

**1600 PEHAM PARKWAY  
BRONX, NEW YORK**

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# **Remedial Action Work Plan**

**NYC BCP Number: NYC 11CBCP001X**

**Prepared for:**

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**JANUARY 2011**



I certify that all engineering plans, specifications and associated designs included in the RAWP have been personally developed by me or under my direct supervision, meet industry standards, and are appropriate for the intended purpose established in this Plan. It is a violation of Article 130 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 130, New York State Education Law.

_____	_____	_____
NYS PE Name and License Number	Date	Signature
Include PE stamp		

# REMEDIAL ACTION WORK PLAN

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## LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
AS/SVE	Air Sparging/Soil Vapor Extraction
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
C/D	Construction/Demolition
COC	Certificate of Completion
CQAP	Construction Quality Assurance Plan
CSOP	Contractors Site Operation Plan
DCR	Declaration of Covenants and Restrictions
ECs/ICs	Engineering and Institutional Controls
HASP	Health and Safety Plan
IRM	Interim Remedial Measure
BCA	Brownfield Cleanup Agreement
MNA	Monitored Natural Attenuation
NOC	Notice of Completion
NYC BCP	New York City Brownfield Cleanup Program
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York State Department of Health and Mental Hygiene
NYCRR	New York Codes Rules and Regulations
NYC OER	New York City Office of Environmental Remediation
NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation
NYS 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
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
SVOC	Semi-Volatile Organic Compound
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

# **EXECUTIVE SUMMARY**

## **Site Description, Physical Setting and Site History**

The Site is identified as 1600 Pelham Parkway in Bronx, New York. MJM Construction Services is filing an application to enter into the New York City Brownfield Cleanup Program (NYC BCP) under the management of the Mayor's Office of Environmental Remediation (OER) as a Volunteer. The Site is associated with Brownfield Cleanup Program ID number 11CBCP001X.

The Site is approximately 24,042 square feet in area, consists of two adjacent lots identified as 30 and 36 (Block 4223) and is located on the southern side of Pelham Parkway South, to the east of Stillwell Avenue in Bronx, NY. The topography of the Site is generally level. The Site Location Map is provided as Figure 1.

Lot 30 is currently developed with a 2-story commercial building with a partial basement, a 1-story shed, an asphalt parking lot. Lot 36 is currently vacant and undeveloped. The Site is currently unoccupied. The surrounding property uses are predominantly commercial and industrial.

The applicant is proposing to make the Site protective of human health and the environment consistent with the contemplated end use for residential and commercial purposes.

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

Lot 30 was historically utilized for commercial purposes, with the current building developed on-site in 1952. Phase I Environmental Site Assessment (ESA) Report by Advanced Cleanup Technologies, Inc. for the Applicant was reviewed to establish the site history. Lot 36 has been a vacant land since 1929. Information for past uses of Site was obtained by evaluating the Fire Insurance Maps and Regulatory Agency Databases.

AOCs are listed below:

1. Hazardous Materials & Noise E designation, E-166: CEQR #06DCP071X
2. Subsurface anomaly indicative of a UST in northwestern portion of Site believed to be a heating oil tank.

3. Presence of historical fill on the property.
4. Proximity to industrial properties and to a major highway.

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

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed ten soil borings across the entire project Site, and collected twenty soil samples for chemical analysis from the soil borings to evaluate soil quality.
3. Installed six groundwater monitoring wells throughout the Site to establish groundwater flow and collected five groundwater samples for chemical analysis to evaluate groundwater quality. One monitoring well was dry during sampling.
4. Installed four soil vapor probes around Site perimeter and collected four samples for chemical analysis.
5. Performed a ground penetrating radar geophysical survey(s) over 50 percent of the Site and identified geophysical anomalies;

### **Summary of the Hydrogeological Findings**

The Site is located in the northeastern portion of the Borough of Bronx, New York. The elevation of the Site is approximately 10 feet above mean sea level (USGS 7.5-Minute Central Park, New York Quadrangle, 1969, Photorevised 1979).

Bronx geology is characterized by a metamorphosed sequence of bedrock known as the Manhattan Prong of the Hartland Formation. The Hartland Formation was formed during the late Cambrian to early Ordovician period and consists of undivided pelitic schist with gneiss and amphibolite. The formation is frequently cross cut by transverse and parallel faults. The area is overlain by Pleistocene aged glacial till deposits. Outcrops of bedrock are common place in the Bronx.

Bedrock with materials class ranging from 2 to 75 was identified beneath the Site. The bedrock is generally metamorphic in character and Ordovician and Precambrian in age. Bedrock was encountered at 12 feet during fieldwork.

Groundwater in the Bronx area and around the Site is not used as a potable (drinking) water source. Bronx residents receive their drinking water supply from surface reservoirs located in upstate New York.

### **Summary of the Environmental Contamination**

1. Depth to groundwater ranges from 6 to 12 feet at the Site.
2. Groundwater flow is generally from north to south beneath the Site.
3. Depth to bedrock is approximately 12 feet at the Site.
4. The stratigraphy, from surface grade to 12 feet down, consists of several feet of historic fill underlain by up to 12 feet of organic silty clay.
5. Boring samples collected during the RI indicate the presence of historic fill material on-Site. Historic fill was identified from zero to at least 2 feet throughout the Site. The fill mainly consists of coal, glass and brick fragments.
6. Soil samples collected during the RI confirmed the presence of Semi-Volatile Organic Compounds (SVOCs) and metals on-Site and are attributable to the presence of historic fill. SVOCs, specifically characterized as Poly Aromatic Hydrocarbons (PAHs) are present in shallow soil in the northeastern, western and eastern quadrants of the Site and in deep soil in the northeastern and north-central portions of the Site at concentrations exceeding the Unrestricted Soil Cleanup Objectives USCO. VOCs were not detected in soil above Track 1 Soil Cleanup Objectives (SCOs). In addition, individual Metals were detected across the entire site at concentrations exceeding the USCO. Two pesticides detected in the western quadrant of the Site from 0 to 2 feet, at concentrations exceeding USCO.
7. Low levels of one VOC/ SVOC (Napthalene) was detected in a single location off-Site and cross- hydraulic gradient. Groundwater containing dissolved metals at concentrations exceeding the respective 6NYCRR Part 703.5 Class GA Groundwater Quality Standards in unfiltered samples. Filtered samples exhibit much lower metals concentrations and achieve groundwater standards. Evaluation of groundwater suggests some saline intrusion or road salt and some impact of sample turbidity and overall indicates that the Site does not adversely affect off-site groundwater resources.

8. Soil vapor samples collected during the RI confirmed the presence of volatile organic compounds in the range from 1,038.26 ug/m<sup>3</sup> to 5,781.4 ug/m<sup>3</sup> on the north side of the property in the south side of the sidewalks along Pelham Parkway South and Stillwell Avenue. The site contaminants observed in soil vapor are attributable to a gasoline or gasoline-associated source. VOCs were not identified in groundwater and were not found in soil samples above Track 1 Soil Cleanup Objectives. Gasoline management activities were not identified in past usage of the site and the soil vapors are not attributed to an onsite source.
9. An underground Storage Tank (UST) is suspected at one location. The UST is believed to be formerly used for space heating for the adjacent two-story building. All USTs will be removed during remediation. Soil sampling adjacent to the suspected UST area did not show any petroleum contamination or NAPL.
10. Aboveground Storage Tanks (ASTs) are absent at the Site.

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

A Qualitative Human Health Exposure Assessment (QHHEA) was performed and indicated that that potential exposure pathways are considered incomplete for future post remedial conditions and complete for onsite workers during the remedial action. The latter requires appropriate Health and Safety program and community air monitoring program during remedial action.

