# Remedial Action Plan

**For**

**108-01 ATLANTIC AVENUE**

**Queens, NEW YORK**

**Block 9315, Lot 23**

**OER Project Number 16EH-NO48Q**

**E-Designation E-281**

**CEQR Number 12DCP106Q**

**Woodhaven/Richmond Hill Rezoning**

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# REMEDIAL ACTION PLAN

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# LIST OF ACRONYMS

| Acronym | Definition |
|---|---|
| AST | Aboveground Storage Tank |
| CAMP | Community Air Monitoring Plan |
| C&D | Construction & Demolition |
| CEQR | City Environmental Quality Review |
| CFR | Code of Federal Regulations |
| CHASP | Construction Health and Safety Plan |
| CO | Certificate of Occupancy |
| CPC | City Planning Commission |
| DSNY | Department of Sanitation |
| "E" | E-Designation |
| EAS | Environmental Assessment Statement |
| EIS | Environmental Impact Statement |
| ESA | Environmental Site Assessment |
| EC/IC | Engineering Control and Institutional Control |
| ELAP | Environmental Laboratory Accreditation Program |
| FDNY | New York City Fire Department |
| GPR | Ground Penetrating Radar |
| HASP | Health and Safety Plan |
| HAZWOPER | Hazardous Waste Operations Emergency Response |
| IDW | Investigation Derived Waste |
| Notice - NNO | Notice of No Objection |
| Notice - NTP | Notice To Proceed |
| Notice - NOS | Notice Of Satisfaction |
| Notice - FNOS | Final Notice of Satisfaction |
| NYC BSA | New York City Board of Standards and Appeals |
| NYC DCP | New York City Department of City Planning |
| NYC DEP | New York City Department of Environmental Protection |
| NYC DOB | New York City Department of Buildings |
| NYC DOF | New York City Department of Finance |
| NYC HPD | New York City Housing Preservation and Development |
| NYCRR | New York Codes Rules and Regulations |
| NYC OER | New York City Office of Environmental Remediation |

| | |
|---|---|
| NYS DEC | New York State Department of Environmental Conservation |
| NYS DEC DER | New York State Department of Environmental Conservation Division of Environmental Remediation |
| NYS DEC PBS | New York State Department of Environmental Conservation Petroleum Bulk Storage |
| NYS DOH | New York State Department of Health |
| NYS DOT | New York State Department of Transportation |
| OSHA | United States Occupational Health and Safety Administration |
| PAHs | Polycyclic Aromatic Hydrocarbons |
| PCBs | Polychlorinated Biphenyls |
| PE | Professional Engineer |
| PID | Photo Ionization Detector |
| PM | Particulate Matter |
| QEP | Qualified Environmental Professional |
| RA | Register Architect |
| RAP | Remedial Action Plan |
| RCA | Recycled Concrete Aggregate |
| RCR | Remedial Closure Report |
| RD | Restrictive Declaration |
| RI | Remedial Investigation |
| SCOs | Soil Cleanup Objectives |
| SCG | Standards, Criteria and Guidance |
| SMP | Site Management Plan |
| SPDES | State Pollutant Discharge Elimination System |
| SSDS | Sub-Slab Depressurization System |
| SVOCs | Semi-Volatile Organic Compounds |
| USCS | Unified Soil Classification System |
| USGS | United States Geological Survey |
| UST | Underground Storage Tank |
| TAL | Target Analyte List |
| TCL | Target Compound List |
| TCO | Temporary Certificate of Occupancy |
| VB | Vapor Barrier |
| VOCs | Volatile Organic Compounds |

# CERTIFICATION

I, Karen G. Tyll, PE, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the 108-01 Atlantic Avenue Site.

I, James M. DeMartinis am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the 108-01 Atlantic Avenue Site.

I certify that 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.

Karen G. Tyll, PE
Name

079520
NYS PE License Number

Signature

2/2/16
Date


James M. DeMartinis
QEP Name

James M. DeMartinis
QEP Signature

2/2/16
Date

# EXECUTIVE SUMMARY

108 Atlantic LLC has established this plan to remediate an 19,561-square foot site located at 108-01 Atlantic Avenue in Queens, New York. A Phase II Subsurface Investigation (Phase II) was performed to compile and evaluate data and information necessary to develop this Remedial Action Plan (RAP). The remedial action described in this document achieves the remedial objectives, complies with applicable environmental standards, criteria and guidance and conforms to applicable laws and regulations.

