

# **3836 CARPENTER AVENUE BRONX, NEW YORK**

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## **Remedial Action Plan**

**NYC OER Project Number: 19TMP0552X, 19EHAZ159X**

**E-Designation: E-279**

**CEQR Number: 11DCP148X**

**Williamsbridge/Baychester Rezoning Action**

**Prepared For:**

A2Z Construction

2005 Hone Avenue

Bronx, NY 1046

**Prepared By:**

Tarek Z. Khouri, P.E.

HydroTech Environmental Engineering and Geology, DPC

15 Ocean Avenue, 2nd Floor

Brooklyn, New York 11225

(718) 636-0800

tkhouri@hydrotechenvironmental.com

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**FEBRUARY 2020**

# REMEDIAL ACTION PLAN

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## LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
AS/SVE	Air Sparging/Soil Vapor Extraction
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
C&D	Construction and Demolition
CEQR	City Environmental Quality Review
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
COC	Certificate of Completion
CQAP	Construction Quality Assurance Plan
CSOP	Contractors Site Operation Plan
DCR	Declaration of Covenants and Restrictions
ECs/ICs	Engineering Controls and Institutional Controls
ELAP	Environmental Laboratory Accreditation Program
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations Emergency Response
IRM	Interim Remedial Measure
MNA	Monitored Natural Attenuation
NYS DEC	New York State Department of Environmental Conservation
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York State Department of Health and Mental Hygiene
NYC OER	New York City Office of Environmental Remediation
NYCRR	New York Codes Rules and Regulations
NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation
NYS DOH	New York State Department of Health

NYS DOT	New York State Department of Transportation
ORC	Oxygen-Release Compound
OSHA	United States Occupational Health and Safety Administration
PCBs	Polychlorinated Biphenyls
PE	Professional Engineer
PID	Photo Ionization Detector
QEP	Qualified Environmental Professional
RAOs	Remedial Action Objectives
RCR	Remedial Closure Report
RAP	Remedial Action Plan
RCA	Recycled Concrete Aggregate
RD	Remedial Design
RI	Remedial Investigation
RMZ	Residual Management Zone
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SSDS	Sub-Slab Depressurization System
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

## CERTIFICATION

I, Tarek Z. Khouri, am currently a registered professional engineer licensed by the State of New York. I performed professional engineering services and had primary direct responsibility for designing the remedial program for the 3836 Carpenter Avenue site, site numbers 19TMP0552X, 19EHAZ159X. I certify to the following:

- I have reviewed this document and the Stipulation List, to which my signature and seal are affixed.
- Engineering Controls developed for this remedial action were designed by me or a person under my direct supervision and designed to achieve the goals established in this Remedial Action Plan for this site.
- The Engineering Controls to be constructed during this remedial action are accurately reflected in the text and drawings of the Remedial Action Plan and are of sufficient detail to enable proper construction.
- This Remedial Action Plan (RAP) has a plan for handling, transport and disposal of soil, fill, fluids and other materials removed from the property in accordance with applicable City, State and Federal laws and regulations. Importation of all soil, fill and other material from off-Site will be in accordance with all applicable City, State and Federal laws and requirements. This RAP has provisions to control nuisances during the remediation and all invasive work, including dust and odor suppression.

Tarek Z. Khouri, P.E.

\_\_\_\_\_  
Name

086611

\_\_\_\_\_  
PE License Number

\_\_\_\_\_  
Signature

02/05/2020

\_\_\_\_\_  
Date



## **EXECUTIVE SUMMARY**

A2Z Construction is working with the NYC Office of Environmental Remediation (OER) in the New York City “E” Designation Program to investigate and remediate a 5,250-square foot site located at 3836 Carpenter Avenue in the Bronx, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Plan (RAP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

### **Site Location and Background**

The Site is located at 3836 Carpenter Avenue in the Williamsbridge section in the Bronx, New York and is identified as Block 4655 and Lot 6 on the New York City Tax Map. The Site is 5,250-square feet in area and is surrounded by two (2) 5-story residential buildings to the north and south, two (2) 2-story residential buildings to the east and one (1) public facility/institution to the west. Currently, the Site is undeveloped and was vacant prior to its demolition in May 2019. Prior to the site being demolished, a vacant three-story private residential dwelling with a standalone one-story garage existed at the site. Demolished building construction debris was backfilled in the basement area to grade that was approximately 6 feet bgs and 790 square feet in area.

### **Summary of Redevelopment Plan**

The proposed future use of the Site will consist of two (2) 4-story residential buildings with 10 units in each building. As part of the development, the existing lot will be sub-divided into two (2) lots. The proposed cellar for the buildings is set at an excavation depth of 12 feet below ground surface (bgs) for foundation elements. The remainder of the Site will be used as rear yard for recreation purposes. Setbacks include approximately 5.6 feet for front and 34 feet for rear yard. The current zoning designation is R6A residential with no commercial overlay. The proposed use is consistent with existing zoning for the property.

### **Summary of Surrounding Property**

The vicinity of the Subject Property consists of residential and commercial properties. The Site is surrounded by Carpenter Avenue followed by a public facility/institution to the west, multi-

family residential buildings to the east, south and north. Within a 500-foot radius of the Site, there are a variety of land uses including residential (multi-story residential apartments) and commercial uses. There are four (4) sensitive receptors present within a 1/8-mile radius of the Subject Property: Correa, Rosa; Figueroa, Evelyn; White Plains Nursing Home Inc DBA Bronx Park and Bronx Park Rehabilitation & Nursing Center.

### **Summary of Past Site Uses and Areas of Concern**

Based upon the review of Phase I report provided by Exclusive Testing Labs (ETL), the following Site history was established. The Site was first fully developed in 1927 as a three-story private residential dwelling with a full basement and a standalone one-story storage garage and was vacant prior to its demolition in May 2019.

The AOCs identified for this site by ETL include:

1. The presence of E-designation (E-279) for Hazardous Material at the Subject Property.
2. The presence of two (2) unregistered 275-gallon Aboveground Storage Tanks (ASTs) located in the northwestern portion of the basement.
3. A nearby site located at 630 East 222<sup>nd</sup> Street with an unresolved spill case and an inconclusive remediation history.

### **Summary of Work Performed under the Remedial Investigation**

ETL performed the following scope of work on June 24, 2019:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed five (5) soil borings across the entire project Site, and collected ten (10) soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed three (3) groundwater monitoring wells throughout the Site to establish groundwater flow. No groundwater samples were collected for chemical analysis to evaluate groundwater quality due to insufficient recharge from the wells;
4. Installed five (5) soil vapor implants around Site perimeter and collected five (5) samples for chemical analysis.



