38-20 32ND STREET

LONG ISLAND CITY, NEW YORK

Remedial Action Work Plan

NYC CEQR Project Number 08DCP021Q
OER Project Number 17TMP0828Q, 17EHAZ311Q

Prepared For:

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MAY 2018

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LIST OF ACRONYMS

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

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

CERTIFICATION

I, Edward Wong, am currently a registered professional engineer licensed by the State of New York. I performed professional engineering services and had primary direct responsibility for designing the remedial program for the 38-20 32nd Street, Long Island City site, site number 17TMP0828Q, 17EHAZ311Q. I certify to the following:

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

_____
Name

_____
PE License Number

_____
Signature

_____
Date

PE Stamp

I, Scott A. Yanuck, am a qualified Environmental Professional. I will have primary direct responsibility for implementation of the remedial program for the 38-20 32nd Street, Long Island City site, site number 17TMP0828Q, 17EHAZ311Q. I certify to the following:

- This Remedial Action Work Plan (RAWP) has a plan for handling, transport and disposal of soil, fill, fluids and other materials removed from the property in accordance with applicable City, State and Federal laws and regulations. Importation of all soil, fill and other material from off-Site will be in accordance with all applicable City, State and Federal laws and requirements. This RAWP has provisions to control nuisances during the remediation and all invasive work, including dust and odor suppression.

_____
QEP Name

_____
QEP Signature

_____
Date

EXECUTIVE SUMMARY

Long Island City Developers, LLC is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program to investigate and remediate a 6,840-square foot site located at 38-20 32nd Street in Long Island City, Queens, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

Site Location and Background

The Site is located at 38-20 32nd Street in the Long Island City section of Queens, New York, and is identified as Block 382 and Lot 24 on the New York City Tax Map (corresponding to an address of 38-24 32nd Street, which is also part of the Site). Figure 1.0 shows the Site location. The Site is 6,840-square feet in area and is bounded by residential and/or mixed-use properties to the north, south, and west, and by 32nd Street to the east. A map showing the Site boundary is shown on Figure 2.0; properties with potentially sensitive receptors (i.e., residential or adult day services uses) within a 500-foot radius of the Site boundary are shown on Figure 3.0.

Currently, the Site is used for commercial purposes; the building is a two-story masonry block and brick building. The ground floor is divided into two (2) separate commercial units of approximately equal size. The southern unit is a photography studio, and the northern unit is utilized by a limousine company for office space and storage of vehicles. The second floor of the building is currently vacant.

Summary of Redevelopment Plan

The proposed future use of the Site is as a mixed-use hotel and commercial building, The specific layout of the proposed site redevelopment includes a basement across the entire building footprint, with excavation of the entire parcel to a depth of at least twelve (12) feet below ground

surface (see Appendix 1.0). The basement level is proposed to be used as the hotel lobby, with a parking garage on the first and second floors, an ambulatory diagnostic health care facility on the third floor, and hotel rooms occupying the remaining floors. The current zoning designation is M1-3 for light industrial purposes. The proposed use is consistent with the planned rezoning of the area surrounding the Site (CEQR 08DCP021Q, Queens Plaza Rezoning).

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

Summary of Surrounding Property

The properties located directly adjoining and surrounding the Site to the north and west are mixed residential and commercial in nature. The properties directly adjoining and surrounding the Site to the south are residential in nature. The property across 32nd Street from the Site is occupied by the AHRC Cyril Weinberg Center (address of 32-03 39th Avenue), which is a day service center for adults with developmental disabilities. These uses represent sensitive receptors for the Site. Land use surrounding the Site is shown on Figure 2.0. The surrounding area is zoned for light manufacturing (M1-3).

Summary of Past Site Uses and Areas of Concern

The Site has been occupied since circa 1940 for industrial and commercial purposes including general contracting, electrical manufacturing, plumbing supply storage, carpentry, auto body and auto repair work, and as a car dispatch office. The current Site occupants include a photography studio and a limousine company.

The AOCs identified for this site in the 2015 Phase I ESA Report, and as part of the 2015 and 2016 Site investigations included:

1. Two (2) USTs located in the northeastern and southeastern corner of the building at the Site.
2. Four (4) ASTs located in the basement of the Site building.
3. Impacted soil and groundwater beneath the Site building.

Summary of Work Performed under the Remedial Investigation

LEA on behalf of Long Island City Developers Group, LLC performed the following scope of work (2017 sample locations are shown on Figure 5.0):

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);

2. Installed four (4) soil borings (SB-A through SB-D, see Figure 5.0) to a depth of ten feet, across the entire project Site, and collected eight (8) soil samples for chemical analysis from the soil borings to evaluate soil quality. Two (2) soil samples were collected for laboratory analysis from each soil boring location, from depths of 0-2' and 8-10' below the building floor;

3. Four (4) groundwater samples were collected from the existing on-Site monitoring wells for chemical analysis to evaluate groundwater quality (the monitoring wells were properly abandoned after sampling);

4. Installed three (3) soil vapor probes around Site and collected three (3) sub-slab soil vapor samples for chemical analysis.