### **Summary of the Remedy**

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

1. Preparation of a Community Protection Statement and performance of all required NYC BCP citizen participation activities according to an approved Citizen Participation Plan (CPP).
2. Establishment of site specific soil cleanup objectives (SCOs) for soils.
3. Removal of all Underground Storage Tanks and removal of any soils that exceed the site specific SCOs. Proper precautions will be taken to appropriately register and close the tank(s), to identify potential spills and notify DEC. A separate tank removal plan will be developed for management under DEC authority.
4. Installation of a vapor barrier at the base of the building slab and an active sub-slab depressurization system under the entire footprint of the building to prevent migration of soil vapor from off-site into the occupied building.
5. Construction and maintenance of an engineered composite cover consisting of asphalt and sub-course or concrete and sub-course to prevent human exposure to residual contaminated soil/fill remaining under the Site;
6. Installation of a demarcation layer on top of the residual soil horizon in areas without a building excavation.
7. Performance of Community Air Monitoring Program for particulates and volatile organic carbon compounds.
8. Collection and analysis of end-point samples to evaluate the performance of the remedy with respect to attainment of SCOs.
9. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
10. Screening for indications of contamination (by visual means, odor, and monitoring with a photo ionization detector (PID)) of excavated soil/fill during all invasive work.
11. Implementation of storm-water pollution prevention measures in accordance with applicable laws and regulations.

12. Performance of all activities associated with the remedial action, including permitting requirements and pretreatment requirements, in accordance with all applicable Federal, State and City laws and regulations.
13. Transportation and off-Site disposal of all soil/fill material removed from the Site at permitted facilities in accordance with all Federal, State and City laws and regulations for handling, transport, and disposal.
14. Sampling and analysis of excavated media as required by disposal facilities.
15. Appropriate segregation of excavated media for off-site disposal.
16. Import of materials to be used for backfill and cover in compliance with OER approved plan and in accordance with all Federal, State and City laws and regulations.
17. Recording of a Declaration of Covenants and Restrictions that includes a full listing of Engineering Controls and Institutional Controls and notice that these controls must be maintained within a Site Management Plan to prevent future exposure to any residual contamination remaining at the Site.
18. Establishment in a recorded Declaration of Covenants and Restrictions, a series of Institutional Controls on the Site, including: (1) compliance with the provisions of the recorded Declaration of Covenants and Restrictions; (2) compliance with provisions of the approved Site Management Plan; (3) operation and maintenance of Engineering Controls as specified in the Site Management Plan; (4) inspection and certification of all Engineering Controls at a frequency and in a manner defined in the Site Management Plan; (5) performance of environmental and public health monitoring as defined in the Site Management Plan; (6) reporting at a frequency and in a manner defined in the Site Management Plan; (7) protection of on-Site monitoring devices in a manner specified in the SMP; and (8) prohibition of discontinuation of Engineering Controls without an OER-approved amendment or extinguishment of the Declaration of Covenants and Restrictions.
19. Establishment in a recorded Declaration of Covenants and Restrictions, a series of site restriction Institutional Controls on the Site, including: (1) prohibition of vegetable gardening and farming; (2) prohibition of the use of groundwater without treatment

rendering it safe for the intended use; (3) prohibition on all disturbance of residual contaminated material unless it is conducted in accordance with the provisions in the Site Management Plan; and (4) prohibition on higher level of land usage without an OER-approved amendment or extinguishment of this Declaration of Covenants and Restrictions.

20. Submission of a RAR which describes the remedial activities including any changes from this RAWP, certifies that the remedial requirements have or will be achieved, defines the Site boundaries, and describes any Engineering and Institutional Controls to be implemented at the Site.
21. Submission of an approved Site Management Plan in the Remedial Action Report for long-term management of residual contamination, including plans for Institutional and Engineering Controls for: (1) inspection and certification, (2) monitoring, (3) operation and maintenance, and (4) reporting.

## COMMUNITY PROTECTION STATEMENT

The Office of Environmental Remediation created the New York City Brownfield Cleanup Program (NYC BCP) to provide governmental oversight for the cleanup of contaminated property in NYC. This Remedial Action Work Plan (“cleanup plan”) describes the findings of prior environmental studies that show the location of contamination at the site, and describes the plans to clean up the site to protect public health and the environment.

This Remedial Action Work Plan for 1600 Pelham Parkway provides a high level of protection for neighboring communities. This cleanup plan 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 egress 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.

**Remedial Investigation and Cleanup Plan.** Under the NYC BCP, a thorough cleanup 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 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. Land uses in the area include a public school identified as “Albert Einstein College”, located approximately 528 feet to the west of the Site.

**Qualitative Human Health Exposure Assessment.** An important part of the cleanup study of the Site is the performance of a study to find all of the ways that people might come in contact with contaminants of 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 and is included in this plan. This assessment has considered all known contamination at the Site and evaluated the potential for people to come in contact with this contamination. All potential public exposures will be addressed under this cleanup plan.

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

**Site Safety Coordinator.** This project has a designated Site safety coordinator to implement the Health and Safety Plan. The safety coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site safety coordinator is Mark Robbins and can be reached at (631) 462-5866 or (631) 457-0030.

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

**Odor, Dust and Noise Control.** This cleanup plan includes actions for odor and dust control. These actions are designed to prevent off-Site odor and dust nuisances and includes steps to be taken if nuisances are detected. Generally, dust is managed by application of physical covers and by water sprays. Odors are controlled by limiting the area of open excavations, physical covers, foams and by a series of other actions (called operational measures). The project is also required to comply with NYC noise control standards. If you observe problems in these areas, please contact Mark Robbins of Hydro Tech at (631) 462-5866 or Shaminder Chawla of NYC Office of Environmental Remediation at (212) 788-8841.

**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.

**Storm-Water Management.** To limit the potential for soil erosion and discharge, this cleanup plan has a storm-water management plan. The main elements of the storm water management plan include physical barriers such as tarp covers and 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 are from 7AM to 5 PM and 5 days of operation.

**Signage.** While the cleanup is in progress, Fact Sheet for the project will be prominently posted at the main entrance of the property noting that the project is participating in the NYC Brownfield Cleanup Program.

**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 at (718) 636-0800, the NYC Office of Environmental Remediation Project Manager at (212) 788-8841, or call 311 and mention the Site is in the NYC Brownfield 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 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, odors 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 securely covered to prevent dust and odor, and properly recorded in logs and records and placarded in compliance with 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 all laws and regulations.

**Imported Material.** All fill materials proposed to be brought onto the Site will comply with detailed rules outlined in this cleanup plan and will be inspected and approved by a qualified worker located on-Site. Waste materials will not be brought onto the Site. Trucks entering the Site with imported clean soils will be securely covered with tight fitting covers.

**Equipment Decontamination.** All equipment used for cleanup work will be washed before it leaves the Site. Trucks will be cleaned at a washing 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. Loaded trucks leaving the Site will not stop or idle in the local neighborhood.

**Final Report.** The results of all cleanup work will be fully documented in a final report (called a Remedial Action Report) that will be available for you to review in the public document repositories located at Pelham Branch Library.

**Long-Term Site Management.** To provide long-term protection 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 in the property's deed. A certification of continued protectiveness of the cleanup will be required from time to time to show that the approved cleanup is still effective.

## CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and MJM Construction Services have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Brownfield 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 BCP, MJM Construction Services 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, Shaminder Chawla , 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 in the nearest public library that maintains evening and weekend hours. This document repository is intended to house, for community review, all principal documents generated during the cleanup program including project applications, Remedial Investigation plans and reports, draft and final Remedial Action plans and reports, the Site Management Plan, the Notice of Completion and all public notices and fact sheets produced during the lifetime of the remedial project. MJM Construction Services will regularly inspect the repositories to ensure that they are fully populated with project information. The repository for this project is:

Pelham Branch Library

3060 Middletown Road

718-792-6744

Hours of operations

Monday and Thursday: 10:00 AM to 8:00 PM

Tuesday and Wednesday: 10:00 AM to 6:00 PM

Friday and Saturday: 10:00 AM to 5:00 PM

And at:

NYC Office of Environmental Remediation

[www.nyc.gov/oer](http://www.nyc.gov/oer)

**Digital Documentation.** NYC OER strongly encourages the use of digital documents in repositories as a means of minimizing paper use while also increasing convenience in access and ease of use.

