

**175 WOODWARD AVENUE  
QUEENS, NEW YORK**

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## **Remedial Action Work Plan**

**NYC VCP Project Number 15CVCP160Q  
OER Project Number 15EHAZ311Q**

**Prepared For:**

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**May 2015**

# **REMEDIAL ACTION WORK PLAN**

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## LIST OF ACRONYMS

<b>Acronym</b>	<b>Definition</b>
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
NOC	Notice of Completion
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
NYC VCP	New York City Voluntary Cleanup Program
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
QHHEA	Qualitative Human Health Exposure Assessment
RAOs	Remedial Action Objectives
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan or 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
VCA	Voluntary Cleanup Agreement
VOC	Volatile Organic Compound

## CERTIFICATION

I, David Pelletier, 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 175 Woodward Ave site, VCP # 15CVCP311Q. I certify to the following:

- I have reviewed this document, 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 Work 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 Work Plan and are of sufficient detail to enable proper construction.
- This Remedial Action Work Plan (RAWP) 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 RAWP has provisions to control nuisances during the remediation and all invasive work, including dust and odor suppression.

David A Pelletier, P.E.

Name

082127-1

PE License Number

Signature

PE Stamp



May 15, 2015

Date

## **EXECUTIVE SUMMARY**

19-02 Troutman LLC is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program to investigate and remediate a 4,500-square foot site located at 175 Woodward Avenue in Queens, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). 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 to applicable laws and regulations.

### **Site Location and Background**

19-02 Troutman LLC has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate an approximately 0.1-acre site located at 175 Woodward Avenue in the Ridgewood section of Queens, New York. Mixed commercial and residential use is proposed for the property. The Remedial Investigation work was performed between March 1, 2015 and April 5, 2015. This Remedial Action Plan summarizes the nature and extent of contamination and provides sufficient information for establishment of remedial action objectives, evaluation of remedial action alternatives, and selection of a remedy that is protective of human health and the environment consistent with the use of the property pursuant to RCNY§ 43-1407(f).

### **Summary of Redevelopment Plan**

The proposed development project consists of new construction of two multi-story buildings, with partial basements used for storage and/or mechanical space only. Building 1 will be an approximately 26x100' footprint at the corner of Woodward Avenue and Troutman Street, and will consist of two commercial spaces on the first floor, with a total of four one-bedroom residential units constructed atop the 997 SF commercial space fronting Woodward Avenue; two on the second floor, and two on the third floor. Building 2 will be an approximately 18x50' footprint on the inside lot, and will consist of a one-bedroom residential unit and communal hallway on the first floor, and two-bedroom residential units on the second, third and fourth

floors. Setbacks will be provided as required by zoning regulations, and an 18x50' yard at the rear of Building 2 will be paved with concrete. As part of the development, the referenced lot is expected to be sub-divided into tentative lot(s) 1A and 1B. Layout of the proposed site development is presented in Figure 2. The remedial action contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

### **Summary of Surrounding Property**

Land uses in the neighborhood are mixed residential, commercial and light industrial. Adjacent east along Woodward Avenue are four story tenements similar to the planned development in size and use. Behind the development to the north is a large detergent warehouse/distribution facility. West across Troutman Street is a large auto salvage yard, and to the south across Woodward Avenue is a large vacant lot and several additional low rise tenements, some of which utilize ground level for commercial purposes. No sensitive receptors were noted within several hundred feet of the Site.

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

The Site was part of a much larger auto salvage operation which extended north and then east around the tenement buildings adjacent east of the Site. Specifically, the Site utilized large racks to store used auto parts which were sold to the public from the existing shed and shipping container structure fronting Woodward Avenue. Reportedly, no auto work was conducted on the Site; that was done on the north adjacent lot, which is now improved with a large detergent warehouse. Records indicate the Site was never developed with permanent structures, and immediately prior to the current metal fabrication operation was utilized for the storage of wood pallets and shipping containers.

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

The work performed under this Remedial Investigation included a series of direct push penetrations for the purposes of screening and sampling soil, groundwater and soil vapor. Figures 1A, 1B and 1C include site plans illustrating the boring locations for each of the media sampled.

A total of twelve penetrations were advanced, including:

- Five (5) penetrations for the purpose of continuous soil sampling to 16' below grade, identified as SB-1 through SB-5;
- Three (3) penetrations for the purpose of well point installation, identified as WP-1 through WP-3;
- Four (4) penetrations for the purpose of soil gas sampling, identified as SV-1 through SV-4.

Each of the five (5) soil penetrations included continuous sampling using 4' acetate cores collected from just below the concrete slab covering the site up to 16' below grade. After visual inspection, each core was opened and inspected for odors and/or volatile emissions with a calibrated PID. In accordance with the work plan, soil samples were collected with a minimal disturbance or air contact time from 2' and 12' below grade. As field screening did not identify any overt evidence of contamination during this sampling, no further soil samples were collected in addition to those previously ordered.

The remaining penetrations were advanced via disposable point for the purposes of expediting penetration to depth.

Three (3) penetrations were advanced via disposable point included an initial probe to 44' bsg, and two subsequent probes to 36'. The probes were advanced for the purpose of well point installation using 20 foot lengths of 1" PVC well screens fixed with bottom points and threaded to solid riser as conduit to grade. After pulling the casing, the annulus around the screens was filled with well gravel and soil. Between 48 and 72 hours after installation, Jade returned to each well and measured the depth from the top of each casing to water using an electronic water level indicator. Each well was subsequently dipped with a micro-bailer to check for the presence of free phase product. After measuring depth and checking for floating product, Jade purged each well point of a minimum 3 gallons of purge water using standard low flow peristalsis. After each point was evacuated and the pump effluent was cleared of suspended solids, groundwater samples were collected by filling each sample container directly from the pump discharge.

The remaining four (4) penetrations were advanced to 12' below grade and used for soil gas sampling. A vapor point fixed to new polyethylene was lowered into each of these open

penetrations, surrounded with #2 well gravel, and the remainder of the bore covered in soil cuttings. The tubing was then connected to a hand pump and several volumes were evacuated from the penetration through the vapor point. Finally, the tubing was connected to a 6 L summa canister regulated to a 2 hour draw.

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

1. Elevation of the property ranges from 93 to 95 feet above mean sea level (amsl).
2. Depth to groundwater ranges from 26.26' to 28.28' feet at the Site.
3. Groundwater flow is generally from southeast to northwest beneath the Site.
4. Depth to bedrock was not determined but, based on available data, could be greater than 200 feet below grade beneath the terminal moraine.
5. The stratigraphy of the site consists of 0.5 to 1 ft of concrete/bedding gravel, beneath which is 24-36" of mixed loam soil. At 4' bsg, typical Long Island sands begin, darker brown as is typical of western Long Island and with higher silt content. Although sand/silt proportions varied, the sand with trace to moderate silt content was consistent from 4' to 16' across the site.
6. Soil/fill sample results were compared to New York State Department of Environmental Conservation (NYSDEC) Part 375 Table 375-6.8 Unrestricted Use and Restricted Residential Use Soil Cleanup Objectives (SCOs). A total of ten samples were taken, five from the 0-2 ft. range and five from the 11-12 ft. range. Fill samples collected during the RI showed no detections of VOCs, PCBs, or pesticides. Several SVOCs were detected exceeding Restricted Residential Use SCOs in one shallow soil sample, including benzo(a)anthracene (3,000 µg/kg), benzo(a)pyrene (2,100 µg/kg), benzo(b)fluoranthene (2,600 µg/kg), dibenzo(a,h)anthracene (340 µg/kg), and indeno(1,2,3-cd)pyrene (950 µg/kg). Benzo(b)fluoranthene (920 µg/kg) and chrysene (2,900 µg/kg) also exceeded Unrestricted Use SCOs in the same shallow sample. Mercury (max. 2.5 mg/kg) exceeded Restricted Residential SCOs in one shallow sample. Other metals exceeded Unrestricted Use SCOs, including Cadmium (max. 4.16 mg/kg), Copper (110 mg/kg), Lead (max. 255 mg/kg), Manganese (1,840 mg/kg), and Zinc (max. 409 mg/kg). All metals exceedances were in the shallow samples, with the exception of one deep sample (SB-3A) which

showed Unrestricted Use exceedances of Cadmium (3.25 mg/kg), Lead (113 mg/kg), Mercury (0.21 mg/kg), and Zinc (241 mg/kg). Overall, the soil chemistry is unremarkable and is indicative of urban historic fill.

7. Groundwater samples results were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater results showed no VOCs or pesticides were detected. One SVOC and several metals were measured at trace concentrations in groundwater, but all concentrations were well below their respective groundwater quality standards. The only exceedance detected was for PCBs (max. 0.61  $\mu\text{g}/\text{kg}$ ). Since no source of PCBs was identified in soil / fill in any area of the Subject site, Jade concludes that the PCBs are likely to have originated from an up-gradient location.
8. Soil vapor results collected during the RI were compared to the compounds listed in Vapor Intrusion Matrices in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion, dated October 2006. Several petroleum-related and chlorinated VOCs were detected in all soil vapor samples collected. Petroleum-related VOCs (BTEX) were detected at maximum concentrations of 32.4  $\mu\text{g}/\text{m}^3$ . The highest concentration of VOCs detected was for acetone (max. of 3,700  $\mu\text{g}/\text{m}^3$ ). The chlorinated VOCs 1,1,1-trichloroethane and carbon tetrachloride were detected well below monitoring and mitigation levels established by NYSDOH soil vapor guidance matrix. Tetrachloroethylene (PCE) was detected in all samples at maximum concentrations of 1.4  $\mu\text{g}/\text{m}^3$ . Trichloroethylene (TCE) was detected in all soil vapor samples and ranged from 2  $\mu\text{g}/\text{m}^3$  to 155  $\mu\text{g}/\text{m}^3$ . The concentrations of TCE are above the mitigation level ranges established within the NYSDOH soil vapor guidance matrix.

## **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. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Selection of NYSDEC Part 375, Section 6.8 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. 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).
6. Excavation and removal of soil/fill exceeding Track 1 Unrestricted Use SCOs. For development purposes, the 75% of the property will be excavated to depths of 11 feet below grade and the remainder 25% of Site will be excavated to 4 feet below grade. In addition, a hotspot area identified within 4 feet excavation will be further delineated and excavated to depths of 14 feet below grade. An estimated 850 tons of soil/fill will be removed from the Site and properly disposed off-Site.
7. 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.

8. 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.
9. Removal of all UST's that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with UST's and appropriate closure of these petroleum spills in compliance with applicable local, State and Federal laws and regulations.
10. 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 RAWP.
11. Collection and analysis of seven (7) equally spaced samples across the entire lot to document all impacted soil has been removed. Additional end point sampling is proposed following secondary excavation in hotspot area (SB-3) from one bottom sample and four sidewall samples oriented north, south, east, and west.
12. Filing of an additional testing plan with sample location map detailing the collection of five additional soil gas samples, including one sample adjacent to each property boundary and one final sample from the center of the Site to assess the effectiveness of the removal of TCE source to soil vapor.
13. 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.
14. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.

15. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, and lists any changes from this RAWP.

If Track 1 Unrestricted Use SCOs are not achieved, the following construction elements implemented as part of new development will constitute Engineering Controls:

16. As part of development, construction of a protective system comprised of an engineered composite cover consisting of a six-inch thick concrete building slab with an 8-inch clean granular sub-base above a minimum 20 mm vapor barrier without seams, breaks, hole or failures of any kind beneath all building areas and a minimum of two feet of clean soil in all open space and landscaped areas.
17. As part of development, installation of a vapor barrier system 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 VaporBlock® Plus™ VBP20 20mm vapor barrier manufactured by Raven Industries ([www.ravenefd.com](http://www.ravenefd.com)). All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration.
18. Based upon results of additional soil vapor sampling (after excavation of all soils to final slab grade), a sub slab depressurization system (SSDS) may be installed which will include an active sub-slab depressurization system (SSDS) consisting of two lengths of horizontal piping set 8' apart traversing the length of each building. The horizontal piping will consist of fabric wrapped, perforated schedule 40 4-inch PVC pipe connected to a 6-inch steel riser pipe that penetrates the slab and travels through the building to the roof. The gas permeable layer will consist of a 6-inch thick layer of 2-inch trap rock stone. The pipe will be finished at the roof line with a 6-inch goose neck pipe to prevent rain infiltration. After the basement slab has been installed, additional soil gas sampling

will be conducted, and the results will be used to determine with OER and Health Department to determine whether passive or active extraction is required.

19. If Track 1 SCOs are not achieved, submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
  
20. If Track 1 SCOs are not achieved, the property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

## COMMUNITY PROTECTION STATEMENT

The NYC Office of Environmental Remediation (OER) provides governmental oversight for the cleanup of contaminated property in NYC. This Remedial Action Work 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: 175 Woodward Avenue, Queens NY 11385  
(a.k.a. 19-02 Troutman Street)
- NYC Voluntary Cleanup Program Project Number: 15CVCP311Q

### **Project Contacts:**

- OER Project Manager: Amanda Duchesne, 212-788-8841
- Site Project Manager: Dave Pelletier P.E., (914) 882 6074
- Site Safety Officer: Dave Pelletier or Jerry Lewis, (914) 882 6074
- Online Document Repository: <http://www.nyc.gov/html/oer/html/document-repository/document-repository.shtml>

**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.

**Qualitative Human Health Exposure Assessment:** An important part of the cleanup planning for the Site is a study to find all of the ways that people might come in contact with contaminants at the Site now or in the future. This study is called a Qualitative Human Health Exposure Assessment (QHHEA). A QHHEA was performed for this project. This assessment has considered all known contamination at the Site and evaluated the potential for people to come in contact with this contamination. All identified public exposures will be addressed under this cleanup plan.

**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 RAWP are in compliance with applicable safety requirements of the United States Occupational Safety and Health Administration (OSHA). This RAWP 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 a 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 include 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 Action 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.

**Signage:** While the cleanup is in progress, a placard will be prominently posted at the main entrance of the property with a laminated project Fact Sheet that states that the project is in the NYC Voluntary Cleanup Program and provides project contact names and numbers, and a link to the document repository where project documents can be viewed.

**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 Voluntary Cleanup 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 Action 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 WORK PLAN**

## **1.0 Project Background**

19-02 Troutman, LLC is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program to investigate and remediate a property located at 175 Woodward Avenue in the Ridgewood section of Queens, New York (the “Site”). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP 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**

19-02 Troutman LLC has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate an approximately 0.1-acre site located at 175 Woodward Avenue in the Ridgewood section of Queens, New York. Mixed commercial and residential use is proposed for the property. The Remedial Investigation work was performed between March 1, 2015 and April 5, 2015. This Remedial Action Work Plan summarizes the nature and extent of contamination and provides sufficient information for establishment of remedial action objectives, evaluation of remedial action alternatives, and selection of a remedy that is protective of human health and the environment consistent with the use of the property pursuant to RCNY§ 43-1407(f).

## **1.2 Redevelopment Plan**

The proposed development project consists of new construction of two multi-story buildings, with partial basements used for storage and/or mechanical space only. Building 1 will be an approximately 26x100’ footprint at the corner of Woodward Avenue and Troutman Street, and will consist of two commercial spaces on the first floor, with a total of four one-bedroom market-

rate residential units constructed atop the 997 SF commercial space fronting Woodward Avenue; two on the second floor, and two on the third floor. Building 2 will be an approximately 18x50' footprint on the inside lot, and will consist of a one-bedroom market-rate residential unit and communal hallway on the first floor, and two-bedroom market-rate residential units on the second, third and fourth floors. Setbacks will be provided as required by zoning regulations, and an 18x50' yard at the rear of Building 2 will be paved with concrete. As part of the development, the referenced lot is expected to be sub-divided into tentative lot(s) 1A and 1B.

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

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

Land uses in the neighborhood are mixed residential, commercial and light industrial. Adjacent east along Woodward Avenue are four story tenements similar to the planned development in size and use. Behind the development to the north is a large detergent warehouse/distribution facility. West across Troutman Street is a large auto salvage yard, and to the south across Woodward Avenue is a large vacant lot and several additional low rise tenements, some of which utilize ground level for commercial purposes. No sensitive receptors were noted within several hundred feet of the Site. Figure 1 shows the surrounding land usage.

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

The Site was part of a much larger auto salvage operation which extended north and then east around the tenement buildings adjacent east of the Site. Specifically, the Site utilized large racks to store used auto parts which were sold to the public from the existing shed and shipping container structure fronting Woodward Avenue. Reportedly, no auto work was conducted on the Site; that was done on the north adjacent lot, which is now improved with a large detergent warehouse. Records indicate the Site was never developed with permanent structures, and immediately prior to the current metal fabrication operation was utilized for the storage of wood pallets and shipping containers.

The AOCs identified for this Site include generalized surface spillage of regulated materials resulting from its past use for auto salvage. The recent use of the shed for metal fabrication was not considered to represent a recognized environmental condition, but as an environmental concern that would be investigated incidentally.

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

The work performed under this Remedial Investigation included a series of direct push penetrations for the purposes of screening and sampling soil, groundwater and soil vapor. Figures 1A, 1B and 1C include site plans illustrating the boring locations for each of the media sampled.

A total of twelve penetrations were advanced, including:

- Five (5) penetrations for the purpose of continuous soil sampling to 16' below grade, identified as SB-1 through SB-5;
- Three (3) penetrations for the purpose of well point installation, identified as WP-1 through WP-3;
- Four (4) penetrations for the purpose of soil gas sampling, identified as SV-1 through SV-4.

Each of the five (5) soil penetrations included continuous sampling using 4' acetate cores collected from just below the concrete slab covering the site up to 16' below grade. After visual inspection, each core was opened and inspected for odors and/or volatile emissions with a calibrated PID. In accordance with the work plan, soil samples were collected with a minimal disturbance or air contact time from 2' and 12' below grade. As field screening did not identify any overt evidence of contamination during this sampling, no further soil samples were collected in addition to those previously ordered.

The remaining penetrations were advanced via disposable point for the purposes of expediting penetration to depth.

Three (3) penetrations were advanced via disposable point included an initial probe to 44' bsg, and two subsequent probes to 36'. The probes were advanced for the purpose of well point installation using 20 foot lengths of 1" PVC well screens fixed with bottom points and threaded

to solid riser as conduit to grade. After pulling the casing, the annulus around the screens was filled with well gravel and soil. Between 48 and 72 hours after installation, Jade returned to each well and measured the depth from the top of each casing to water using an electronic water level indicator. Each well was subsequently dipped with a micro-bailer to check for the presence of free phase product. After measuring depth and checking for floating product, Jade purged each well point of a minimum 3 gallons of purge water using standard low flow peristalsis. After each point was evacuated and the pump effluent was cleared of suspended solids, groundwater samples were collected by filling each sample container directly from the pump discharge.

The remaining four (4) penetrations were advanced to 12' below grade and used for soil gas sampling. A vapor point fixed to new polyethylene was lowered into each of these open penetrations, surrounded with #2 well gravel, and the remainder of the bore covered in soil cuttings. The tubing was then connected to a hand pump and several volumes were evacuated from the penetration through the vapor point. Finally, the tubing was connected to a 6 L summa canister regulated to a 2 hour draw.