Due to access constraints within the Site building, the RI sampling activities were conducted in two phases, in June 2017 and August 2017. The initial phase of sampling was conducted on June 16, 2017 in the northern portion of the building prior to complete occupancy of this area by the limousine company, and included soil sampling at SB-C and SB-D, groundwater sampling at MW-3 and MW-4, and sub-slab soil vapor sampling at SV-1 and SV-2. Access to the southern portion of the building for sampling was not available until August 2017, due to concerns about disruptions to the photographer's business by the sampling (the business closed for vacation during August, allowing sampling to be conducted unimpeded). As a result, the remainder of the sampling program was conducted on August 2, 2017 (groundwater sampling at MW-1 and MW-2) and August 3, 2017 (soil sampling as SB-A and SB-B, and sub-slab soil sampling at SV-3).

Summary of Findings of Remedial Investigation

1. Elevation of the property is 31 feet.

2. Depth to groundwater ranges from 13.20 to 15.10 feet at the Site.

3. Groundwater flow is generally from the west to the east beneath the Site.

4. Depth to bedrock is estimated to be 73 feet at the Site.

5. The stratigraphy of the site, from the surface below the concrete floor of the Site building within the four (4) soil borings advanced during the 2017 investigation generally consisted of tan to brown-black silt and clay or silty clay to a depth of 2 to 4 feet. This material was underlain by 2 to 6 feet of silty fine sand (although was absent at SB-A), followed by tan silty clay to sandy clay to 10 feet, the terminal depths of the borings (except at SB-C where the silty sand was observed from 4 to 10 feet). At SB-B, the zone from 3 to 6.5 feet was comprised of tan silty fine sand. Photoionization detector (PID) readings of 0.1 parts per million (ppm) to 38 ppm (this reading was measured in the 0 to 2-foot interval at boring SB-C, which was collected for analysis) were measured in the soil samples, and no odors were noted in any of the soil samples. These materials are similar to those previously recorded for the Site, as documented in boring logs from previous investigations.

6. The soil sampling results were compared to NYSDEC 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives (UUSCOs) and Restricted-Residential Use Soil Cleanup Objectives (RRSCOs). Soil/fill samples collected during the RI showed only two (2) soil samples, SB-A 0-2' and SB-C 0-2', that contained any analytes at concentrations exceeding the Unrestricted Use SCOs, including copper, lead, and mercury in both samples, plus zinc in the SB-C 0-2' sample. These metals were not detected at concentrations exceeding Track 1 SCOs in the deeper samples from borings SB-A or SB-C. VOCs, SVOCs, pesticides and PCBs were not detected in any soil sample. Overall, soil chemistry is unremarkable and does not indicate any disposal of waste.

7. Groundwater samples collected during the RI showed that two (2) VOCs were detected in groundwater at concentrations exceeding their New York State 6 NYCRR Part 703.5 Class GA groundwater quality standards (GQSs), including benzene (at 19 ug/L) in the sample from MW-1 and trichlorofluoromethane in the samples from MW-1, MW-2, and MW-4 at a maximum concentration of 160 ug/L. Two SVOCs were detected in groundwater at concentrations exceeding their GQSs, including bis

(2-ethylhexyl) phthalate in the sample from MW-4 at 24 .7ug/L and naphthalene in the samples from MW-2 and MW-4 at maximum concentration of 17.2 ug/L. No pesticides or PCBs were detected in any of the groundwater samples. Several metals were identified and only antimony, magnesium, manganese, and sodium exceeded their respective GQSs in dissolved samples.

8. Soil vapor results were conservatively compared to the indoor air guidelines in Table 3.1 Air Guideline Values (AGVs) presented in the New York State Department of Health (NYSDOH)'s *Final Guidance for Evaluating Soil Vapor Intrusion*, dated October 2006. Soil vapor samples collected during the RI showed 23 individual VOCs that were detected in the soil vapor samples. Soil vapor samples detected low levels of petroleum related and elevated concentrations of chlorinated compounds. Highest concentrations were detected for trichlorofluoromethane at 11,000 ug/m^3.Tthree (3) chlorinated VOCs including 1,1,1-trichloroethane detected in two samples at maximum concentration of 150 ug/m^3, tetrachloroethene (PCE) detected in all three samples ranging from 63 ug/m^3 to 4,300 ug/m^3, and trichloroethene (TCE) detected in two samples at maximum concentration of 37 ug/m^3. Concentrations of above chlorinated compounds are above the guidance values established by NYSDOH and require mitigation. Although indoor air samples were not collected as part of the RI, per the May 2017 updated matrices in the NYSDOH guidance, the PCE concentration detected in sample SV-1 (4,300 micrograms per cubic meter ug/m^3) would yield a decision of "mitigate", regardless what the PCE concentration in the indoor air.