## Summary of Findings of Remedial Investigation

1. The Site is located in the southern portion of the Borough of the Bronx, New York. The elevation of the Subject Property is approximately 105 feet above mean sea level (USGS 7.5-Minute Flushing, New York Quadrangle, 2013).
2. The regional groundwater flow direction in the vicinity of the Site is presumed to be southwest in the direction of Bronx river. Only one monitoring well, GW-2 showed presence of groundwater at 15 feet bgs where bedrock was encountered.
3. The stratigraphy of the site for sub-surface soils consists of gravelly-sandy loam and unweathered bedrock. Soils encountered at the unexcavated portions of the site that was formerly occupied by the waste debris pile and storage shed/garage consist of gravelly-fine sandy loam. No evidence of contamination was observed in soil borings. Shallow bedrock was encountered, which extended to depths ranging from five to eighteen feet below grade surface as confirmed by ETL.
4. Soil/fill samples collected during the remedial investigations were compared to the New York State Department of Environmental Conservation (NYSDEC) 6NYCRR Part 375 Section 6.8 Unrestricted Use Soil Cleanup Objectives (SCOs) and Restricted Residential Use SCOs.
  - No VOCs, SVOCs, PCBs or metals were detected at concentrations exceeding their respective Unrestricted Use SCOs.
  - One pesticide, 4,4'-DDT (at 0.00609 mg/kg) was detected in SB-2 [0-2'] surface soil sample at a concentration exceeding its respective Unrestricted Use SCO.
5. No groundwater samples were collected during the RI at the Site due to insufficient recharge from the groundwater monitoring wells.
6. Soil vapor results collected during the RI were compared to New York State Department of Health (NYSDOH) Final Guidance for Evaluation of Soil Vapor Intrusion matrices dated October 2006.
  - Soil vapor results indicated low levels of petroleum-related VOCs and elevated levels of chlorinated VOCs (CVOCs).

- The total concentration of petroleum-related VOCs (BTEX) ranged from 98.98  $\mu\text{g}/\text{m}^3$  to 131.84  $\mu\text{g}/\text{m}^3$ .
- CVOCs detections included 1,1,1-trichloroethane (max. of 15.6  $\mu\text{g}/\text{m}^3$ ), carbon tetrachloride (max. of 1.95  $\mu\text{g}/\text{m}^3$ ), methylene chloride (max. of 38.5  $\mu\text{g}/\text{m}^3$ ), tetrachloroethylene (PCE) (ranging from 4.03  $\mu\text{g}/\text{m}^3$  to 92.2  $\mu\text{g}/\text{m}^3$ ), trichloroethylene (TCE) (ranging from 2.71  $\mu\text{g}/\text{m}^3$  to 8.81  $\mu\text{g}/\text{m}^3$ ), and vinyl chloride (max. of 3.3  $\mu\text{g}/\text{m}^3$ ).
- VOCs including acetone (ranging from 13,300  $\mu\text{g}/\text{m}^3$  to 33,900  $\mu\text{g}/\text{m}^3$ ), methyl ethyl ketone (MEK) (ranging from 269  $\mu\text{g}/\text{m}^3$  to 1,190  $\mu\text{g}/\text{m}^3$ ), and propylene (ranging from 196  $\mu\text{g}/\text{m}^3$  to 2,700  $\mu\text{g}/\text{m}^3$ ) were also detected in the soil vapor samples.

## Summary of the Remedial Action

The proposed remedial action achieves protection of public health and the environment for the intended use of the property. The proposed remedial action achieves all of the remedial action objectives established for the project and addresses applicable standards, criterion, and guidance; is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants; is cost effective and implementable; and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
2. Selection of NYSDEC Part 375 Restricted Residential Use Soil Cleanup Objectives (SCOs).
3. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
4. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by disposal

facility(s).

5. Excavation and removal of soil/fill exceeding Restricted Residential SCOs. Most of the building area (about 67% of the property) will be excavated to a depth of approximately 12 feet below grade for development purposes. The buildings will have a slab on grade portion along the 5 foot setback from each side. The rear yard area and the front area will not be excavated. Approximately 1,622 tons of soil/fill will be removed from the Site and properly disposed at an appropriately licensed or permitted facility.
6. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
7. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
8. Removal of all USTs that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with USTs and appropriate closure of these petroleum spills in compliance with applicable local, State and Federal laws and regulations.
9. Transportation and off-Site disposal of all soil/fill material at licensed or permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.
10. Collection and analysis of five (5) post-excavation confirmation samples to determine the performance of the remedy with respect to attainment of Restricted Residential SCOs.
11. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.

12. Performance of all activities required for the remedial action, including acquisition of required permits and attainment of pretreatment requirements, in compliance with applicable laws and regulations.
13. Dewatering, if required, in compliance with city, state, and federal laws and regulations. Extracted groundwater will either be containerized for off-site licensed or permitted disposal or will be treated under a permit from New York City Department of Environmental Protection (NYCDEP) to meet pretreatment requirements prior to discharge to the sewer system.
14. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
15. Submission of a Remedial Closure Report (RCR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, and lists any changes from this RAP.
16. Construction of an engineered composite cover consisting of, at minimum, a 4-inch thick concrete building slab beneath all building areas and the front area and concrete pavers in the rear yard area.
17. Installation of a vapor barrier system consisting of vapor barrier beneath the building slab and outside of sub-grade foundation sidewalls to mitigate soil vapor migration into the building. The vapor barrier system will consist of a 20-mil Raven Industries Vapor Block Plus (or OER-approved equivalent) vapor barrier below the slab throughout the full building area and outside all sub-grade foundation sidewalls. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration. All penetrations throughout the slab for utility lines will be sealed utilizing VaporSeal Tape and Pour-N-Seal by Raven Industries.
18. The property will continue to be registered with an E-Designation at the NYC Buildings Department.

## COMMUNITY PROTECTION STATEMENT

The NYC Office of Environmental Remediation (OER) provides governmental oversight for the cleanup of contaminated property in NYC. This Remedial Action Plan (“cleanup plan”) describes the findings of prior environmental studies, shows the location of identified contamination at the site, and describes the plans to clean up the site to protect public health and the environment.

This cleanup plan provides a very high level of protection for neighboring communities and also includes many other elements that address common community concerns, such as community air monitoring, odor, dust and noise controls, hours of operation, good housekeeping and cleanliness, truck management and routing, and opportunities for community participation. The purpose of this Community Protection Statement is to explain these community protection measures in non-technical language to simplify community review.

### **Project Information:**

- Site Address: 3836 Carpenter Avenue, Bronx NY
- NYC OER Project Number: 19TMP0552X

### **Project Contacts:**

- OER Project Manager: Samantha Catalanotto, 212-788-8841
- Site Project Manager: Anusha Agnoor, 631-822-8021
- Site Safety Officer: Aglin Zefi, 347-287-1593
- Online Document Repository: <https://a002-epic.nyc.gov/app/workspace/7652/docrepository>

**Remedial Investigation and Cleanup Plan:** Under the oversight of the NYC OER, a thorough study of this property (called a remedial investigation) has been performed to identify past property usage, to sample and test soils, groundwater and soil vapor, and to identify contaminant sources present on the property. The cleanup plan has been designed to address all contaminant sources that have been identified during the study of this property.