**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 prepared by MJM Construction Services, reviewed and approved by OER prior to distribution and mailed by

MJM Construction Services, who is obligated to submit a certification of mailing to OER within five days of the mailing date. Public comment is solicited in public notices for all work plans developed under the NYC Brownfield 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 BCP project. These include:

- **Public Notice of the availability of the NYC BCP Application, Remedial Investigation Report and Remedial Action Work Plan and a 30-day public comment period on the Application and 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 Application, Remedial Investigation Report and Remedial Action Work Plan and the initiation of a 30-day public comment period on the Application and 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.

## SUSTAINABILITY STATEMENT

The Sustainability Statement is a program employed by OER to encourage the Enrollee to consider the benefits of sustainable remediation and development during the formative project planning process. The Sustainability Statement provides a summary of sustainability efforts to be employed by the Enrollee or its contracting team. OER strongly recommends, but does not require, that the Enrollee employ sustainable means to implement the selected remedy defined in this RAWP and subsequent redevelopment including those that take into consideration the sustainability goals defined in PlaNYC. Such goals include: maximizing the recycling and reuse of clean, non-virgin materials; reducing the consumption of virgin and non-renewable resources; minimizing energy consumption and greenhouse gas emissions; improving energy efficiency; and enhancing biodiversity during landscaping associated with Site development.

This Sustainability Statement summarizes sustainable and green remediation efforts to be employed under this Remedial Action Work Plan (RAWP). The MJM Construction Services has evaluated sustainable remediation opportunities and proposes the following means to address these goals in the remediation and redevelopment.

**Reuse of Clean, Recyclable Materials.** Reuse of clean, recyclable materials reduces consumption of non-renewable virgin resources and can provide energy savings and greenhouse gas reduction since these materials can be locally-derived.

An estimate of the mass (tonnage) of clean, non-virgin materials (reported by type of material) reused under this plan will be quantified and reported in the RAR in total tonnage.

**Reduce Consumption of Virgin and Non-Renewable Resources.** Reduced consumption of virgin and non-renewable resources lowers the overall environmental impact of the project on the region by conserving these resources.

An estimate of the mass (tonnage) of virgin and non-renewable resources, the use of which will be avoided under this plan, will be quantified and reported in the RAR in total tonnage.

**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 existing contamination from off-Site.

Under future conditions, building recontamination from potential off-site sources will be prevented through the use of a vapor barrier below the building slab and construction of a sub-slab depressurization system. Current regulations will be met for storage and handling of any materials onsite that may present a potential recontamination threat. Long-term site management will include periodic site inspection that will identify and correct any new issues of environmental concern.

An estimate of the area of the Site that utilizes recontamination controls under this plan will be reported in the RAR in total acres and percentage of total Site area.

**Storm-water Retention.** Storm-water retention improves water quality by lowering the rate of combined storm-water 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 storm-water retention capability of the brownfield redevelopment project will be included in the RAR.

**Linkage with Green Building.** Green buildings provide a multitude of benefits to the city across a broad range of areas, such as reduction of energy consumption, conservation of resources, and reduction in toxic materials use.

The number of Green buildings that are associated with this brownfield redevelopment property will be reported in the RAR. The total square footage of green building space created as a function of this brownfield redevelopment will be quantified for residential, commercial and industrial/manufacturing uses.

**Paperless Brownfield Cleanup Program.** MJM Construction Services is participating in OER's Paperless Brownfield 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. A gross estimate of the number of pounds of paper saved under this plan will be reported in the RAR.

**Low-Energy Project Management Program.** MJM Construction Services 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. A gross estimate of the number of miles of personal transportation that is conserved in this process, and the number of commuter trips within NYC that are avoided will be quantified and reported in the RAR.

**Grey Water Reuse.** Reuse of gray water, including harvested rainwater, in place of water from NYC's water distribution system reduces demand on the city's water supply and conserves this valuable resource.

A gross estimate of the grey water reuse capability of the brownfield redevelopment project will be reported (gallons per day).

# **REMEDIAL ACTION WORK PLAN**

## **1.0 INTRODUCTION**

MJM Construction Services has enrolled as a Volunteer in the New York City Brownfield Cleanup Program (NYC BCP) to investigate and remediate a 0.55-acre site located at 1600 Pelham Parkway in Bronx, New York City. Residential and commercial use is proposed for the property. This Remedial Action Work Plan (RAWP) summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation (RI), performed between January 2009 and November 2009. It provides remedial alternatives analysis that includes consideration of a Track 1 (permanent) cleanup, and a description of the proposed remedial action. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and conforms with applicable City, State and Federal laws and regulations.

### **1.1 SITE LOCATION AND DESCRIPTION**

The Site is located in Bronx, New York City and is identified as Block 4223 and Lot 30, 36 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 0.55-acres and is bounded by Pelham Parkway South to the north, Bassett Avenue, AMTRAK rail road, a parking lot and a 2-story bar/restaurant to the south, horse stable and a 2-story house to the east, and Stillwell Avenue and a residential building to the west. A map of the site boundary is shown in Figure 2. Currently, the Site is a 2-story building with a partial basement and a parking lot and is currently vacant and unoccupied.

### **1.2 CONTEMPLATED REDEVELOPMENT PLAN**

An RI was performed to compile and evaluate data and information necessary to develop this RAWP in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. The proposed redevelopment plan and end use is described below. However, the Remedial Action contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

The contemplated future use of the Site will consist of residential use and will include 7-story residential building with commercial at ground floor. The Site is approximately 0.55 acres and the footprint of the proposed building will be 0.30 acres. Remaining areas will be parking area open to sky. Residential space will be from the first floor up. The building will be identified as 1600 Pelham Parkway, Bronx, New York. The proposed development will include no unpaved open spaces or landscaped areas.

Layout of the proposed site development is presented in Figure 2. The current zoning designation is R-6A and residential. The proposed use is consistent with existing zoning for the property.

### **1.3 DESCRIPTION OF SURROUNDING PROPERTY**

The Site is located in a commercial, industrial and residential neighborhood. Pelham Parkway South is located to the north of the Site. Bassett Avenue, AMTRAK rail road, a parking lot and a 2-story bar/restaurant are located to the south of the Site. A 2-story house and horse stable is located to the east of the Site. Stillwell Avenue and a residential building are located to the northwest and an industrial area to the southwest of the Site. (Figure 2).

Within 400 feet radius of the Site, there are a variety of land uses including: vacant land, institutional, industrial, commercial, transportation and parking, public facilities, residential buildings (one to multi-family residential apartments) and mixed residential and commercial facilities. The Site is zoned R-6A (general residential district). Properties located within ¼ mile radius from the Site are zoned R4, R3X, R3-2 (general residence district) and M1-1 (general manufacturing district).

#### **Sensitive Receptors**

Within 528 feet radius, there is one school (Albert Einstein College) located to the west and cross-hydraulic-gradient of the Site. Based on the distance and location, the Site should not impact upon its environmental quality.

No day care facilities, hospitals, rivers, streams, wetlands or other sensitive receptors were identified within 1,000 feet from the Site. The following table indicates the closest sensitive receptors to the Site.

	Distance (feet)	Direction
Schools	528	W
Day care facilities	1,900	W
Hospitals	1,800	W-SW
Rivers, streams	4,200	W
Wetlands	6,200	NW

Figure 1 shows the surrounding land usage, with sensitive environmental receptors indicated.

#### **1.4 PRIOR ACTIVITY**

Based on an evaluation of the data and information from the RIR and this RAWP, the presence of inactive hazardous waste as defined in ECL §27-1303 is not suspected.

## **2.0 DESCRIPTION OF REMEDIAL ACTION OBJECTIVES**

### **2.1 REMEDIAL ACTION OBJECTIVES**

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

#### **2.1.1 Groundwater**

- Prevent direct exposure to contaminated groundwater.
- Prevent exposure to contaminants volatilizing from contaminated groundwater.

#### **2.1.2 Soil**

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

#### **2.1.3 Soil Vapor**

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

### **3.0 DESCRIPTION OF REMEDIAL ACTION PLAN**

#### **3.1 REMEDIAL ACTION ALTERNATIVES ANALYSIS**

Two remedial action alternatives are considered in this alternatives analysis.