## **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, 175 Woodward Avenue", dated April 14 2015 (RIR).

1. Elevation of the property ranges from 93 to 95 feet above mean sea level (amsl).
2. Depth to groundwater ranges from 26.26' to 28.28' feet at the Site.
3. Groundwater flow is generally from southeast to northwest beneath the Site.
4. Depth to bedrock was not determined but, based on available data, could be greater than 200 feet below grade beneath the terminal moraine.
5. The stratigraphy of the site consists of 0.5 to 1 ft of concrete/bedding gravel, beneath which is 24-36" of mixed loam soil. At 4' bsg, typical Long Island sands begin, darker brown as is typical of western Long Island and with higher silt content. Although

sand/silt proportions varied, the sand with trace to moderate silt content was consistent from 4' to 16' across the site.

6. Soil/fill samples results were compared to New York State Department of Environmental Conservation (NYSDEC) Part 375 Table 375-6.8 Unrestricted Use and Restricted Residential Use Soil Cleanup Objectives (SCOs). A total of 10 samples were taken, five from the 0-2 ft. range and five from the 11-12 ft. range. Fill samples collected during the RI showed no detections of VOCs, PCBs, or pesticides. Several SVOCs were detected exceeding Restricted Residential Use SCOs in one shallow soil sample, including benzo(a)anthracene (3,000 µg/kg), benzo(a)pyrene (2,100 µg/kg), benzo(b)fluoranthene (2,600 µg/kg), dibenzo(a,h)anthracene (340 µg/kg), and indeno(1,2,3-cd)pyrene (950 µg/kg). Benzo(b)fluoranthene (920 µg/kg) and chrysene (2,900 µg/kg) also exceeded Unrestricted Use SCOs in the same shallow sample. Mercury (max. 2.5 mg/kg) exceeded Restricted Residential SCOs in one shallow sample. Other metals exceeded Unrestricted Use SCOs, including Cadmium (max. 4.16 mg/kg), Copper (110 mg/kg), Lead (max. 255 mg/kg), Manganese (1,840 mg/kg), and Zinc (max. 409 mg/kg). All metals exceedances were in the shallow samples, with the exception of one deep sample (SB-3A) which showed Unrestricted Use exceedances of Cadmium (3.25 mg/kg), Lead (113 mg/kg), Mercury (0.21 mg/kg), and Zinc (241 mg/kg). Overall, the soil chemistry is unremarkable and is indicative of urban historic fill.
7. Groundwater samples results were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater results showed no VOCs or pesticides were detected. One SVOC and several metals were measured at trace concentrations in groundwater, but all concentrations were well below their respective groundwater quality standards. The only exceedance detected was for PCBs (max. 0.61 µg/kg). Because no PCBs “sources” were identified in soil / fill in any area of our site, Jade concludes the PCBs must be originating from an up gradient location.
8. Soil vapor results collected during the RI were compared to the compounds listed in Vapor Intrusion Matrices in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion, dated October 2006. Several petroleum-related and chlorinated VOCs were detected in all soil vapor samples collected.

Petroleum-related VOCs (BTEX) were detected at maximum concentrations of 32.4  $\mu\text{g}/\text{m}^3$ . The highest concentrations of a VOC detected was for acetone (max. of 3,700  $\mu\text{g}/\text{m}^3$ ). The chlorinated VOCs, 1,1,1-trichloroethane and carbon tetrachloride were detected well below monitoring and mitigation levels established by NYSDOH soil vapor guidance matrix. Tetrachloroethylene (PCE) was detected in all samples at maximum concentrations of 1.4  $\mu\text{g}/\text{m}^3$ . Trichloroethylene (TCE) was detected in all soil vapor samples and ranged from 2  $\mu\text{g}/\text{m}^3$  to 155  $\mu\text{g}/\text{m}^3$ . The concentrations of the TCE are above the mitigation level ranges established within the NYSDOH soil vapor guidance matrix.

For more detailed results, consult the RIR. Based on an evaluation of the data and information from the RIR and this RAWP, 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 exposure to contaminants volatilizing from contaminated soil.

### **Groundwater**

- Prevent direct exposure to contaminated groundwater.

### **Soil Vapor**

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

### **3.0 Remedial Alternatives Analysis**

The goal of the remedy selection process is to select a remedy that is protective of human health and the environment taking into consideration the current, intended and reasonably anticipated future use of the property. The remedy selection process begins by establishing RAOs for media in which chemical constituents were found in exceedance of applicable standards, criteria and guidance values (SCGs). Remedial alternatives are then developed and evaluated based on the following ten criteria:

- Protection of human health and the environment;
- Compliance with SCGs;
- Short-term effectiveness and impacts;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume of contaminated material;
- Implementability;
- Cost effectiveness;
- Community acceptance;
- Land use; and
- Sustainability.

As required, a Track 1 Unrestricted Use scenario is evaluated for the remedial action. The following is a detailed description of the alternatives analyzed to address impacted media at the Site:

#### **Alternative 1: Track 1 Cleanup**

- Selection of NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
- Removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs throughout the Site, and confirmation that Track 1 Unrestricted Use SCOs have been achieved with post-excavation endpoint sampling. If soil/fill containing analytes at concentrations above Unrestricted Use SCOs is still present at the base of the excavation after removal of all soil required for construction of the new building's cellar level is complete, additional

excavation would be performed to ensure complete removal of soil/ fill that does not meet Track 1 Unrestricted Use SCOs.

- No Engineering or Institutional Controls are required for a Track 1 cleanup, however a vapor barrier would be installed beneath the basement foundation and behind foundation sidewalls of the new building as a part of development to prevent any potential future exposures from off-Site soil vapor;
- A passive sub-slab depressurization system (pSSDS) would be installed to prevent potential exposures from soil vapor in the future; and
- A composite cover system would be placed over the entire site as part of new development.

### **Alternative 2: Track 4 Cleanup**

- Establishment of Site Specific (Track 4) SCOs;
- Excavation and removal of all soil/fill exceeding Track 4 Site-Specific SCOs and confirmation that Track 4 Site-Specific SCOs have been achieved with post-excavation endpoint sampling. Excavation for construction of the new building's cellar would take place to a depth of approximately 11 feet below grade for 75% of Site and the remaining 25% to depths of 4 feet below grade and a hotspot removal to 14 feet below grade. If soil/fill containing analytes at concentrations above Track 4 Site-Specific SCOs is still present at the base of the excavation after removal of all soil required for construction of the new building's cellar is complete, additional excavation will be performed to ensure complete removal of soil that does not meet Track 4 Site-Specific SCOs;
- Installation of vapor barrier beneath and along sidewalls up to grade.
- A minimum two week period of inaction, to allow the newly exposed formation to naturally aerate and release any vapors trapped in the subsurface. This will be followed by the collection of five additional soil gas samples, including one sample adjacent to each property boundary and one final sample from the center of the Site. The additional testing will serve to assess the effectiveness of the aeration and attempt to locate potential sources of TCE vapor. If the testing indicates that a source exists from an adjacent property after a complete evaluation of the results, additional effort will be conducted to prevent continued migration on-site (i.e. slurry wall, linear soil vapor extraction,

combination of both, etc.) If such conditions are revealed, a modification to the RAWP will be filed with the OER as an addendum for review, discussion and final approval. If the testing indicates that the source is on-site from deeper soils, standard soil gas extraction will be utilized in the form of a double layer of impermeable sheeting sandwiching a minimum 6" layer of ¾" crushed stone, embedded with 4" perforated PVC piping set 10 feet apart, manifolded and used to extract soil gas below the proposed basement floor slab. After the basement slab has been installed, additional soil gas sampling will be conducted, and the results used to determine whether passive or active extraction is required.

- If TCE levels remain elevated, the system will be converted to an active SSDS, and the Site will become subject to, at minimum, annual maintenance and three year certification requirements. Establishment of an approved Site Management Plan (SMP) to ensure long-term management of Engineering and Institutional Controls, including the performance of periodic inspections and certification that the controls are performing as they were intended. The SMP will note that the property owner and property owner's successors and assigns must comply with the approved SMP.
- The property will continue to be registered with an E-Designation (or) Restrictive Declaration at the NYC Buildings Department.
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site; prohibitions of restricted Site uses, such as farming or vegetable gardening, to prevent future exposure pathways; and prohibition of a higher level of land use without OER approval;
- Placement of a deed notice to record the ECs/ICs on the deed to ensure that future owners of the Site continue to comply with the SMP, as required.

### **3.1 Threshold Criteria**

#### **Protection of Public Health and the Environment**

This criterion is an evaluation of the remedy's ability to protect public health and the environment, and an assessment of how risks posed through each existing or potential pathway

of exposure are eliminated, reduced or controlled through removal, treatment, and implementation of Engineering Controls or Institutional Controls. Protection of public health and the environment must be achieved for all approved remedial actions.

Alternative 1 would be protective of human health and the environment by removing all soil/fill exceeding Track 1 Unrestricted Use SCO's and groundwater protection standards, thus eliminating potential for direct contact with contaminated soil/fill once construction is complete and eliminating the risk of contaminants leaching into groundwater.

Alternative 2 would achieve comparable protections of human health and the environment by excavation and removal of the historic fill at the Site and by ensuring that remaining soil/fill on-Site meets Track 4 Site-Specific SCO's, as well as by placement of Institutional and Engineering Controls, including a composite cover system. The composite cover system would prevent direct contact with any remaining on-Site soil/fill. Implementing Institutional Controls, including a Site Management Plan and continuing the E-designation on the property, would ensure that the composite cover system remains intact and protective of public health. Establishment of Track 4 Site-Specific SCO's would minimize the risk of contamination leaching into groundwater.

For both Alternatives, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan, an approved Soil/Materials Management Plan, and Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would be prevented as its use is prohibited by city laws and regulations. Potential future migration of off-Site soil vapors into the new building would be prevented by installing a vapor barrier below the building slab and outside foundations walls below grade.

## **3.2 Balancing Criteria**

### **Compliance with Standards, Criteria and Guidance (SCGs)**

This evaluation criterion assesses the ability of the alternative to achieve applicable standards, criteria and guidance.

Alternative 1 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal of soil to achieve Track 1 Unrestricted Use SCO's and Protection of Groundwater SCO's. Compliance with SCGs for soil vapor would also be achieved by installing a waterproofing/vapor barrier system below the new building's basement slab and continuing the vapor barrier outside of subgrade foundation walls, as part of development.

Alternative 2 would achieve compliance with the remedial goals, chemical-specific SCG's and RAOs for soil through removal of soil to meet Track 4 Site-Specific SCO's. Compliance with SCG's for soil vapor would also be achieved by installing a waterproofing/vapor barrier system below the new building's basement slab and continuing the vapor barrier outside of subgrade foundation walls. A Site Management Plan would ensure that these controls remained protective for the long term.

Health and safety measures contained in the CHASP and CAMP will be implemented during Site redevelopment under this RAWP. For both Alternatives, focused attention on means and methods employed during the remedial action would ensure that handling and management of contaminated material would be in compliance with applicable SCGs. These measures will insure protection of on-site workers and the surrounding community from exposure to Site-related contaminants.

### **Short-Term Effectiveness and Impacts**

This evaluation criterion assesses the effects of the alternative during the construction and implementation phase until remedial action objectives are met. Under this criterion, alternatives are evaluated with respect to their short term effects during the remedial action on public health

and the environment during implementation of the remedial action, including protection of the community, protection of onsite workers and environmental impacts.

Both Alternative 1 and 2 have similar short-term effectiveness during their implementation, as each requires excavation of historic fill material. Both alternatives would result in short-term dust generation impacts associated with excavation, handling, load out of materials, and truck traffic. Short-term impacts could potentially be higher for Alternative 1 since excavation of greater amounts of historical fill material would take place. However, focused attention to means and methods during a Track 1 removal action, including community air monitoring and appropriate truck routing, would minimize the overall impact of these activities.

An additional short-term adverse impact and risks to the community associated with both remedial alternatives is increased truck traffic. Truck traffic will be routed on the most direct course using major thoroughfares where possible and flag persons will be used to protect pedestrians at Site entrances and exits.

The potential adverse impact to the community, workers and the environment for both alternatives would be minimized through implementation of control plans including a CHASP and CAMP and a Soil/Materials Management Plan (SMMP), during all on-Site soil disturbance activities and would minimize the release of contaminants into the environment. Both alternatives provide short-term effectiveness in protecting the surrounding community by decreasing the risk of contact with on-Site contaminants. Construction workers operating under appropriate management procedures and a Construction Health and Safety Plan (CHASP) would provide protection from on-Site contaminants by using personal protective equipment which would be worn consistent with the documented risks within the respective work zones.

### **Long-term effectiveness and permanence**

This evaluation criterion addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual contamination remaining at the Site after response objectives have been met, such as permanence of the remedial alternative, magnitude of remaining contamination, adequacy of controls including the adequacy and suitability of

Engineering Controls/Institutional Controls (ECs/ICs) that may be used to manage contaminant residuals that remain at the Site and assessment of containment systems and ICs that are designed to eliminate exposures to contaminants, and long-term reliability of ECs.

Alternative 1 would achieve long-term effectiveness and permanence related to on-Site contamination by permanently removing all impacted soil/fill above Track 1 Unrestricted Use SCO's. Removal of on-Site contaminant sources will also prevent future groundwater contamination.

Alternative 2 would provide long-term effectiveness by removing most on-Site contamination and attaining Track 4 Site-Specific SCOs; installing a composite cover system across the Site; maintaining use restrictions; establishing an SMP to ensure long-term management of ICs and ECs; and maintaining registration as an E-designated property to memorialize these controls for the long term. The SMP would ensure long-term effectiveness of all ECs and ICs by requiring periodic inspection and certification that these controls and restrictions continue to be in place and are functioning as they were intended, assuring that protections designed into the remedy continue to provide the required level of protection.

### **Reduction of toxicity, mobility, or volume of contaminated material**

This evaluation criterion assesses the remedial alternative's use of remedial technologies that permanently and significantly reduce toxicity, mobility, or volume of contaminants as their principal element. The following is the hierarchy of source removal and control measures that are to be used to remediate a Site, ranked from most preferable to least preferable: removal and/or treatment, containment, elimination of exposure and treatment of source at the point of exposure. It is preferred to use treatment or removal to eliminate contaminants at a Site, reduce the total mass of toxic contaminants, cause irreversible reduction in contaminants mobility, or reduce of total volume of contaminated media.

Alternative 1 will permanently eliminate the toxicity, mobility, and volume of contaminants from on-Site soil by removing all soil in excess of Track 1 Unrestricted Use SCO's.

Alternative 2 would remove most of the historic fill at the Site, and all remaining on-Site soil/fill beneath the new building will meet Track 4 Site-Specific SCO's.

Alternative 1 would remove a greater total mass of contaminants from the Site. The removal of soil to 11-14 feet for the new development in both scenarios would lessen the difference in contaminant mass removal between these two alternatives.

## **Implementability**

This evaluation criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation, including technical feasibility of construction and operation, reliability of the selected technology, ease of undertaking remedial action, monitoring considerations, administrative feasibility (e.g. obtaining permits for remedial activities), and availability of services and materials.

The techniques, materials and equipment to implement both Alternatives 1 and 2 are readily available and have been proven to be effective in remediating the contaminants present on the Site. They use standard equipment and technologies that are well established in the industry. The reliability of each remedy is also high. There are no special difficulties associated with any of the activities proposed.

## **Cost effectiveness**

This evaluation criterion addresses the cost of alternatives, including capital costs (such as construction costs, equipment costs, and disposal costs, engineering expenses) and site management costs (costs incurred after remedial construction is complete) necessary to ensure the continued effectiveness of a remedial action.

Since historic fill at the Site was found to extend to a depth of up to 4' below grade during the RI, and the new building requires excavation of the entire Site to a depth of 11 feet, the costs associated with both Alternative 1 and Alternative 2 will likely be comparable. Costs associated with Alternative 1 could potentially be higher than Alternative 2 if additional soil with analytes

above Track 1 Unrestricted Use SCOs is encountered below the excavation depth required for development.

Additional costs could include installation of additional shoring/underpinning, disposal of additional soil, and import of clean soil for backfill. However, long-term costs for Alternative 2 are likely higher than Alternative 1 based on implementation of a Site Management Plan as part of Alternative 2.

Although the remedial plan in Alternative 1 includes a period of inactivity for natural aeration, the remedial plan would couple the remedial action with the redevelopment of the Site, lowering total costs. The remedial plan will also consider the selection of the most appropriate disposal facilities to reduce transportation and disposal costs during cleanup and redevelopment of the Site.

## **Community Acceptance**

This evaluation criterion addresses community opinion and support for the remedial action. Observations here will be supplemented by public comment received on the RAWP.

This RAWP will be subject to a public review under the NYC VCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedy. This public comment will be considered by OER prior to approval of this plan. The Citizen Participation Plan for the project is provided in Appendix 2. Observations here will be supplemented by public comment received on the RAWP. Under both alternatives, the overall goals of the remedial program, to protect public health and the environment and eliminate potential contaminant exposures, have been broadly supported by citizens in NYC communities.

## **Land use**

This evaluation criterion addresses the proposed use of the property. This evaluation has considered reasonably anticipated future uses of the Site and takes into account: current use and historical and/or recent development patterns; applicable zoning laws and maps; NYS Department of State's Brownfield Opportunity Areas (BOA) pursuant to section 970-r of the

general municipal law; applicable land use plans; proximity to real property currently used for residential use, and to commercial, industrial, agricultural, and/or recreational areas; environmental justice impacts, Federal or State land use designations; population growth patterns and projections; accessibility to existing infrastructure; proximity of the site to important cultural resources and natural resources, potential vulnerability of groundwater to contamination that might emanate from the site, proximity to flood plains, geography and geology; and current Institutional Controls applicable to the site.

The current, intended, and reasonably anticipated future land use of the Site and its surroundings are compatible with the selected remedy of soil remediation. The proposed future use of the Site includes low rise multi-family residential use with a small first floor space for commercial retail.

Following remediation, the Site will meet either Track 1 Unrestricted Use or Track 4 Site-Specific SCOs, both of which are protective of public health and the environment for its planned residential use. The proposed use is compliant with the property's zoning and is consistent with recent development patterns and current area use. The areas surrounding the site is urban and consists of predominantly mixed residential and commercial buildings in zoning districts designated for commercial and residential uses. Some limited manufacturing exists to the north and is consistent with zoning for that area. The development would remediate a vacant contaminated lot and provide a modern residential building. The proposed development would clean up the property and make it safer, create new employment opportunities, living space for affordable and supportive housing and associated societal benefits to the community, and other economic benefits from land revitalization.

Temporary short-term project impacts are being mitigated through site management controls and truck traffic controls during remediation activities. Following remediation, the Site will meet either Track 1 Unrestricted Use SCOs or Track 4 Site-Specific SCOs, both of which are protective of public health and the environmental for its planned use.

The Site is not in close proximity to important cultural resources, including federal or state historic or heritage sites or Native American religious sites, natural resources, waterways,

wildlife refuges, wetlands, or critical habitats of endangered or threatened species. The Site is located in an urban area and not in proximity to fish or wildlife and neither alternative would result in any potential exposure pathways of contaminant migration affecting fish or wildlife. The remedial action is also protective of groundwater natural resources. The Site does not lie in a Federal Emergency Management Agency (FEMA)-designated flood plain. Both alternatives are equally protective of natural resources and cultural resources. Improvements in the current environmental condition of the property achieved by both alternatives considered in this plan are consistent with the City's goals for cleanup of contaminated land.