**Identification of Sensitive Land Uses:** Prior to selecting a cleanup, the neighborhood was evaluated to identify sensitive land uses nearby, such as schools, day care facilities, hospitals and residential areas. The cleanup program was then tailored to address the special conditions of this community.

**Health and Safety Plan:** This cleanup plan includes a Construction Health and Safety Plan (CHASP) that is designed to protect community residents and on-Site workers. The elements of this RAP are in compliance with applicable safety requirements of the United States Occupational Safety and Health Administration (OSHA). This RAP includes many protective elements including those discussed below.

**Site Safety Coordinator:** This project has a designated Site safety coordinator to implement the CHASP. The safety coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site safety coordinator is identified at the beginning of this Community Protection Statement.

**Worker Training:** Workers participating in cleanup of contaminated material on this project are required to be trained in 40-hour hazardous waste operators training course and to take annual refresher training. This pertains to workers performing specific tasks including removing contaminated material and installing cleanup systems in contaminated areas.

**Community Air Monitoring Plan:** Community air monitoring will be performed during this cleanup project to ensure that the community is properly protected from contaminants, dust and odors. Air samples will be tested in accordance with a detailed plan called the Community Air Monitoring Plan or CAMP. Results will be regularly reported to the NYC Office of Environmental Remediation. This cleanup plan also has a plan to address any unforeseen problems that might occur during the cleanup (called a 'Contingency Plan').

**Odor, Dust and Noise Control:** This cleanup plan includes actions for odor and dust control. These actions are designed to prevent off-Site odor and dust nuisances and includes steps to be taken if nuisances are detected. Generally, dust is managed by application of physical covers and by water sprays. Odors are controlled by limiting the area of open excavations, physical covers, spray foams and by a series of other actions (called operational measures). The project is also required to comply with applicable NYC noise control standards. If you observe problems in these areas, please contact the onsite Project Manager or NYC Office of Environmental Remediation Project Manager listed on the first page of this Community Protection Statement document.

**Quality Assurance:** This cleanup plan requires that evidence be provided to illustrate that all cleanup work required under the plan has been completed properly. This evidence will be summarized in the final report, called the Remedial Closure Report. This report will be submitted to the NYC Office of Environmental Remediation and will be thoroughly reviewed.

**Stormwater Management:** To limit the potential for soil erosion and discharge, this cleanup plan has provisions for stormwater management. The main elements of the stormwater management include physical barriers such as tarp covers and erosion fencing, and a program for frequent inspection.

**Hours of Operation:** The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. For this cleanup project, the hours of operation will conform to requirements of the NYC Department of Buildings.

**Complaint Management:** The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager or the NYC Office of Environmental Remediation Project Manager listed on the first page of this Community Protection Statement document or call 311 and mention the Site is in the NYC “E” Designation Program.

**Utility Mark-outs:** To promote safety during excavation in this cleanup, the contractor is required to first identify all utilities and must perform all excavation and construction work in compliance with NYC Department of Buildings regulations.

**Soil and Liquid Disposal:** All soil and liquid material removed from the Site as part of the cleanup will be transported and disposed of in accordance with all applicable City, State and Federal regulations, and required permits will be obtained.

**Soil Chemical Testing and Screening:** All excavations will be supervised by a trained and properly qualified environmental professional. In addition to extensive sampling and chemical testing of soils on the Site, excavated soil will be screened continuously using hand-held instruments, by sight, and by smell to ensure proper material handling and management, and community protection.

**Stockpile Management:** Soil stockpiles will be kept covered with tarps to prevent dust, odor and erosion. Stockpiles will be frequently inspected. Damaged tarp covers will be promptly replaced. Stockpiles will be protected with silt fences. Hay bales will be used, as needed, to protect storm water catch basins and other discharge points.

**Trucks and Covers:** Loaded trucks leaving the Site will be covered in compliance with applicable laws and regulations to prevent dust and odor. Trucks will be properly recorded in logs and records and placarded in compliance with applicable City, State and Federal laws, including those of the New York State Department of Transportation. If loads contain wet material that can leak, truck liners will be used. All transport of materials will be performed by licensed truckers and in compliance with applicable laws and regulations.

**Imported Material:** All fill materials proposed to be brought onto the Site will comply with rules outlined in this cleanup plan and will be inspected and approved by a qualified worker located on the Site. Waste materials will not be brought onto the Site. Trucks entering the Site



with imported clean materials will be covered in compliance with applicable laws and regulations.

**Equipment Decontamination:** All equipment used for cleanup work will be inspected and washed, if needed, before it leaves the Site. Trucks will be cleaned at a truck inspection station on the property before leaving the Site.

**Housekeeping:** Locations where trucks enter or leave the Site will be inspected every day and cleaned regularly to ensure that they are free of dirt and other materials from the Site.

**Truck Routing:** Truck routes have been selected to: (a) limit transport through residential areas and past sensitive nearby properties; (b) maximize use of city-mapped truck routes; (c) limit total distance to major highways; (d) promote safety in entry to highways; (e) promote overall safety in trucking; and (f) minimize off-Site line-ups (queuing) of trucks entering the property. Operators of loaded trucks leaving the Site will be instructed not to stop or idle in the local neighborhood.

**Final Report:** The results of all cleanup work will be fully documented in a final report (called the Remedial Closure Report) that will be available for public review online. A link to the online document repository and the public library with Internet access nearest the Site are listed on the first page of this Community Protection Statement document.

**Long-Term Site Management:** If long-term protection is needed after the cleanup is complete, the property owner will be required to comply with an ongoing Site Management Plan that calls for continued inspection of protective controls, such as Site covers. The Site Management Plan is evaluated and approved by the NYC Office of Environmental Remediation. Requirements that the property owner must comply with are defined either in the property's deed or established through a city environmental designation registered with the Department of Buildings. A certification of continued protectiveness of the cleanup will be required from time to time to show that the approved cleanup is still effective.

# REMEDIAL ACTION PLAN

## 1.0 PROJECT BACKGROUND

A2Z Construction is working with the NYC Office of Environmental Remediation (OER) in the “E” Designation Program to investigate and remediate a property located at 3836 Carpenter Avenue in the Williamsbridge section of the Bronx, New York (the “Site”). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Plan (RAP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAP establishes remedial action objectives, provides a remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, and complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

### 1.1 Site Location and Background

The Site is located at 3836 Carpenter Avenue in the Williamsbridge section in the Bronx, New York and is identified as Block 4655 and Lot 6 on the New York City Tax Map. **Figure 1** shows the Site location. The Site is 5,250-square feet in area and is surrounded by two (2) 5-story residential buildings to the north and south, two (2) 2-story residential buildings to the east and one (1) public facility/institution to the west. A map of the site boundary is shown in **Figure 2**. Currently, the Site is undeveloped and was vacant prior to its demolition in May 2019. Prior to the site being demolished, a vacant three-story private residential dwelling with a standalone one-story garage existed at the site. Demolished building construction debris was backfilled in the basement area to grade that was approximately 6 feet bgs and 790 square feet in area.