Alternative 1 is a Track 1 alternative that involves complete removal of all soil and fill on the property that exceeds the unrestricted Track 1 SCOs. This alternative involves the excavation and removal of approximately 13,000 cu. yds of soil and fill and eliminates all contaminant sources and will not require any Engineering or Institutional Controls.

Alternative 2 is a Track 4 alternative that involves:

- Establishment of approved site-specific Soil Cleanup Objectives (SCOs);
- Removal of all Underground Storage Tanks and soil above site specific SCOs.
- End-point sampling and attainment of site specific Soil Cleanup Objectives;
- Placement of a final cover over the entire site to eliminate exposure to remaining soil/fill;
- Installation of a vapor barrier and an active sub-slab depressurization system under the entire building footprint to prevent migration of soil vapor from off-Site sources into the building structure and eliminate exposures to soil vapors;
- Establishment of use restrictions including prohibitions on the use of groundwater from the site and prohibitions on other sensitive site uses, such as farming or vegetable gardening, to eliminate potential future exposure pathways;
- Establish a Site Management Plan to ensure long-term management of these Institutional and Engineering Controls including the performance of periodic inspections and certification that the controls are performing as they were intended; and
- Placement of a deed restriction to memorialize the remedial action and the Engineering and Institutional Controls to ensure that future owners of the site continue to maintain these controls as required.

### 3.1.1 Threshold Criteria

#### 3.1.1.1 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 Institutional Controls or Engineering Controls. Protection of public health and the environment must be achieved for all approved remedial actions.

The Track 1 alternative will result in excavation of all soil with contaminant concentration above Track 1 SCOs and would:

- Eliminate the risk of ingestion exposures or other direct contact with contaminated on-Site soils consistent with remedial action objectives;
- Eliminate the risk of leaching into groundwater and ingestion exposures or direct contact with groundwater with contamination derived from the Site consistent with remedial action objectives; and
- Eliminate potential sources for on-Site production of soil vapors, and prevent migration of on-Site derived vapors into occupied structures and eliminate associated inhalation exposures consistent with remedial action objectives.

The Track 4 alternative would:

- Establish approved site specific SCOs;
- Remove underground tanks and provide for removal of soils above SCOs;
- Installation of a vapor barrier and active sub-slab depressurization system to prevent the migration of on-Site and off-Site derived vapors into occupied structures and eliminates any associated inhalation exposures;
- Placement of a final cover over the entire site to eliminate any potential exposures to remaining soils that do not exceed the site specific SCOs;

- Establish use restrictions to ensure that future ingestion or other exposures to groundwater are eliminated;
- Establish a Site Management Plan to ensure long term management of Institutional and Engineering Controls to ensure that all Engineering and Institutional controls are inspected periodically and requires certification that the remedy continues to perform as it was designed, thus ensuring that the protections achieved for public health and the environment remain in perpetuity;
- Place a deed restriction to memorialize these controls in order to decrease the risk of future exposures with contaminated media consistent with remedial action objectives to memorialize the remedial action and the existence of Engineering and Institutional Controls and will ensure that these controls will be appropriately managed by future owners of the Site.

### **3.1.2. Balancing Criteria**

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

The Track 1 alternative would address the chemical-specific SCGs for soil, groundwater and soil vapor by excavation and removal of all material above the Track 1 SCOs. 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.

The Track 4 alternative would address the chemical-specific SCGs for soil, groundwater and soil vapor by establishment of site specific SCOs and excavation underground tanks and soils exceeding SCOs. Similar to the Track 1 alternative, 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.

### 3.1.2.2 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 effects on public health and the environment during implementation of the remedial action, including protection of the community during remedial actions, environmental impacts, time until remedial response objectives are achieved, and protection of workers during remedial actions.

The Track 1 alternative would result in more significant short-term impacts due to the slightly larger quantity of excavation and transport required to remove all historic fill and other material necessary to achieve Track 1 SCOs throughout the Site. These impacts could include higher air quality impacts caused by greater soil excavation, handling and load out, and associated truck traffic. Similar impacts would be associated with import of backfill. Focused attention to means and methods employed during the remedial action, including community air monitoring and appropriate truck routing, would minimize or negate the overall impact of these activities.

The Track 4 alternative would result in fewer short-term impacts associated with excavation, handling, load out of materials, and truck traffic. Construction of a vapor barrier and active sub-slab depressurization system would not result in any negative short-term impacts. Focused attention to means and methods during the remedial action, including community air monitoring and appropriate truck routing, would minimize or negate the overall impact of these activities.

### 3.1.2.3 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 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 Engineering Controls.

The Track 1 alternative would be effective over the long-term by providing a permanent cleanup of on-Site contamination through removal of all soils in excess of the Track 1 SCOs and would eliminate any potential on-Site sources of soil vapors and groundwater contamination consistent with remedial action objectives.

The Track 4 alternative would also be effective over the long-term by removing underground storage tanks and soils above SCOs, placement of a final cover over the entire Site, establish use restrictions, establish a Site Management Plan to ensure long-term management of Institutional and Engineering Controls, and placement of a deed restriction to memorialize these controls for the long term. Although groundwater impacts have not been observed, removal actions will minimize the risk of leaching into groundwater and contact with or exposures to groundwater with contamination derived from on-Site consistent with remedial action objectives. Soil and fill removal above SCOs would also minimize potential sources for on-Site production of soil vapors, migration of on-Site-derived vapors, and use of active sub-slab depressurization would prevent migration of on-Site and off-Site derived vapors into occupied structures and eliminate associated inhalation exposures consistent with remedial action objectives. Groundwater use restrictions will eliminate potential exposure to groundwater and establishment of a SMP and a deed restriction will ensure that this protection remains effective for the long-term (in perpetuity). The vapor barrier and active sub-slab depressurization will have the added benefit of providing protection against possible future migration of soil vapors from off-Site sources not available with the Track 1 alternative alone. The SMP will ensure long-term effectiveness of all Engineering and Institutional Controls by requiring periodic inspection and certification that these controls and use restrictions continue to be in place and functioning as they were intended assuring that protections designed into the remedy will provide continued high level of protection in perpetuity.

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

This evaluation criterion assesses the remedial alternative's use of treatment 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.

The Track 1 alternative will provide maximum reduction of toxicity, mobility and volume of contaminated material on-Site by excavation and removal of all soils that exceed the Track 1 unrestricted use SCOs.

The Track 4 alternative will provide:

- Reduction of toxicity, mobility and volume of contaminated material on-Site by excavation and removal of USTs and soil/fill that exceeds site-specific SCOs;
- Removal of soil and fill above SCOs will reduce the potential for migration of contaminants in groundwater and soil vapor;
- Operation of an active vapor barrier and sub-slab depressurization system that will eliminate the potential for migration of off-site soil vapors into the building;
- Placement of a cover over the entire Site that will lower toxicity by eliminating potential contact with remaining soil below the site specific SCOs;
- Groundwater use restrictions will reduce toxicity by ensuring that there is no direct contact with on-Site groundwater in the future;
- Establishment of a Site Management Plan and placement of a deed restriction to memorialize these controls will ensure long-term management of these Engineering and Institutional Controls and provide assurance that protective levels of toxicity and mobility will continue in perpetuity.

#### 3.1.2.5 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 Track 1 alternative is both feasible and implementable. It uses standard materials and services and well established technology. The reliability of the remedy is high. There are no special difficulties associated with any of the activities proposed but will require a long period of time to accomplish due to the large quantity of soil and fill material that would require removal.

Similarly, the Track 4 alternative is also both feasible and implementable. It uses standard materials and services and well established technology. The reliability of the remedy is also high. There are no special difficulties associated with any of the activities proposed, which utilize standard industry methods.

#### 3.1.2.6. 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.

The capital costs for the Track 1 alternative is substantially higher than the costs for the Track 4 alternative. Higher costs are driven by higher total volume of soil/fill that would be excavated and transported from the Site and disposed of at an off-Site location.