**Site Location and Current Usage**

The Site is located at 108-01 Atlantic Avenue in the Richmond Hill section in Queens, New York and is identified as Block 9315 and Lot 23 on the New York City Tax Map. Once the project is complete, Lot 23 will be 108-11 Atlantic Avenue and Lot 30 will be 108-03 Atlantic Avenue. Figure 1 shows the Site location. The Site is 19,561-square feet and is bounded by residential to the north, Atlantic Avenue to the south, 109$^{th}$ Street to the east, and 108$^{th}$ Street to the west. A map of the site boundary is shown in Figure 2. Currently, the Site is vacant with no buildings.

**Summary of Proposed Redevelopment Plan**

The proposed future use of the Site will consist of the construction of two one story commercial use buildings (Use Group 6A; BC Occupancy M) with Basement. The proposed use is consistent with existing zoning for the property.

*Building #1*

New 1 Story Commercial Building (to be Lot 30 and 108-03 Atlantic Avenue)

- 18' in Height.
- The building covers 66% of the lot.
- Accessory off-street parking in the open space
- 7,623 SF of retail on the first floor
- 1,000 SF of storage, mech. room, utility room and meter room in the basement

*Building #2*

New 1-Story Commercial Building (to be Lot 23 and 108-11 Atlantic Avenue).

- 18' in Height.
- The building covers 79% of the lot.
- Accessory off-street parking in the open space
- 5,756 SF of retail on the first floor
- 1,000 SF of storage, mech. room, utility room and meter room in the basement

Each of the buildings will have a 1,000 $ft^2$ or 2,000 $ft^2$ basement (Figure 2). The proposed excavation depth is 14 feet for the footings and 12 feet for the remainder of the basement. The slab on grade/open spaces will only be 4-6" thick. Additionally, in the on-grade area of the building, there will be approximately 4 feet of excavation required for foundation elements. The remainder of the site which will be finished with at-grade parking underlain by 8 drywells will require excavation of approximately 1 foot. The total excavation volumes can be seen in Table 2. The water table will not be encountered during excavation.

**Summary of the Remedy**

The proposed remedial action achieves all of the remedial action goals established for the project. The proposed remedial action is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants and uses standard methods that are well established in the industry. The proposed remedial action will consist of:

1. Perform a Community Air Monitoring Program for particulates and volatile organic carbon compounds.

2. Establish Soil Cleanup Objectives (SCOs) for contaminants of concern. Excavation and removal of soil/fill exceeding SCOs.

3. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of Unrestricted Use SCOs.

4. Construction and maintenance of an engineered, composite cover consisting of concrete pavement (4-inches thick) and a building slab (8-inches thick) to prevent human exposure to residual soil/fill remaining under the Site.

5. Installation of a vapor barrier system beneath the building slab and along foundation sidewalls.

6. Installation and operation of a passive sub-slab depressurization system.

7. 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.

8. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.

9. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.

10. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.

11. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.

12. Submission of a Remedial Closure Report (RCR) that describes the remedial activities, certifies that the remedial requirements have been achieved, and describes all Engineering and Institutional Controls to be implemented at the Site, and lists any changes from this RAP.

# REMEDIAL ACTION PLAN

## 1.0 SITE BACKGROUND

This Remedial Action Plan (RAP) and site-specific Construction Health and Safety Plan (CHASP) have been developed for 108-01 Atlantic Avenue in the Richmond Hill section of Queens New York (the Site). This project has been assigned project number 16EH-N048Q by OER. This RAP describes the remediation and/or mitigation activities to be implemented at the Site in coordination with the New York City Office of Environmental Remediation (OER) for the purposes of satisfying the requirements of the Hazardous Materials E-Designation Program and obtaining a Notice To Proceed. An E-Designation for Hazardous Materials (E-7) was placed on the Site by the New York City Department of City Planning (DCP) as part of the Woodhaven/Richmond Hill rezoning action (CEQR number 12DCP106Q). The site-specific CHASP (Appendix A) addresses site-specific hazards, identified contaminants of concern and safety requirements associated with remediation and mitigation activities in accordance with ASTM and OSHA guidelines.

