Management of Investigation-Derived Waste (IDW) and Remedial Operation and Maintenance (O&M) Waste

Any IDW and remedial O&M waste will be containerized in New York State Department of Transportation (NYSDOT)-approved 55-gallon drums or other appropriate containers. The drums will be sealed at the end of each work day and labeled with the date, the well or boring number(s), the type of waste (i.e., drill cuttings, development water or purge water) and the name of an AKRF point-of-contact. Drums will be staged in secure areas, away from public access to the extent practicable.

Soil/fill samples collected from soil boring or excavation activities will be used for waste characterization of soil/fill, since such data would be biased towards areas which are expected to be most contaminated. Additional waste characterization soil or other samples may be collected, if requested by the disposal facility. All IDW and remedial waste will be disposed of or treated according to applicable local, state, and federal regulations.

4.0 SAMPLING AND LABORATORY PROCEDURES

4.1 Import Soil/Fill Sampling

Prior to importing soil/fill for use as backfill, the intended imported material will be evaluated using the following procedures:

- A segregated stockpile of the intended imported material will be made available for sampling at a frequency and for the required parameters as outlined in Section 5.4(e) 10 of NYSDEC DER-10.
- Soil/fill sample(s) will be collected from the segregated stockpile for analysis in accordance with NYSDEC requirements and sampling results will be submitted to NYSDEC for approval.
- No material will be added to or removed from the segregated stockpile intended for import following the sample collection.
- Samples will be collected into laboratory-supplied containers.
- Samples will be kept in an ice-filled cooler or refrigerator, with the exception of any asbestos samples, until receipt by the laboratory.
- The clean soil/fill layer will be underlain by a demarcation layer such as orange snow fence to indicate the top of the original soil/fill.
- Decontaminate all sampling equipment between sampling locations as described in Sections 3.2 and 3.3 of this QAPP.

4.2 Reuse Sampling

Prior to reuse as backfill, excavated material will be evaluated using the criteria below:

- Concrete or demolition debris that does not exhibit signs of contamination will be sampled for asbestos prior to reuse on-site.
- Soil/fill material proposed for reuse will be sampled at a frequency and for the required parameters as outlined in NYSDEC's DER-10, Table 5.4.
- Samples will be collected into laboratory-supplied containers.
- Samples will be kept in an ice-filled cooler or refrigerator, with the exception of any asbestos samples, until receipt by the laboratory.
- Decontaminate all sampling equipment between sampling locations as described in Sections 3.2 and 3.3 of this QAPP.

4.3 Endpoint Soil Sampling

In the event that evidence of contamination [odors, staining, elevated photoionization detector (PID) readings, or analytical results of soil samples above NYSDEC Part 375 Commercial Soil Cleanup Objectives (CSCOs)] is identified during any breach to the composite cover system or excavation of soil/fill as part of the redevelopment or renovation of the Site, endpoint soil sampling activities will be performed in accordance with NYSDEC DER-10. Per NYSDEC DER-10 Section 5.4, sidewall samples will be collected a minimum one sample for every 30 linear feet and bottom samples will be collected at a frequency of one every 900 square feet. Endpoint soil samples will be analyzed for NYSDEC Final Commissioner's Policy - Soil Cleanup Guidance (CP-51) volatile organic compounds (VOCs) by EPA Method 8260C, target compound

list (TCL) semivolatile organic compounds/base-neutrals (SVOCs/BNs) by EPA Method 8270D, and Toxicity Characteristic Leaching Procedure (TCLP) metals by EPA Method 6010C.

Soil sampling will be conducted according to the following procedures:

- Characterize the sample according to the modified Burmeister soil classification system.
- After selecting which samples will be analyzed in the laboratory, fill the required laboratory-supplied sample jars with the soil from the selected sampling location or labeled sealable plastic bags. Seal and label the sample jars as described in Section 4.6 of this QAPP and place in an ice-filled cooler.
- Decontaminate any reusable soil sampling equipment between sample locations as described in Section 3.2 of this QAPP.
- Record boring number, sample depth, and sample observations (evidence of contamination, PID readings, soil classification) in field log book and boring log data sheet, if applicable.

4.4 Sub-Slab Depressurization System (SSDS) Operations and Maintenance Sampling

Four vapor monitoring points (VMPs) were installed during remedial action implementation at strategic locations to inspect induced vacuum conditions during the operation of the SSDS. Vacuum will be monitored at these locations at regular intervals as designated in the SMP.

4.4.1 Vacuum Monitoring

The procedures for instantaneously screening the vacuum monitoring points are as follows:

- Remove the access manhole cover.
- Attach the analog vacuum gauge or digital manometer with male Quick-Connect fitting to the female quick connect fitting at the monitoring point well head and document reading.
- Detach vacuum gauge/manometer and confirm that Quick-Connect female fitting is closed.
- Replace the access manhole.

4.5 SSDS Sampling

4.5.1 System Vacuum Monitoring

The procedures for instantaneously screening the vacuum monitoring points are as follows:

- Remove the access manhole.
- Attach the analog vacuum gauge or digital manometer with male Quick-Connect fitting to the female Quick-Connect fitting at the monitoring point well head and document reading.
- Detach vacuum gauge/manometer and confirm that Quick-Connect female fitting is closed/sealed.
- Replace the access manhole.

4.5.2 Indoor Air Sampling

Indoor air quality sampling may be conducted at the Site. If implemented, sampling will be conducted in accordance with the New York State Department of Health (NYSDOH) Vapor Intrusion Guidance Document. Indoor air quality sampling will be performed at the Site following system failure greater than 48 hours in accordance with the following details:

- The indoor air sampling is to be conducted following the completion of a pre-sampling inspection and chemical inventory of the Site building.
- Place a labeled 6-Liter SUMMA® canister at the breathing zone level (3 to 4 feet above ground surface) in sampling locations established by NYSDEC and NYSDOH.
- Record the vacuum reading from the vacuum gauge on the canister at the beginning of the 8-hour sampling period.
- Open the valve of the canister and record the time in the field book. At the end of the 8-hour sampling period, close valves, remove flow-rate controllers and vacuum gauges, install caps on canisters, and record time.
- Place SUMMA canisters in shipping containers for transportation to laboratory.
- Repeat procedure for all of the sampling locations.

4.6 Laboratory Methods

Table 1 summarizes the laboratory methods that will be used to analyze field samples as well as the sample container type, preservation, and applicable holding times. Other analytes may be added if required by the disposal facility. An Environmental Laboratory Approval Program (ELAP)-certified laboratory will be used for all chemical analyses in accordance with DER-10 2.1(b) and 2.1(f), including NYSDEC July 2005 Analytical Services Protocol (ASP) Category B Deliverables.