Both alternatives satisfy the threshold balancing criterion and other criterion listed here, and each is fully protective of public health and the environment, will control migration of contaminants, will comply with SCGs, are effective for the short-term and long-term, are implementable, and reduces both mobility and toxicity.

#### 3.1.2.7 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.

Based on the overall goals of the remedial program and initial observations by the project team, both of the alternatives are acceptable to the community. This RAWP will be subject to and undergo public review under the NYC BCP and will provide the opportunity for detailed

public input on the remedial alternatives and the selected remedial action. This public comment will be considered by OER prior to approval of this plan.

#### 3.1.2.8 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.

Both alternatives for remedial action at the site are comparable with respect to the proposed use and to land uses in the vicinity of the Site. The proposed use is consistent with the existing zoning designation for the property and is consistent with recent development patterns. The Site is surrounded by residential, commercial and industrial property and both alternatives provide comprehensive protection of public health and the environment for these uses. Improvements in the current brownfield condition of the property achieved by both alternatives are also consistent with the City's goals for cleanup of contaminated land and bringing such properties into productive reuse. Both alternatives are equally protective of natural resources and cultural resources. This RAWP will be subject to undergo public review under the NYC BCP and will provide the opportunity for detailed public input on the land use factors described in this section. This public comment will be considered by OER prior to approval of this plan.

### 3.1.2.9. 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: minimizing energy consumption and greenhouse gas emissions; improving energy efficiency; maximizing the recycling and reuse of non-virgin materials; reducing the consumption of virgin and non-renewable resources; and promotion of the use of native vegetation and enhancing biodiversity during landscaping associated with Site development.

Both alternatives have the potential to utilize sustainable means to achieve the cleanup goals. This program contemplates the utilization of several green remediation methods that are equally compatible with either alternative. The full list of green remediation activities considered in this program is included in the Sustainability Statement.

## **4.0 REMEDIAL ACTION**

### **4.1 SUMMARY OF PREFERRED REMEDIAL ACTION**

The preferred alternative is Alternative 2, the Track 4 remedy. The preferred remedy achieves protection of public health and the environment for the intended use of the property. The preferred remedial action alternative will achieve all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action alternative is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants. The preferred remedial action alternative is cost effective and implementable and uses standard methods that are well established in the industry.

The proposed remedial action is summarized below:

1. Preparation of a Community Protection Statement and performance of all required NYC BCP citizen participation activities according to an approved Citizen Participation Plan (CPP).
2. Establishment of site specific soil cleanup objectives (SCOs) for soils.
3. Removal of all Underground Storage Tanks and removal of any soils that exceed the site specific SCOs. Proper precautions will be taken to appropriately register and close the tank, to identify potential spills and notify DEC. A separate tank removal plan will be developed for management under DEC authority.
4. Installation of a vapor barrier at the base of the building slab and an active sub-slab depressurization system under the entire footprint of the building to prevent migration of soil vapor from off-site into the occupied building.
5. Construction and maintenance of an engineered composite cover consisting of asphalt and sub-course and concrete and sub-course to prevent human exposure to residual contaminated soil/fill remaining under the Site;
6. Installation of a demarcation layer on top of the residual soil horizon in areas without a building excavation.

7. Performance of Community Air Monitoring Program for particulates and volatile organic carbon compounds.
8. Collection and analysis of end-point samples to evaluate the performance of the remedy with respect to attainment of SCOs.
9. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
10. Screening for indications of contamination (by visual means, odor, and monitoring with a photo ionization detector (PID)) of excavated soil/fill during all invasive work.
11. Implementation of storm-water pollution prevention measures in accordance with applicable laws and regulations.
12. Performance of all activities associated with the remedial action, including permitting requirements and pretreatment requirements, in accordance with all applicable Federal, State and City laws and regulations.
13. Transportation and off-Site disposal of all soil/fill material removed from the Site at permitted facilities in accordance with all Federal, State and City laws and regulations for handling, transport, and disposal.
14. Sampling and analysis of excavated media as required by disposal facilities.
15. Appropriate segregation of excavated media for off-site disposal.
16. Import of materials to be used for backfill and cover in compliance with OER approved plan and in accordance with all Federal, State and City laws and regulations.
17. Recording of a Declaration of Covenants and Restrictions that includes a full listing of Engineering Controls and Institutional Controls and notice that these controls must be maintained within a Site Management Plan to prevent future exposure to any residual contamination remaining at the Site.
18. Establishment in a recorded Declaration of Covenants and Restrictions, a series of Institutional Controls on the Site, including: (1) compliance with the provisions of the recorded Declaration of Covenants and Restrictions; (2) compliance with provisions of

the approved Site Management Plan; (3) operation and maintenance of Engineering Controls as specified in the Site Management Plan; (4) inspection and certification of all Engineering Controls at a frequency and in a manner defined in the Site Management Plan; (5) performance of environmental and public health monitoring as defined in the Site Management Plan; (6) reporting at a frequency and in a manner defined in the Site Management Plan; (7) protection of on-Site monitoring devices in a manner specified in the SMP; and (8) prohibition of discontinuation of Engineering Controls without an OER-approved amendment or extinguishment of the Declaration of Covenants and Restrictions.

19. Establishment in a recorded Declaration of Covenants and Restrictions, a series of site restriction Institutional Controls on the Site, including: (1) prohibition of vegetable gardening and farming; (2) prohibition of the use of groundwater without treatment rendering it safe for the intended use; (3) prohibition on all disturbance of residual contaminated material unless it is conducted in accordance with the provisions in the Site Management Plan; and (4) prohibition on higher level of land usage without an OER-approved amendment or extinguishment of this Declaration of Covenants and Restrictions.
20. Submission of a RAR which describes the remedial activities including any changes from this RAWP, certifies that the remedial requirements have or will be achieved, defines the Site boundaries, and describes any Engineering and Institutional Controls to be implemented at the Site.
21. Submission of an approved Site Management Plan in the Remedial Action Report for long-term management of residual contamination, including plans for Institutional and Engineering Controls for: (1) inspection and certification, (2) monitoring, (3) operation and maintenance, and (4) reporting.

#### **4.2 SOIL CLEANUP OBJECTIVES AND MATERIALS REMOVAL**

Based on the findings of the RIR, site specific SCO's are proposed for this project. The Soil Cleanup Objectives for this Site are listed in Table below. All soil samples that exceed the

Track 1 SCOs proposed for this remedial action are highlighted in Table 7 and shown on a spider map in Figure 4A, 4B, 4C.

Site Cleanup Objectives for 1600 Pelham Parkway Site are:

<b>Contaminant</b>	<b>SCO</b>
Arsenic	23
Cadmium	4.3
Chromium (total)	60
Lead	700
Total Mercury	1.0
Total SVOCs	250
VOC's	6NYCRR Part 375-6.8 Track 2 Restricted Residential SCOs

Soil and materials management on-Site and off-Site will be conducted in accordance with the soil management plan as described below. All primary contaminant sources (such as hotspots) identified during the remedial action will be identified by GPS or surveyed by a surveyor licensed to practice in the State of New York. This information will be provided on maps in the Remedial Action Report.

#### **4.3 ESTIMATED MATERIAL REMOVAL AND IMPORT QUANTITIES**

The total quantity of soil/fill expected to be disposed off-Site is approximately 250 cu.yds. No soil will be imported into the Site for backfill. The estimated quantity of onsite soil/fill

expected to be reused/relocated on Site is 450 tons or 300 cubic yards. Soil will be removed in the area of BTEX soil findings. This will be discussed further in a Soil Management Plan.

#### **4.4 POST EXCAVATION END-POINT SAMPLING**

Soil and fill to be removed under this remedial action will be performed in conjunction with remedial performance end-point sampling. Sampling will be performed promptly following materials removal and testing completed prior to Site development activities.

##### **4.4.1 End-Point Sampling Frequency**

End-point sampling frequency will consist of the following:

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.

Post-remediation sample locations and depth will be biased towards the areas and depths of highest contamination identified during previous sampling episodes unless field indicators such as field instrument measurements or visual contamination identified during the remedial action indicate that other locations and depths may be more heavily contaminated. In all cases, post-remediation samples should be biased toward locations and depths of the highest expected contamination.