### 1.1 Site Location and Current Usage

The Site is located at 108-01 Atlantic Avenue in the Richmond Hill section in Queens, New York and is identified as Block 9315 and Lot 23 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 119,561-square feet and is bounded by residential to the north, Atlantic Avenue to the south, 109$^{th}$ Street to the east, and 108$^{th}$ Street to the west. A map of the site boundary is shown in Figure 2. Currently, the Site is vacant with no buildings.

### 1.2 Proposed Redevelopment Plan

The proposed future use of the Site will consist of the construction of two one-story commercial use buildings (Use Group 6A; BC Occupancy M) with Basement. The proposed use is consistent with existing zoning for the property. Plans are given in Appendix B.

*Building #1*

New 1 Story Commercial Building (to be Lot 30 and 108-03 Atlantic Avenue)

- 18' in Height.
- The building covers 66% of the lot.
- Accessory off-street parking in the open space
- 7,623 $ft^2$ of retail on the first floor
- 1,000 $ft^2$ of storage, mech. room, utility room and meter room in the basement

*Building #2*

New 1 Story Commercial Building (to be Lot 23 and 108-11 Atlantic Avenue).

- 18' in Height.
- The building covers 79% of the lot.
- Accessory off-street parking in the open space
- 5,756 $ft^2$of retail on the first floor
- 1,000 $ft^2$ of storage, mech. room, utility room and meter room in the basement

Each of the buildings has a 1,000 $ft^2$ basement. The proposed excavation depth is 10 feet. The slab on grade/open spaces will only be 8" thick. Hence the total excavation volume is 2 ( 1,000 $ft^2$ x 10' = 20,000 $ft^3$ with up to an additional 5,000 $ft^3$ site wide. There will be 8 drywells installed underneath the open space concrete area so additional soils will be excavated. The water table will not be encountered during excavation.

A gas station previously occupied the lot. It has since been demolished. The related DOB application numbers are 421080635 and 421170039. They were signed off on 07/15.

### 1.3 Description of Surrounding Property

The site is located on Atlantic Avenue with commercial properties (stores and auto repair shops) with scattered residences to the east and west. There are multi-family residences immediately to the north of the site as well as along 108th and 109th streets.

There are no sensitive receptors such as schools, hospitals, and day care facilities within a 250 to 500-foot radius. The Maurice A. Fitzgerald Playground is located approximately 500 feet west of the site but on the south side of Atlantic Avenue.

## 1.4 Environmental Investigation Reports

The following environmental work plans and reports were developed for the Site:

- *Remedial Investigation Report*, November 2015, prepared by Seacliff Environmental.
- *Tank Closure Report*, March 2015, prepared by Tyree Environmental.
- *Phase II Environmental Site Assessment*, January 2015, prepared by LBG.

The following work has been performed at the site:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed 11 soil borings across the entire project Site, and collected 22 soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed 4 groundwater monitoring wells throughout the Site to establish groundwater flow and collected 5 groundwater samples for chemical analysis to evaluate groundwater quality;
4. Installed 5 soil vapor probes around Site perimeter and collected 5 samples for chemical analysis.

Digital (PDF) copies of the above referenced environmental work plans and reports are included as Appendix B.

## 1.5 Summary of Regulatory Correspondence

There is no known regulatory correspondence beyond communications with OER.

## 1.6 Findings of Environmental Investigation

1. Elevation of the property is 48 feet above mean sea level.
2. Depth to groundwater is 32 feet at the Site.

3. Groundwater flow is from north to south beneath the Site.

4. Depth to bedrock is approximately 450 feet at the Site.

5. The stratigraphy of the site, from the surface down, consists of 2 to 8 feet of fill underlain by glacial outwash sands to at least a depth of 40 feet.