Table 1
Laboratory Analytical Methods for Analysis Groups

Sample Type	Analysis	Method	Container Type	Preservative	Hold Time
Soil/Fill (Reuse/Backfill)	TCL VOCs	8260C	Encore sampler	4 °C	48 hours
	SVOCs	8270D	4 oz. clear glass jar	4 °C	5 days to extract, 49 days to analyze
	TAL Metals Mercury	6010C 7471B	4 oz. clear glass jar	4 °C	14 days 26 days
	PCBs	8082A	4 oz. clear glass jar	4 °C	14 days
	Pesticides	8081B	4 oz. clear glass jar	4 °C	5 days to extract, 49 days to analyze
Soil/Fill (Endpoint Sampling)	CP-51 VOCs	8260	Encore samplers (3), 2 oz. plastic jar	4 °C	48 hours
	TCL SVOCs-BNs	8270D	4 oz. clear glass jar	4 °C	5 days to extract, 49 days to analyze
	TCLP Metals	6010C	4 oz. clear glass jar	4 °C	14 days 26 days
Soil Vapor/Indoor Air Sampling	VOCs	TO-15	6-L SUMMA® Canister	None	30 days

4.7 Quality Control (QC) Sampling

In addition to the laboratory analysis of the investigative soil samples, additional analysis will be included for QC measures, as required by the NYSDEC July 2005 ASP Category B sampling techniques. The QC samples will include field blanks, trip blanks, matrix spike/matrix spike duplicates (MS/MSD), and blind duplicate samples at a minimum frequency of one sample per 20 field samples collected or per sample delivery group (SDG). No additional QC samples will be collected during waste classification sampling unless required by the disposal facility. Table 2 provides a summary of the field samples and QA/QC samples to be analyzed by the laboratory.

Table 2
Field Sample and QC Sample Quantities

				QC Samples			
Sample Type	**Parameters**	**Analytical Method[1]**	**Field Samples**	**Field Blank[2]**	**Trip Blank[2]**	**MS/MSD[3]**	**Duplicate[3]**
Soil	VOCs	EPA 8260C	TBD	1/20 (TBD)	1 (Laboratory-Supplied)	1/20 (TBD)	1/20 (TBD)
	SVOCs, TAL Metals, Mercury, PCBs, and Pesticides	EPA 8270D, 6010C/7471B, 8082A, and 8081B	TBD	1/20	NA	1/20	1/20
SSDS/SVE Total Influent, Intermediate, Effluent	TCL VOCs	TO-15	X	NA	NA	NA	NA
SSDS/SVE Individual Line Samples	TCL VOCs	TO-15	X	NA	NA	NA	NA

Notes:
MS/MSD – matrix spike/matrix spike duplicate
TBD – sampling to be determined based on work activities
NA – not applicable

[1] – NYSDEC July 2005 ASP Category B deliverables
[2] – One trip blank per shipment with VOC analyses
[3] – One MS/MSD and duplicate sample per twenty field samples or sample shipment

4.8 Sample Handling

4.8.1 Sample Identification

All samples will be consistently identified in all field documentation, chain-of-custody (COC) documents, and laboratory reports. All samples will be amended with the collection date at the end of the sample name in a year, month, day (YYYYMMDD) format. Blind duplicate sample nomenclature will consist of: the sample type, followed by an "X"; MS/MSD sample nomenclature will consist of the parent sample name only but triplicate sample volume will be collected and the COC comment section will explain that the additional volume is for running the MS/MSD; and trip and field blanks will consist of "TB-" and "FB-", respectively, followed by a sequential number of the trip/field blanks collected within the SDG and the matrix (soil or groundwater). In accordance with NYSDEC Environmental Quality Information System (EQuIS™) protocol, special characters will not be used for sample nomenclature and sample IDs below 10 will be amended with a "0". Sample nomenclature examples are provided in Table 3.

Table 3
Examples of Sample Nomenclature

Sample Description	Sample Designation
Soil endpoint sample collected from 1 to 2 feet below grade at the north wall of an excavation	EP-N 1-2_ YYYYMMDD
Duplicate soil sample collected from 1 to 2 feet at the north wall of the excavation	EP-N 1-2_YYYYMMDD
Import soil sample collected from the first imported stockpile	ISP-1_YYYYMMDD

Sample Description	Sample Designation
Reuse soil sample collected from the first on-site stockpile	SP-1_YYYYMMDD
Soil vapor sample	SV-1_YYYMMDD
Ambient air sample	AA-1_YYYYMMD
Indoor air sample	IA-1_YYYYMMDD

4.8.2 Sample Labeling and Shipping

All sample containers will be provided with labels containing the following information:

- Project identification
- Sample identification
- Date and time of collection
- Analysis(es) to be performed
- Sample preservative, if any
- Sampler's initials

Once the samples are collected and labeled, they will be placed in chilled coolers and stored in a cool area away from direct sunlight to await shipment to the laboratory. All samples will be shipped to the laboratory at least twice per week. At the start and end of each workday, field personnel will add ice to the coolers as needed.

The samples will be prepared for shipment by placing each sample in a sealable plastic bag, then wrapping each container in bubble wrap to prevent breakage, adding freezer packs and/or fresh ice in sealable plastic bags and the chain-of-custody (COC) form. Tedlar® bags will be enclosed in a zip lock bag as an added protection prior to being placed in a cooler or shipment container without ice. SUMMA® canisters will also be placed into their appropriate shipment containers and do not require preservation with ice. All samples will be shipped overnight (e.g., Federal Express) or transported by a laboratory courier. All coolers and shipment containers shipped to the laboratory will be sealed with mailing tape and a COC seal to ensure that they remain sealed during delivery.

4.8.3 Sample Custody

Field personnel will be responsible for maintaining the sample coolers in a secured location until they are picked up and/or sent to the laboratory. The record of possession of samples from the time they are obtained in the field to the time they are delivered to the laboratory or shipped off-site will be documented on COC forms. The COC forms will contain the following information: project name; names of sampling personnel; sample number; date and time of collection and matrix; and signatures of individuals involved in sample transfer, and the dates and times of transfers. Laboratory personnel will note the condition of the custody seal and sample containers at sample check-in.

4.9 Field Instrumentation

Field personnel will be trained in the proper operation of all field instruments at the start of the field program. Instruction manuals for the equipment will be on file at the site for referencing proper operation, maintenance and calibration procedures. The equipment will be calibrated

according to manufacturer specifications at the start of each day of fieldwork, if applicable. If an instrument fails calibration, the project manager or QA/QC officer will be contacted immediately to obtain a replacement instrument. A calibration log will be maintained to record the date of each calibration, any failure to calibrate and corrective actions taken. The PID will be calibrated each day using 100 parts per million (ppm) isobutylene standard gas.