### **Sustainability of the Remedial Action**

This criterion evaluates the overall sustainability of the remedial action alternatives and the degree to which sustainable means are employed to implement the remedial action including those that take into consideration NYC's sustainability goals defined in PlaNYC: A Greener, Greater New York. Sustainability goals may include: maximizing the recycling and reuse of non-virgin materials; reducing the consumption of virgin and non-renewable resources; minimizing energy consumption and greenhouse gas emissions; improving energy efficiency; and promotion of the use of native vegetation and enhancing biodiversity during landscaping associated with Site development.

While Alternative 2 would potentially result in lower energy usage based on reducing the volume of material transported off-Site, both remedial alternatives are comparable with respect to the opportunity to achieve sustainable remedial action. The remedial plan for either alternative would take into consideration the shortest trucking routes during off-Site disposal of historic fill and other soils, which would reduce greenhouse gas emissions and conserve energy used to fuel trucks. The New York City Clean Soil Bank program is available for reuse of any clean native soils under either alternative. A complete list of green remedial activities considered as part of the NYC VCP is included in a Sustainability Statement.

## **4.0 Remedial Action**

### **4.1 Summary of Preferred Remedial Action**

The preferred remedial action alternative is Alternative 1, the Track 1 remedial action. The preferred remedial action:

1. achieves protection of public health and the environment.
2. achieves the remedial action objectives established and addresses applicable SCGs.
3. is effective in both the short-term and long-term;
4. reduces if not eliminates mobility, toxicity and volume of contaminants.
5. is cost effective and implementable using standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Selection of NYSDEC Part 375, Section 6.8 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. 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).
6. Excavation and removal of soil/fill exceeding Track 1 Unrestricted Use SCOs. For development purposes, the 75% of the property will be excavated to depths of 11 feet

below grade and the remainder 25% of Site will be excavated to 4 feet below grade. In addition, a hotspot area identified within 4 feet excavation will be further delineated and excavated to depths of 14 feet below grade. An estimated 850 tons of soil/fill will be removed from the Site and properly disposed off-Site.

7. 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.
8. 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.
9. Removal of all UST's that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with UST's and appropriate closure of these petroleum spills in compliance with applicable local, State and Federal laws and regulations.
10. 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 RAWP.
11. Collection and analysis of seven (7) equally spaced samples across the entire lot to document all impacted soil has been removed. Additional end point sampling is proposed following secondary excavation in hotspot area (SB-3) from one bottom sample and four sidewall samples oriented north, south, east, and west.
12. Filing an additional testing plan with testing location map detailing the collection of five additional soil gas samples, including one sample adjacent to each property boundary and one final sample from the center of the Site to assess the effectiveness of the removal of TCE source to soil vapor.

13. 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.
14. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
15. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, and lists any changes from this RAWP.

If Track 1 Unrestricted Use SCOs are not achieved, the following construction elements implemented as part of new development will constitute Engineering Controls:

16. As part of development, construction of a protective system comprised of an engineered composite cover consisting of a six-inch thick concrete building slab with an 8-inch clean granular sub-base above a minimum 20 mm vapor barrier without seams, breaks, hole or failures of any kind beneath all building areas and a minimum of two feet of clean soil in all open space and landscaped areas.
17. As part of development, installation of a vapor barrier system 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 VaporBlock® Plus™ VBP20 20mm vapor barrier manufactured by Raven Industries ([www.ravenefd.com](http://www.ravenefd.com)). All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration.
18. Based upon results of additional soil vapor sampling (based on additional testing plan to be filed after excavation), a sub slab depressurization system (SSDS) may be installed

which will include either an active or passive sub-slab depressurization system (SSDS) consisting of two lengths of horizontal piping set 8' apart traversing the length of each building. The horizontal piping will consist of fabric wrapped, perforated schedule 40 4-inch PVC pipe connected to a 6-inch steel riser pipe that penetrates the slab and travels through the building to the roof. The gas permeable layer will consist of a 6-inch thick layer of 2-inch trap rock stone. The pipe will be finished at the roof line with a 6-inch goose neck pipe to prevent rain infiltration. After the basement slab has been installed, additional soil gas sampling will be conducted, and the results will be used to determine with OER and Health Department to determine whether passive or active extraction is required.

19. If Track 1 SCOs are not achieved, submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
  
20. If Track 1 SCOs are not achieved, the property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

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

Track 1 SCOs are proposed for this project and SCO's are defined in 6 NYCRR Part 375, Table 6.8(a) Track 1 Unrestricted Use. If Track 1 SCO's are not achieved, the following Track 4 Site-Specific SCO's will be utilized:

<u>Contaminant</u>	<u>Site-Specific SCO's</u>
Total SVOCs	100 ppm
Lead	700 ppm
Mercury	2.5 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 4. Discrete contaminant sources (such as hotspots) identified during the remedial action will be identified by GPS or surveyed. This information will be provided in the Remedial Action Report.

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

The entire lot will be excavated to a depth of four feet below grade. A secondary excavation with a diameter of 10' will extend an additional 10' in the hot spot identified as SB-3. The location of planned excavations is shown in Figure 3. The total quantity of soil/fill expected to be excavated and disposed off-Site is 850 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.

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 Quantity
Clean Earth	Urban fill / petroleum-contaminated, hazardous / non-hazardous	850 tons

Any changes in disposal facility 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;
- Target Analyte List metals; and
- Pesticides/PCBs by EPA Method 8081/8082.

New York State ELAP certified laboratories will be used for all end-point sample analyses. Laboratories performing end-point sample analyses will be reported in the RAR. The RAR 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 End-point Sampling**

Removal actions for development purposes under this plan will be performed in conjunction with confirmation end-point soil sampling. Nine confirmation samples will be collected from the base of the excavation at locations to be determined by OER. Samples will be analyzed for VOCs, SVOCs, pesticides, PCBs and metals according to analytical methods described above.

### **Hotspot End-point Sampling**

End-point samples will be collected from the sidewalls and base of excavation at the one hotspot identified in the Remedial Investigation, according to the procedure listed below. Hotspots include SB-3 for semi-volatile and metals including lead and arsenic. End-point samples will be analyzed for SCO trigger parameters.

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 end-point 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

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°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.

## **Import of Soils**

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 4. The estimated quantity of soil to be reused on this project is 250 tons. Reuse soils will meet the SCO's established for this project. A map of soil backfill placement locations is shown in Figure 4.

### **4.3 Engineering Controls**

The remedial action will achieve Track 1 Unrestricted Use SCOs and no Engineering Controls are required. However, the following design elements are considered protective systems and will be incorporated into the project as part of the development:

- (1) Composite Cover System
- (2) Soil Vapor Barrier System
- (3) Passive Sub-Slab Depressurization System

If Track 1 is 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 will be comprised of 6 inches of reinforced concrete slab underlain by 8 inches of clean sub-base material in building areas and 2 feet of clean soil meeting Track 1 SCOs in open space areas.

If a Track 1 remedial action is not achieved, 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 RAWP 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 Action 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 vapor barrier.

“The vapor barrier will consist of a layer of 20mm VaporBlock® Plus™ VBP20 to be installed atop of the final soil elevation and beneath the SSDS system, if required. After the SSDS is installed a second vapor barrier comprised of a layer of 6mm poly sheeting will be installed over the SSDS gravel pack. All work is to be completed before foundation slab construction is started. The vapor barrier will extend throughout the area occupied by the footprint of the new building and up the foundation sidewalls and will be installed in accordance with manufacturer specifications”.

The vapor barrier will extend throughout the area occupied by the footprint of the new building and up the foundation sidewalls and will be installed in accordance with manufacturer specifications.

A plan view showing the location of the proposed vapor barrier system is provided in Figure 5. Typical design sections for the vapor barrier on slab and sidewalls are provided in Figure 5 and 6. Product specification sheets are provided in Appendix 6. The Remedial Action Report will include as-built drawings and diagrams, manufacturer documentation, and photographs.

The Remedial Action Report will include a 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.

The Vapor Barrier is considered a protective system. However, if a Track 1 remedial action is not achieved, the Vapor Barrier System will constitute a permanent engineering control and will

be inspected and its performance certified at specified intervals as required by this RAWP 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 Action Report.

### **Sub-Slab Depressurization System**

Should soil vapor analysis indicate a need for vapor extraction, the migration of soil vapor into the building will be mitigated with the construction of a passive Sub-Slab Depressurization System (SSDS). The pSSDS will consist of at minimum two lengths of horizontal piping set 8' apart traversing the entire length of each building. The horizontal piping will consist of fabric wrapped, perforated schedule 40 4-inch PVC pipe connected to a 6-inch steel riser pipe that penetrates the slab and travels through the building to the roof. The gas permeable layer will consist of a 6-inch thick layer of 2-inch trap rock stone. The pipe will be finished at the roof line with a 6-inch goose neck pipe to prevent rain infiltration.

- Although this protective system is not an Engineering Control for the remedial action, the remedial engineer will certify in the RAR that the system was properly installed, establishing a vacuum throughout the gas permeable layer and a negative (decreasing outward) pressure gradient across the entire building slab to prevent vapor migration into the building.

The system will be inspected and its performance certified at specified intervals as required by this RAWP and the Site Management Plan. Maintenance of this SSDS will be described in the Site Management Plan in the Remedial Action Report. The location and layout of the SSDS is shown in Figure 6. A typical section of the system is shown in Figure 6.

## **4.4 Institutional Controls**

A Track 1 remedial action is proposed and Institutional Controls are not required. If a Track 1 remedial action is not achieved, Institutional Controls (IC's) 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 IC's 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 Action Report (RAR). Institutional Controls would be:

- Continued registration of the E-Designation for the property. This RAWP 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 RAR for approval by OER that provides procedures for appropriate operation, maintenance, inspection, and certification of ECs and IC's. 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 and will not be used for a higher level of use without prior approval by OER.

## **4.5 Site Management Plan**

A Track 1 remedial action is proposed and Site Management is not required. If a Track 1 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 Action Report and issuance of the Notice of Completion (NOC) 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 RAWP. The Site Management Plan is submitted as part of the RAR 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 RAR 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.

## **4.6 Qualitative Human Health Exposure Assessment**

The objective of the qualitative exposure assessment is to identify potential receptors and pathways for human exposure to the contaminants of concern (COC) that are present at, or migrating from, the Site. The identification of exposure pathways describes the route that the COC takes to travel from the source to the receptor. An identified pathway indicates that the potential for exposure exists; it does not imply that exposures actually occur.

Data and information reported in the Remedial Investigation Report (RIR) are sufficient to complete a Qualitative Human Health Exposure Assessment (QHHEA) for this project. As part of the VCP process, a QHHEA was performed to determine whether the Site poses an existing or future health hazard to the Site's exposed or potentially exposed population. The sampling data from the RI were evaluated to determine whether there is any health risk under current and future conditions by characterizing the exposure setting, identifying exposure pathways, and evaluating contaminant fate and transport. This QHHEA was prepared in accordance with Appendix 3B and Section 3.3 (b) 8 of the NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation.

### **Known and Potential Contaminant Sources**

Based on the results of the Remedial Investigation Report the contaminants of concern found are:

Soil:

- Several SVOCs including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene were detected exceeding Restricted Residential Use SCOs in one shallow soil sample.
- Several metals were identified, but only mercury exceeded Restricted Residential SCOs in one shallow sample.

Groundwater:

- The only exceedance detected was for PCBs.

Soil Vapor:

1. Petroleum-related VOCs (BTEX) were detected at low concentrations.
2. The chlorinated VOCs, trichloroethylene (TCE) was detected in all soil vapor samples at elevated concentrations

### **Nature, Extent, Fate and Transport of Contaminants**

SVOCs and metals are present in the historic fill materials to depths of 4 feet below grade. Metals are also present in one hotspot area (SB-3) above Restricted Residential SCOs, to depths of approximately 10 to 12 feet below grade. SVOCs and metals found in soil were not found in

groundwater above their respective GQS. The chlorinated TCE and petroleum-related VOCs identified in soil vapor were not identified in on-site soil and are believed to be associated with an off-site source.

## **Receptor Populations**

### **On-Site Receptors:**

The site is currently vacant and undeveloped and access to the Site is restricted by an 8 foot high, chained and locked, perimeter fence. Onsite receptors are limited to trespassers, site representatives and visitors granted access to the property. During construction, potential on-site receptors include construction workers, site representatives, and visitors. Under proposed future conditions, potential on-site receptors include adult and child building residents, workers and visitors.

### **Off-Site Receptors:**

Potential off-site receptors within a 500 foot radius of the Site include adult and child residents; commercial and construction workers; pedestrians; and trespassers based on the following land uses within 500 feet of the Site:

1. Commercial Businesses – existing and future
2. Residential Buildings – existing and future
3. Building Construction / Renovation – existing and future
4. Pedestrians, Trespassers, Cyclists – existing and future

## **Potential Routes of Exposure**

Three potential primary routes exist by which chemicals can enter the body: ingestion, inhalation, and dermal absorption. Exposure can occur based on the following potential media:

- Ingestion of groundwater or fill/ soil;
- Inhalation of vapors or particulates; and
- Dermal absorption of groundwater or fill/ soil.

## **Potential Exposure Points**

### **Current Conditions:**

The site is currently capped with concrete; there are no potential exposure pathways from ingestion, inhalation, or dermal absorption of soil/ fill. Groundwater is not exposed at the site. The site is served by the public water supply and groundwater is not used at the site for potable supply and there is no potential for exposure. Because the site is currently undeveloped, there is no potential for soil vapor to accumulate on site.

### **Construction/ Remediation Conditions:**

During the remedial action, onsite workers will come into direct contact with surface and subsurface soils as a result of on-Site construction and excavation activities. On-Site construction workers potentially could ingest, inhale or have dermal contact with exposed impacted soil and fill. Similarly, off-Site receptors could be exposed to dust and vapors from on-Site activities. Due to the depth of groundwater, direct contact with groundwater is not expected. During construction, on-Site and off-Site exposures to contaminated dust from on-Site will be addressed through the Soil/Materials Management Plan, dust controls, and through the implementation of the Community Air-Monitoring Program and a Construction Health and Safety Plan.

### **Proposed Future Conditions:**

Under future remediated conditions, all soils in excess of Track 1 SCOs will be removed. The site will be fully capped, preventing potential direct exposure to soil and groundwater remaining in place, and protective systems (vapor barrier/passive SSDS) will prevent any potential exposure due to inhalation by preventing soil vapor intrusion. The site is served by the public water supply, and groundwater is not used at the site. There are no plausible off-site pathways for oral, inhalation, or dermal exposure to contaminants derived from the site.

### **Overall Human Health Exposure Assessment**

There are potential complete exposure pathways for the current site condition. There are potential complete exposure pathways that require mitigation during implementation of the remedy. There are no complete exposure pathways under future conditions after the site is developed. This assessment takes into consideration the reasonably anticipated use of the site, which includes one mixed-use commercial and residential and one solely residential structure, site-wide surface cover, and a subsurface vapor barrier system and a SSDS for the buildings.

Under current conditions, on-Site exposure pathways exist for those with access to the Site and trespassers. During remedial construction, on-Site and off-Site exposures to contaminated dust from historic fill material will be addressed through dust controls, and through the implementation of the Community Air Monitoring Program, the Soil/Materials Management Plan, and a Construction Health and Safety Plan. Potential post-construction use of groundwater is not considered an option because groundwater in this area of New York City is not used as a potable water source. There are no surface waters in close proximity to the Site that could be impacted or threatened.

## **5.0 Remedial Action Management**

### **5.1 Project Organization and Oversight**

Principal personnel who will participate in the remedial action include Dave Pelletier, Remedial Engineer, and Jerry Lewis, Site Safety Coordinator. The Professional Engineer (PE) for this project is Dave Pelletier, P.E.

### **5.2 Site Security**

Site access will be controlled by an existing 10 foot steel perimeter fence fitted with a 16' wide double door.

### **5.3 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.

### **5.4 Construction Health and Safety Plan**

The Health and Safety Plan is included in Appendix 5. The Site Safety Coordinator will be Jerry Lewis. Remedial work performed under this RAWP 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 HASP and applicable laws and regulations. The CHASP pertains to remedial and invasive work performed at the Site until the issuance of the Notice of Completion.

All field personnel involved in remedial activities will participate in training required under 29 CFR 1910.120, such as 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 all 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.

## **5.5 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 bailing/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 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 shut down.

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.

### **5.6 Agency Approvals**

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

## **5.7 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 including NYC Building Code 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 RAWP. 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 RAWP.

## **Dewatering**

Dewatering is not anticipated during remediation and construction.

## **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 pads 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 clean 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 19-02 Troutman LLC 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.

### **5.8 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 includes exiting south on Troutman Street from entrance as required, proceeding 80 feet to corner, then making a right turn at corner onto Woodward Avenue. Then, proceed one block on Woodward before making a left turn on Flushing Avenue, a major commercial corridor.

## **5.9 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.

## **5.10 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 business 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. 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 RAWP or other sensitive or time critical information. However, such information will be included in the daily reports. Emergency conditions and changes to the RAWP will be communicated directly to the OER project manager by personal communication. Daily reports will be included as an Appendix in the Remedial Action Report.

### **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 RAR in digital format (i.e. jpeg files).

### **5.11 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.

### **5.12 Deviations From The Remedial Action Work Plan**

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

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

## **6.0 Remedial Action Report**

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

- Information required by this RAWP;
- Text description with thorough detail of all engineering and institutional controls (if Track 1 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 Track 1 remedial action is not achieved);
- Description of any changes in the remedial action from the elements provided in this RAWP 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 Track 1 remedial action is not achieved);

- The RAWP and Remedial Investigation Report will be included as appendices to the RAR;
- Reports and supporting material will be submitted in digital form and final PDFs will include bookmarks for each appendix.

## 7.0 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 two month remediation period is anticipated.

<b>Schedule Milestone</b>	<b>Weeks from Remedial Action Start</b>	<b>Duration (weeks)</b>
OER Approval of RAWP	1	2
Fact Sheet 2 announcing start of remedy	3	1
Mobilization	4	1
Remedial Excavation	5	2
Demobilization	7	1
Submit Remedial Action Report	8	4

**FIGURE 1: SITE LOCATION MAP AND SURROUNDING LAND USAGE**

TENEMENTS/  
FIRST FL RETAIL

LARGE AUTO PARTS RECLAMATION FACILITY

TROUTMAN STREET

N

100' - 9"

29' - 4"

6"

14'

11"

25' - 0"

45' - 5"

MASONRY WALL

16'

14' - 0"

WOODWARD AVENUE

WOODWARD AVENUE

VACANT LOT TO BE REDEVELOPED RESIDENTIAL

DETERGENT PACKAGING / DISTRIBUTION WAREHOUSE

3

FOUR STORY TENEMENT RESIDENCE

SCALE: TBD

APRIL 5, 2015

FIGURE 1 - SITE LOCATION AND SURROUNDING PROPERTIES  
OER PROJECT NUMBER 15EHAZ311Q

175 WOODWARD AVE

RIDGEVEIW, QUEENS

FS9

**FIGURE 2: MAP OF PROPOSED END-POINT SAMPLE LOCATIONS**

TENEMENTS/  
FIRST FL RETAIL

LARGE AUTO PARTS RECLAMATION FACILITY

TROUTMAN STREET

100' - 9"

29' - 4"

45' - 5"  
MASONRY WALL

14' - 6"  
14' - 0"

11' - 11"

25' - 0"

TYPICAL END-POINT SAMPLE  
LOCATION APPROXIMATELY  
15-20 FEET ON CENTER

MINIMU 15 FOOT DIAMETER EXCAVATION

PROPOSED REAR YARD TO BE BACKFILLED WITH CONFIRMED  
CLEAN SOIL CONCRETE AND SURFACED

IN THE AREA OF SB-3 URBAN FILL  
CONSTITUENTS EXTENDED BELOW THE 4' DEPTH  
INTERVAL. AS SUCH EXCAVATION WILL BE ADVANCED  
TO 14' BELOW ORIGINAL GRADE AND BOTH SIDEWALL  
AND BOTTOM SAMPLES COLLECTED FOR LAB ANALYSIS  
TO DOCUMENT COMPLETE REMOVAL OF URBAN FILL  
FROM THE SITE.