##### **4.4.2 Analytical Methodology**

All end-point samples will be analyzed for the specific trigger analytes listed in the SCOs utilizing the following methodologies:

- Volatile organic compounds (VOCs) by EPA Method 8260;
- Semi-volatile organic compounds (SVOCs) by EPA Method 8270;
- Target Analyte List (TAL) metals; and
- Pesticides/PCBs by EPA Method 8081/8082.

Where required, groundwater samples will be analyzed for:

- VOCs by EPA Method 8260;
- SVOCs by EPA Method 8270;
- TAL metals, and
- Pesticides/PCBs by Method 8081/8082.

Where required, soil gas samples will be analyzed for VOCs by EPA method TO-15.

If either LNAPL and/or DNAPL are detected a sample will be collected for characterization and “finger print analysis”.

#### **4.4.3 Reporting of End-Point Data in Remedial Action Report**

Chemical labs used for all end-point sample analytical results will be NYS DOH ELAP certified labs and will be reported in the RAR. The RAR will provide a tabular and map summary of all end-point sample results.

## **5.0 REMEDIAL ACTION MANAGEMENT**

### **5.1 PROJECT ORGANIZATION**

Principal personnel who will participate in the remedial action include Mark E. Robbins, Principal and Rachel Ataman, Vice President.

### **5.2 PROGRAM OVERSIGHT**

The Qualified Environmental Professional (QEP) for this project is Mark E. Robbins.

### **5.3 SITE SECURITY**

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

### **5.4 WORK HOURS**

The hours for operation of remedial construction will conform to the New York City Department of Buildings construction code requirements or according to specific variances issued by that agency.

### **5.5 CONSTRUCTION HEALTH AND SAFETY PLAN (HASP)**

The Health and Safety Plan is included in Appendix A. The Site Safety Coordinator will be Mark Robbins. All remedial work performed under this RAWP will be in full compliance with all applicable laws and regulations, including Site and OSHA worker safety requirements and HAZWOPER requirements. Confined space entry, if any, will comply with all 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 all applicable laws and regulations. The HASP pertains to all remedial and invasive work performed at the Site until the issuance of the Notice of Completion.

## **5.6 WORKER TRAINING AND MONITORING**

All field personnel involved in remedial activities will participate in all training required under 29 CFR 1910.120, includes 40-hour hazardous waste operator training and annual 8-hour refresher training. Site Safety Officer will be responsible for maintaining all workers training records.

All personnel entering the exclusion zone will be trained in the provisions of the HASP and be required to sign an HASP acknowledgment. Site-specific training will be provided to all 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.

## **5.7 EMERGENCY CONTACT INFORMATION**

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

## **5.8 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 demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pit excavation or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while opening a well

cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence. Exceedences of action levels observed during performance of the Community Air Monitoring Plan (CAMP) will be reported to the OER Project Manager and included in the Daily Report.

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

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

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

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

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

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

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ( $\text{mcg}/\text{m}^3$ ) 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.

## **5.9 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.

## **5.10 SITE PREPARATION**

### **5.10.1 Pre-Construction Meeting**

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

### **5.10.2 Mobilization**

The first step in site preparation is mobilization. Mobilization will be conducted as necessary for each phase of work at the Site. Mobilization includes field personnel orientation, equipment mobilization (entail 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.

### **5.10.3 Stabilized Construction Entrance**

Steps will be taken to ensure that trucks departing the site are not tracking soil off-Site. Such actions may include use of cleaned asphalt or concrete roads or use of stone or other aggregate-based egress paths between the truck wash and the property exit. Measures will be taken to ensure that adjacent roadways will be kept clean of project related soils, fill and debris.

### **5.10.4 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. Utility companies and other

responsible authorities will be contacted to locate and mark the locations, and a copy of the Markout Ticket will be retained by the contractor prior to the start of drilling, excavation or other invasive subsurface operations. Overhead utilities may also be present throughout the anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead utilities will be minimized by maintaining a safe distance between overhead power lines and drill rig mast.

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.

#### **5.10.5 Dewatering**

Excavations that extend below the water table may require dewatering. Submersible pumps will be used to extract groundwater from gravel lined sumps in the excavations or a system of well points will be used for groundwater extraction. Extracted groundwater will be conveyed to a storage tank or treatment system.

Depending on the selected discharge option, a NYC DEP sewer use permit will be obtained to discharge treated groundwater to the sewers, at the corner of Stillwell Avenue and Pelham Parkway South.

#### **5.10.6 Equipment and Material Staging**

Equipment and materials will be stored and staged in a manner that is consistent with City, State, and Federal regulations.

A Site map showing the location(s) of proposed equipment and material staging areas, truck wash, stockpile areas, and other pertinent remedial management features is shown.

#### **5.10.7 Decontamination Area and Truck Wash**

A decontamination area will be established on the project site.

A truck decontamination pad will be set up close to Site exit. Before exiting the NYC BCP Site, transport vehicles will be required to stop at the decontamination pad and will be inspected for evidence of contaminated soil on the undercarriage, body, and wheels. Soil will be removed on the decontamination pad. After wetting with potable water, brooms or shovels will be utilized for the bulk removal of soil from vehicles and equipment. The decontamination procedure for the removal of the remaining soil and liquids will consist of washing with potable water. Odor suppressant foam will be applied, if necessary, to control emissions from soil in trucks.

Soil generated by the decontamination process will be stockpiled and tested, and based on the results of the testing will be either reused on-Site or transported off-Site for disposal.

## **5.11 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 and erosion control measures 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 decontaminated on the decontamination pad as necessary. In addition, all investigation and remediation derived waste (IDW) e.g., decontamination fluids, drill cuttings, recirculation water, well development purge water, etc. will be containerized in 55-gallon drums and staged for characterization at a secured location on-Site and will be appropriately disposed.

## **5.12 TRAFFIC CONTROL**

Trucks leaving the NYC BCP Site will proceed without stopping in the neighborhood to prevent neighborhood impacts. The planned route on local roads for waste transport vehicles is presented.

## **5.13 REPORTING**

All required reports will be included as an Appendix in the Remedial Action Report.

### **5.13.1 Daily Reports**

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

- A statement of the activities and an update of progress made;
- Locations of work performed;
- Quantities of material imported and exported from the Site;
- Status of on-Site soil/fill stockpiles;
- A summary of all citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- A summary of CAMP excursions;
- Photographs of notable Site conditions and activities.
- OER assigned project number.

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.

## **5.14 RECORD KEEPING AND PHOTO-DOCUMENTATION**

Job-site record keeping for all remedial work will be performed. These records will be maintained on-Site at all times 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 all major remedial activities to illustrate remedial program elements and all contaminant source areas. Select photographs will be submitted everyday along with the daily reports. Photographs will be properly tagged and submitted at the completion of the project in the RAR on electronic media (jpeg files).

### **5.15 COMPLAINT MANAGEMENT**

All complaints from citizens will be promptly notified to OER by phone and email. Complaints will be promptly addressed and will also be reported to OER in daily reports. These reports will include the nature of the complaint, the party providing the complaint, and the actions taken to resolve any problems. Complaints from the public will be addressed as appropriate through modifications to the remedial program.

### **5.16 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN**

All changes to the RAWP will be reported to the OER Project Manager and will be documented in daily reports and in the Remedial Action Report. The process to be followed if there are any deviations from the RAWP, at a minimum, will include a written submission to the OER with the following information:

- A request for OER approval regarding the deviation.
- Reasons for deviating from the approved RAWP; and
- Effect of the deviations on overall remedy.

### **6.2.1 DUSR**

The Data Usability Summary Report (DUSR) provides a thorough evaluation of analytical data without third party data validation including post remedial samples. The primary objective of a DUSR is to determine whether or not the data meets the site/project specific criteria for data quality and data use. The DUSR for post-remedial samples collected during implementation of this RAWP will be included in the Remedial Action Report (RAR).