4.10 Data Review

In accordance with DER-10, each of the samples collected will undergo a third-party data review process to ensure the usability of the data collected. Data usability summary reports documenting any issues with QA/QC will be prepared and included in the Periodic Review Report (PRR). The resume for Lori Beyer of L.A.B. Validation Corp., the anticipated third-party data reviewer, is included in Attachment A.

4.11 Reporting of Data

All data generated during the monitoring activities will be submitted in the appropriate Environmental Quality Information System (EQuIS™) Electronic Data Deliverable (EDD) format.

ATTACHMENT A

RESUMES OF KEY PROJECT PERSONNEL

REBECCA KINAL, PE

PROGRAM MANAGER

Rebecca Kinal, PE has extensive experience in the assessment and remediation of soil and groundwater contamination and other hazardous/non-hazardous waste problems. Ms. Kinal's experience includes environmental due diligence, soil and groundwater investigations, leaking underground storage tank studies, soil gas/vapor intrusion surveys, and oversight of small- and large-scale remediation programs, including design of groundwater remediation systems and vapor mitigation systems. She has directed numerous Phase I and Phase II assessments and remediation programs, many of them in conjunction with commercial/residential developers, law firms, lending institutions, and public agencies. She is experienced in the cleanup of contaminated properties under New York State Brownfield Cleanup Program (BCP) regulations and the New York City "E-designation" program. As a part of this work, her duties have included technical and report review, engineering design, proposal writing, scheduling, budgeting, and acting as liaison between clients and regulatory agencies, and project coordination with federal, state, and local authorities.

BACKGROUND

Education
MS, Rensselaer Polytechnic Institute, Hydrogeology, 1995
BS, Lafayette College, Civil Engineering, 1992

Licenses/Certifications
Professional Engineer, NY - 082046-1
OSHA 40 Hour HAZWOPER,
OSHA 8 Hour Refresher

Years of Experience
23 years in the industry
19 years with AKRF

References:
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REBECCA KINAL, PE

VICE PRESIDENT / ENVIRONMENTAL ENGINEER

Corona, NY 11368
Kay.Zias@parks.nyc.gov
Phone: (718) 760-6748

RELEVANT EXPERIENCE

New York City School Construction Authority On-Call Contracts for Environmental Consulting Services, Various Sites, NY

Ms. Kinal has served as the project manager for AKRF's on-call hazardous materials consulting contract with the New York City School Construction Authority for over 10 years. For potential new school sites, assignments include initial due diligence; Phase I environmental site assessments (ESAs); and subsurface investigation of soil, groundwater, and soil vapor to determine the suitability of a site for development as a school, likely remediation requirements, and associated costs. For sites undergoing design and development, assignments include preparation of remediation plans, contract specifications, and design drawings. The work has also included conducting indoor air quality testing, vapor intrusion assessments, preparation of specifications and construction management for petroleum storage tank removals, and investigation and remediation of spills for existing schools. Due to the sensitivity of school sites, work under this contract is often conducted on short notice and during non-school hours. Under the contract, Ms. Kinal has managed several major efforts, including emergency remediation work related to flooding from Superstorm Sandy, expedited due diligence for large portfolios of proposed Universal Pre-Kindergarten (UPK and 3K) sites, and large Phase II investigations of sites with NYC Office of Environmental Remediation (OER) E-designations and/or contamination warranting potential NYSDEC involvement.

Montefiore Medical Center, Various Locations, NY

Ms. Kinal provides environmental due diligence assistance to Montefiore Medical Center (MMC) for the ongoing expansion of their facilities, primarily in the Bronx and Westchester County. She conducts and manages environmental due diligence tasks related to their property transactions, including Phase I Environmental Site Assessments (ESAs), Phase II investigations, indoor air quality surveys/vapor intrusion assessments, and remediation cost estimates. She also assists MMC in making decisions with respect to environmental risk issues. Projects have ranged from small, single-lot properties to large hospital campuses.

Transaction Support, Confidential Client, Various Locations

Ms. Kinal provided transaction support related to the proposed sale of a large construction equipment supply company. She managed inspections of 12 of the company's storage and maintenance yards located in New York, New Jersey, Connecticut, Rhode Island and Massachusetts to assess environmental concerns, and advise the client regarding environmental liabilities related to the proposed sale. The work was completed on an expedited turnaround to comply with the due diligence time-frame.

Brooklyn Technical High School Athletic Field Improvements, Brooklyn, NY

Ms. Kinal provided environmental support services to the selected contractor for improvements to the Brooklyn Tech H.S. athletic field facilities. These services included: preparation of an in situ sampling plan for waste characterization and disposal; supervision of waste characterization sampling activities; development and implementation of a community air monitoring program during all soil disturbance; and coordination for removal of a petroleum storage tank discovered construction.

REBECCA KINAL, PE

VICE PRESIDENT / ENVIRONMENTAL ENGINEER

Street-Works Development, Hamilton Green (200 Hamilton Avenue), White Plains, NY

AKRF prepared the EIS under the New York State Environmental Quality Review Act (SEQRA) and provided site planning and environmental services for the development of Hamilton Green—a new vibrant, mixed-use community in downtown White Plains, NY. Ms. Kinal managed environmental due diligence and remediation planning for the project, which included Phase I and II environmental assessments, a petroleum Spill investigation, preparation of remediation cost estimates, and application and acceptance to the NYSDEC Brownfield Cleanup Program (BCP).

Redevelopment at Polychrome R&D and Manufacturing Sites, AvalonBay, Yonkers, NY

Ms. Kinal served as the Engineer of Record for remediation of the former Polychrome research and development (R&D) site, a NYSDEC Brownfield redevelopment project along the Hudson River. The remediation included hot spot excavation, LNAPL collection, in-situ soil stabilization (ISS), soil management, groundwater treatment, dewatering, shoreline permitting, groundwater discharge permitting, and a site-wide engineered cover systems, including a vapor barrier and sub-slab depressurization system (SSDS). Ms. Kinal reviewed the design documents, supervised field inspections, provided support to the project team regarding contractor submittals and field changes, and certified the Final Engineering Report and Site Management Plan. The Site received its Certificate of Completion in December 2019.