WOODWARD AVENUE

DETERGENT PACKAGING / DISTRIBUTION WAREHOUSE

VACANT LOT TO BE REDEVELOPED RESIDENTIAL

FOUR STORY TENEMENT RESIDENCE

NOTES:

1. PROPOSED EXCAVATION WILL CAUSE THE REMOVAL OF ALL SOIL FROM THE SITE FROM PROPERTYLINE TO PROPERTY LINE TO A MINIMUM DEPTH OF 4' BELOW BOTTOM OF EXISTING CONCRETE SLAB
2. A MINIMUM OF 14 POST EXCAVATION SAMPLES WILL CONFIRM ALL URBAN FILL IS CONTAINERIZED AT THE APPROVED LANDFILL.
3. ADDITIONAL EXCAVATION AND FOLLOW UP END POINT SAMPLING WILL PROCEED IN ANY AREA WHERE END POINT SAMPLING INDICATES URBAN FILL CONSTITUENTS EXCEEDED THE ANTICIPATED DEPTH OF 4' BELOW GRADE.
4. ALL SAMPLING TO BE CONDUCTED IN ACCORDANCE WITH SPECIFICATIONS PROVIDED IN THE RAWP.
5. END POINT SAMPLING PROPOSED 15-20 FOOT ON CENTER
6. EXCAVATION CONTRACTOR RESPONSIBLE TO PROTECT POSITIONS OUTSIDE THE PROPERTY LINE FROM COLLAPSE AND MEET ALL APPLICABLE OSHA AND DOB SAFETY REQUIREMENTS
7. SITE AREA 4,580 SF = 200 TON/FOOT (TOTAL EXCAVATION 11 FT = 2, 250 TONS)
8. CONCRETE TO BE DISPOSED AS CLEAN FILL

SCALE: TBD

APRIL 5, 2015

FIGURE 2 - PROPOSED END POINT SAMPLE LOCATION MAP  
OER PROJECT NUMBER 15EHAZ311Q

175 WOODWARD AVE

RIDGEVEIW, QUEENS

**FIGURE 3: SITE EXCAVATION DIAGRAM**

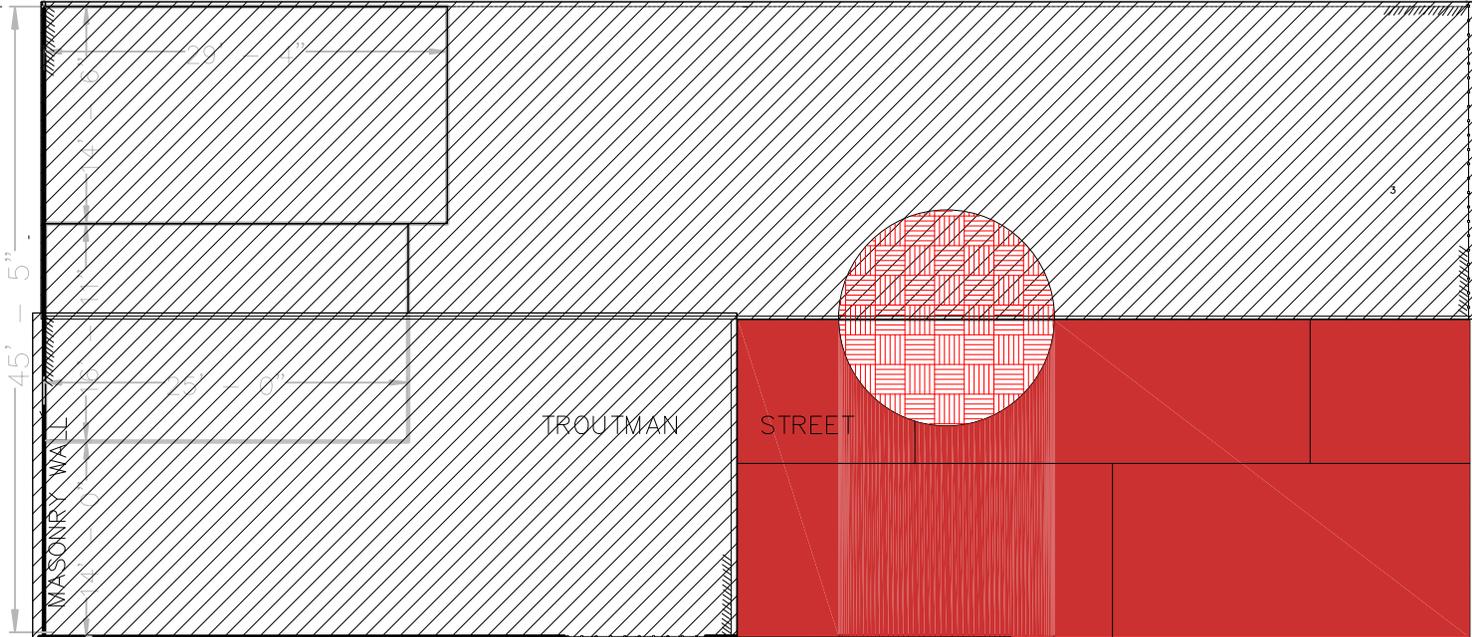
TENEMENTS/  
FIRST FL RETAIL

LARGE AUTO PARTS RECLAMATION FACILITY

TROUTMAN STREET

N

100' - 9"



WOODWARD AVENUE

5'

WOODWARD AVENUE

45'

MASONRY WALL

TROUTMAN STREET

TROUTMAN STREET

DETERGENT PACKAGING / DISTRIBUTION WAREHOUSE

FOUR STORY TENEMENT RESIDENCE

NOTES:

1. RED SHADING INDICATES REAR YARD W/PROPOSES EXCAVATION TO 4' TO REMOVE URBAN FILL
2. BLACK IRON HATCHING INDICATES BUILDING ENVELOP WHICH WILL INCLUDE A MINIMUM EXCAVATION OF 11 FEET
3. RED HATCHED CIRCLE INDICATES AN AREA OF DEEPER EXCAVATION TO RMEOVE URBAN FILL IMPACT - AS NEEDED.

SCALE: TBD

MAY 27, 2015

FIGURE 3 - PROPOSED EXCAVATION PLAN

OER PROJECT NUMBER 15EHAZ311Q

175 WOODWARD AVE

RIDGEVEIW, QUEENS

FS9

**FIGURE 4: MAP OF SOIL/FILL REUSE AND BACKFILL PLACEMENT LOCATIONS**

TENEMENTS/  
FIRST FL RETAIL

LARGE AUTO PARTS RECLAMATION FACILITY

TROUTMAN STREET

100' - 9"

29' - 4"

6"

14'

11"

25' - 0"

16'

14' - 0"

5"

45'

WOODWARD AVENUE

WOODWARD AVENUE

VACANT LOT TO BE REDEVELOPED RESIDENTIAL

DETERGENT PACKAGING / DISTRIBUTION WAREHOUSE

MASONRY WALL

FOUR STORY TENEMENT RESIDENCE

NOTES:

1. BLACK AND LIGHT BLUE SHADING INDICATES WHERE GRADE WILL HAVE TO BE RAISED AFTER THE URBAN FILL MITIGATION IS COMPLETE.
2. IN THE BLACK COLORED AREA A MINIMUM 3 FEET OF FILL WILL HAVE TO BE PLACED
3. IN THE LT BLUE SHADED AREA UP TO 14' OF FILL WILL BE REQUIRED TO RETURN THE FINAL EXCAVATION ASSOCIATED WITH SB-3 BACK TO FINAL BACKYARD GRADE.
4. IN THE RED SHADED AREA POST MITIGATION WILL REQUIRE A MINIMUM OF 4 FEET OF FILL TO BE PLACED TO ESTABLISH THE PROPOSED BACKYARD (CONCRETE COVERED).
5. DEEPER ON-SITE SOILS DOCUMENTED CLEAN BY END POINT SAMPLE ANALYSIS WILL PROVIDE MORE THAN ADEQUATE FILL TO COMPLETE THE BACKFILL PLAN AND ELLIMINATE THE NEED FOR IMPORTED FILL.

SCALE: TBD

MAY 27, 2015

FIGURE 4 - PROPOSED BACKFILL PLAN

OER PROJECT NUMBER 15EHAZ311Q

175 WOODWARD AVE

RIDGEVEIW, QUEENS

FS9

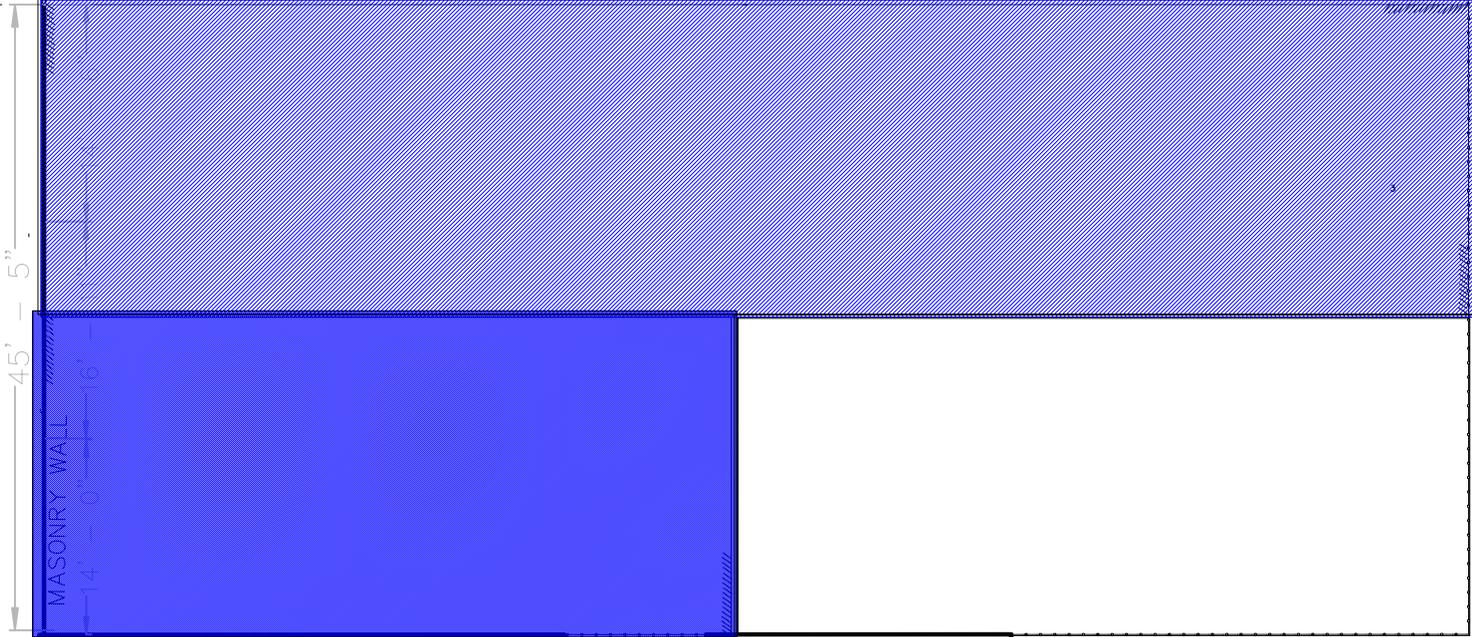
**FIGURE 5: VAPOR BARRIER/WATERPROOFING MEMBRANE DIAGRAMS**

TENEMENTS/  
FIRST FL RETAIL

LARGE AUTO PARTS RECLAMATION FACILITY

TROUTMAN STREET

100' - 9"



WOODWARD AVENUE

DETERGENT PACKAGING / DISTRIBUTION WAREHOUSE

VACANT LOT TO BE REDEVELOPED RESIDENTIAL

FOUR STORY TENEMENT RESIDENCE

NOTES:

1. BLUE SHADING INDICATES APPROXIMATE EXTENTS OF PROPOSED VAPOR BARRIER AND MOISTURE BARRIER
2. VAPOR BARRIER TO CONSIST OF 10 MIL VAPOR BLOCK OR APPROVED OTHER (SEE SPECIFICATIONS APPENDIX 6)
3. MOISTURE BARRIER TO CONSIST OF 6 MIL POLY SHEETING OR APPROVED OTHER
4. INSTALLTION DIAGRAMS PROVIDED IN FIRGURE 6 AND 6A

SCALE: TBD

MAY 27, 2015

FIGURE 5 - VAPOR / MOISTURE BARRIERS LAYOUT

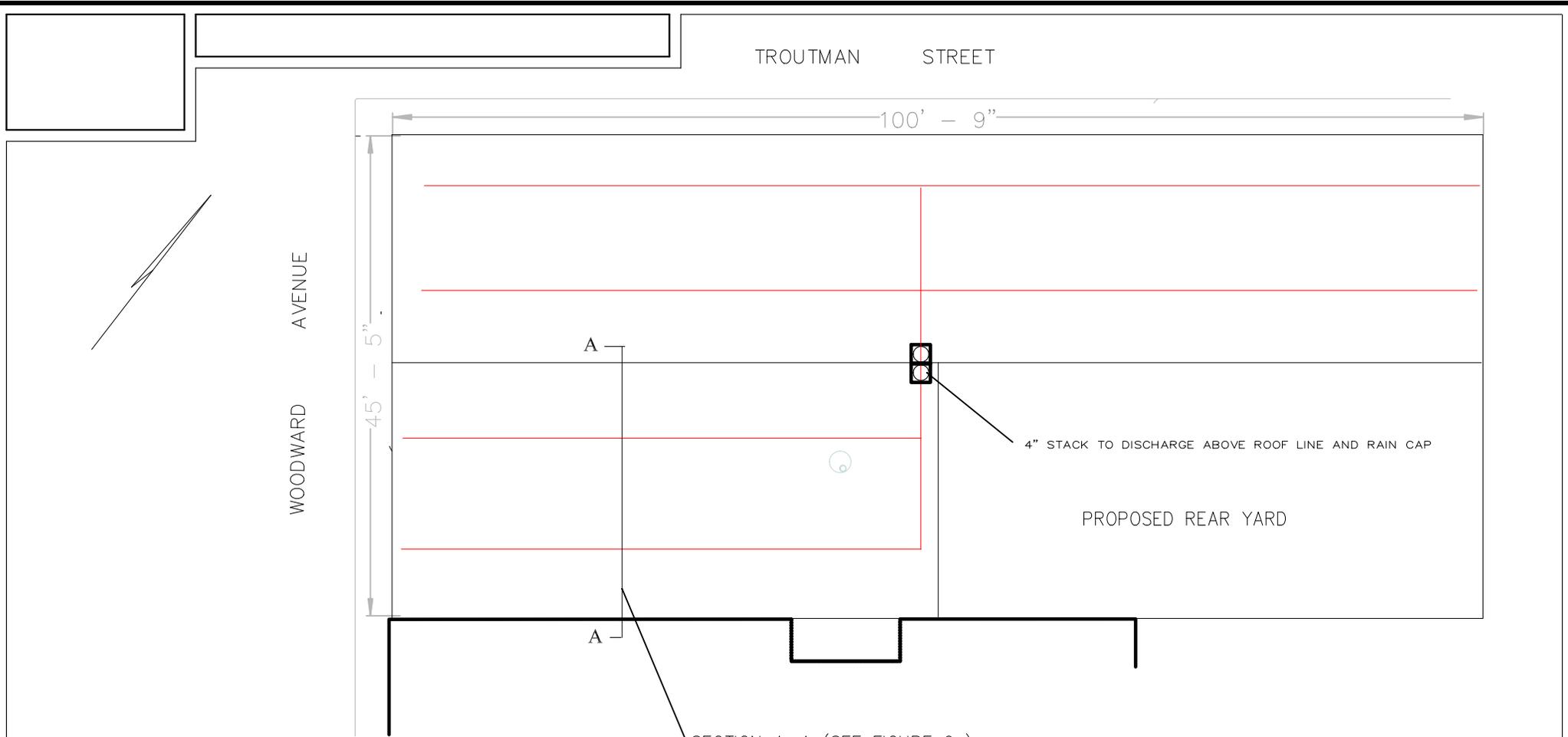
OER PROJECT NUMBER 15EHAZ311Q

175 WOODWARD AVE

RIDGEVEIW, QUEENS

F59

**FIGURE 6: SUB-SLAB DEPRESSURIZATION DESIGN DIAGRAMS**

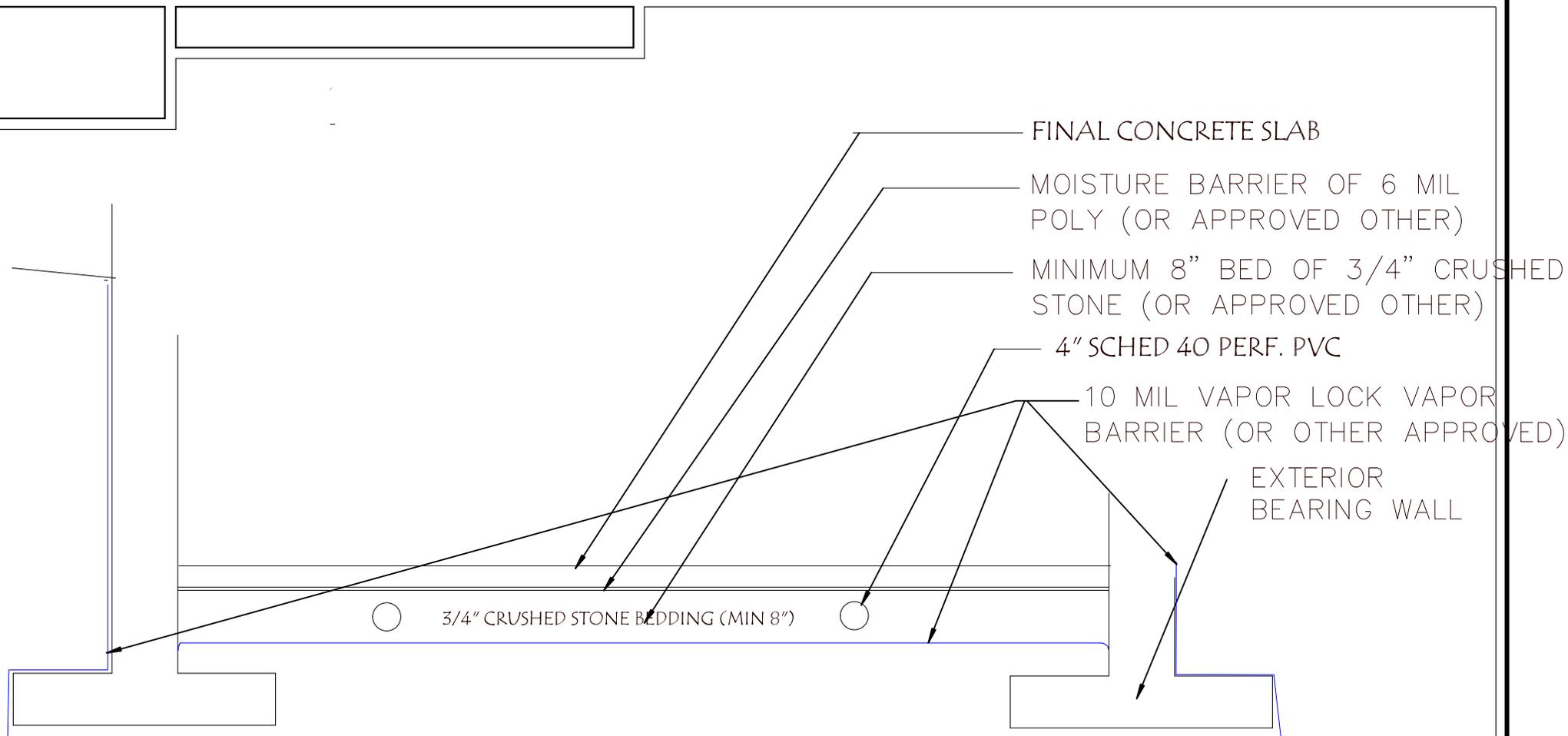


SECTION A-A (SEE FIGURE 6a)