6. Soil/fill samples results from the 2015 Seacliff Environmental RI were compared to New York State Department of Environmental Conservation (NYSDEC) Unrestricted Use Soil Cleanup Objectives and Restricted Residential Use Soil Cleanup Objectives (SCOs) as presented in 6NYCRR Part 375-6.8 and CP51. Soil/fill results showed trace concentrations of several VOCs and PCBs, but none above Unrestricted Use SCOs. Several SVOCs consisting of Polycyclic Aromatic Hydrocarbons (PAHs) were detected with benz(a)anthracene (max. of 1,600 µg/kg), benzo(a)pyrene (max. of 1,500 µg/kg), benzo(b)fluoranthene (max. of 1,400 µg/kg), benzo(k)fluoranthene (max. of 1,100 µg/kg), chrysene (max. of 1,600µg/kg), and indeno(1,2,3-cd)pyrene (1,100/kg), exceeding Restricted Residential Use SCOs within shallow soil samples. One pesticide, 4,4'-DDT, was detected in two shallow samples (max of 7.1 µg/kg) above the Unrestricted Use SCO. Several metals including lead (max. of 192 mg/kg), mercury (max. of 0.261 mg/kg), and zinc (max. of 142 mg/kg) exceeded Unrestricted Use SCOs in two shallow samples.

7. Groundwater sample results from the RI were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater results showed no VOCs, PCBs or pesticides in any sample. One SVOC, bis(2-ethylhexyl)phthalate (max of 10 µg/L), exceeded its GQS. Several metals were identified in groundwater, but only iron (0.552 mg/L), manganese (max of 2.65 mg/L) and sodium (max of 35.1 mg/L) exceeded their respective GQS in dissolved samples.

8. Soil vapor samples collected during the RI were compared to the compounds listed in Table 3.1 Air Guideline Values Derived by the NYSDOH located in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion dated October 2006. Soil vapor samples collected during the RI showed moderate levels of petroleum-related VOCs and chlorinated VOCs. The total

concentration of petroleum-related VOCs (BTEX) ranged from 5.31 µg/$m^3$ to 6,012.8 µg/m3. Tetrachloroethylene (PCE) was detected in two soil vapor samples with a maximum concentration of 238 µg/$m^3$. 1,1,1-trichloroethane (TCA), carbon tetrachloride, and trichloroethylene (TCE) were not detected in any of the five samples. Concentrations of tetrachloroethylene were above the mitigation level ranges established within the NYSDOH soil vapor guidance matrix.

For environmental investigation data, consult the reports listed in Section 1.4. Based on an evaluation of the environmental data and information, disposal of significant amounts of hazardous waste is not suspected at this site.

# 2 DESCRIPTION OF REMEDIATION

## 2.1 Objectives

The Site remediation and mitigation objectives are:

### 2.1.1 Soil

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

### 2.1.3 Soil Vapor

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

Remedial and mitigation measures described herein will be performed in accordance with applicable laws and regulations, and the site-specific CHASP. This remedy is protective of public health and/or the environment for the intended use.

## 2.2 Summary of Remedial Action

The proposed plan achieves all of the remedial action goals established for the project. The proposed remedial action is effective in both the short-term and long-term, reduces mobility, toxicity and volume of contaminants, and uses standard methods that are well established in the industry.

The proposed remedial action will consist of:

1. Perform a Community Air Monitoring Program for particulates and volatile organic carbon compounds.

2. Excavation and removal of soil/fill exceeding the Unrestriced Use Soil Cleanup Objectives (UUSCO).

3. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of UUSCOs.

4. Construction and maintenance of an engineered composite cover consisting of concrete pavement (4-inches thick) and building slab (8-inches thick) to prevent human exposure to residual soil/fill remaining under the Site.

5. Installation of a vapor barrier system beneath the building slab and along foundation sidewalls.

6. Installation and operation of a passive sub-slab depressurization system.

7. 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.

8. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.

9. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.

10. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.

11. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.

12. Submission of a Remedial Closure Report (RCR) that describes the remedial activities certifies that the remedial requirements have been achieved, and describes all Engineering and Institutional Controls to be implemented at the Site, and lists any changes from this RAP.

## 2.3 Soil Cleanup Objectives and Soil/Fill Management

The Unrestricted Use Soil Cleanup Objectives are to be used for this projectand are listed in Table 3. 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 1. The location of planned excavations is shown in Figure 2.

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.