New York City Department of Design & Construction (NYCDDC), East Side Coastal Resiliency (ESCR), New York, NY

AKRF was retained by the NYCDDC to provide a multi-disciplinary design for the protection of Lower Manhattan against another catastrophic hurricane. The main components of the design include levees, berms, retaining walls, cut-off walls, and increasing the ground elevation to mitigate and limit surging flood waters from entering Lower Manhattan. A large portion of the project's subsurface has been impacted by manufactured gas plant (MGP)-related contamination. Ms. Kinal serves as the Engineer of Record for MGP mitigation design components of the project. Her work includes certification of the Mitigation Work Plan submitted to NYSDEC and review of contract specifications and drawings.

United States Tennis Association, USTA NTC Master Plan Support, Queens, NY

AKRF prepared an EIS for the New York City Departments of City Planning (DCP) and Environmental Protection (DEP) as co-lead agencies to analyze the expansion of the National Tennis Center, which includes multiple improvements and construction projects at the USTA campus over several years. As part of the EIS requirements, AKRF prepared a Remedial Action Plan for implementation during the proposed project's construction. In accordance with the RAP, vapor mitigation systems were incorporated into the design for several of the proposed structures at the facility, including two new stadiums, a new transportation center, and several practice court facilities. Ms. Kinal prepared the specifications and design drawings for the vapor mitigation and provided construction support to review contractor submittals and inspect the vapor barrier and sub-slab depressurization system installations.

New York City Economic Development Corporation (NYCEDC), Yankee Stadium, Bronx, NY

Ms. Kinal performed the hazardous materials analysis for the Draft Environmental Impact Statement for the proposed new Yankee Stadium. The analysis included a Phase I Environmental Site Assessment of the entire project area and Subsurface (Phase II) Investigation in areas where environmental conditions were identified. The Phase II investigation included geophysical surveys to search for potential underground storage tanks; and soil, soil gas, and groundwater sampling at over 40 locations to determine potential environmental impacts during and after the proposed construction. Remedial Action Plans (RAPs) and Construction Health and Safety Plans (CHASPs) were developed to specify

environmental monitoring, soil management protocols, and health and safety requirements during construction of the new stadium and redevelopment of the old stadium site. Ms. Kinal also managed an extensive community air monitoring program during demolition of the old Yankee Stadium and construction of the New York City Department of Parks and Recreation's Heritage Field, which included short-term and long-term monitoring for airborne particulates and lead.

Roosevelt Union Free School District, Roosevelt UFSD

Ms. Kinal managed environmental investigation and remediation activities for the sites of three new elementary schools and a new middle school in Roosevelt, New York. Remediation activities include removal/closure of contaminated dry wells and underground petroleum storage tanks, and excavation and off-site disposal of petroleum- and pesticide-contaminated soil. Remediation of the new middle school site, which also included a sub-slab depressurization system, was conducted through coordination with the NYSDEC, NYSDOH, New York State Education Department (NYSED), and the local school district. Upon completion of the remediation and school construction, Ms. Kinal managed confirmatory indoor air testing and preparation of a Final Engineering Report to document the site clean-up. The NYSDEC issued a Certificate of Completion, allowing the new school to open on schedule.

APPENDIX G

SITE MANAGEMENT INSPECTION FORM

ROUTINE/DETAILED SYSTEM MONITORING INSPECTION FORM
MTA Paratransit Relocation Facility
1120 Commerce Avenue, Bronx, New York

ROUTINE SSDS OPERATIONS INSPECTION CHECK

Inspector Name(s):	**Date:**
Time In:	**Time Out:**

General

Weather:	Temperature (°F):	Barometric Pressure (in. Hg):	Ambient Air (Odors/Particulate?):

When was the last rain event?

Are each of the three blowers currently operating?
If no, please list which, the reason/alarm condition:

Any evidence of system tampering, vandalism or damage to the exhaust stacks?
Have any alarms occurred or been observed upon inspection of each of the risers (VR-1, VR-2, VR-3)?

Were all cleanout/sampling port caps securely attached prior to system testing?
If no, list location and contact Project Manager/Project Director.

Is the concrete floor slab overlying all of the SSDS pits and piping runs intact?
If no, list location and contact Project Manager/Project Director.

DETAILED SSDS Operations (by Remedial Engineer's designated representative)

Sample Identification	Sample Location	Vacuum Reading [3] in. H_2O	PID Reading [5] ppm			
MP-1	First Floor [2]					
MP-2	First Floor [2]					
MP-3	First Floor [2]					
MP-4	First Floor [2]					

Comments:

Notes:
1. Monitoring point locations (see Figure 5 of the Site Management Plan):
MP-1: Northeastern portion of first floor. MP-2: Southeastern portion of first floor.
MP-3: Southwestern portion of first floor. MP-4: Northwestern portion of first floor.

5
in. of H2O - inches of water
PID - Photoionization Detector
ppm - parts per million
NA - not applicable

Notes:

Emergency Contact Information

Name	Title	Contact Number	
Marc Godick	AKRF Project Director	914-922-2356 (office)	
Dustin Kapson	AKRF Project Manager	646-388-9767 (office)	
Rebecca Kinal	AKRF Remedial Engineer	914-922-2362 (office)	

APPENDIX H

ENGINEERING CONTROL SYSTEM COMPONENT MANUAL AND TROUBLESHOOTING GUIDE

ENGINEERING CONTROL TROUBLESHOOTING GUIDE
MTA PARATRANSIT RELOCATION SITE
1100 Commerce Avenue, Bronx NY

Environmental Control Type: Site Cover System

Problem:

Breech in Cover System

Troubleshooting Guidance:

Consult Excavation Work Plan and Site Management Plan to verify location and cover system type

Confirm/Check:

No leaks or spills are draining into the breech of the cover system.

No odors or vapors are escaping from the breech of the cover system.