Notes:

1. RED DOTTED LINE INDICATES APPROXIMATE LAYOUT OF 4" SCHED 40 PERFORATED PIPING
2. ENTIRE BUILDING ENVELOPE TO BE FILLED WITH UP TO 8" OF 3/4" CRUSHED STONE OR APPROVED OTHER
3. A MINIMUM 2" OF CRUSHED STONE ABOVE AND 2" BELOW PIPING TO ALLOW FOR EFFICIENT RECOVERY
4. CRUSHED STONE BEDDING AND PERFORATED PIPING INSIDE TO BE SANDWICHED BETWEEN BOTTOM VAPOR BARRIER AND YOP MOISTURE BARRIER.
5. STACK/RISER TO BE INSTALLED BY PLUMBING IN SCHED 80 PVC OR APPROVED OTHER

SCALE: TBD	MAY 27, 2015
FIGURE 6 - SUB-SLAB DEPRESSURIZATION SYSTEM LAYOUT OER PROJECT NUMBER 15EHAZ311Q	
175 WOODWARD AVE	RIDGEWOOD, QUEENS



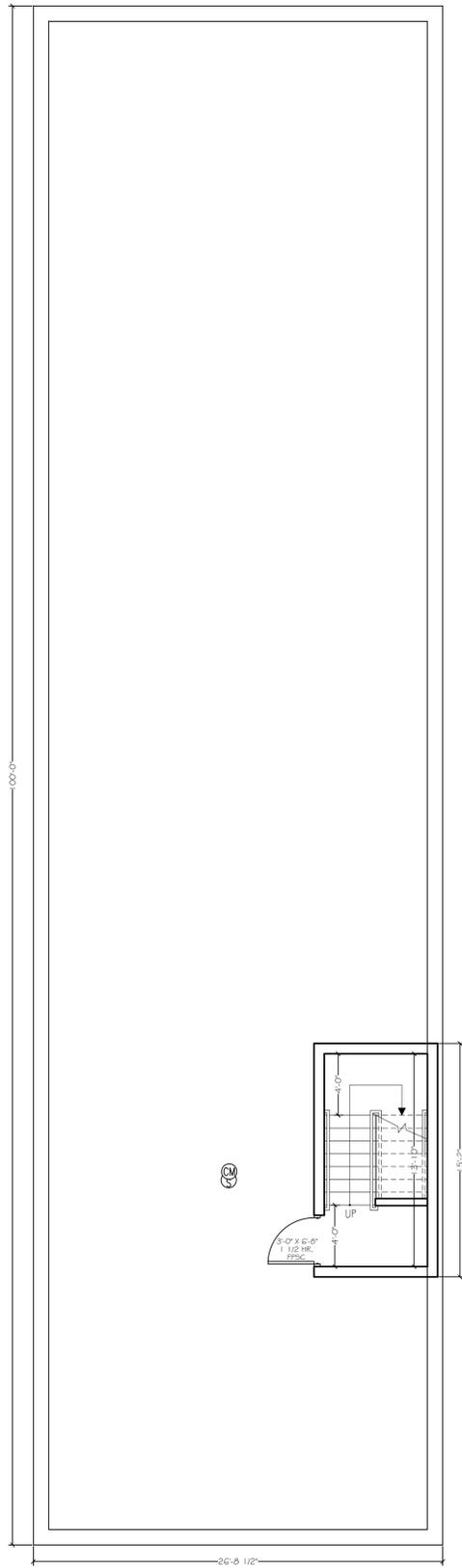
NOTES:

1. VAPOR AND MOISTURE BARRIERS TO BE INSTALLED WITH A MINIMUM NUMBER OF SEAMS
2. WHERE SEAMS ARE NECESSARY, BARRIERS TO BE ADHERED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION AT MINIMUM TO INCLUDE A DOUBLE 1/2" BEAD OF 100% SILICONE AND MINIMUM 2' OVERLAP
3. VAPOR BARRIER TO BE INSTALLED OUTSIDE BASEMENT SIDEWALL AFTER WEATHERPROOFING IS COMPLETE TO PREVENT HORIZONTAL MIGRATION OF VAPORS INTO STRUCTURE

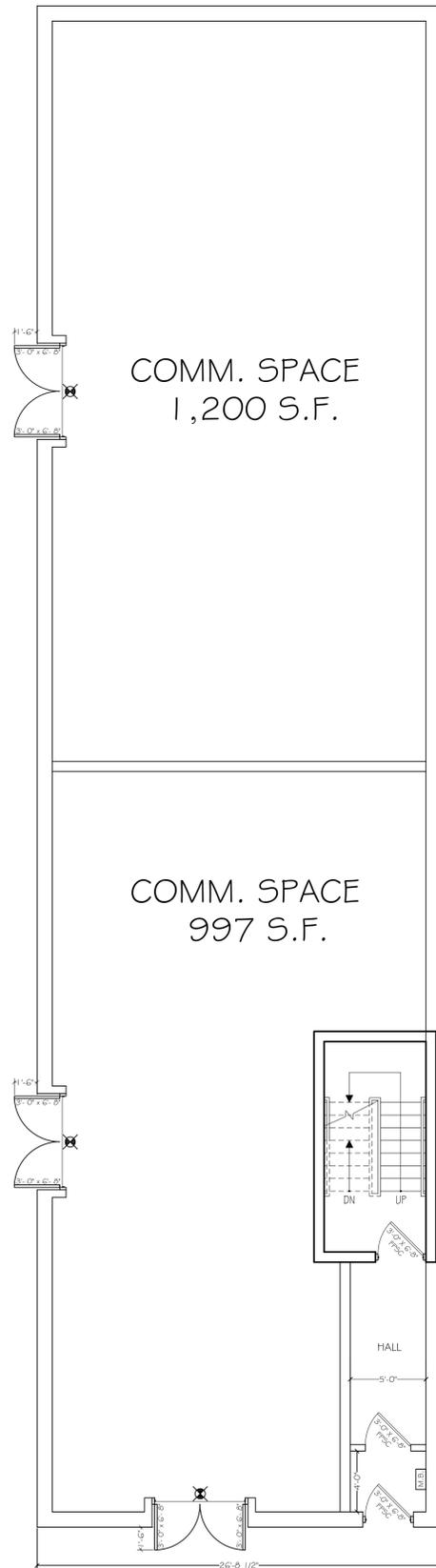
SCALE: TBD	MAY 27, 2015
FIGURE 6A - SUB-SLAB DEPRESSURIZATION SYSTEM CROSS SECTION OER PROJECT NUMBER 15EHAZ311Q	
175 WOODWARD AVE	RIDGEWOOD, QUEENS

## **APPENDIX 1**

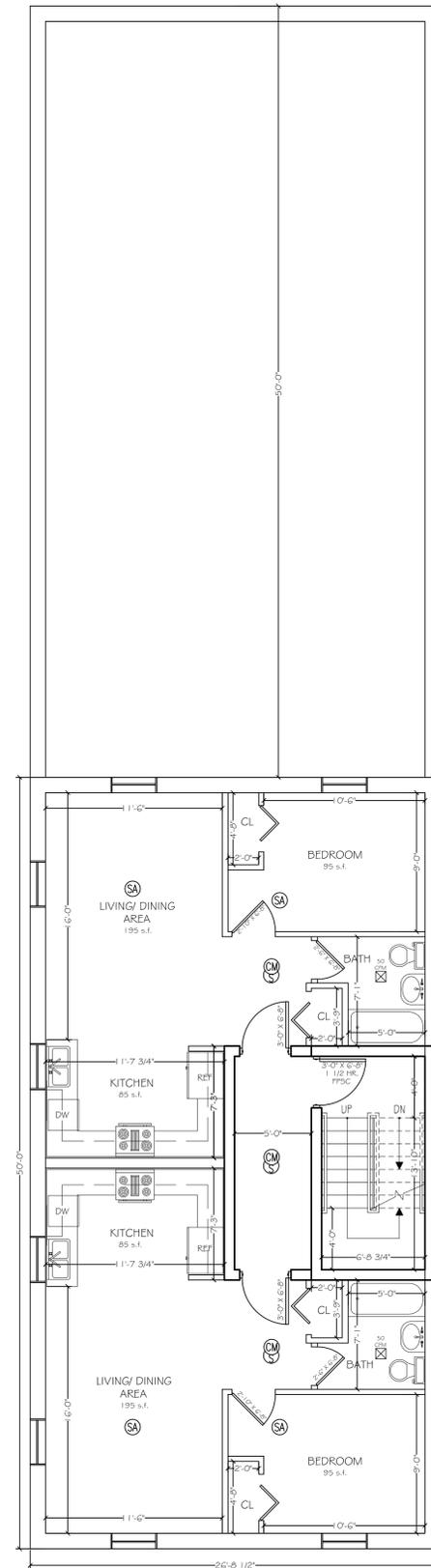
### **PROPOSED DEVELOPMENT PLANS**



CELLAR LEVEL

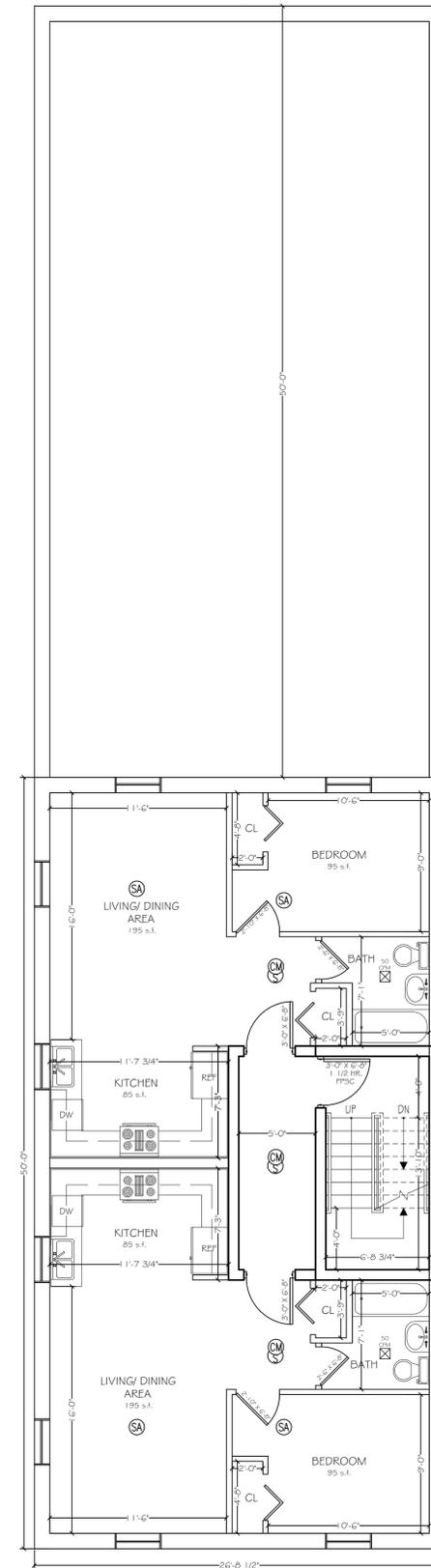


1ST FLOOR



RESIDENTIAL  
(2 UNITS)

2ND FLOOR



RESIDENTIAL  
(2 UNITS)

3RD FLOOR

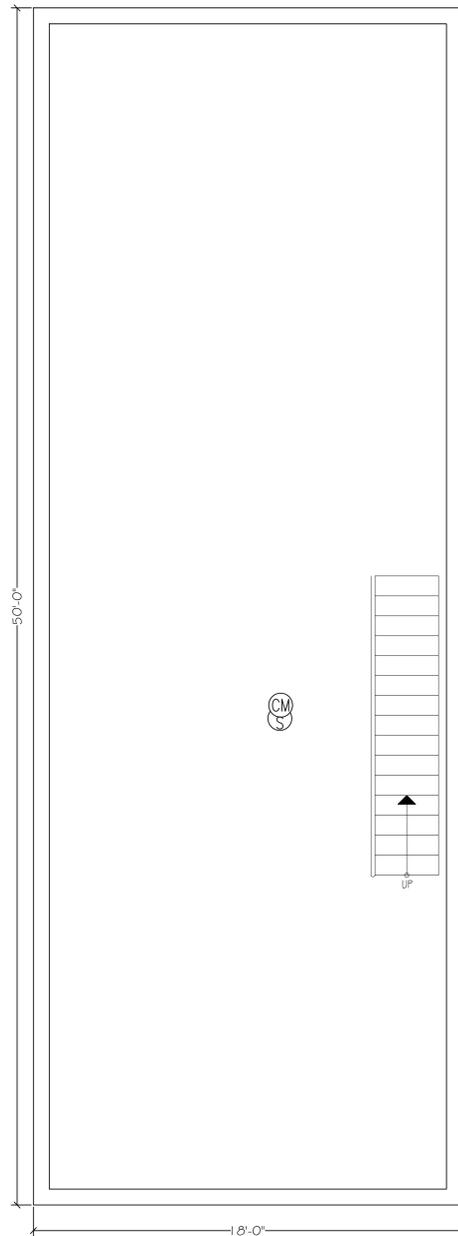
**TarLan Design-Build, LLC.**  
**SAVERIO TARANTINO, P.E.**  
 Office (212) 571-4164  
 Fax (212) 571-4163  
 1 Beekman Street, Suite 607 • New York • New York • 10038

ADDRESS: **175 WOODWARD AVENUE, QUEENS 11385**  
 PROJECT TITLE:  
 DRAWING TITLE:  
**GENERAL NOTES & PLOT PLAN**

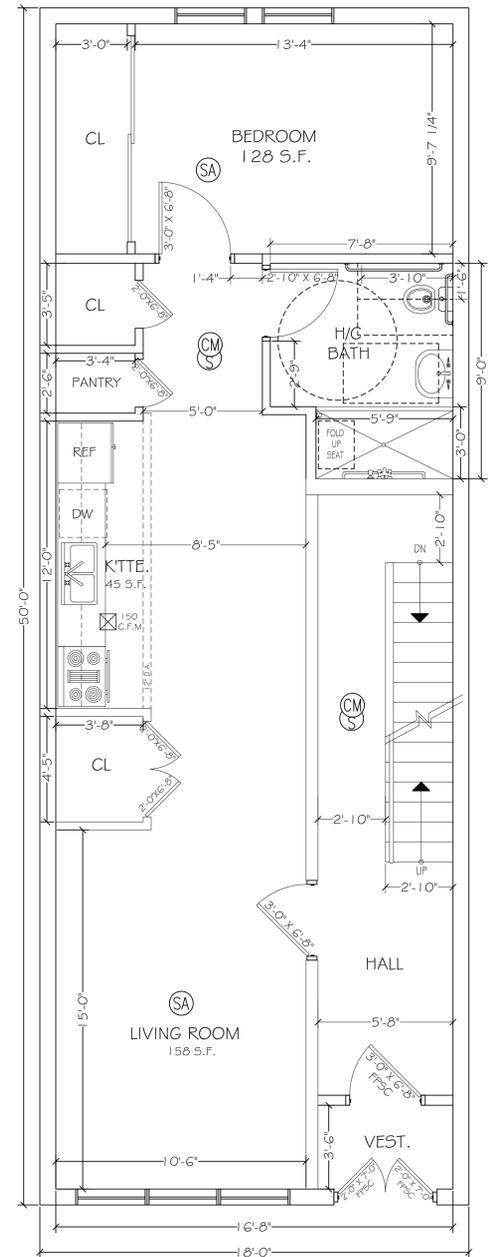
#	REVISION	DATE

SCALE: AS NOTED  
 DRAWING BY: T.L.  
 CHECKED BY: S.T.  
 SEAL & SIGNATURE

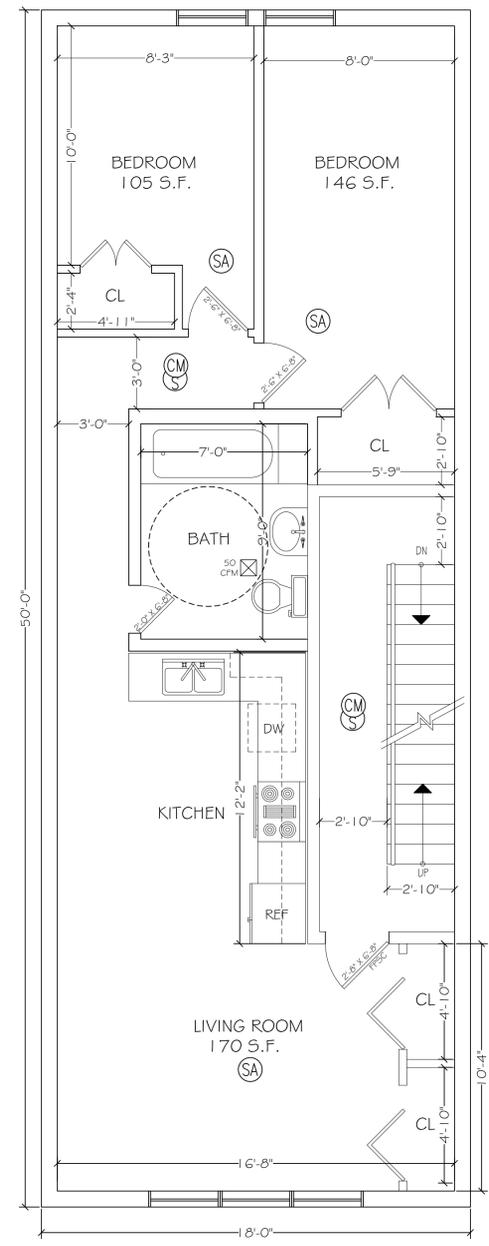
DATE ISSUED: 11-13-2014  
 DWG. No. **A -001.00**  
 PAGE: 1 of X  
 NYC DOB No.