### 2.3.1 Estimated Soil/Fill Removal Quantities

The total quantity of soil/fill expected to be excavated and disposed off-Site is 1,200 tons. The proposed disposal locations for Site-derived impacted materials are listed below. Additional disposal locations established at a later date will be reported promptly to the OER Project Manager.

| **Disposal Facility** | **Waste Type** | **Estimated Quantities** |
|---|---|---|
| Clean Earth<br><br>Carteret, New Jersey | Historic fill and clean soil | 1,200 tons |

### 2.3.2 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;
- Target Analyte List metals; and
- Pesticides/PCBs by EPA Method 8081 and 8082.

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.

### 2.3.3 Confirmation End-Point Sampling

Removal actions for development purposes under this plan will be performed in conjunction with seven confirmation end-point samples as shown on Figure 7. To evaluate attainment of UUSCOs , analytes will include those for which UUSCOs have been developed, including VOCs, SVOCs, pesticides, PCBs, and metals according to analytical methods described above.

### 2.3.4 Hotspot 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.

### 2.3.5 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 accuracy, precision and completeness requirements will be addressed by the laboratory for all data generated.

One duplicate sample for every 20 samples collected will be submitted to the approved laboratory for analysis of the same parameters. One trip blank will be submitted to the laboratory with each shipment of soil samples.

Collected samples will be appropriately packaged, placed in coolers and shipped via overnight courier or delivered directly to the analytical laboratory by field personnel. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or "cold-paks" to maintain a temperature of 4$^{o}$C.

Dedicated disposable sampling materials will be used for the collection endpoint samples, eliminating the need to prepare field equipment (rinsate) blanks. However, if non-disposable equipment is used, (stainless steel scoop, etc.) field rinsate blanks will be prepared at the rate of 1 for every eight samples collected. Decontamination of non-dedicated sampling equipment will consist of the following:

- Gently tap or scrape to remove adhered soil
- Rinse with tap water

- Wash with alconox® detergent solution and scrub
- Rinse with tap water
- Rinse with distilled or deionized water
- Prepare field blanks by pouring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers. Trip blanks will be used whenever samples are transported to the laboratory for analysis of VOCs. Trip blanks will not be used for samples to be analyzed for metals, SVOCs or pesticides. One blind duplicate sample will be prepared and submitted for analysis every 20 samples.

### 2.3.6 Import and Reuse of Soils

Import of soils onto the property and reuse of soils already onsite will be performed in conformance with the Soil/Materials Management Plan in Appendix 1. However, the estimated quantity of soil to be imported into the Site for backfill and cover soil is 0 tons. The estimated quantity of onsite soil/fill expected to be reused/relocated on Site is 0 tons. However, two sets of tanks were removed at the site and clean backfill was used in the excavations. As part of the RI, borings were drilled at each former tank location (B-3 and B-8). The fill was observed to be angular concrete fragments and gravel (rock) with very little fines. There was no visual/olfactory evidence of contamination and PID readings were 0.0 ppm. The delivery ticket for this backfill - Construx Recycled Aggregate dated February 20, 2015 -is provided in the previous environmental reports Appendix. A letter from Metro Environmental Services dated September 3, 2015 certifying that this backfill material was not contaminated is also provided in the Appendix. The architect will determine if this backfill is suitable for construction. If not, it will be removed and properly disposed of. Replacement fill, if needed, will conform to the requirements outlined in the RAWP.

## 2.4 Engineering Controls

Engineering Controls were employed in the remedial action to address residual contamination remaining at the site. The Site has three primary Engineering Control (EC) Systems. These are:

- composite cover system consisting of concrete covered roads, concrete covered sidewalks, and concrete building slabs;
- vapor barrier system; and
- sub-slab depressurization system.

### 2.4.1 Composite Cover System

Exposure to residual soil/fill will be prevented by an engineered, composite cover system to be built on the Site. The composite cover system will be comprised of concrete covered parking areas, concrete covered sidewalks, and a concrete building slab (all minimum 4-inches in thickness).

The site building slab will be a permanent engineering control for the Site. The system will be inspected and reported at specified intervals as required by the Site Management Plan (SMP). A Soil 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 RCR.

The composite cover system is a permanent engineering control for the Site.

### 2.4.2 Waterproofing/Vapor Barrier System

A Vaporblock Plus VBP 20-mil vapor barrier, manufactured by Raven Industries, will be installed beneath the structure's basement and at grade slab and along foundation sidewalls to grade. Product specification sheets are provided in Appendix 7. The RCR will include photographs (maximum of two photos per page) of the installation process, professional engineer (PE) certified letter (on company letterhead) from the primary contractor responsible for installation oversight and field inspections, and a copy of the manufacturer's certificate of warranty.