Following Troubleshooting/Repair:

Call Emergency Site Contact Below to Report Condition

Emergency Contact Information

Name	*Title*	*Contact Numbers*
Dustin Kapson	AKRF Project Manager	646-388-9767 (office)
Marc Godick	AKRF Project Director	914-922-2356 (office), 917-991-4030 (cell)

ENGINEERING CONTROL TROUBLESHOOTING GUIDE
MTA PARATRANSIT RELOCATION SITE
1100 Commerce Avenue, Bronx NY

Environmental Control Type: SSDS

Problem:

Blower Not Operating

Troubleshooting Guidance:

Confirm/Check:

Electric service is operational at Site building and there is no sign of damage or vandalism to the System

Electric connections to the System are intact and have not been damaged

Status of All Alarms (see guidance sheets on alarm conditions)

If Problem Persists following Troubleshooting/Repair:

Call Emergency Site Contact Below

Emergency Contact Information

Name	***Title***	***Contact Numbers***
Dustin Kapson	AKRF Project Manager	646-388-9767 (office)
Marc Godick	AKRF Project Director	914-922-2356 (office), 917-991-4030 (cell)

ENGINEERING CONTROL TROUBLESHOOTING GUIDE
MTA PARATRANSIT RELOCATION SITE
1100 Commerce Avenue, Bronx NY

Environmental Control Type: SSDS

Problem:

Low Vacuum Alarm Condition

Troubleshooting Guidance:

Confirm/Check:

Electric service is operational at Site building and there is no sign of damage or vandalism to the System

Status of Piping and System Connections

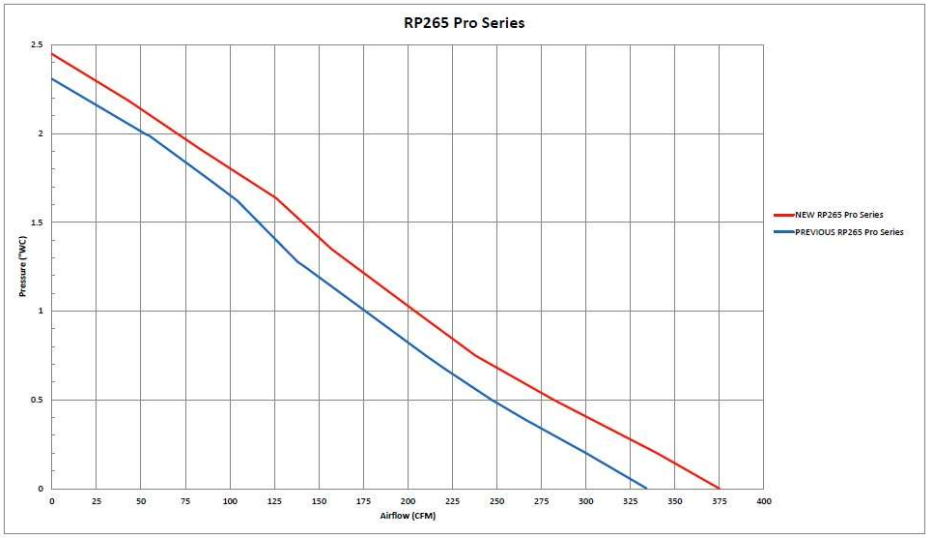
If Problem Persists following Troubleshooting/Repair:

Call Emergency Site Contact Below

Emergency Contact Information

Name	***Title***	***Contact Numbers***
Dustin Kapson	AKRF Project Manager	646-388-9767 (office)
Marc Godick	AKRF Project Director	914-922-2356 (office), 917-991-4030 (cell)

RP265 New Performance Curves



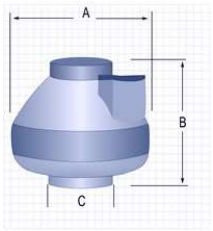
MODEL	P/N	FAN DUCT DIAMETER	WATTS	REC. MAX OP. PRESSURE "WC	TYPICAL CFM VS. STATIC PRESSURE WC					2.0"

MODEL	P/N	FAN DUCT DIAMETER	WATTS	REC. MAX OP. PRESSURE "WC	TYPICAL CFM VS. STATIC PRESSURE WC					2.0"	RRNC
					0"	0.2"	0.5"	1.0"	1.5"		RRNC
RP140† Pro Series	28460	4"	14-19	0.6	152	120*	64*	-	-	-	RF1
RP145 Pro Series	28461	4"	34-66	1.7	169	150*	124*	81*	42	4	RF1, RF2
RP260 Pro Series	28462	6"	47-65	1.3	251	210*	157	70	-	-	-
RP265 Pro Series	28463	6"	96-136	2.3	375	340*	282*	204*	140	70	-
RP380 Pro Series	28464	8"	96-138	2.0	531	490*	415*	268*	139	41	-

**Denotes HVI certified values. †Denotes Energy Star® rated.*

DIMENSIONS

MODEL	DIMENSIONS		
MODEL	A	B	C
RP140 Pro	9.7"	8.5"	4.5"
RP145 Pro	9.7"	8.5"	4.5"
RP260 Pro	11.75"	8.6"	6"
RP265 Pro	11.75"	8.6"	6"
RP380 Pro	13.41"	10.53"	8"



Additional Info

Reviews

Conditions of Sale

RadonAway
The world's leading radon fan manufacturer

RP PRO SERIES

Installs white, stays white

Radon Mitigation Fan

All RadonAway® fans are specifically designed for radon mitigation. RP Series Fans provide superb performance, run ultra-quiet and are attractive. They are ideal for most sub-slab radon mitigation systems.

Features

- Eternalast™ polycarbonate plastic housing
- Energy efficient
- Ultra-quiet operation
- Meets all electrical code requirements
- Water-hardened motorized impeller
- Seams sealed to inhibit radon leakage (RP140 & RP145 double snap sealed)
- ETL Listed - for indoor or outdoor use
- Thermally protected motor
- Rated for commercial and residential use

MODEL	P/N	FAN DUCT DIAMETER	WATTS	RECOM. MAX. OP. PRESSURE "WC	TYPICAL CFM vs. STATIC PRESSURE WC				
					0"	.5"	1.0"	1.5"	2.0"
RP140	28460	4"	15-21	0.7	135	70	-	-	-
RP145	28461	4"	41-72	1.7	166	126	82	41	3
RP260	28462	6"	47-65	1.3	251	157	90	-	-
RP265	28463	6"	95-139	2.3	375	282	204	140	70
RP380	28464	8"	96-138	2.0	531	415	268	139	41

Model	A	B	C
RP140	4.5"	9.7"	8.5"
RP145	4.5"	9.7"	8.5"
RP260	6"	11.75"	8.6"
RP265	6"	11.75"	8.6"
RP380	8"	13.41"	10.53"

MADE IN USA

ETL Listed

All RadonAway® inline radon fans are covered by our 5-year, hassle-free warranty.

RP140 Only

For Further Information, Contact Your Radon Professional:

Rev E 0921
P/N 02047

RP, GP, XP Pro Series Installation Instructions

Fan Installation & Operating Instructions
RP, GP, XP Pro Series Fans
Please Read and Save These Instructions.

DO NOT CONNECT POWER SUPPLY UNTIL FAN IS COMPLETELY INSTALLED. MAKE SURE ELECTRICAL SERVICE TO FAN IS LOCKED IN "OFF" POSITION. DISCONNECT POWER BEFORE SERVICING FAN.