CELLAR LEVEL



1ST FLOOR



TYP. 2ND - 4TH FLOORS

**TarLan Design-Build, LLC.**  
**SAVERIO TARANTINO, P.E.**  
 Office (212) 571-4164  
 Fax (212) 571-4163  
 1 Beekman Street, Suite 607 • New York • New York • 10038

ADDRESS: **175 WOODWARD AVENUE, QUEENS 11385**  
 PROJECT TITLE:  
 DRAWING TITLE:  
**GENERAL NOTES & PLOT PLAN**

#	REVISION	DATE

SCALE: AS NOTED  
 DRAWING BY: T.L.  
 CHECKED BY: S.T.  
 SEAL & SIGNATURE

DATE ISSUED: 11-13-2014  
 DWG. No. **A -001.00**  
 PAGE: 1 of X  
 NYC DOB No.

## **APPENDIX 2**

### **CITIZEN PARTICIPATION PLAN**

The NYC Office of Environmental Remediation and 19-02 Troutman LLC have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYC VCP, 19-02 Troutman LLC will maintain a repository for project documents and provide public notice at specified times throughout the remedial program. This Plan also takes into account potential environmental justice concerns in the community that surrounds the project Site. Under this Citizen Participation Plan, project documents and work plans are made available to the public in a timely manner. Public comment on work plans is strongly encouraged during public comment periods. Work plans are not approved by the NYC Office of Environmental Remediation (OER) until public comment periods have expired and all comments are formally reviewed. An explanation of cleanup plans in the form of a public meeting or informational session is available upon request to OER's project manager assigned to this Site, Amanda Duchesne, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (212) 788-8841.

#### **Project Contact List:**

OER has established a Site Contact List for this project to provide public notices in the form of fact sheets to interested members of the Community.

Communications will include updates on important information relating to the progress of the cleanup program at the Site as well as to request public comments on the cleanup plan. The Project Contact List includes owners and occupants of adjacent buildings and homes, principal administrators of nearby schools, hospitals and day care centers, the public water supplier that serves the area, established document repositories, the representative Community Board, City

Council members, other elected representatives and any local Brownfield Opportunity Area (BOA) grantee organizations. Any member of the public or organization will be added to the Site Contact List on request. A copy of the Site Contact List is maintained by OER's project manager. If you would like to be added to the Project Contact List, contact NYC OER at (212) 788-8841 or by email at [brownfields@cityhall.nyc.gov](mailto:brownfields@cityhall.nyc.gov).

### **Repositories:**

A document repository is maintained online. Internet access to view OER's document repositories is available at public libraries. This document repository is intended to house, for community review, all principal documents generated during the cleanup program including Remedial Investigation plans and reports, Remedial Action work plans and reports, and all public notices and fact sheets produced during the lifetime of the remedial project. The library nearest the Site is:

Ridgewood Public Library

20-12 Madison Street, Ridgewood NY 11385

(718) 821-4770

#### Hours of Operation:

Mon 9:00am – 8:00pm

Tue 1:00pm – 6:00pm

Wed 10:00am – 6:00pm

Thu 12:00pm – 8:00pm

Fri 10:00am – 6:00pm

Sat 10:00am – 5:30pm

Sun Closed

### **Digital Documentation:**

NYC OER requires the use of digital documents in our repository as a means of minimizing paper use while also increasing convenience in access and ease of use.

## **Issues of Public Concern:**

There are no specific issues of concern to stakeholders proximate to the project site.

## **Public Notice and Public Comment:**

Public notice to all members of the Project Contact List is required at three major steps during the performance of the cleanup program (listed below) and at other points that may be required by OER. Notices will include Fact Sheets with descriptive project summaries, updates on recent and upcoming project activities, repository information, and important phone and email contact information. All notices will be reviewed and approved by OER prior to distribution and mailed by the 19-02 Troutman LLC. Public comment is solicited in public notices for all work plans developed under the NYC Voluntary Cleanup Program. Final review of all work plans by OER will consider all public comments. Approval will not be granted until the public comment period has been completed.

## **Citizen Participation Milestones:**

Public notice and public comment activities occur at several steps during a typical NYC VCP project. These steps include:

- **Public Notice of the availability of the Remedial Investigation Report and Remedial Action Work Plan and a 30-day public comment period on the Remedial Action Work Plan:** Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the availability of the Remedial Investigation Report and Remedial Action Work Plan and the initiation of a 30-day public comment period on the Remedial Action Work Plan. The Fact Sheet summarizes the findings of the RIR and provides details of the RAWP. The public comment period will be extended an additional 15 days upon public request. A public meeting or informational session will be conducted by OER upon request.
- **Public Notice announcing the approval of the RAWP and the start of remediation:** Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the approval of the RAWP and the start of remediation.

- **Public Notice announcing the completion of remediation, designation of Institutional and Engineering Controls and issuance of the Notice of Completion:**  
Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the completion of remediation, providing a list of all Institutional and Engineering Controls implemented for to the Site and announcing the issuance of the Notice of Completion.

## APPENDIX 3

### SUSTAINABILITY STATEMENT

This Sustainability Statement documents sustainable activities and green remediation efforts planned under this remedial action.

#### **Reuse of Clean, Recyclable Materials and Reduced Consumption of Non-**

**Renewable Resources:** Reuse of clean, locally-derived recyclable materials reduces consumption of non-renewable virgin resources and can provide energy savings and greenhouse gas reduction. An estimate of the quantity (in tons) of clean, non-virgin materials (reported by type of material) reused under this plan will be quantified and reported in the RAR.

#### **Reduced Energy Consumption and Promotion of Greater Energy Efficiency:**

Reduced energy consumption lowers greenhouse gas emissions, improves local air quality, lessens in-city power generation requirements, can lower traffic congestion, and provides substantial cost savings. Best efforts will be made to quantify energy efficiencies achieved during the remediation and will be reported in the Remedial Action Report (RAR). Where energy savings cannot be easily quantified, a gross indicator of the amount of energy saved or the means by which energy savings was achieved will be reported.

**Conversion to Clean Fuels:** Use of clean fuel improves NYC's air quality by reducing harmful emissions. Natural gas will be utilized for fuel in the new building. An estimate of the volume of clean fuels used during remedial activities will be quantified and reported in the RAR.

**Recontamination Control:** Recontamination after cleanup and redevelopment is completed undermines the value of work performed, may result in a property that is less protective of public health or the environment, and may necessitate additional cleanup work later or impede future redevelopment. Recontamination can arise from future releases that occur within the property or by influx of contamination from off-Site. An estimate of the area of the

Site that utilizes recontamination controls under this plan will be reported in the RAR in square feet.

**Stormwater Retention:** Stormwater retention improves water quality by lowering the rate of combined stormwater and sewer discharges to NYC's sewage treatment plants during periods of precipitation, and reduces the volume of untreated influent to local surface waters. An estimate of the enhanced stormwater retention capability of the redevelopment project will be included in the RAR.

**Paperless Voluntary Cleanup Program:** 19-02 Troutman LLC is participating in OER's Paperless Voluntary Cleanup Program. Under this program, submission of electronic documents will replace submission of hard copies for the review of project documents, communications and milestone reports.

**Low-Energy Project Management Program:** 19-02 Troutman LLC is participating in OER's low-energy project management program. Under this program, whenever possible, meetings are held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation.

## **APPENDIX 4**

### **SOIL/MATERIALS MANAGEMENT PLAN**

#### **1.1 Soil Screening Methods**

Visual, olfactory and PID soil screening and assessment will be performed under the supervision of a Qualified Environmental Professional and will be reported in the final remedial report. Soil screening will be performed during invasive work performed during the remedy and development phases prior to issuance of final signoff by OER.

#### **1.2 Stockpile Methods**

Excavated soil from suspected areas of contamination (e.g., hot spots, USTs, drains, etc.) will be stockpiled separately and will be segregated from clean soil and construction materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

All stockpile activities will be compliant with applicable laws and regulations. Soil stockpile areas will be appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials shall be located at least of 50 feet from the property boundaries, where possible. Hay bales or equivalent will surround soil stockpiles except for areas where access by equipment is required. Silt fencing and hay bales will be used as needed near catch basins, surface waters and other discharge points.

### **1.3 Characterization of Excavated Materials**

Soil/fill or other excavated media that is transported off-Site for disposal will be sampled in a manner required by the receiving facility, and in compliance with applicable laws and regulations. Soils proposed for reuse on-Site will be managed as defined in this plan.

### **1.4 Materials Excavation, Load-Out, and Departure**

The PE/QEP overseeing the remedial action will:

- oversee remedial work and the excavation and load-out of excavated material;
- ensure that there is a party responsible for the safe execution of invasive and other work performed under this work plan;
- ensure that Site development activities and development-related grading cuts will not interfere with, or otherwise impair or compromise the remedial activities proposed in this RAWP;
- ensure that the presence of utilities and easements on the Site has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- ensure that all loaded outbound trucks are inspected and cleaned if necessary before leaving the Site;
- ensure that all egress points for truck and equipment transport from the Site will be kept clean of Site-derived materials during Site remediation.

Locations where vehicles exit the Site shall be inspected daily for evidence of soil tracking off premises. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

Open and uncontrolled mechanical processing of historical fill and contaminated soil on-Site will not be performed without prior OER approval.

### **1.5 Off-Site Materials Transport**

Loaded vehicles leaving the Site will comply with all applicable materials transportation requirements (including appropriate covering, manifests, and placards) in accordance with

applicable laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364. If loads contain wet material capable of causing leakage from trucks, truck liners will be used. Queuing of trucks will be performed on-Site, when possible in order to minimize off Site disturbance. Off-Site queuing will be minimized.

Outbound truck transport routes are described in the remedial report. This routing takes into account the following factors: (a) limiting transport through residential areas and past sensitive sites; (b) use of mapped truck routes; (c) minimizing off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. To the extent possible, all trucks loaded with Site materials will travel from the Site using these truck routes. Trucks will not stop or idle in the neighborhood after leaving the project Site.

## **1.6 Materials Disposal Off-Site**

The following documentation will be established and reported by the PE/QEP for each disposal destination used in this project to document that the disposal of regulated material exported from the Site conforms with applicable laws and regulations: (1) a letter from the PE/QEP or 175 Woodward to each disposal facility describing the material to be disposed and requesting written acceptance of the material. This letter will state that material to be disposed is regulated material generated at an environmental remediation Site in New York City under a governmental remediation program. The letter will provide the project identity and the name and phone number of the PE/QEP or 175 Woodward. The letter will include as an attachment a summary of all chemical data for the material being transported; and (2) a letter from each disposal facility stating it is in receipt of the correspondence (1, above) and is approved to accept the material. These documents will be included in the final remedial report.

The Remedial Action Report will include an itemized account of the destination of all material removed from the Site during this remedial action. Documentation associated with disposal of all material will include records and approvals for receipt of the material. This information will be presented in the final remedial report.

All impacted soil/fill or other waste excavated and removed from the Site will be managed as regulated material and will be disposed in accordance with applicable laws and regulations. Historic fill and contaminated soils taken off-Site will be handled as solid waste and will not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility).

Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the final remedial report. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the final remedial report. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e., clean soil removed for development purposes), including transport to a Part 360-16 Registration Facility, a formal request will be made for approval by OER with an associated plan compliant with 6NYCRR Part 360-16. This request and plan will include the location, volume and a description of the material to be recycled, including verification that the material is not impacted by site uses and that the material complies with receipt requirements for recycling under 6NYCRR Part 360. This material will be appropriately handled on-Site to prevent mixing with impacted material.

## **1.7 Materials Reuse On-Site**

Soil and fill that is derived from the property that meets the Soil Cleanup Objectives (SCOs) established in this plan may be reused on-Site. 'Reuse on-Site' means material that is excavated during the remedy or development, does not leave the property, and is relocated within the same property and on land with comparable levels of contaminants in soil/fill material, compliant with applicable laws and regulations, and addressed pursuant to the NYC VCP agreement subject to Engineering and Institutional Controls. The PE/QEP will ensure that reused materials are segregated from other materials to be exported from the Site and that procedures defined for material reuse in this remedial plan are followed. The expected location for placement of reused material is shown in Section 4.2.

Organic matter (wood, roots, stumps, etc.) or other waste derived from clearing and grubbing of the Site will not be buried on-Site. Soil or fill excavated from the site for grading or other purposes will not be reused within a cover soil layer or within landscaping berms.

## **1.8 Demarcation**

After completion of hotspot removal and any other invasive remedial activities, and prior to backfilling, the top of the residual soil/fill will be defined by one of three methods: (1) placement of a demarcation layer. The demarcation layer will consist of geosynthetic fencing or equivalent material to be placed on the surface of residual soil/fill to provide an observable reference layer. A description or map of the approximate depth of the demarcation layer will be provided in the SMP; or (2) a land survey of the top elevation of residual soil/fill before the placement of cover soils, pavement and associated sub-soils, or other materials or structures; or, (3) all materials beneath the approved cover will be considered impacted and subject to site management after the remedy is complete. Demarcation may be established by one or any combination of these three methods. As appropriate, a map showing the method of demarcation for the Site and all associated documentation will be presented in the RAR.

This demarcation will constitute the top of the site management horizon. Materials within this horizon require adherence to special conditions during future invasive activities as defined in the Site Management Plan.

## **1.9 Import of Backfill Soil From Off-Site Sources**

This Section presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site. Imported soils will not exceed groundwater protection standards established in Part 375. Imported soils for Track 1 remedial action projects will not exceed Track 1 SCO's.

A process will be established to evaluate sources of backfill and cover soil to be imported to the Site, and will include an examination of source location, current and historical use(s), and any

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

The following potential sources may be used pending attainment of backfill and cover soil quality objectives:

- Clean soil from construction projects at non-industrial sites in compliance with applicable laws and regulations;
- Clean soil from roadway or other transportation-related projects in compliance with applicable laws and regulations;
- Clean recycled concrete aggregate (RCA) from facilities permitted or registered by the regulations of NYS DEC.
- All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with provisions in this remedial plan. The final remedial report will report the source of the fill, evidence that an inspection was performed on the source, chemical sampling results, frequency of testing, and a Site map indicating the locations where backfill or soil cover was placed.
- All material will be subject to source screening and chemical testing.
- Inspection of imported fill material will include visual, olfactory and PID screening for evidence of contamination. Materials imported to the Site will be subject to inspection, as follows:
  - Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
  - The PE/QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and
  - Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.

Composite samples of imported material will be taken at a minimum frequency of one sample for every 500 cubic yards of material. Once it is determined that the fill material meets imported backfill or cover soil chemical requirements and is non-hazardous, and lacks petroleum contamination, the material will be loaded onto trucks for delivery to the Site.

Recycled concrete aggregate (RCA) will be imported from facilities permitted or registered by NYSDEC. Facilities will be identified in the final remedial report. A PE/QEP is responsible to ensure that the facility is compliant with 6NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require additional testing, unless required by NYSDEC under its terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete. RCA material is not acceptable for, and will not be used as cover material.

Import of backfill material from off-site sources is not planned as part of this project.

### **1.10 Fluids Management**

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable laws and regulations. Liquids discharged into the New York City sewer system will receive prior approval by New York City Department of Environmental Protection (NYC DEP). The NYC DEP regulates discharges to the New York City sewers under Title 15, Rules of the City of New York Chapter 19. Discharge to the New York City sewer system will require an authorization and sampling data demonstrating that the groundwater meets the City's discharge criteria. The dewatering fluid will be pretreated as necessary to meet the NYC DEP discharge criteria. If discharge to the City sewer system is not appropriate, the dewatering fluids will be managed by transportation and disposal at an off-Site treatment facility.

Discharge of water generated during remedial construction to surface waters (i.e. a stream or river) is prohibited without a SPDES permit issued by New York State Department of Environmental Conservation.

As the planned excavation does not extend into the saturated zone, dewatering is not anticipated as part of this project.

## **1.11 Stormwater Pollution Prevention**

Applicable laws and regulations pertaining to stormwater pollution prevention will be addressed during the remedial program. Erosion and sediment control measures identified in this remedial plan (silt fences and barriers, and hay bale checks) will be installed around the entire perimeter of the remedial construction area and inspected once a week and after every storm event to ensure that they are operating appropriately. Discharge locations will be inspected to determine whether erosion control measures are effective in preventing significant impacts to receptors. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. Undercutting or erosion of the silt fence toe anchor will be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

## **1.12 Contingency Plan for Unknown Contamination Sources**

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown contamination source areas during invasive Site work will be promptly communicated to OER's Project Manager. Petroleum spills will be reported to the NYS DEC Spill Hotline. These findings will be included in the daily report. If previously unidentified contaminant sources are found during on-Site remedial excavation or development-related excavation, sampling will be performed on contaminated source material and surrounding soils and reported to OER. Chemical analytical testing will be performed for TAL metals, TCL volatiles and semi-volatiles, TCL pesticides and PCBs, as appropriate.

## **1.13 Odor, Dust, and Nuisance Control**

### **Odor Control**

All necessary means will be employed to prevent on- and off-Site odor nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) use of foams to cover exposed odorous soils. If

odors develop and cannot otherwise be controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-Site disposal; and (e) use of chemical odorants in spray or misting systems.

This odor control plan is capable of controlling emissions of nuisance odors. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. OER will be notified of all odor complaint events. Implementation of all odor controls, including halt of work, will be the responsibility of the PE/QEP's certifying this remedial plan.

## **Dust Control**

Dust management during invasive on-Site work will include, at a minimum:

- Use of a dedicated water spray methodology for roads, excavation areas and stockpiles.
- Use of properly anchored tarps to cover stockpiles.
- Exercise extra care during dry and high-wind periods.
- Use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface.

This dust control plan is capable of controlling emissions of dust. If nuisance dust emissions are identified, work will be halted and the source of dusts will be identified and corrected. Work will not resume until all nuisance dust emissions have been abated. OER will be notified of all dust complaint events. Implementation of all dust controls, including halt of work, will be the responsibility of the PE/QEP's responsible for certifying this remedial plan.

## **Other Nuisances**

Noise control will be exercised during the remedial program. All remedial work will conform, at a minimum, to NYC noise control standards.

Rodent control will be provided during the remedial program, as necessary, to prevent nuisances.

**APPENDIX 5**

**CONSTRUCTION HEALTH AND SAFETY PLAN**

# **SITE SPECIFIC HEALTH AND SAFETY PLAN**

FOR

## **SOIL CONTAMINATION MITIGATION**

**175 Woodward Ave**

**Queens, New York**

**NYC VCP Site Number: 15EHAZ311Q**

Prepared for:

**Peitro Gagaliardi**

**20 Pine Street, Unit 515**

**New York, New York 10005**

Reviewed by:

**Inspector Amanda Deuschne**

**NYCOER**

**47-40 21<sup>st</sup> St., Long Island City, New York 11101**

**(718) 482- 4038 Office**

**(718) 482-4098 fax**

Prepared by:

**Dave Pelletier, P.E.**

**Jade Environmental, Inc.**

**59 Circle Dr., Hopewell Jct., New York 12533**

**(845) 724-7010 Office**

**(845) 704-1376 eFax**

May 26, 2015

## **I. EMERGENCY RESPONSE ACTIONS**

<b>Ambulance</b>	911
<b>Fire Department</b>	911
<b>Police Department</b>	911
<b>Poison Control Center</b>	(800) 222-1222
<b>Con Ed (emergency)</b>	(800) 752-6633
<b>EPA Emergency:</b>	(908) 321-6660
<b>CHEMTREC</b>	(800) 424-9555
<b>National Response Center:</b>	(800) 424-8802

**Hospital Name:** Woodhull Medical Center  
760 Broadway, Brooklyn, New York  
(718) 963-8000

**Directions to Hospital:** Troutman north 2 blocks to left on Flushing Ave  
1.5 mile on Flushing to Broadway - Hospital on left  
(SEE MAP ON LAST PAGE)  
**ETA: 11 minutes – 1.6 miles**

## **INTERIM FIRST AID PROCEDURES**

**Skin/Eye Contact:** Flush eyes and/or skin thoroughly with water for 15 minutes. Remove contaminated clothing. Wash affected areas with soap and water. If skin was contacted with a dry material, brush it off first, then flush with water. Seek medical attention if irritation develops.