## **6.0 SOILS/MATERIALS MANAGEMENT PLAN**

### **6.1 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 RAR. Soil screening will be performed during all excavation and invasive work performed during the remedy and development phases, including excavations for foundations and utility work, prior to issuance of the Notice of Completion. It will be the responsibility of the PE/QEP certifying the remedy to provide technically competent field staff with proper experience to oversee all excavation activity. A description of experience of field staff will be provided to OER upon request.

### **6.2 STOCKPILE METHODS**

Excavated soil from suspected areas of contamination and contaminated materials from different sources (e.g., hot spots, USTs, drains, etc.) will be stockpiled separately and will be segregated from other soil and construction materials. Soils with stumps, roots, and related matter also will be stockpiled separately from other soil and construction materials at the Site.

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 double layers of minimum of 8-mil sheeting, will be kept covered at all times with appropriately anchored plastic sheeting, and will be routinely inspected. Broken or ripped tarps will be promptly replaced. Stockpiles of excavated soils and other materials shall be located at least of 50 feet from the property boundaries, where possible. Hay bales 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. Soil stockpile areas will be appropriately graded to control run-off in accordance with a Stormwater Pollution Prevention Plan (SWPPP) for the Site.

### **6.3 CHARACTERIZATION OF EXCAVATED MATERIALS**

A minimum of one composite sample consisting of five grab samples will be collected for every 2,000 cubic yards of excavated and stockpiled material planned for reuse exhibiting no evidence of contamination as detailed above. The analysis to be performed will include the parameters for determining soil reuse will include herbicides, pesticides/PCBs, TCL VOCs, TCL SVOCs, and lead, arsenic, mercury and cadmium. If soil reuse criteria are not met then the soil will be sampled for requirements of an off-Site disposal facility, and likely will include full toxic characteristic leaching procedure (TCLP) parameters. Based upon the results of the chemical analyses, the final disposition of these materials will be determined. No further characterization is proposed for excavated soil exhibiting no evidence of contamination (i.e., non-hot spot areas).

### **6.4 MATERIALS EXCAVATION, LOAD-OUT AND DEPARTURE**

The PE/QEP will oversee all invasive work and the excavation and load-out of all excavated material and will ensure that there is a party responsible for the safe execution of all invasive and other work performed under this work plan.

The PE/QEP will ensure that Site development activities will not interfere with, or otherwise impair or compromise the remedial activities proposed in this RAWP. Development-related grading cuts will not interfere with, or otherwise impair or compromise, the performance of remediation required by this plan.

The presence of utilities and easements on the Site has been investigated by the PE/QEP who will ensure that any identified risks from work proposed under this plan are properly addressed by appropriate parties.

Loaded vehicles leaving the Site will comply with all applicable materials transportation requirements (including appropriate tarping, secure covering, manifests, and placards) in accordance with appropriate Federal, State, and City laws and regulations.

A decontamination pad will be maintained on-Site and the PE/QEP will be responsible for ensuring that all loaded outbound trucks are cleaned before leaving the Site. Locations where vehicles exit the Site shall be inspected daily for evidence of off-Site soil tracking. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to

Site-derived materials. The PE/QEP will be responsible for ensuring that all egress points for truck and equipment transport from the Site will be kept clean of Site-derived materials during Site remediation and development.

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

## **6.5 OFF-SITE MATERIALS TRANSPORT**

Loaded vehicles leaving the Site will comply with all applicable materials transportation requirements (including appropriate tarping, secure covering, manifests, and placards) in accordance with City, State, and Federal laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364. Loose or incomplete truck covers will be prohibited. 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 shown in Figure 13. This routing takes into account the following factors: (a) limiting transport through residential areas and past sensitive sites; (b) use of City 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.

## **6.6 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 all applicable laws: (1) a letter from the PE/QEP or Enrollee 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 of is regulated material generated at an environmental remediation Site in Bronx, 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 enrollee. The letter will include as an attachment a summary of all chemical data for the material being transported (including site characterization data); and (2) a letter from each disposal facility stating it is in receipt of the correspondence (above) and is approved to accept the material. These documents will be included in the RAR.

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 also be presented in the RAR.

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.

<b><u>Disposal Facility</u></b>	<b><u>Waste Type</u></b>	<b><u>Estimated Quantities</u></b>
Soil Safe Inc. , Logan Township, NJ has been proposed	Soil and Historic fill  Petroleum contaminated soil	250 cu.yds

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 all City, State and Federal 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).

Unregulated off-Site management of materials from this Site is prohibited.

Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the RAR. A Bill of Lading system or equivalent to oversee off-Site transportation of exported materials is required. This information will be reported in the RAR. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in full compliance with applicable City, State, and Federal laws and regulations.

## **6.7 MATERIALS REUSE ON-SITE**

Soil and fill that is derived from the property that meets the soil cleanup objectives established for the property may be reused on-Site, subject to approval by OER. The soil cleanup objectives for on-Site reuse are listed in Table 6. ‘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 covered by the NYC BCP agreement and 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 RAWP are followed. The expected location for placement of reused material is shown.

Only native or virgin soil can be placed within the top two feet of the cover soil . Stockpiled backfill material will be maintained on-Site separate from the areas of active remediation work. The stockpile size will be limited to 1,000 cubic yards or less.

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, within landscaping berms, or as backfill for subsurface utility lines.

## **6.8 FLUIDS MANAGEMENT**

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable City, State, and Federal laws and regulations. Discharge to the New York City sewer represents the preferred method for management of dewatering fluid during construction. Liquids discharged into the New York City sewer system will receive prior approval by New York City Department of Environmental Protection (NYC DEP). 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 NYC DEP regulates discharges to the New York City sewers under New York City Department of Environmental Protection’s Title 15, Rules of the City of New York (RCNY) Chapter 19. The dewatering fluid will be pretreated as necessary to meet the New York City 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.

## **6.9 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 orange snow fencing geosynthetic material or equivalent material to be placed on the surface of residual soil/fill to provide an observable reference layer. A map showing the approximate depth of the demarcation layer throughout the Site will be provided in the SMP; or (2) a land survey will be performed by a surveyor licensed by the State of New York. The survey will define 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. 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 soil management horizon. Materials within this horizon require adherence to special conditions during future invasive activities as defined in the Site Management Plan. A map showing the approximate elevation of the demarcation will be included in the Remedial Action Report and the Site Management Plan.

## **6.10 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. The backfill and cover soil quality objectives are listed in Table 6. Currently no backfill import is anticipated for this project.

An investigation will be performed to evaluate sources of potential fill to be imported to the Site, and will include an examination of each source site's location, current and historical use(s), and any applicable documentation. Material from industrial sites, spill sites, other

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;
- Recycled concrete aggregate (RCA) from facilities permitted or registered by, and in full compliance with the regulations of NYS DEC.

All materials received for import onto the Site will be approved by the PE/QEP and will be in compliance with provisions in this RAWP. The RAR 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 was placed.

#### **6.10.1 Source Screening and 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 securely covered with tight fitting covers and will enter the Site at designated locations;
- The PE/QEP is responsible to ensure that every truck load of imported material will be inspected for evidence of contamination;
- Fill material will be free of solid waste including pavement materials, and debris, stumps, roots, and other organic matter, as well as ashes, oil and perishables or foreign matter; and
- Fill material will not contain any material greater than 12 inches in its greatest dimension.

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

Recycled concrete aggregate (RCA) may be imported from facilities permitted or registered by, and in full compliance with the regulations of NYSDEC. Facilities will be identified in the RAR. The 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.

#### **6.11 STORM-WATER POLLUTION PREVENTION**

All applicable laws and regulations pertaining to storm-water pollution prevention will be addressed during the remedial program. Erosion and sediment control measures identified in this RAWP (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. Where discharge locations or points are accessible, they 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 shall be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

#### **6.12 CONTINGENCY PLAN**

A contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown or unexpected 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 discussed above, as appropriate.

## **6.13 ODOR, DUST AND NUISANCE CONTROL**

### **6.13.1. 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 certifying the Remedial Action Report.

### **6.13.2 Dust Control**

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

- Use of a dedicated on-Site water spray methodology for roads, excavation areas and stockpiles.
- Use of properly anchored tarps to cover stockpiles.
- Use of extra care during dry and high-wind periods.