1. **WARNING!** For General Ventilating Use Only. Do Not Use to Exhaust Hazardous, Corrosive or Explosive Materials, Gases or Vapors. See Vapor Intrusion Application Note #AN001 for important information on VI Applications. RadonAway.com/vapor-intrusion

2. **NOTE:** Fan is suitable for use with solid state speed controls; however, use of speed controls is not generally recommended.

3. **WARNING!** Check voltage at the fan to ensure it corresponds with nameplate.

4. **WARNING!** Normal operation of this device may affect the combustion airflow needed for safe operation of fuel burning equipment. Check for possible backdraft conditions on all combustion devices after installation.

5. **NOTICE!** There are no user serviceable parts located inside the fan unit.
   Do NOT attempt to open. Return unit to the factory. (See Warranty, p. 8, for details.)

6. **WARNING!** Do not leave fan unit installed on system piping without electrical power for more than 48 hours. Fan failure could result from this non-operational storage.

7. **WARNING!** TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

   a) Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer. (See p. 8.)

   b) Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.

   c) Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire rated construction.

   d) Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent backdrafting. Follow the heating equipment manufacturers' guidelines and safety standards such as those published by any National Fire Protection Association, and the American Society for Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), and the local code authorities.

   e) When cutting or drilling into a wall or ceiling, do not damage electrical wiring and other hidden utilities.

   f) Ducted fans must always be vented to outdoors.

   g) If this unit is to be installed over a tub or shower, it must be marked as appropriate for the application and be connected to a GFCI (Ground Fault Circuit Interrupter) protected branch circuit.

Fan Installation & Operating Instructions

RP Pro Series	GP Pro Series	XP Pro Series
RP140 | P/N 28460	GP201 | P/N 28465	XP151 | P/N 28469
RP145 | P/N 28461	GP301 | P/N 28466	XP201 | P/N 28470
RP260 | P/N 28462	GP401 | P/N 28467	
RP265 | P/N 28463	GP501 | P/N 28468	
RP380 | P/N 28464		

1.0 SYSTEM DESIGN CONSIDERATIONS

1.1 INTRODUCTION

The RP, GP and XP Pro Series Radon Fans are intended for use by trained, professional, certified/licensed radon mitigators. The purpose of these instructions is to provide additional guidance for the most effective use of RP, GP and XP Series Fans. These instructions should be considered supplemental to EPA/radon industry standard practices, state and local building codes and regulations. In the event of a conflict, those codes, practices and regulations take precedence over these instructions.

1.2 FAN SEALING

The RP, GP and XP Pro Series Radon Fans are factory sealed; no additional caulk or other materials are required to inhibit air leakage.

1.3 ENVIRONMENTALS

The RP, GP and XP Pro Series Radon Fans are designed to perform year-round in all but the harshest climates without additional concern for temperature or weather. For installations in an area of severe cold weather, please contact RadonAway for assistance. When not in operation, the fan should be stored in an area where the temperature is never less than 32 degrees F or more than 100 degrees F.

1.4 ACOUSTICS

The RP, GP and XP Pro Series Radon Fans, when installed properly, operate with little or no noticeable noise to the building occupants. The velocity of the outgoing air should be considered in the overall system design. In some cases the "rushing" sound of the outlet air may be disturbing. In these instances, the use of a RadonAway Exhaust Muffler is recommended.

(To ensure quiet operation of inline and remote fans, each fan shall be installed using sound attenuation techniques appropriate for the installation. For bathroom and general ventilation applications, at least 8 feet of insulated flexible duct shall be installed between the exhaust or supply grille(s) and the fan(s). The RP, GP and XP Pro Series Radon Fans are not suitable for kitchen range hood remote ventilation applications.)

1.5 GROUND WATER

In the event that a temporary high water table results in water at or above slab level, water may be drawn into the riser pipes, thus blocking air flow to the RP, GP and XP Pro Series Radon Fan. The lack of cooling air may result in the fan cycling on and off as the internal temperature rises above the thermal cutoff. Should this condition arise, it is recommended that the fan be turned off until the water recedes, allowing for return to normal operation.

1.6 SLAB COVERAGE

The RP, GP and XP Pro Series Radon Fans can provide coverage up to 2000+ sq. ft. per slab penetration. This will primarily depend on the sub-slab material in any particular installation. In general, the tighter the material, the smaller the area covered per penetration. Appropriate selection of the RP, GP and XP Pro Series Radon Fan best suited for the sub-slab material can improve the slab coverage. The RP, GP and XP Pro Series Radon Fans have a wide range of models to choose from to cover a wide range of sub-slab materials. The RP140 and 145 are best suited for general purpose use. The RP260 can be used where additional airflow is required, and the RP265 and RP380 are best suited for large slab, high airflow applications. Additional suction points can be added as required. It is recommended that a small pit (5 to 10 gallons in size) be created below the slab at each suction hole.

1.7 CONDENSATION & DRAINAGE

Condensation is formed in the piping of a mitigation system when the air in the piping is chilled below its dew point. This can occur at points where the system piping goes through unheated space such as an attic, garage or outside. The system design must provide a means for water to drain back to a slab hole to remove the condensation. The RP, GP and XP Pro Series Radon Fan MUST be mounted vertically plumb and level, with the outlet pointing up for proper drainage through the fan. Avoid mounting the fan in any orientation that will allow water to accumulate inside the fan housing. The RP, GP and XP Pro Series Radon Fans are NOT suitable for underground burial.

For RP, GP and XP Pro Series Fan piping, the following table provides the minimum recommended pipe diameter and pitch under several system conditions.

Pipe Diameter	Minimum Rise per Ft of Run*		
	@25 CFM	@50 CFM	@100 CFM
4”	1/8”	1/4”	3/8”
3”	1/4”	3/8”	1 1/2”

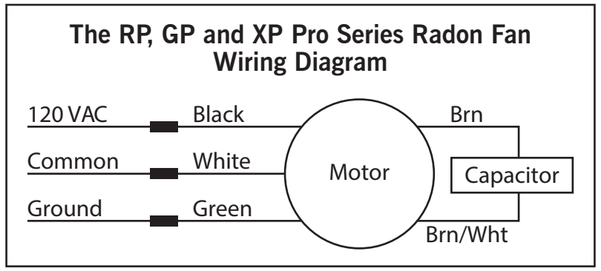
*See p. 7 for detailed specifications.

1.8 SYSTEM MONITOR & LABEL

A System Monitor, such as a manometer (P/N 50017) or audible alarm (P/N 28535, 28001-2, 28001-4 or 28421), is required to notify the occupants of a fan system malfunction. A System Label (provided with Manometer P/N 50017) with instructions for contacting the installing contractor for service and identifying the necessity for regular radon tests to be conducted by the building occupants must be conspicuously placed in a location where the occupants frequent and can see the label.