### 1.2 Redevelopment Plan

The proposed development of the Site will consist of two (2) 4-story residential buildings with 10 units in each building. As part of the development, the existing lot will be sub-divided into two (2) lots. The proposed cellar for the buildings is set at an excavation depth of 12 feet bgs for foundation elements. The remainder of the site will be used as rear yard for recreation purposes.

Setbacks include approximately 5.6 feet for front and 34 feet for rear yard. Layout of the proposed site development is presented in **Figure 3**. The current zoning designation is R6A residential with no commercial overlay. The proposed use is consistent with existing zoning for the property.

The remedial action contemplated under this RAP may be implemented independently of the proposed redevelopment plan.

### **1.3 Description of Surrounding Property**

The vicinity of the Subject Property consists of residential and commercial properties. The Site is surrounded by Carpenter Avenue followed by a public facility/institution to the west, multi-family residential buildings to the east, south and north. Within a 500-foot radius of the Site, there are a variety of land uses including residential (multi-story residential apartments) and commercial uses. There are four (4) sensitive receptors present within a 1/8-mile radius of the Subject Property: Correa, Rosa; Figueroa, Evelyn; White Plains Nursing Home Inc DBA Bronx Park and Bronx Park Rehabilitation & Nursing Center.

### **1.4 Summary of Past Site Uses and Areas of Concern**

Based upon the review of Phase I report provided by ETL, the following Site history was established. The Site was first fully developed in 1927 as a three-story private residential dwelling with a full basement and a standalone one-story storage garage and was vacant prior to its demolition in May 2019.

The AOCs identified for this site by ETL include:

1. The presence of E-designation (E-279) for Hazardous Material at the Subject Property.
2. The presence of two (2) unregistered 275-gallon ASTs located in the northwestern portion of the basement.
3. A nearby site located at 630 East 222<sup>nd</sup> Street with an unresolved spill case and an inconclusive remediation history.

### **1.5 Summary of Work Performed under the Remedial Investigation**

ETL performed the following scope of work on June 24, 2019:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed five (5) soil borings across the entire project Site, and collected ten (10) soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed three (3) groundwater monitoring wells throughout the Site to establish groundwater flow. No groundwater samples were collected for chemical analysis to evaluate groundwater quality due to insufficient recharge from the wells;
4. Installed five (5) soil vapor implants around Site perimeter and collected five (5) samples for chemical analysis.

## **1.6 Summary of Findings of Remedial Investigation**

A remedial investigation was performed, and the results are documented in a companion document called “Remedial Investigation Report, 3836 Carpenter Avenue”, dated December 2019 (RIR).

1. The Site is located in the southern portion of the Borough of the Bronx, New York. The elevation of the Subject Property is approximately 105 feet above mean sea level (USGS 7.5-Minute Flushing, New York Quadrangle, 2013).
2. The regional groundwater flow direction in the vicinity of the Site is presumed to be southwest in the direction of Bronx river. Only one monitoring well, GW-2 showed presence of groundwater at 15 feet bgs where bedrock was encountered.
3. The stratigraphy of the site for sub-surface soils consists of gravelly-sandy loam and unweathered bedrock. Soils encountered at the unexcavated portions of the site that was formerly occupied by the waste debris pile and storage shed/garage consist of gravelly-fine sandy loam. No evidence of contamination was observed in soil borings. Shallow bedrock was encountered, which extended to depths ranging from five to eighteen feet below grade surface as confirmed by ETL.
4. Soil/fill samples collected during the remedial investigations were compared to the New York State Department of Environmental Conservation (NYSDEC) 6NYCRR Part 375

## Section 6.8 Unrestricted Use Soil Cleanup Objectives (SCOs) and Restricted Residential Use SCOs.

- No VOCs, SVOCs, PCBs or metals were detected at concentrations exceeding their respective Unrestricted Use SCOs.
  - One pesticide, 4,4'-DDT (at 0.00609 mg/kg) was detected in SB-2 [0-2'] surface soil sample at a concentration exceeding its respective Unrestricted Use SCO.
5. No groundwater samples were collected during the RI at the Site due to insufficient recharge from the groundwater monitoring wells.
6. Soil vapor results collected during the RI were compared to New York State Department of Health (NYSDOH) Final Guidance for Evaluation of Soil Vapor Intrusion matrices dated October 2006.
- Soil vapor results indicated low levels of petroleum-related VOCs and elevated levels of chlorinated VOCs (CVOCs).
  - The total concentration of petroleum-related VOCs (BTEX) ranged from 98.98  $\mu\text{g}/\text{m}^3$  to 131.84  $\mu\text{g}/\text{m}^3$ .
  - CVOCs detections included 1,1,1-trichloroethane (max. of 15.6  $\mu\text{g}/\text{m}^3$ ), carbon tetrachloride (max. of 1.95  $\mu\text{g}/\text{m}^3$ ), methylene chloride (max. of 38.5  $\mu\text{g}/\text{m}^3$ ), tetrachloroethylene (PCE) (ranging from 4.03  $\mu\text{g}/\text{m}^3$  to 92.2  $\mu\text{g}/\text{m}^3$ ), trichloroethylene (TCE) (ranging from 2.71  $\mu\text{g}/\text{m}^3$  to 8.81  $\mu\text{g}/\text{m}^3$ ), and vinyl chloride (max. of 3.3  $\mu\text{g}/\text{m}^3$ ).
  - VOCs including acetone (ranging from 13,300  $\mu\text{g}/\text{m}^3$  to 33,900  $\mu\text{g}/\text{m}^3$ ), methyl ethyl ketone (MEK) (ranging from 269  $\mu\text{g}/\text{m}^3$  to 1,190  $\mu\text{g}/\text{m}^3$ ), and propylene (ranging from 196  $\mu\text{g}/\text{m}^3$  to 2,700  $\mu\text{g}/\text{m}^3$ ) were also detected in the soil vapor samples.

For more detailed results, consult the RIR. Based on an evaluation of the data and information from the RIR and this RAP, disposal of significant amounts of hazardous waste is not suspected at this site.

## **2.0 REMEDIAL ACTION OBJECTIVES**

Based on the results of the RI, the following Remedial Action Objectives (RAOs) have been identified for this Site:

### **Soil**

- Prevent direct contact with contaminated soil.
- Prevent migration of contaminants that would result in groundwater or surface water contamination.

### **Soil Vapor**

- Prevent exposure to contaminants in soil vapor.
- Prevent migration of soil vapor into dwelling and other occupied structures.