**Ingestion:** Do not induce vomiting. Use vegetable oil to retard ingestion. Call Poison Control Center at (800) 222-1222. Tell them what was swallowed and how much, if possible. Indicate victims age and weight. Follow instructions. Bring victim to hospital or call ambulance.

**Inhalation:** Remove person from contaminated environment without risking your own safety. DO NOT ENTER A CONFINED SPACE UNLESS WEARING LEVEL B AND A STANDBY PERSON IS PRESENT. DO NOT ENTER EXCLUSION ZONE UNLESS WEARING ONE LEVEL HIGHER PROTECTION THAN VICTIM WAS WEARING. Administer artificial respiration, if necessary. Bring victim to hospital or call ambulance.

## **II. PROJECT CONTACTS**

**Project Owner/Developer: Pietro Gargagliardi**

20 Pine  
New York, NY

**Project Consultant:**

Dave Pelletier, PE.  
Jade Environmental, Inc.  
59 Circle Drive, Hopewell Junction, NY 12533  
(845) 724-7010 Office  
(845) 704-1376 Fax to Email  
(914) 882-6074 Cell

**Project Manager:**

Mike Rivituso (914) 882-6074

**Project Supervisor:**

Dave Pelletier, P.E. (914) 882-6074

**Health & Safety Officer:**

David Rimberg, Ph.D. (914) 882-6074

**Other Site Personnel:**

No unauthorized individuals permitted in work area during investigation activities.

**Subcontractors:**

Chemical Analysis: York Analytical Labs  
120 Research Dr., Stratford, CT  
(203) 325-1371 Office  
Phil Murphy, Lab Manager

Liquid Waste Mgmt: Enviro-Waste  
Route 6, Mahopac, New York

Cont. Soil Trans.: TBD

Cont. Soil Disposal: Clean Earth, Kearney, New Jersey

Scrap Metal Disposal: Alloco Disposal 594 Scholes St Brooklyn

### **III. PROPOSED WORK**

#### **3.1 *General***

The work proposed herein includes the excavation, removal, transportation and delivery of approximately 850 tons of contaminated soil (top 4 to 5 feet) from this former commercial site to Clean Earth in Kearney, New Jersey. The work further includes removal of an additional +/- 1000 tons of non-contaminated soil to an alternative construction site(s) to be used for development. Once all the soil needed to be removed is complete, the work will include installing concrete foundations including a vapor barrier to prevent soil vapors from entering the future building basement.

#### **3.2 *Contaminated Soil Identification***

During soil excavation contaminated soil will be targeted for excavation based on visual and olfactory evidence of contamination. Photo-ionization will be used as a back up to insure all accessible field identifiable contaminated soil is removed. To determine when all of the contaminated soil has been removed and only clean underlying soil remains, end points samples will be collected at 20-25' intervals and analyzed for PAHs.

#### **3.3 *Remedial Closure Assessment***

In accordance with NYSDEC Site Assessment Guidelines presented in SPOTS #14 *Site Assessments at Petroleum Bulk Storage Facilities*, at least one composite soil sample will be collected from every 20-25 foot of excavation wall (minimum four per excavation) comprised of aliquots excavated a minimum of 6" from the walls of the excavation approximately 1'-2' above the high water table.

New, disposable gloves will be used to handle all soil samples collected. Enough soil will be collected in lab supplied sample jars with zero head space to facilitate soil analysis for the intended analysis. As the excavation will advance well into the saturated zone, out bottom sample will consist of groundwater collected directly from the excavation.

All samples will be collected in appropriate lab supplied/preserved sample jars with zero head space, cataloged, packed in a cooler with ice and transported under proper chain of custody to a New York State Department of Health licensed, ELAP chemical laboratory for analysis.

Via proper chain of custody, Jade will order the analysis of each soil sample collected for volatile organic compounds listed in the NYSDEC STARS Memo#1 "*Petroleum Contaminated Soil Guidance Policy*" via EPA analytical method 8260. The results will be compared to state guidelines for soil quality and state groundwater quality standards.

**3.4 *Groundwater Pumping and Disposal***

Groundwater is deep and soils are well drained, groundwater will not be addressed as part of this project.

**3.5 *Backfilling***

As the excavation will be filled with building basements, no significant backfilling will occur except as needed to install the basement subgrade and an SSDS beneath the vapor barrier. The bedding will be comprised of highly permeable ¾” crushed stone to facilitate free flow of soil gases below slab for collection by the SSDS and discharge above the buildings proposed roof line.

**3.6 *Quarterly Monitoring***

As groundwater is not being addressed now monitoring is required.

## **IV. PURPOSE OF THE HEALTH AND SAFETY PLAN**

### ***4.1 Purpose***

The Occupational Safety and Health Administration (OSHA) can request a site specific Health and Safety Plan be prepared for all emergency response actions and a copy of that plan be made readily available on the work site during the course of the project. The purpose of this Work, Health and Safety Plan (HASP) is to describe work to be completed, assign responsibilities, establish personal protection standards, mandatory safe practices/procedures and provide for contingencies that may arise during soil and/or tank removal and disposal activities. This HASP has been developed in accordance with the requirements set forth in 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response; Final Rule and 29 CFR 1926 Construction.

### ***4.2 Objective/Limitations***

This HASP is intended to minimize health and safety risks to both site personnel and the community resulting from the potential presence of hazardous materials contained inside the tanks, site soils and possibly groundwater. This HASP is not designed or intended to address potential health and safety concerns associated with geotechnical, mechanical, or structural safety concerns, nor to supercede or replace any OSHA regulation and/or local and state construction code or regulation. The plan procedures shall be updated based upon the on-going findings of site conditions including the most current information available.

### ***4.3 Compliance***

All employees conducting activities on-site in which a potential exposure exists must be in compliance with all applicable Federal, state and local rules and regulations. All employees conducting site activities must also be familiar with the procedures, requirements and provisions of this plan. In the event of conflicting plans/requirements, personnel must implement those safety practices that afford the highest level of protection. The project manager is directly responsible for all aspects of the project both technical and administrative. The health and safety director (HSD) is responsible for all aspects of health and safety for activities conducted during site activities. The Site Safety Officer (SSO) is responsible for ensuring that the health and safety plan is implemented properly at all times during site operations. Specific personnel responsibilities will vary depending upon the task being conducted.

#### **IV. PURPOSE OF THE HEALTH AND SAFETY PLAN - CONT**

##### **4.4 HASP Generation/Potential Exposure**

The first step in formulating any HASP involves characterizing the site in terms of hazards. With respect to the work planned for this project and the potential conditions to be encountered. The following potential hazards identified include but are not limited to:

*Chemical Exposure* – Chemicals entering the body through inhalation, skin absorption, ingestion or puncture wounds;

*Explosion/fire* – As a result of ignition of gasoline fumes contained within soils or residual vapors exiting the bore hole;

*Electrical hazards* – Boring equipment contacting buried power lines;

*Heat/Cold Exp.* – Hot environments such as the building basement/boiler room or cold exposure as a result of working outside during cold days resulting in risks of hypothermia/frost bite;

*Stress/fatigue* - Long hours with short time frames for work completion deadlines contribute to these hazards;

*Mechanical hazards*- Moving equipment such as the hydraulic hammer;

*Physical Hazards* - Holes, ditches, precariously positioned equipment, sharp objects, slippery surfaces, steep/unstable slopes, uneven terrain, unstable surfaces and traffic are all additional potential safety concerns.

##### **4.5 Hazard Assessment**

Once the work plan and site conditions have been characterized, a hazard assessment must be performed. The Hazard Assessment is used to assess what engineering and administrative controls can be implemented to reduce any potential health and safety concerns.

###### **4.5.1 Engineering/Administrative Controls**

Based on the anticipated hazards anticipated on this project, controls implemented will include but not be limited to:

*Restricted access:* Only trained personnel approved by the Site Safety Officer will be permitted on-site during the work; No eating or smoking will be permitted in the work area.

#### **IV. PURPOSE OF THE HEALTH AND SAFETY PLAN – CONT.**

*Emission controls:* If atmospheric screening indicates volatile organic emissions down gradient of the work site exceeding threshold values contaminated soils will be covered during all non excavation activities with either polyethylene sheeting of appropriate thickness or clean soil to minimize release of emissions. In addition only trailers equipped with trailer tarps will be used to haul contaminated materials. Fans will be used as required to assist in reducing vapor concentrations

*PPE:* Personal Protection to be used on this site will follow level D guidelines until conditions are met that require up grade to level C such as VOC emissions exceeding 5 ppm in the breathing zone.

## **V. GENERAL SITE INFORMATION**

### ***5.1 Project Information/Site Description***

The 100' x 44' site is improved with a perimeter fence a small shed and two shipping containers. The remainder of the lot is concrete paved. Please refer to the project map provided in Appendix A for the layout of the site with respect to the anticipated location of our planned borings.

### ***5.2 Work Tasks***

Excavation and removal of soil and construction of an SSDS including a vapor barrier beneath the new structure proposed for the Site. The pre-foundation construction will be overseen by Jade Environmental, Inc and physical activities completed by the owners contractor.

### ***5.3 Subcontracted Services***

5.3.1 York Laboratories - chemical analysis of samples collected.

5.3.2 Alpine Environmental, Inc. - Transport of non haz liquid wastes generated.

5.3.5 Clean Earth of Carteret – Transport and disposal of contaminated soil

## **VI. SITE CHARACTERIZATION**

### ***6.1 Site History and Description***

The Subject of this project includes an unimproved 100' x 44' lot securitized by a perimeter fence and containing a small shed and two shipping containers used for metal fabrication by a local welder.

### ***6.2 Unusual Features***

Unusual site features include:

- Occupied residential properties abut the project site to the east. A warehouse abuts the project site to the north. West across Troutman is a down gradient auto parts salvage company. South across Woodward Ave are residential tenements and a large vacant lot reportedly pending a large residential development.

### ***6.3 Utilities***

Utilities will be marked and cleared by utility personnel via the NYC/Long Island One Call System. No work will commence until notification of clearance is provided by all utilities.

## **VII. CHEMICAL DATA**

### ***7.1 Results of Chemical Analysis***

Known contamination includes hydrocarbons and heavy metals typical of urban fill. Additional chemicals that may be encountered include diesel fuel, engine lubricants or fuel oil. MSDS sheets for these compounds are provided in the appendix.

### ***7.2 Potential Physiological Hazards***

The potential to physical contact with these compounds during planned remedial activities exists. The potential adverse health effects from gasoline and diesel fuel include irritated eye nose or upper respiratory tract, headache, nausea, drowsiness, dizziness and difficulty breathing. Heavy metals such as organic lead historically added to fuel can effect the central nervous system, kidneys and immune system, particularly in small children. In adults lead can cause decreased reaction time, weakness in the fingers, wrists or ankles and possibly affect memory.

### ***7.3 Exposure Pathways***

The most likely pathway to exposure is the inhalation of volatile chemicals and/or particulate laden air as a result of the soil extraction process. Dermal contact is also a potential exposure pathway. The remaining sections of this HASP address procedures to reduce the potential for unnecessary and unacceptable exposures to these compounds.

## **VIII. SITE HEALTH AND SAFETY PROCEDURES**

Based on planned work and the anticipated hazards to be encountered, the following minimum procedures will be required to address potential health and safety concerns.

### ***8.1 Community Health and Safety Consideration***

Work will be conducted during standard work hours so minor noise generated by the excavator and transport trucks should not be an issue. Downwind air currents will be monitored for VOCs using a calibrated PID and dust by a MiniRAM or approved other. If air currents leaving the site indicate elevated VOC or dust emissions, mitigating measures including but not limited to waste covering and wind barriers will be used to reduce the concentration of VOCs/dust leaving the site. No off-site activities are proposed, no additional community Health and Safety concerns exist.

### ***8.2 Action Levels***

All work will be conducted in level D protection to include work gloves, steel toe shoes and hard hat until such time that action levels require upgrade to level C.

### ***8.3 Personal Protective Equipment***

This work will be conducted under level D conditions until the Site Safety Officer instructs an upgrade.

Level D	Protective Clothing – work shoes, gloves
Modified Level D	Level D plus coveralls
Level C	Modified Level D plus respiratory protection w/organic vapor cartridges
Level B	Level C plus self contained breathing apparatus

### ***8.4 Site Security***

Access will be restricted to unauthorized individuals. Barriers and bridging to be provided in accordance with city requirements.

### ***8.5 Work Zones***

Where work zones include excavations that could present a tripping or falling hazard, the area will be cordoned off with caution tape.

## **IX. PROJECT PERSONNEL RESPONSIBILITIES**

The implementation of this health and safety plan will be a coordinated effort of the project team consisting of an engineer and an equipment operator experienced with hazardous waste site characterization.

The following paragraphs identify the key project personnel and briefly describe the health and safety designations and general responsibilities that will be employed.

### ***9.1 Project Manager***

The Project Manager (PM) is responsible for communicating any applicable information so that when the HASP is written, all potential hazards have been evaluated. The PM is responsible for ensuring that the requirements stated in this HASP are complied with during all site activities. The PM is responsible for ensuring an adequate budget to cover the costs of air monitoring, personal protective equipment and other health and safety supplies needed to perform work safely at the site. The PM is also responsible for ensuring that the Health and Safety Manager is informed of any incidents that occur that were not expected.

### ***9.2 Health and Safety Manager***

The Health and Safety Manager (HSM) is responsible for safety procedures and operations at the site, including the following:

- Determining the level of personal protection required;
- Updating health and safety equipment requirements or procedures based on new information gathered during the investigation;
- Changing the levels of personal protection based on site observations;
- Monitoring compliance with the health and safety requirements;
- Stopping work, if required, to protect worker safety or where noncompliance with health and safety requirements is found;
- Informing personnel (other than team members) who want access to work areas of the potential hazards of the site;
- Requiring that all personnel entering the excavation, who may potentially be exposed to toxic substances or hazardous materials, have completed a 40-hour hazardous waste site worker training program in accordance with OSHA regulations 29 CFR 1910.120; and
- Monitoring team members to determine compliance with the applicable physical requirements as stipulated in the health and safety program.

## **IX. PROJECT PERSONNEL RESPONSIBILITIES - CONT.**

### **9.3 *Site Safety Officer***

The SSO is responsible for ensuring the procedures outlined in the HASP are followed by all personnel at all times on a site. The SSO, or designee is responsible for conducting required air monitoring on this site. Any changes in site conditions that may require a modification to the HASP, will be coordinated between the HSM and SSO and/or PM.

The SSO will also be responsible for conducting site safety meetings before the commencement of work to review the HASP with on-site personnel.

## **X. HAZARD SIGNS**

### ***10.1 Acute Symptoms of Exposure***

Workers should go to the support zone as soon as any of these symptoms are experienced:

- Rotten egg odor or sweet almond-like odor
- Headache
- Nausea or vomiting
- Fatigue
- Weakness
- Confusion
- Euphoria
- Dizziness
- Irritation of eyes, nose, throat
- Dermatitis
- Chills
- Chest tightness
- Cough
- Muscle spasms
- Staggered gait
- Increased salivation
- Indigestion
- Diarrhea
- Irritability
- Metallic taste in mouth

## **XI. HAZARD/TASK ANALYSIS**

### *11.1 All Site Activities*

Potential hazards that may be associated with any on-site activity are listed below.

**Hazards: Skin and/or eye contact, inhalation of VOC's, inhalation of contaminated dust and other airborne particulates.**

**Precautions:**

- Wear the required personal protective equipment when conditions or activities indicate the need for it.
- Avoid walking through puddles, and contacting other potential sources of contaminants such as drums.
- Keep airborne dust levels to a minimum by wetting down surfaces.

**Hazards: Physical injuries,  
Abrasions, insect bites, back injuries, slips, trips, falls.**

**Precautions:**

- Avoid slippery surfaces when possible.
- Practice safe lifting techniques.
- Know the location of other site workers at all times, especially before moving and/or starting up heavy equipment such as drill rig or truck.
- Be observant of possible insect nesting areas.
- Have a first aid kit on hand.

**Hazards:**

- **Heat and cold stress.**

**Precautions:**

- Dress appropriately; wear dry clothing.
- Take frequent breaks during extreme weather conditions.
- Refer to the sections on Heat Stress or Cold Stress, as appropriate for additional precautions.

## **XI. HAZARD/TASK ANALYSIS – CONT.**

### **Hazards:**

- **Fire.**

### **Precautions:**

- Have a fire extinguisher on hand.
- Keep ignition sources away from flammable materials and atmospheres.

### **Hazards:**

- **Security.**

### **Precautions:**

- Stay alert to neighborhood activities.

## ***11.2 Specific Tasks***

The hazards associated with specific site tasks are described below.

### ***11.2.1 Excavation***

#### **Hazards:**

- **Unexpected contact with boom;**
- **Trip, fall, slope failure, steep slopes**

#### **Precautions:**

- Stay clear of boom radius.
- No work in excavation while excavator in operation

### ***11.2.2 Soil Sampling***

#### **Hazards:**

- **Inhalation of and skin contact with contaminants in the soil.**

#### **Precautions:**

- Stand upwind to reduce inhalation hazard.
- Wear respiratory protection when conditions indicate need for it.
- Wear safety glasses and nitrile gloves to prevent eye and skin contact.
- Wear vinyl boots over safety boots if free product is encountered.

## **XII. PERSONAL PROTECTION**

### ***12.1 General Guidelines***

- Activities shall be performed in compliance with all OSHA Construction Industry Standards/Regulations.
- All work conducted on-site shall be coordinated through the project manager, the site safety officer, and/or the health and safety director.
- During any activity conducted on-site in which a potential exists for exposure to hazardous materials or, accident or injury, at least two persons shall be present who are in constant communication with each other.
- Following the procedures, requirements, and provisions of this plan, all personnel who may be potentially exposed to hazardous materials or wastes shall be in compliance with Federal/State regulations, OSHA 29 CFR 1910.120.
- Any drum or tank discovered on-site shall not be sampled, opened, or handled until an appropriate task-specific plan for unknown drum/tank sampling has been implemented.
- Samples from areas known, or suspected, to be contaminated with hazardous substances shall be handled with appropriate personal protective equipment.
- All equipment used in site operations shall be properly cleaned and maintained in good working order. Equipment shall be inspected for signs of defect and/or contamination before and after use.
- Eating, drinking, chewing gum, and smoking shall be prohibited while performing site activities and in work zones. Personnel shall wash thoroughly before initiating any of the aforementioned activities.
- The Buddy System should be used. Each buddy should watch for signs of fatigue, exposure and heat stress
- The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated shall result in evacuation of site personnel and reevaluation of the hazards and the level of protection. Contact the Health and Safety Director to determine the appropriate actions to take.
- The walls and faces of trenches 5 feet or more deep and all excavations in which workers are exposed to danger from moving ground or cave-ins shall be guarded by a shoring system, sloping of the ground, or some other equivalent measure per OSHA requirements.