1.9 ELECTRICAL WIRING

The RP, GP and XP Pro Series Radon Fans operate on standard 120V, 60Hz AC. All wiring must be performed in accordance with National Fire Protection (NFPA) National Electrical Code, Standard #70, current edition, for all commercial and industrial work, and state and local building codes. All wiring must be performed by a qualified and licensed electrician. Outdoor installations require the use of a UL Listed watertight conduit. Ensure that all exterior electrical boxes are outdoor rated and properly sealed to prevent water penetration into the box. A means, such as a weep hole, is recommended to drain the box.



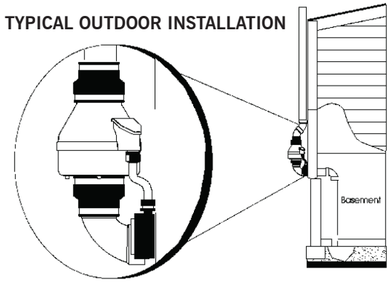
1.10 SPEED CONTROLS

The RP, GP and XP Pro Series Radon Fans are rated for use with electronic speed controls; however, speed controls are generally not recommended. If used, the recommended speed control is Pass & Seymour Solid State Speed Control (Cat. No. 94601-1).

2.0 INSTALLATION

The RP, GP and XP Pro Series Radon Fans can be mounted indoors or outdoors. (It is suggested that EPA and radon mitigation standards recommendations be followed in choosing the fan location.) The GP fans have an integrated mounting bracket; the RP, GP and XP Pro Series Radon Fans may be mounted directly on the system piping or fastened to a supporting structure by means of an optional mounting bracket. The ducting from the fan to the outside of the building has a strong effect on noise and fan energy use. Use the shortest, straightest duct routing possible for best performance, and avoid installing the fan with smaller ducts than recommended. Insulation around the ducts can reduce energy loss and inhibit mold growth. Fans installed with existing ducts may not achieve their rated airflow.

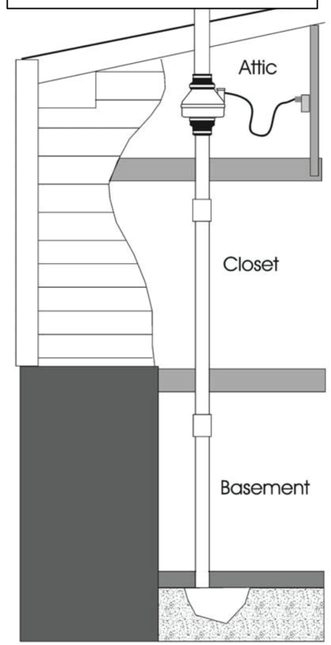
TYPICAL OUTDOOR INSTALLATION



2.1 MOUNTING

Mount the RP, GP and XP Pro Series Radon Fan vertically with outlet up. Ensure the unit is plumb and level. When mounting directly on the system piping assure that the fan does not contact any building surface to avoid vibration noise.

TYPICAL INDOOR INSTALLATION



2.2 MOUNTING BRACKET (optional)

The RP, GP and XP Pro Series Radon Fans may be optionally secured with the RadonAway Fan Mounting Bracket (P/N 25007). Foam or rubber grommets may also be used between the bracket and mounting surface for vibration isolation.

2.3 SYSTEM PIPING

Complete piping run, using flexible couplings as a means of disconnect for servicing the unit and for vibration isolation. As the fan is typically outside of the building thermal boundary and is venting to the outside, installation of insulation around the fan is not required.

2.4 ELECTRICAL CONNECTION

Connect wiring with wire nuts provided, observing proper connections (See Section 1.9). Note that the fan is not intended for connection to rigid metal conduit.

2.5 VENT MUFFLER (optional)

Install the muffler assembly in the selected location in the outlet ducting. Solvent weld all connections. The muffler is normally installed at the end of the vent pipe.

2.6 OPERATION CHECKS & ANNUAL SYSTEM MAINTENANCE

_____ **Verify** all connections are tight and **leak-free**.

_____ **Ensure** the RP, GP and XP Pro Series Radon Fan and all ducting are **secure and vibration-free**.

_____ **Verify system vacuum pressure** with manometer. **Ensure** vacuum pressure is within normal operating range and **less than** the maximum recommended operating pressure.
(Based on sea-level operation, at higher altitudes reduce by about 4% per 1000 feet)
(Further reduce Maximum Operating Pressure by 10% for High Temperature environments.)
See Product Specifications. If this is exceeded, increase the number of suction points.

_____ **Verify Radon levels** by testing to EPA Protocol and applicable testing standards.

THE FOLLOWING CHARTS SHOW THE PERFORMANCE OF THE RP, GP AND XP PRO SERIES RADON FANS

RP Pro Series Product Specifications

Typical CFM Vs. Static Pressure "WC									
Model	**0"**	**.2"**	**.5"**	**.75"**	**1.0"**	**1.25"**	**1.5"**	**1.75"**	**2.0"**
RP140	152	120*	64*	-	-	-	-	-	
RP145	169	150*	124*	101	81*	61	42	22	4
RP260	251	210*	157	117	70	26	-	-	-
RP265	375	340*	282*	238	204*	170	140	108	70
RP380	531	490*	415*	340	268*	200	139	84	41

**Denotes HVI certified values.*

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
RP140	14 - 19 watts	0.6" WC
RP145	34 - 66 watts	1.7" WC
RP260	47-65 watts	1.3" WC
RP265	96 - 136 watts	2.3" WC
RP380	96 - 138 watts	2.0" WC

**Reduce by 10% for High Temperature Operation. **Reduce by 4% per 1000 ft. of altitude.*

Model	Size	Weight	Inlet/Outlet	L.2
RP140	8.5"H x 9.7" Dia.	5.5 lbs	4.5"OD (4.0" PVC Sched 40 size compatible)	25
RP145	8.5"H x 9.7" Dia.	5.5 lbs	4,5" OD	15
RP260	8.6"H x 11.75" Dia.	5.5 lbs	6.0" OD	48
RP265	8.6"H x 11.75" Dia.	6.5 lbs	6.0" OD	30
RP380	10.53"H x 13.41" Dia.	11.5 lbs	8.0" OD	57

L.2 = Estimated Equivalent Length of Rigid Metal Ducting resulting in .2" WC pressure loss for Duct Size listed. Longer Equivalent Lengths can be accommodated at Flows Lower than that at .2" WC pressure loss (see CFM Vs Static Pressure "WC Table).