### **3.0 Remedial Action**

#### **3.1 Summary of Preferred Remedial Action**

The preferred remedial action is a Restricted Residential Use remedial action. The preferred remedial action achieves protection of public health and the environment for the intended use of the property. The preferred remedial action will achieve all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants. The preferred remedial action alternative is cost effective and implementable and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
2. Selection of NYSDEC Part 375 Restricted Residential Use Soil Cleanup Objectives (SCOs).
3. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
4. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by disposal facility(s).
5. Excavation and removal of soil/fill exceeding Restricted Residential SCOs. Most of the building area (about 67% of the property) will be excavated to a depth of approximately 12 feet below grade for development purposes. The buildings will have a slab on grade portion along the 5 foot setback from each side. The rear yard area and the front area will not be excavated. Approximately 1,622 tons of soil/fill will be removed from the Site and properly disposed at an appropriately licensed or permitted facility.

6. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
7. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
8. Removal of all USTs that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with USTs and appropriate closure of these petroleum spills in compliance with applicable local, State and Federal laws and regulations.
9. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media onsite.
10. Collection and analysis of five (5) post-excavation confirmation samples to determine the performance of the remedy with respect to attainment of Restricted Residential SCOs.
11. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
12. Performance of all activities required for the remedial action, including acquisition of required permits and attainment of pretreatment requirements, in compliance with applicable laws and regulations.
13. Dewatering, if required, in compliance with city, state, and federal laws and regulations. Extracted groundwater will either be containerized for off-site licensed or permitted disposal or will be treated under a permit from New York City Department of Environmental Protection (NYCDEP) to meet pretreatment requirements prior to discharge to the sewer system.



14. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
15. Submission of a Remedial Closure Report (RCR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, and lists any changes from this RAP.
16. Construction of an engineered composite cover consisting of, at minimum, a 4-inch thick concrete building slab beneath all the building areas and the front area and pavers in the rear yard area.
17. Installation of a vapor barrier system consisting of vapor barrier beneath the building slab and outside of sub-grade foundation sidewalls to mitigate soil vapor migration into the building. The vapor barrier system will consist of a 20-mil Raven Industries Vapor Block Plus (or OER-approved equivalent) vapor barrier below the slab throughout the building area and outside all sub-grade foundation sidewalls. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration. All penetrations through the slab for utility lines will be sealed utilizing VaporSeal Tape and Pour-N-Seal by Raven Industries.
18. The property will continue to be registered with an E-Designation at the NYC Buildings Department.

### **3.2 Soil Cleanup Objectives and Soil/Fill Management**

Restricted Residential SCOs are proposed for this project and SCOs are defined in 6 NYCRR Part 375, Table 6.8 Track 2 Restricted Residential Use. If Track 2 SCOs are not achieved, the following Site-Specific SCOs will be utilized:

<b><u>Contaminant</u></b>	<b><u>Site-Specific SCO's</u></b>
Total SVOCs	100 ppm
Lead	800 ppm
Barium	500 ppm

Soil and materials management on-Site and off-Site, including excavation, handling and disposal, will be conducted in accordance with the Soil/Materials Management Plan in **Appendix 3**. Discrete contaminant sources (such as hotspots) identified during the remedial action will be horizontally and vertically identified by GPS or surveyed. This information will be provided in the RCR.

### **Soil/Fill Excavation and Removal**

Most of the building area (about 67% of the property) will be excavated to a depth of approximately 12 feet below grade for development purposes. The rear yard area and the front area will not be excavated. The location of planned excavations is shown in **Figure 4**. The total quantity of soil/fill expected to be excavated and disposed off-Site is 1,622 tons. For each disposal facility to be used in the remedial action, a letter from the developer/QEP to the receiving facility requesting approval for disposal and a letter back to the developer/QEP providing approval for disposal will be submitted to OER prior to any transport and disposal of soil at a facility.

Disposal facilities will be reported to OER when they are identified and prior to the start of remedial action.

### **End-Point Sampling**

End-point samples will be analyzed for compounds and elements as described below utilizing the following methodology:

- Volatile organic compounds by EPA Method 8260;
- Semi-volatile organic compounds by EPA Method 8270;
- Pesticides/PCBs by EPA Method 8081/8082; and
- Target Analyte List metals

New York State ELAP certified labs will be used for all end-point sample analyses. Labs performing end-point sample analyses will be reported in the RCR. The RCR will provide a tabular and map summary of all end-point sample results and will include all data including non-detects and applicable standards and/or guidance values.

### **Confirmation Sampling**

Removal actions for development purposes under this plan will be performed in conjunction with post-excavation confirmation soil sampling. Five (5) confirmation samples will be collected from the base of the excavation at locations to be determined by OER. To evaluate attainment of Restricted Residential SCOs, samples will be analyzed for VOCs, SVOCs, pesticides, PCBs and metals according to analytical methods described above.

### **Hot Spot End-Point Sampling**

For any hotspots identified during this remedial program, including any hotspots identified during the remedial action, hotspot removal actions will be performed to ensure that hotspots are fully removed, and end-point samples will be collected at the following frequency:

1. For excavations less than 20 feet in total perimeter, at least one bottom sample and one sidewall sample biased in the direction of surface runoff.
2. For excavations 20 to 300 feet in perimeter:
  - For surface removals, one sample from the top of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
  - For subsurface removals, one sample from each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
3. For sampling of volatile organics, bottom samples should be taken within 24 hours of excavation and should be taken from the zero to six-inch interval at the excavation floor. Samples taken after 24 hours should be taken at six to twelve inches.
4. For contaminated soil removal, post remediation soil samples for laboratory analysis should be taken immediately after contaminated soil removal. If the excavation is enlarged horizontally, additional soil samples will be taken pursuant to bullets 1-3 above.

Post-remediation sample locations and depth will be biased towards the areas and depths of highest contamination identified during previous sampling episodes unless field indicators such as field instrument measurements or visual contamination identified during the remedial action

indicate that other locations and depths may be more heavily contaminated. In all cases, post-remediation samples should be biased toward locations and depths of the highest expected contamination.

If either LNAPL and/or DNAPL are detected, appropriate samples will be collected for characterization and “finger print analysis” and required regulatory reporting (i.e. spills hotline) will be performed.

### **Quality Assurance/Quality Control**

The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The laboratory will address the accuracy, precision and completeness requirements for all data generated.

Field QA/QC will include the following procedures:

- Calibration of field equipment, including PID, on a daily basis;
- Use of dedicated and/or disposable field sampling equipment;
- Proper sample handling and preservation;
- Proper sample chain of custody documentation; and
- Completion of report logs.