## **XII. PERSONAL PROTECTION – CONT.**

### ***12.2 Air Monitoring***

If deemed necessary by the Site Safety Officer, monitoring shall be performed within the work area on-site in order to detect the presence and the relative levels of toxic substances, the presence of flammable or explosive atmospheres and/or oxygen deficient environments. The purpose of the air monitoring is to avoid or minimize exposure of the field personnel and the public to potential environmental hazards in the soil. The data collected throughout monitoring shall be used to determine the appropriate levels of personal protective equipment. Monitoring shall be conducted in order to determine baseline data on potential hazards prior to entry in the work area, and periodically while conducting work on-site to evaluate any changes in conditions of the specific work area. Each work area must be screened for ambient levels of contamination prior to initiating work activities.

Periodic monitoring on the site will consist of initial monitoring, during changes in site conditions (i.e. drilling activities, opening of a monitoring well, soil sampling etc.), and at regular intervals throughout the day as deemed necessary by the SSO, but at least once every two hours.

Any activity that is to be conducted in a confined or enclosed area or in on-site buildings must be monitored for oxygen deficiency and explosion potential, as well as chemical contamination.

### ***12.3 Personal Protective Equipment***

The purpose of personal protective clothing and equipment is to shield or isolate individuals from the chemical and physical hazards that may be encountered during work activities. The level of protection required must correspond to the level of hazard known, or suspected, in the specific work area.

There are four basic levels (A, B, C, and D) of personal protection as established by the U.S. Environmental Protection Agency (EPA). Level A provides the highest level of protection and Level D provides the lowest. See Section 6.3 for specific glove materials, Tyvek® suits, overboot material, and cartridge type.

- Level D will consist of field clothes, gloves, steel toe and shank safety boots, safety glasses and a hard hat, no respiratory protection.
- Modified Level D will consist of Tyvek® coverall, safety glasses, gloves with disposable inner gloves, steel toe and shank work boots, over boots if free product is encountered or as otherwise specified, hearing protection and, if overhead hazards are present, such as during drilling, a hard hat. Safety glasses must also be worn during drilling.

## **XII. PERSONAL PROTECTION – CONT.**

- Level C will consist of the same equipment as listed for modified Level D with the addition of a full or half-faced air purifying respirator and protective clothing to protect against the compound or component from which exposure may occur.
- Level B, if required for working on this project site, consists of the same equipment as listed for Level C with the substitution of a full-faced Self Contained Breathing Apparatus (SCBA) in place of a full-faced air-purifying respirator.
- Level A, if required will consist of the same as level C with the addition of fully encapsulating chemical resistant clothing.

When wearing Level C, B, or A, all junctures between the chemical protective coverall (i.e., Tyvek® suit) and boots, gloves, and respirator must be taped. The suit must be placed over the boots and gloves. When taping, remember to leave a tab for easy removal. Stress spots in the suit must also be taped, such as under the arms, down the zipper, and up or across the back.

Personal protective equipment has been selected consistent with the hazards associated with the expected field activities. Personal protective equipment (PPE) is available in various sizes to provide a good fit for all personnel. PPE is stored in clean lockers in the equipment storage area in the main office building. Site workers are responsible for maintenance and storage of equipment at the site.

### ***12.4 Health and Safety Action Levels***

An action level is a point at which increased protection is required due to the concentration of contaminants in the work area or other environmental conditions. Each action level is determined by the concentration level (above background level) and the ability of the personal protective equipment to protect against that specific contaminant. The action levels are based on concentrations in the breathing zone.

If ambient levels are measured which exceed the action levels in areas accessible to the public or unprotected personnel, necessary site control measures (barricades, warning signs, and mitigative actions, etc.) must be implemented prior to commencing activities at the specific work site.

Personnel should also be able to upgrade or downgrade their level of protection with the concurrence of the SSO and task manager.

## **XII. PERSONAL PROTECTION – CONT.**

Reasons to upgrade:

- Known or suspected presence of dermal hazards.
- Occurrence or likely occurrence of gas, vapor or dust emission.
- Change in work task that will increase the exposure or potential exposure with hazardous materials.

Reasons to downgrade:

- New information indicating that the situation is less hazardous than was originally suspected.
- Change in site conditions that decrease the potential hazard.
- Change in work task that will reduce exposure to hazardous materials.

### **XIII. SITE CONTROL**

The purpose of site control is to minimize potential contamination of workers, protect the public from the site's hazards, and prevent vandalism. The degree of site control necessary depends on the site characteristics, site size, and the surrounding community.

Site work zones may be established at each work area, and if required, will be established directly prior to the work being conducted by Jade.

Each work area will establish three zones:

- Exclusion Zone - contaminated work area.
- Contamination Reduction Zone - the decontamination area.
- Support Zone - uncontaminated, clean area.

Each zone will be periodically monitored in accordance with the air monitoring requirements established in this Plan. The Exclusion Zone and the Contamination Reduction Zone are considered work areas. The Support Zone is considered an area that is accessible to the public.

The Exclusion Zone is the area where primary activities occur, such as sampling, installation of wells, clean up work, etc. This area must be clearly marked with hazard tape, barricades or cones, or enclosed by fences or ropes. Only personnel involved in work activities will be allowed in the Exclusion Zone.

The Contamination Reduction Zone is the transition area between the contaminated area and the clean area. Decontamination is the main focus in this area. The decontamination of workers and equipment limits the physical transfer of hazardous substances into the clean area. This area must also be clearly marked with hazard tape and access limited to personnel involved in decontamination. Decontamination is explained in a later section of this plan.

- The Support Zone is an uncontaminated zone, which is the location of administrative and other support functions, such as first aid, equipment supply, emergency information, etc. The Support Zone should have negligible potential for exposure to contaminants and is equivalent to that of background.
- Jade will establish a decontamination area and support zone (if necessary) at the site before the commencement of on-site activities. The support zone would also serve as the entry point for controlling site access. All personnel leaving the support zone, at a minimum, in addition to the associated PPE required, will be required to wear chemical resistant outer boots when traversing the site.

## **XIV. DECONTAMINATION**

### ***14.1 Personnel Decontamination***

All personal protective equipment will be disposed of, or decontaminated at the conclusion of each workday. A designated container for Tyvek® suits and other disposables will be located on the site. Tyvek suits, respirator cartridges, and other disposables (inner gloves) will be doffed at the conclusion of each work day and replaced with new equipment prior to commencing work on the following work day. Respiratory equipment, boots, outer gloves, and foul weather gear will be washed and rinsed at the end of the day and stored in sanitized bags. Decontamination of personal protective equipment will consist of manual rinses of Alconox®/tap water, and/or tap water.

#### ***14.1.1 Personnel Decontamination Steps***

##### **Modified Level D**

1. Remove coveralls and protective equipment.
2. Discard disposable garments.
3. Containerize wash and decontamination waters for disposal, as necessary.

##### **Level C**

1. Drop equipment off in a segregated area in the decontamination zone.
2. Wash/rinse outer suit and boots.
3. Wash/rinse outer gloves.
4. Remove outer boots.
5. Remove outer gloves.
6. Deposit disposables in container for proper disposal.
7. Remove suit.
8. Remove respirator.
9. Remove inner gloves.
10. Containerize wash and decontamination waters for disposal, as necessary.

##### **Level B**

1. Drop equipment off in a segregated area in the decontamination zone.
2. Wash/rinse outer boots.
3. Wash/rinse chemical resistant outer gloves.

#### **XIV. DECONTAMINATION – CONT.**

4. Wash/rinse air tank, hose, and protective suit.
5. Remove duct tape from boots, gloves, and face piece and discard.
6. Remove boot covers and outer gloves.
7. Remove face piece, airline, and emergency respirator.
8. Remove chemical resistant suit.
9. Remove inner boots.
10. Remove hardhat.
11. Remove inner gloves and discard.
12. Containerize wash and decontamination waters for disposal.

##### ***14.2 Equipment Decontamination***

All soil and groundwater sampling equipment will be washed using a mixture of Alconox® and distilled water and rinsed with distilled water. All decontamination fluids, as necessary, will be contained within a designated area on-site.

## **XV. EMERGENCY INFORMATION**

On-site emergencies can range in intensity from minor to serious conditions. Various procedures for responding to site emergencies are listed in this section. The HSD or designated SSO is responsible for contacting local emergency services in emergency situations (however, others must assume this responsibility if the situation warrants). An injured person shall be accompanied by another worker at all times.

An emergency information sheet containing the hospital location, directions, phone access, and emergency service phone numbers shall be posted at each work area during site activities.

### ***15.1 Emergency Procedures for Contaminated Personnel***

Whenever possible, personnel should be decontaminated before administering first aid. In the Contamination Reduction Zone there will be a separate decontamination line for emergency use only in order to reduce the risk of exposure.

- Skin Contact: Remove contaminated clothing, wash immediately with water, use soap if available.
- Inhalation: Remove from contaminated atmosphere; initiate artificial respiration if necessary; arrange for emergency transport to hospital.
- Ingestion: Remove from contaminated area; do not induce vomiting if the victim is unconscious; never induce vomiting when acids, alkalines, or petroleum products are suspected.
- If site personnel have unexplainably collapsed, all personnel must evacuate work area. Rescue personnel must don a level of protection higher than the victim was in before evacuating victim from work area. Confined space rescue always requires Level B protection. No one will re-enter the work area until the cause has been determined and the Site Safety Officer has determined that the area is safe to re-enter.
- In case of fire, all personnel must evacuate work area and the SSO will contact local fire department.

### ***15.2 Physical Injuries***

Basic first aid supplies (bandages, gauze, tape) are located in the first aid kit. The first aid kit is located in the Support Zone and/or in a designated site vehicle.

## **XV. EMERGENCY INFORMATION – CONT.**

### ***15.3 Site Emergencies***

Horn blasts will be used as emergency signals. Two horn blasts indicate an injury has occurred. Three horn blasts followed by a continuous blast indicates that all personnel in the Exclusion Zone must immediately evacuate. Personnel will move to the predesignated, safe reassembly points. On-site activities will stop until the added risk is removed or minimized. Do not walk through a vapor cloud to go to the safe area.

### ***15.4 Safety Equipment***

Safety and personal protective equipment will be kept in a dry and sanitary condition in a designated area in the support zone or designated site vehicle. The safety equipment available on-site is as follows: respiratory equipment, hard hats, tyvek coveralls, safety glasses, gloves, boots, emergency eyewash, fire extinguisher, first aid kit, first aid manual, potable drinking water, portable radios, log books to record readings, and absorbent materials.

### ***15.5 Spill Containment***

In the event that on-site work results in the accidental spill or release of oil or hazardous materials, containment to the extent possible will be required by on-site personnel (in proper PPE). Containment should include the use of absorbent pads or materials, diking with soils, covering and/or diverting spills from sewers, drains, surface water bodies, etc. For spills that cannot be controlled by on-site personnel or are above the reportable quantities, the SSO or designee will secure the area and notify the State Police, and the State Emergency Response Coordinator.

## **XVI. HEAT STRESS**

### ***16.1 Symptoms and Remedies***

Acclimatization and frequent rest periods must be established for conducting activities where heat stress may occur. Symptoms of heat stress and appropriate responses include:

- Heat Rash - redness of skin. Remedy - frequent rest and change of clothing.
- Heat Cramp - painful muscle spasms in hands feet, and/or abdomen. Remedy - administer lightly salted water (1/4 teaspoon per gallon) orally unless there are medical restrictions.
- Heat Exhaustion - clammy, moist, pale skin, dizziness, nausea rapid pulse, fainting. Remedy - remove to cooler area and administer fluids orally or have physician administer saline solution intravenously.
- Heat Stroke - hot dry skin; red, spotted or bluish; high body temperature of 104°F, mental confusion, loss of consciousness, convulsions or coma. Remedy - immediately cool victim by immersion in cool water. Wrap in wet sheet while fanning, sponge with cool liquid. While fanning, treat for shock. Call for an ambulance. **DO NOT DELAY TREATMENT. COOL BODY WHILE AWAITING AMBULANCE.**

### ***16.2 Precautions***

Precautions to take to reduce the possibility of heat stress include the following:

- Avoid caffeine and alcohol both during work hours and 24 hours before on-site activity.
- Drink water before feeling thirsty.
- Watch for signs and symptoms of heat stress.
- Rest in cool/dry areas, such as air-conditioned vehicle or building or in the shade.
- Use cooling devices such as water sprays or fans to cool off.

## **XVII. COLD STRESS**

### ***17.1 Symptoms***

Cold stress symptoms may include any or all of the following:

Excessive fatigue

Irritability

Euphoria

Drowsiness

Uncontrollable shivering

Frost nip

Medical assistance is necessary if these symptoms persist.

### ***17.2 Treatment***

Cold Stress and Frostbite Emergency Care

- Remove the patient to a warm, dry place.
- If clothing is wet, remove and replace with dry clothing.
- Keep patient warm. Rewarming of the patient should be gradual to avoid heat stroke symptoms.
- Dehydration, or the loss of body fluids may result in cold injury due to a significant change in blood flow to the extremities. If patient is conscious and alert, warm sweet drinks should be provided.
- Extremities affected by frostbite should be gradually warmed up and returned to normal temperature. Moist compresses should be applied; begin with luke warm compresses and slowly increase the temperature as changes in skin temperature are detected.
- Keep patient warm and calm; remove to a medical facility as soon as possible.

### ***17.3 Prevention***

- Take breaks in heated shelters at frequent intervals when working in temperatures below 20°F, including wind chill.
- Remove outer layer of clothing when entering the shelter. Loosen other layers to allow sweat to evaporate.
- Drink warm, sweet liquids or soups to reduce possibility of cold injury. Avoid caffeine and alcohol.

## **XVIII. HEALTH AND SAFETY PROGRAM COMPONENTS**

### ***18.1 Medical Surveillance***

All project personnel who work at hazardous waste operations participate in the company medical surveillance program. This program tracks the physical condition of employees in compliance with OSHA regulations. Medical examinations and consultations are completed for all employees prior to assignment, annually, upon termination, and in the event of injury and/or illness resulting from exposure at a work site.

### ***18.2 Training***

All project personnel have completed a minimum of 40 hours of hazardous waste activity instruction plus a minimum of three days of field training under the direct supervision of a trained, experienced person. Project personnel also receive 8 hours of annual refresher training. Site Managers and Supervisors receive an additional 8 hours of supervisory training. All training meets the requirements of 29 CFR 1910.120.

### ***18.3 Authorization***

All site personnel shall acknowledge and comply with the policies and procedures established in this Health and Safety Plan.

If any site worker performs work in an unsafe manner and/or in violation of Federal, state, or local regulations, notify the Site Safety Officer and/or the Project Manager. The Project Manager is responsible to notify the client so that appropriate actions are taken.

All personnel have the authority to shut down field operations at this site if our subcontractors are not conducting work in accordance with the requirements of this Plan or if site conditions are determined to be unsafe to continue operations.

## **XIX. REFERENCES**

1. U.S. Environmental Protection Agency, Standard Operating Safety Guides, U.S. EPA, November 1984.
2. U.S. Environmental Protection Agency, Superfund Public Health Evaluation Manual, EPA/540/1-86/060, January 1986.
3. 29 CFR 1910 Hazardous Waste Operations and Emergency Response, March 8, 1989.
4. NIOSH, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, DHHS/NIOSH-85-115, October 1985.
5. NIOSH Criteria for Recommended Practice – “Working in Confined Space”
6. ACGIH, Threshold Limit Values and Biological Exposure Indices.
7. American Petroleum Institute (API) RP 1604 Closure of Underground Petroleum Storage Tanks
8. API 1628 “A Guide to the Assessment and Remediation of Underground Petroleum Releases”
9. API 1629/4367 “A Guide for Assessing and Remediating Petroleum Hydrocarbons in Soil”
10. API Publication 2219 “Safe Operating Guidelines for Vacuum Trucks in Petroleum Service”
11. NFPA 326 “Safe Entry of Underground Petroleum Tanks”
12. NFPA 327 “Standard Procedure for Cleaning or Safe Guarding Small Tanks and Containers”.
13. ASTM PS03 “Guide for Site Characterization for Confirmed or Suspected Petroleum Releases” “Standard Guide for Corrective Action for Petroleum Releases”
14. NYSDEC Division of Environmental remediation DRAFT DER-10 “Technical Guidance for Site Investigation and remediation”

**XX. HEALTH AND SAFETY PLAN AGREEMENT**

This agreement must be signed by all personnel , subcontractors, and visitors before conducting field activities at this site and/or entering the exclusion or decontamination zones.

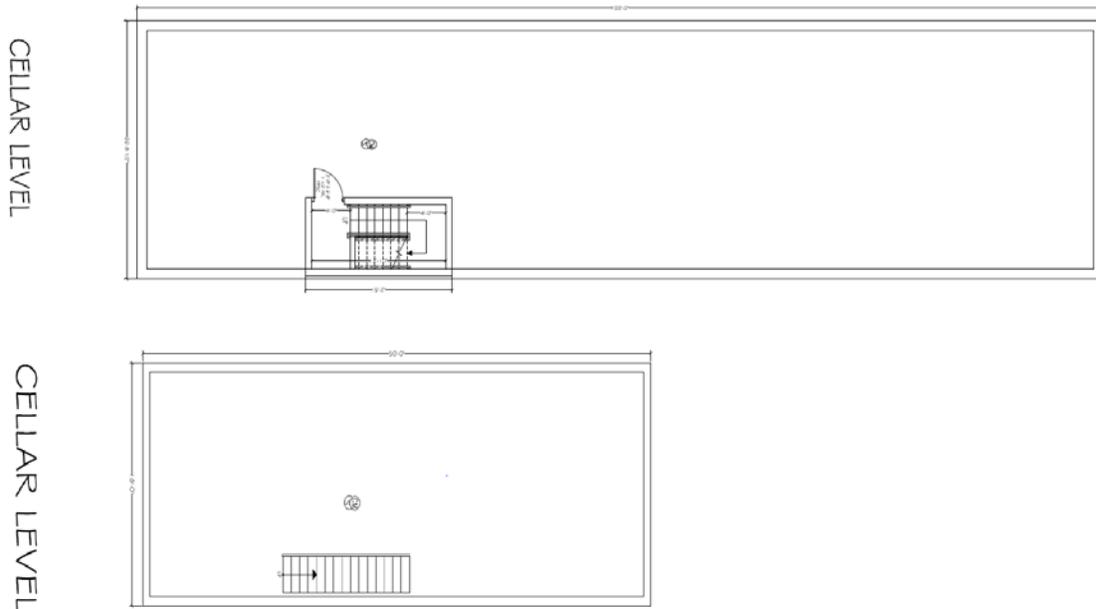
1. I have read this Health and Safety Plan and I understand the requirements of the Plan.
  
2. I will conduct work at this site in accordance with the requirements of the Health and Safety Plan.

_____ Signature	_____ Date	_____ Company
_____	_____	_____

## Appendix A Work Plan Map

Troutman Avenue → North

**Two Building Envelopes to be constructed with 11' basements**



Adjacent Tenements

## Appendix B Map with Directions to Hospital