XP Pro Series Product Specifications

Typical CFM Vs. Static Pressure "WC						
	0"	**.5"**	**1.0"**	**1.5"**	**1.75"**	**2.0"**
XP151	167	127	77	-	-	-
XP201	126	98	66	26	-	-

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
XP151	53-70 watts	1.4" WC
XP201	38-74 watts	1.6" WC

**Reduce by 10% for High Temperature Operation **Reduce by 4% per 1000 ft. of altitude.*

Model	Size	Weight	Inlet/Outlet
XP151	9.5"H x 8.5" Dia.	6 lbs	4.5"OD (4.0" PVC Sched 40 size compatible)
XP201	9.5"H x 8.5" Dia.	6 lbs	4.5" OD

GP Pro Series Product Specifications

Typical CFM Vs. Static Pressure "WC							
	1.0"	**1.5"**	**2.0"**	**2.5"**	**3.0"**	**3.5"**	**4.0"**
GP201	54	42	11	-	-	-	-
GP301	64	54	41	4	-	-	-
GP401	-	61	52	44	22	-	-
GP501	-	-	66	58	50	27	4

Model	Power Consumption 120VAC, 60Hz, 1.5 Amp Maximum	Maximum Recommended Operation Pressure* (Sea Level Operation)**
GP201	31-67 watts	1.8" WC
GP301	56-100 watts	2.3" WC
GP401	62-128 watts	3.0" WC
GP501	68 - 146 watts	3.8" WC

**Reduce by 10% for High Temperature Operation **Reduce by 4% per 1000 ft. of altitude.*

Model	Size	Weight	Inlet/Outlet
GP201	13"H x 12.5" Dia.	12 lbs	3.5"OD (3.0" PVC Sched 40 size compatible)
GP301	13"H x 12.5" Dia.	12 lbs	3.5" OD
GP401	13"H x 12.5" Dia.	12 lbs	3.5" OD
GP501	13"H x 12.5" Dia.	12 lbs	3.5" OD

RP, XP and GP Pro Series Additional Specifications

Model	Recommended Duct	PVC Pipe Mounting	Thermal Cutout	Insulation Class
RP140	3" or 4" Schedule 20/40 PVC	Mount on the duct pipe or with optional mounting bracket. For Ventilation: 4", 6" or 8" Rigid or Flexible Ducting.	130°C/266°F	Class B Insulation
RP145			130°C/266°F	Class F Insulation
RP260			150°C/302°F	
RP265			150°C/302°F	
RP380	6" Schedule 20/40 PVC Pipe		150°C/302°F	
XP151	3" or 4" Schedule 20/40 PVC	Fan may be mounted on the duct pipe or with integral flanges.	120°C/248°F	Class B Insulation
XP201				
GP201	3" or 4" Schedule 20/40 PVC	Fan may be mounted on the duct pipe or with integral flanges.	120°C/248°F	Class B Insulation
GP301				
GP401				
GP501				

Continuous Duty
3000 RPM
Thermally Protected
RP, GP Residential and Commercial
XP Residential Only
Rated for Indoor or Outdoor Use

ENERGY STAR
RP140 Only

LISTED
Electric Fan

Intertek
77728

Conforms to UL STD. 507
Certified to CAN/CSA STD. C22.2 No.113

IMPORTANT INSTRUCTIONS TO INSTALLER

Inspect the RP, GP and XP Pro Series Radon Fan for shipping damage within 15 days of receipt. **Notify RadonAway of any damages immediately.** RadonAway is not responsible for damages incurred during shipping. However, for your benefit, RadonAway does insure shipments.

There are no user serviceable parts inside the fan. **Do not attempt to open the housing.** Return unit to factory. (See Warranty below).

Install the RP, GP and XP Pro Series Radon Fan in accordance with all EPA, ANSI/AARST standard practices, and state and local building codes and regulations.

Provide a copy of this instruction or comparable radon system and testing information to the building occupants after completing system installation.

Warranty

RadonAway® warrants that the RP, GP (excluding GP500) and XP Pro Series Radon Fan (the "Fan") will be free from defects in materials and workmanship for a period of 12 months from the date of purchase or 18 months from the date of manufacture, whichever is sooner (the "Warranty Term").

RadonAway® will replace any fan which fails due to defects in materials or workmanship during the Warranty Term. This Warranty is contingent on installation of the Fan in accordance with the instructions provided. This Warranty does not apply where any repairs or alterations have been made or attempted by others, or if the unit has been abused or misused. Warranty does not cover damage in shipment unless the damage is due to the negligence of RadonAway®.

The Fan must be returned (at Owner's cost) to the RadonAway® factory. Any Fan returned to the factory will be discarded unless the Owner provides specific instructions along with the Fan when it is returned regardless of whether or not the Fan is actually replaced under this warranty. Proof of purchase must be supplied upon request for service under this Warranty.

5-YEAR EXTENDED WARRANTY WITH PROFESSIONAL INSTALLATION.

RadonAway® will extend the Warranty Term of the fan to 60 months (5 years) from date of purchase or 66 months from date of manufacture, whichever is sooner, provided that the fan is installed by a professional radon mitigation contractor. Proof of purchase and/or proof of professional installation may be required for service under this warranty. No extended warranty is offered outside the Continental United States and Canada beyond the standard 12 months from the date of purchase or18 months from the date of manufacture, whichever is sooner.

RadonAway® is not responsible for installation, removal or delivery costs associated with this Warranty.

LIMITATION OF WARRANTY

EXCEPT AS STATED ABOVE, THE RP, GP (excluding GP500) and XP PRO SERIES RADON FANS ARE PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT SHALL RADONAWAY BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR RELATING TO, THE FAN OR THE PERFORMANCE THEREOF. RADONAWAY'S AGGREGATE LIABILITY HEREUNDER SHALL NOT IN ANY EVENT EXCEED THE AMOUNT OF THE PURCHASE PRICE OF SAID PRODUCT. THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY SHALL BE THE REPAIR OR REPLACEMENT OF THE PRODUCT, TO THE EXTENT THE SAME DOES NOT MEET WITH RADONAWAY'S WARRANTY AS PROVIDED ABOVE.

For service under this Warranty, contact RadonAway for a Return Material Authorization (RMA) number and shipping information. No returns can be accepted without an RMA. If factory return is required, the customer assumes all shipping costs, including insurance, to and from factory.

RadonAway® 3 Saber Way
Ward Hill, MA 01835 USA TEL (978) 521-3703
FAX (978) 521-3964
Email to: Returns@RadonAway.com

Record the following information for your records:

Serial Number: _____ Purchase Date: _____