The above procedures will be executed as follows:

- Disposable sampling equipment will be used to minimize cross-contamination between samples;
- For each of the parameters analyzed, a sufficient sample volume will be collected to adhere to the specific analytical protocol, and provide sufficient sample for reanalysis if necessary;

- Because plasticizers and other organic compounds inherent in plastic containers may contaminate samples requiring organic analysis, samples will be collected in glass containers;
- Appropriate sample preservation techniques, including cold temperature storage at 4° C, will be utilized to ensure that the analytical parameters concentrations do not change between the time of sample collection and analysis; and
- Samples will be analyzed prior to the expiration of the respective holding time for each analytical parameter to ensure the integrity of the analytical results.

### **Import of Soils**

Import of soils onto the property will be performed in conformance with the Soil/Materials Management Plan in **Appendix 3**. Imported soil will meet the lower of:

- NYSDEC Part 375 Restricted Residential Use SCO's, and
- Groundwater Protection Standards in Part 375-6.8.

Soil import is not planned on this project.

### **Reuse of Onsite Soils**

Reuse of onsite soils already onsite will be performed in conformance with the Soil/Materials Management Plan in **Appendix 3**. Soil reuse is not planned on this project.

## **3.3 Engineering Controls**

The remedial action will achieve Restricted Residential Use SCOs and no Engineering Controls are required. However, the following design elements will be incorporated into the project as part of the development:

- (1) Composite Cover System
- (2) Vapor Barrier System

If Restricted Residential Use SCOs are not achieved, these elements will constitute Engineering Controls that will be employed in the remedial action to address residual contamination remaining at the Site.

## **Composite Cover System**

Exposure to residual soil/fill will be prevented by an engineered, composite cover system to be built on the Site. This composite cover system is comprised of:

- Minimum 4-inch thick concrete slab below building area and front area
- Concrete pavers in rear yard

**Figure 6** shows the typical design for each remedial cover type used on this Site and location of each cover type built at the Site.

The composite cover system will be a permanent engineering control. The system will be inspected, and its performance certified at specified intervals as required by this RAP and the Site Management Plan. A Soil and Materials Management Plan will be included in the Site Management Plan and will outline the procedures to be followed in the event that the composite cover system and underlying residual soil/fill is disturbed after the remedial action is complete. Maintenance of this composite cover system will be described in the Site Management Plan in the Remedial Closure Report.

## **Vapor Barrier System**

Migration of soil vapor from onsite or offsite sources into the building will be mitigated with a combination of building slab and a vapor barrier. The vapor barrier system will consist of a 20-mil Raven Industries Vapor Block Plus vapor barrier. The vapor barrier will extend throughout the area occupied by the footprint of the new building up the foundation sidewalls to meet grade and will be installed in accordance with manufacturer specifications. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration. All penetrations through the slab for utility lines will be sealed utilizing VaporSeal Tape and Pour-N-Seal by Raven Industries.

A plan showing the location of the proposed vapor barrier system plan and details is provided in **Figures 7A & 7B**. Product specification sheets are provided in **Appendix 4**. The Remedial Closure Report will include as-built drawings and diagrams; manufacturer documentation; and photographs.

The Vapor Barrier System is a permanent engineering control and will be inspected and its performance certified at specified intervals as required by this RAP and the Site Management Plan. A Soil and Materials Management Plan will be included in the Site Management Plan and will outline the procedures to be followed in the event that the composite cover system and underlying vapor barrier system is disturbed after the remedial action is complete. Maintenance of these systems will be described in the Site Management Plan in the Remedial Closure Report.

### **3.4 Institutional Controls**

A Restricted Residential Use remedial action is proposed, and Institutional Controls are not required. If Restricted Residential Use SCOs are not achieved, Institutional Controls (ICs) will be incorporated in this remedial action to manage residual soil/fill and other media and render the Site protective of public health and the environment. These ICs define the program to operate, maintain, inspect and certify the performance of Engineering Controls and Institutional Controls on this property. Institutional Controls would be implemented in accordance with a Site Management Plan included in the final Remedial Closure Report (RCR). Institutional Controls would be:

- Continued registration of the E-Designation for the property. This RAP includes a description of all ECs and ICs and summarizes the requirements of the SMP which will note that the property owner and property owner's successors and assigns must comply with the approved SMP;
- Submittal of a SMP in the RCR for approval by OER that provides procedures for appropriate operation, maintenance, inspection, and certification of ECs and ICs. SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; 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 the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determine by OER in the SMP and will comply with RCNY §43-1407(1)(3).

- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;
- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP;
- The Site will be used for residential use and will not be used for a higher level of use without prior approval by OER.

### **3.5 Site Management Plan**

A Restricted Residential Use remedial action is proposed, and Site Management is not required. If a Restricted Residential Use remedial action is not achieved, Site Management will be required and will be the last phase of remediation. Site Management will begin with the approval of the Remedial Closure Report and issuance of the Notice of Satisfaction (NOS) for the Remedial Action. The Site Management Plan (SMP) describes appropriate methods and procedures to ensure implementation of all ECs and ICs that are required by this RAP. The Site Management Plan is submitted as part of the RCR but will be written in a manner that allows its use as an independent document. Site Management continues until terminated in writing by OER. The property owner is responsible to ensure that all Site Management responsibilities defined in the Site Management Plan are implemented.

The SMP will provide a detailed description of the procedures required to manage residual soil/fill left in place following completion of the remedial action in accordance with the Voluntary Cleanup Agreement with OER. This includes a plan for: (1) implementation of EC's and ICs; (2) operation and maintenance of EC's; (3) inspection and certification of IC's and EC's.

Site management activities and EC/IC certification will be scheduled by OER on a periodic basis to be established in the RCR and the SMP and will be subject to review and modification by OER. The Site Management Plan will be based on a calendar year and certification reports will be due for submission to OER by July 30 of the year following the reporting period.



## **4.0 Remedial Action Management**

### **4.1 Project Organization and Oversight**

Principal personnel who will participate in the remedial action include Anusha Agnoor, Project Manager (PM), Tarek Z. Khouri, Professional Engineer (PE) and Mark E. Robbins, Qualified Environmental Professional (QEP).

### **4.2 Site Security**

Site access will be controlled through gated entrances to the fenced property. Barriers will be installed around work areas as needed to delineate and restrict access to the work area. For work areas of limited size, barrier tape will be sufficient to delineate and restrict access. For larger worker areas, temporary fencing will be provided.

### **4.3 Work Hours**

The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. The hours of operation will be conveyed to OER during the pre-construction meeting.

### **4.4 Construction Health and Safety Plan**

The site-specific Construction Health and Safety Plan (CHASP) is included in **Appendix 2**. The Site Safety Coordinator will be Mr. Aglin Zefi. Remedial work performed under this RAP will be in full compliance with applicable health and safety laws and regulations, including Site and OSHA worker safety requirements and HAZWOPER requirements. Confined space entry, if any, will comply with OSHA requirements and industry standards and will address potential risks. The parties performing the remedial construction work will ensure that performance of work is in compliance with the CHASP and applicable laws and regulations. The CHASP pertains to remedial and invasive work performed at the Site until the issuance of the Notice of Satisfaction.