### 2.4.3 Sub-Slab Depressurization System

Migration of soil vapor into the building will be mitigated with the construction of a passive Sub-Slab Depressurization System (SSDS). The horizontal piping will consist of 4"

diameter, perforated PVC pipe set in a 6" minimum gravel bed.The piping will encompass both buildings and under the proposed basement.

The passive SSDS is an engineering control for the remedial action. The remedial engineer will certify in the RCR that the passive SSDS was designed and properly installed to establish a vacuum in the gas permeable layer and a negative (decreasing outward) pressure gradient across the building slab to prevent vapor migration into the building.

The SSDS is a permanent engineering control. The system will be inspected and its performance certified at specified intervals as required by this RAP and Site Management Plan. Maintenance of this SSDS will be described in the Site Management Plan in the Remedial Closure Report. The location and layout of the SSDS is shown in Figure 9. A typical section of the system is shown in Figure 9

# 3 REMEDIAL ACTION MANAGEMENT

## 3.1 Project Organization and Oversight

Principal personnel who will participate in the remedial action include Jim DeMartinis of Seacliff Environmental, Inc. The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are Karen G. Tyll P.E. and Jim DeMartinis.

## 3.2 Site Security

Site access will be controlled by gated entrances to the fenced property.

## 3.3 Work Hours

The hours for operation of remedial construction will be from 8 AM to 4 PM. These hours conform to the New York City Department of Buildings construction code requirements.

## 3.4 Construction Health and Safety Plan

The site-specific Construction Health and Safety Plan (CHASP) is included in Appendix A. The Site Safety Coordinator will be Jim DeMartinis. 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 be required to sign an CHASP acknowledgment. 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.

### 3.5 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. Exceedences of action levels observed during performance of the Community Air Monitoring Plan (CAMP) will be reported to the OER Project Manager and included in the Daily Report.

### 3.5.1 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.

### 3.5.2 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 (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 will be employed. Work will 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.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/$m^3$ 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 mcg/$m^3$ of the upwind level and in preventing visible dust migration.

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

## 3.6 Agency Approvals

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

## 3.7 Site Preparation

### 3.7.1 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.

### 3.7.2 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.

### 3.7.3 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 incompliance 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 Markout 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.

### 3.7.4 Equipment and Material Staging

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations. The location of proposed equipment and material staging areas, truck inspection station, stockpile areas, and other pertinent remedial management features will be away from the bordering residential properties and near the entrance to Atlantic Avenue.

### 3.7.5 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.

### 3.7.6 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.

## 3.8 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 all on major truck-friendly roads –Atlantic Avenue directly east to the Van Wyck Expressway.

## 3.9 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.

## 3.10 Reporting and Record Keeping

### 3.10.1 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 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 excursions, if any;
- 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.

### 3.10.2 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).

## 3.11 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.

## 3.12 Deviations from the Remedial Action Plan

All changes to the RAP will be reported to 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.

# 4 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;
- As-built drawings for all constructed remedial elements, required certifications, manifests and other written and photographic documentation of remedial work performed under this remedy;
- Site Management Plan;
- 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 and all material 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 contaminated material removed from the Site including a map showing source areas;
- Account 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.
- Reports and supporting material will be submitted in digital form.

## Remedial Closure Report Certification

The following certification will appear in front of the Executive Summary of the Remedial Closure Report. The certification will include the following statements:

*I, _____Karen G. Tyll_____, am currently a professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the108-01 Atlantic Avenue Site.*

*I, _____James DeMartinis_____, am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the 108-01 Atlantic Avenue Site.*

*I certify that the OER-approved Remedial Action Plan dated month day year and Stipulations in a letter dated month day, year; if any 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.*

# 5 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 three-month remediation period is anticipated.

| Schedule Milestone | Weeks from Remedial Action Start | Duration (weeks) |
|---|---|---|
| OER Approval of RAP | 0 | - |
| Mobilization | 4 | 1 |
| Remedial Construction | 5 | 8 |
| Demobilization | 13 | 1 |
| Submit Remedial Closure Report | 16 | 3 |