- Use of gravel or recycled concrete aggregate on egress 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 responsible for certifying the Remedial Action Report.

### **6.13.3 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 Site clearing and grubbing, and during the remedial program, as necessary.

## **7.0 ENGINEERING AND INSTITUTIONAL CONTROLS**

Engineering Controls (EC) and Institutional Controls (IC) have been incorporated in this remedial action to manage any residual contamination and render the Site protective of public health and the environment. These ECs and ICs are described hereafter. Long-term employment of EC/ICs will be required by a Declaration of Covenant and Restrictions (DCR) assigned to the property by the title holder and will be implemented under a site-specific Site Management Plan (SMP) that will be included in the RAR.

### **7.1 INSTITUTIONAL CONTROLS**

Institutional Controls can generally be subdivided into ICs that support the ECs listed in section 7.2 of this RAWP including those required to implement, maintain, monitor and report on those systems, and ICs that place general restrictions on Site usage. The ICs in this remedial action that support ECs are:

- A DCR including a description of all ICs and ECs and noting the requirements of the SMP will be registered with the City Register or county clerk, as appropriate. The DCR will note that the property owner and property owner's successors and assigns will comply with the DCR and all elements of the approved SMP;
- A SMP will be submitted in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting and certification of all ECs.
- Grantor agrees to 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 and all controls. This certification shall be submitted annually, or an alternate period of time that OER may allow. This certification must comply with RCNY §43-1407(1)(3).

Under this remedial action, the Site will be subject to a series of ICs in the form of site restrictions and requirements. These include:

- Vegetable gardens and farming on the Site are prohibited;
- 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 contaminated material must be conducted pursuant to the soil management provisions in the Site Management Plan;
- The Site will be used for residential and commercial use only and will not be used for a higher level of use without prior notice to OER;

#### **7.1.1 Declaration of Covenants and Restrictions**

An OER-approved Declaration of Covenants and Restrictions (DCR) will be registered with the City Register or the country clerk, as appropriate to ensure that the grantor of the DCR and the grantor's successors and assigns implement the ICs and ECs required under this remedy. The registered DCR will be submitted as part of the Remedial Action Report. The DCR must be registered prior to OER issuance of the Notice of Completion.

#### **7.1.2 Site Management Plan**

Site Management is the last phase of remediation and begins 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 the DCR and 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 DCR and the Site Management Plan are implemented.

The SMP will provide a detailed description of the procedures required to manage residual contamination left in place following completion of the remedial action in accordance with the BCA with OER. This includes: (1) development, implementation, and management of

all ICs and ECs; (2) development and implementation of monitoring systems; (3) development of a plan to operate and maintain any treatment, collection, containment, or recovery systems; (4) submittal of reports, performance of inspections and certification of results, and demonstration of proper communication of Site information to OER; and (5) defining criteria for termination of treatment system operation.

To address these needs, the SMP will include four sections: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems, and; (4) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to OER. The SMP will be prepared in accordance with the requirements in NYS DEC DER-10 Technical Guidance for Site Investigation and Remediation and the guidelines provided by OER.

Site management activities, reporting, and EC/IC certification will be scheduled on a certification period basis. The certification period will be annual. The Site Management Plan will be based on a calendar year and will be due for submission to OER by March 31 of the year following the reporting period.

The Site Management Plan in the Remedial Action Report will include a monitoring plan for groundwater at the downgradient Site perimeter to evaluate Site-wide performance of the remedy pending the results of the findings presented in the RAR.

## **7.2 ENGINEERING CONTROL SYSTEMS**

### **7.2.1 Composite Cover System**

Exposure to residual contaminated soils will be prevented by an engineered composite cover system that will be placed over the surface of the entire Site. This composite cover system will be comprised of asphalt-covered roads, concrete-covered sidewalks, and concrete building slabs.

A diagram showing the design detail for each cover type is shown in Figure 15. A map showing the aerial distribution of each of the cover types to be built at the Site is included in

Figure 14. The composite cover system is a permanent engineering control for the Site. The system will be inspected and reported at specified intervals as required by this RAWP and the SMP. The use of this system will not be terminated without written approval by OER. A Soil Management Plan will be included in the Site Management Plan and will outline the procedures to be followed in the event that the composite cover system and underlying residual contamination are disturbed after the remedial action is complete. Maintenance of this composite cover system will be described in the Site Management Plan in the RAR.

### **7.2.2 Vapor Barrier and Venting**

A vapor barrier will be placed beneath the building slab at the lowest floor. All areas of the building will contain an active sub-slab depressurization system. These systems will be managed under the Site Management Plan.

## **8.0 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:

- As-built drawings for all constructed remedial elements, required certifications, manifests, bills of lading and other written and photographic documentation of remedial work performed under this remedy;
- Site Management Plan;
- Description of any changes in the remedial action from the elements provided in the RAWP and associated design documents;
- Tabular summary of all performance evaluation sampling results and all material characterization results 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;
- Tabular summary and map of residual contamination that exceeds Track 2 6NYCRR Part 375-6.8 SCOs for restricted residential use;
- Account of the source area locations and characteristics of all contaminated material removed from the Site including excavated contaminated soil, historic fill, solid waste, hazardous waste, non-regulated material, and fluids, including the map(s) showing all source areas;
- Account of the disposal destination of all contaminated material removed from the Site, documentation associated with disposal of all material will include records and approvals for receipt of the material.
- Account of the origin and any required chemical quality testing for all material imported onto the Site.

- All reports and supporting material will be submitted in digital form (pdf format) and other digital formats as required by OER.

## **8.1 REMEDIAL ACTION REPORT CERTIFICATION**

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

*I, Shaik A. Saad, am currently a registered professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the 1600 Pelham Parkway Site Site No. 11CBCP001X.*

*I, Mark E. Robbins, am a qualified Environmental Professional. I had primary direct responsibility for implementation of Remedial Action Work Plan.*

*I certify that the Site description presented in this RAR is identical to the Site descriptions and associated amendments presented in the Declaration of Covenants and Restrictions, the Site Management Plan, and the NYC Brownfield Cleanup Agreement for 1600 Pelham Parkway.*

*I certify that the OER-approved Remedial Action Work Plan and Stipulations, year; if any were implemented and that all requirements in those documents have been substantively complied with.*

*I certify that the remedial activities were observed by qualified professionals under my supervision and that the remediation requirements set forth in the Remedial Action Work Plan have been achieved.*

*I certify that all use restrictions, Institutional Controls and Engineering Controls identified in the RAWP, and all operation and maintenance requirements applicable to the Site are contained in a Declaration of Covenants and Restrictions and that such declaration and covenant has been recorded.*

*I certify that a Site Management Plan is included in this RAR that provides for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site.*

*I certify that the export of all contaminated soil, fill, liquids or other material from the property was performed in accordance with the Remedial Action Work Plan, and that the materials were taken to facilities licensed to accept this material in full compliance with Federal, State and City laws and regulations.*

*I certify that all import of soils from off-Site has been performed in a manner that is consistent with the methodology defined in the Remedial Action Work Plan.*

*I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.*

## 9.0 SCHEDULE

Schedule Milestone	Estimated Completion Date
OER Approval of RAWP	-
Fact Sheet (start of Remedy)	Approval plus 1 week
Mobilization	Approval plus 1 week
Excavate and Stage Soil for Reuse	Approval plus 3 months
Excavate and Remove Contaminated Soil, Remove USTs and Other Materials	Approval plus 3 months
Submit NYC BCP Site Draft Remedial Action Report	Approval plus 4 months
Soil/vapor Depressurization system	Approval plus 16 months
Place Barrier Layer	Approval plus 16 months
Demobilization	Approval plus 18 months
Finalize and Register Deed Restrictions	Approval plus 18 months
Submit NYC BCP Site Draft Remedial Action Report	Approval plus 18 months
Submit BCP Site Final Remedial Action Report	Approval plus 19 months
Obtain Notice of Completion	Approval plus 20 months