All field personnel involved in remedial activities will participate in training required under 29 CFR 1910.120, including 40-hour hazardous waste operator training and annual 8-hour refresher training. Site Safety Officer will be responsible for maintaining workers training records. Personnel entering any exclusion zone will be trained in the provisions of the CHASP and will comply with the requirements of 29 CFR 1910.120. Site-specific training will be provided to field personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

An emergency contact sheet with names and phone numbers is included in the CHASP. That document will define the specific project contacts for use in case of emergency.

#### **4.5 Community Air Monitoring Plan**

Real-time air monitoring for volatile organic compounds (VOCs) and particulate levels at the perimeter of the exclusion zone or work area will be performed. Continuous monitoring will be performed for all ground intrusive activities and during the handling of contaminated or potentially contaminated media. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pit excavation or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection, for instance, will 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. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed 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. Exceedances of action levels observed during performance of the Community Air Monitoring Plan (CAMP) will be reported to the NYC OER Project Manager and included in the Daily Report.

## **VOC Monitoring, Response Levels, and Actions**

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during invasive work. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- 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 will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- 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 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 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.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

All 15-minute readings must be recorded and be available for OER personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

## **Particulate Monitoring, Response Levels, and Actions**

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will 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.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ( $\text{mcg}/\text{m}^3$ ) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed  $150 \text{ mcg}/\text{m}^3$  above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than  $150 \text{ mcg}/\text{m}^3$  above the upwind level, work will be stopped, and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within  $150 \text{ mcg}/\text{m}^3$  of the upwind level and in preventing visible dust migration.

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

### **4.6 Agency Approvals**

All permits or government approvals required for remedial construction have been or will be obtained prior to the start of remediation and construction. Approval of this RAP by OER does not constitute satisfaction of these requirements and will not be a substitute for any required permit.

## **4.7 Site Preparation**

### **Pre-Construction Meeting**

OER will be invited to attend the pre-construction meeting at the Site with all parties involved in the remedial process prior to the start of remedial construction activities.

### **Mobilization**

Mobilization will be conducted as necessary for each phase of work at the Site. Mobilization includes field personnel orientation, equipment mobilization (including securing all sampling equipment needed for the field investigation), marking/staking sampling locations and utility mark-outs. Each field team member will attend an orientation meeting to become familiar with the general operation of the Site, health and safety requirements, and field procedures.

### **Utility Marker Layouts, Easement Layouts**

The presence of utilities and easements on the Site will be fully investigated prior to the performance of invasive work such as excavation or drilling under this plan by using, at a minimum, the One-Call System (811). Underground utilities may pose an electrocution, explosion, or other hazard during excavation or drilling activities. All invasive activities will be performed in compliance with applicable laws and regulations to assure safety. Utility companies and other responsible authorities will be contacted to locate and mark the locations, and a copy of the mark out ticket will be retained by the contractor prior to the start of drilling, excavation or other invasive subsurface operations. Overhead utilities may also be present within the anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead utilities will be prevented by maintaining a safe distance between overhead power lines and drill rig masts.

Proper safety and protective measures pertaining to utilities and easements, and compliance with all laws and regulations will be employed during invasive and other work contemplated under this RAP. The integrity and safety of on-Site and off-Site structures will be maintained during all invasive, excavation or other remedial activity performed under the RAP.

## **Dewatering**

Dewatering is not planned and anticipated during remediation.

## **Equipment and Material Staging**

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations.

## **Stabilized Construction Entrance**

Steps will be taken to ensure that trucks departing the site will not track soil, fill or debris off-Site. Such actions may include use of cleaned asphalt or concrete roads or use of stone or other aggregate-based egress paths between the truck inspection station and the property exit.

Measures will be taken to ensure that adjacent roadways will be kept clean of project related soils, fill and debris.

## **Truck Inspection Station**

An outbound-truck inspection station will be set up close to the Site exit. Before exiting the Site, trucks will be required to stop at the truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris will be removed. Brooms, shovels and potable water will be utilized for the removal of soil from vehicles and equipment, as necessary.

## **Extreme Storm Preparedness and Response Contingency Plan**

Damage from flooding or storm surge can include dislocation of soil and stockpiled materials, dislocation of site structures and construction materials and equipment, and dislocation of support of excavation structures. Damage from wind during an extreme storm event can create unsafe or unstable structures, damage safety structures and cause downed power lines creating dangerous site conditions and loss of power. In the event of emergency conditions caused by an extreme storm event, the enrollee will undertake the following steps for site preparedness prior to the event and response after the event.

## **Storm Preparedness**

Preparations in advance of an extreme storm event will include the following: containerized hazardous materials and fuels will be removed from the property; loose materials will be secured to prevent dislocation and blowing by wind or water; heavy equipment such as excavators and generators will be removed from excavated areas, trenches and depressions on the property to high ground or removed from the property; an inventory of the property with photographs will be performed to establish conditions for the site and equipment prior to the event; stockpile covers for soil and fill will be secured by adding weights such as sandbags for added security and worn or ripped stockpile covers will be replaced with competent covers; stockpiled hazardous wastes will be removed from the property; stormwater management systems will be inspected and fortified, including, as necessary: clean and reposition silt fences, hay bales; clean storm sewer filters and traps; and secure and protect pumps and hosing.

## **Storm Response**

At the conclusion of an extreme storm event, as soon as it is safe to access the property, a complete inspection of the property will be performed. A site inspection report will be submitted to OER at the completion of site inspection and after the site security is assessed. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. Damage from storm conditions that result in acute public safety threats, such as downed power lines or imminent collapse of buildings, structures or equipment will be reported to public safety authorities via appropriate means such as calling 911. Petroleum spills will be reported to NYS DEC within 2 hours of identification and consistent with State regulations. Emergency and spill conditions will also be reported to OER. Public safety structures, such as construction security fences will be repaired promptly to eliminate public safety threats. Debris will be collected and removed. Dewatering will be performed in compliance with existing laws and regulations and consistent with emergency notifications, if any, from proper authorities. Eroded areas of soil including unsafe slopes will be stabilized and fortified. Dislocated materials will be collected and appropriately managed. Support of excavation structure will be inspected and fortified as necessary. Impacted stockpiles

will be contained and damaged stockpile covers will be replaced. Stormwater control systems and structures will be inspected and maintained as necessary. If soil or fill materials are discharged off site to adjacent properties, property owners and OER will be notified and corrective measure plan designed to remove and clean dislocated material will be submitted to OER and implemented following approval by OER and granting of site access by the property owner. Impacted offsite areas may require characterization based on site conditions, at the discretion of OER. If onsite petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYS DEC's spill hotline at DEC 800-457-7362 within statutory defined timelines. If the source of the spill is ongoing and can be identified, it should be stopped if this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYS DEC.

### **Storm Response Reporting**

A site inspection report will be submitted to OER at the completion of site inspection. An inspection report established by OER is available on OER's website ([www.nyc.gov/oer](http://www.nyc.gov/oer)) and will be used for this purpose. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. The site inspection report will be sent to the OER project manager and will include the site name, address, tax block and lot, site primary and alternate contact name and phone number. Damage and soil release assessment will include: whether the project had stockpiles; whether stockpiles were damaged; photographs of damage and notice of plan for repair; report of whether soil from the site was dislocated and whether any of the soil left the site; estimates of the volume of soil that left the site, nature of impact, and photographs; description of erosion damage; description of equipment damage; description of damage to the remedial program or the construction program, such as damage to the support of excavation; presence of onsite or offsite exposure pathways caused by the storm; presence of petroleum or other spills and status of spill reporting to NYS DEC; description of corrective actions; schedule for corrective actions. This report should be completed and submitted to OER project manager with photographs within 24 hours of the time of safe entry to the property after the storm event.



## **4.8 Traffic Control**

Drivers of trucks leaving the Site with soil/fill will be instructed to proceed without stopping in the vicinity of the Site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the site is a right out of the Site to head south on Westchester Avenue. Trucks will enter either Interstate-95 or Interstate-78 and continue on non-local roads until they reach their respective destination, likely in New Jersey or Pennsylvania.

## **4.9 Demobilization**

Demobilization will include:

- As necessary, restoration of temporary access areas and areas that may have been disturbed to accommodate support areas (e.g., staging areas, decontamination areas, storage areas, temporary water management areas, and access area);
- Removal of sediment from erosion control measures and truck wash and disposal of materials in accordance with applicable laws and regulations;
- Equipment decontamination, and;
- General refuse disposal.

Equipment will be decontaminated and demobilized at the completion of all field activities.

Investigation equipment and large equipment (*e.g.*, soil excavators) will be washed at the truck inspection station as necessary. In addition, all investigation and remediation derived waste will be appropriately disposed.

## **4.10 Reporting and Record Keeping**

### **Daily Reports**

Daily reports providing a general summary of activities for each day of active remedial work will be emailed to the OER Project Manager by the end of the following day. Those reports will include:

- Project number and statement of the activities and an update of progress made, and locations of excavation and other remedial work performed;

- Quantities of material imported and exported from the Site;
- Status of on-Site soil/fill stockpiles;
- A summary of all citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- A summary of CAMP results noting all excursions, if any. CAMP data may be reported;
- Photograph of notable Site conditions and activities.

The frequency of the reporting period may be revised in consultation with OER project manager based on planned project tasks. Daily email reports are not intended to be the primary mode of communication for notification to OER of emergencies (accidents, spills), requests for changes to the RAP or other sensitive or time critical information. However, such information will be included in the daily reports. Emergency conditions and changes to the RAP will be communicated directly to the OER project manager by personal communication. Daily reports will be included as an Appendix in the RCR.

An alpha-numeric site map identifying the locations described in reports will be established in coordination with the selected soil disposal facility and will be submitted to OER prior to field mobilization.

### **Record Keeping and Photo-Documentation**

Job-site record keeping for all remedial work will be performed. These records will be maintained on-Site during the project and will be available for inspection by OER staff.

Representative photographs will be taken of the Site prior to any remedial activities and during major remedial activities to illustrate remedial program elements and contaminant source areas. Photographs will be submitted at the completion of the project in the RCR in digital format (i.e. jpeg files).

### **4.11 Complaint Management**

All complaints from citizens will be promptly reported to OER. Complaints will be addressed, and outcomes will also be reported to OER in daily reports. Notices to OER will include the

nature of the complaint, the party providing the complaint, and the actions taken to resolve any problems.

#### **4.12 Deviations from the Remedial Action Plan**

All changes to the RAP will be reported to, and approved by, the OER Project Manager and will be documented in daily reports and reported in the RCR. The process to be followed if there are any deviations from the RAP will include a request for approval for the change from OER noting the following:

- Reasons for deviating from the approved RAP;
- Effect of the deviations on overall remedy; and
- Determination that the remedial action with the deviation(s) is protective of public health and the environment.

## **5.0 Remedial Closure Report**

A Remedial Closure Report (RCR) will be submitted to OER following implementation of the remedial action defined in this RAP. The RCR will document that the remedial work required under this RAP has been completed and has been performed in compliance with this plan. The RCR will include:

- Information required by this RAP;
- Text description with thorough detail of all engineering and institutional controls (if Restricted Residential Use remedial action is not achieved);
- As-built drawings for all constructed remedial elements;
- Manifests for all soil or fill disposal;
- Photographic documentation of remedial work performed under this remedy;
- Site Management Plan (if Restricted Residential Use remedial action is not achieved);
- Description of any changes in the remedial action from the elements provided in this RAP and associated design documents;
- Tabular summary of all end point sampling results (including all soil test results from the remedial investigation for soil that will remain on site) and all soil/fill waste characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all soil or fill material removed from the Site including a map showing the location of these excavations and hotspots, tanks or other contaminant source areas;
- Full accounting of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material;
- Account of the origin and required chemical quality testing for material imported onto the Site;

- Continue registration of the property with an E-Designation by the NYC Department of Buildings (if Restricted Residential Use remedial action is not achieved);
- The RAP and Remedial Investigation Report will be included as appendices to the RCR;
- Reports and supporting material will be submitted in digital form and final PDF's will include bookmarks for each appendix.

## Remedial Closure Report Certification

I, [name], certify the following:

- I am currently a registered professional engineer licensed by the State of New York.
- I performed professional engineering services and had primary direct responsibility for implementation of the remedial program for the [site name (address)] site, site number [OER project number].
- I have reviewed this document, to which my signature and seal are affixed.
- Engineering Controls implemented during this remedial action were designed by me or a person under my direct supervision and achieve the goals established in the Remedial Action Plan for this site.
- The Engineering Controls constructed during this remedial action were professionally observed by me or by a person under my direct supervision and (1) are consistent with the Engineering Control design established in the Remedial Action Plan and (2) are accurately reflected in the text and drawings for as-built design reported in this Remedial Closure Report.
- The OER-approved Remedial Action Plan dated [date] and Stipulations in a letter dated [date] were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

Name

PE License Number

Signature

Date

PE Stamp

I, [name], am a Qualified Environmental Professional. I had primary direct responsibility for implementation of the remedial program for the [site name (address)] site, site number [OER project number]. I certify to the following:

- The OER-approved Remedial Action Plan dated [date] and Stipulations in a letter dated [date] were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

QEP Name

QEP Signature

Date

## 6.0 Schedule

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a 24-week remediation period is anticipated.

Schedule Milestone	Weeks from Remedial Action Start	Duration (weeks)
OER Approval of RAP	0	0
Mobilization	2	1
Remedial Excavation	4	2
Demobilization	10	1
Submit Remedial Closure Report	24	8