Summary of the Remedial Action

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

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds during implementation of the remedial action portion of Site redevelopment.
3. Selection of Restricted Residential Soil Cleanup Objectives (SCOs), with site-specific SCOs established for copper (270 mg/kg), lead (1,000 mg/kg), and mercury (2.5 mg/kg).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking/staking excavation areas.
5. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil sampling will be conducted at a frequency dictated by disposal facility(s).
6. Removal of two abandoned-in-place USTs, one located in the northern portion of the Site and the other located in the southern portion of the Site (see Figure 5.0). The USTs are currently listed with the NYSDEC as abandoned-in-place; the NYSDEC registration will be amended upon removal of the USTs. Reporting of any petroleum spills associated with USTs will be made and appropriate closure of these petroleum spills will be conducted in compliance with applicable local, State and Federal laws and regulations.
7. Excavation and removal of soil/fill exceeding Site Specific Track 4 (Restricted Residential Use SCOs, with site-specific SCOs for copper, lead, and mercury) from the entire site to the depths of 12 feet below grade including in a 10-foot by 10-foot by 5-foot deep area surrounding RI boring SB-A. Approximately, 4500 tons of soil/fill will be excavated and removed from this development.
8. Observation and screening of soil excavated during construction of the building basement (after completion of the hot-spot and UST excavation program) for indications of contamination by visual means, odor, and monitoring with a PID.
9. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site or direct loading, as warranted and feasible.

10. Collection and analysis of endpoint samples from the bottom of excavations and in USTs excavations and SB-A excavation as described above, to confirm that the remedy meets Track 4 SCOs. Additional four endpoint samples will be obtained from the bottom of excavations.
11. Management of excavated materials including temporarily stockpiling and segregating, if required and feasible, in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
12. Transportation and off-Site disposal of all contaminated soil/fill material at licensed or permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan.
13. Performance of all activities required for the remedial action, including acquisition of required permits and attainment of pretreatment requirements, in compliance with applicable laws and regulations.
14. Dewatering is not anticipated to be required for the remedial action or Site redevelopment, however, if needed, dewatering will be conducted in compliance with city, state, and federal laws and regulations.
15. Implementation of storm-water pollution prevention measures as needed in compliance with applicable laws and regulations.
16. Construction of an engineered composite cover consisting of a minimum six-inch thick concrete building slab with an 8-inch clean granular sub-base beneath all building areas.
17. Installation of a vapor barrier system consisting of vapor barrier beneath the building slab and exterior of sub-grade foundation sidewalls to mitigate soil vapor migration into the building. The vapor barrier will consist of a Barrier Bac VBC-350 Vapor Barrier. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration.
18. Installation and operation of an active SSDS consisting of a network of perforated schedule 40 4-inch PVC horizontal pipes set in the middle of a gas permeable layer immediately beneath the building slab and vapor barrier system and connected to a 6-inch steel riser pipe that penetrates the slab and travels through the building to the roof. The SSDS will include pressure gauges and alarms. The active SSDS is an Engineering Control for the remedial action. The remedial engineer will certify in the RAR that the

active SSDS was designed and properly installed to establish a vacuum in the gas permeable layer and a negative pressure gradient across the building slab to prevent vapor migration into the building.

19. A deed restriction will be placed on the property to document the installation of, and continued operation, of an active SSDS. The deed restriction can be removed if OER determines that the active SSDS has achieved its goals and is no longer warranted.
20. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, and lists any changes from this RAWP.
21. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

COMMUNITY PROTECTION STATEMENT

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

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

Project Information:

- Site Address: 38-20 32nd Street, Long Island City, New York
- OER Project Number 17TMP0828Q, 17EHAZ311Q and 18CVCP081Q
- NYC CEQR Project Number 08DCP021Q

Project Contacts:

- OER Project Manager: Isabel McRae, 212-341-2034
- Site Project Manager: Brian McCabe (***LEA***), 631-673-0612
- Site Safety Officer: Brian McCabe (***LEA***), 631-673-0612
- Online Document Repository: https://a002-epic.nyc.gov/app/workspace/pma/4471/milestones

Remedial Investigation and Cleanup Plan: Under the oversight of the NYC OER, a thorough study of this property (called a remedial investigation) has been performed to identify past property usage, to sample and test soils, groundwater and soil vapor, and to identify

contaminant sources present on the property. The cleanup plan has been designed to address all contaminant sources that have been identified during the study of this property.

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

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

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

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

Worker Training: Workers participating in cleanup of contaminated material on this project are required to be trained in a 40-hour hazardous waste operators training course and to take

annual refresher training. This pertains to workers performing specific tasks including removing contaminated material and installing cleanup systems in contaminated areas.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Truck Routing: Truck routes will be selected to: (a) limit transport through residential areas and past sensitive nearby properties; (b) maximize use of city-mapped truck routes; (c) limit total distance to major highways; (d) promote safety in entry to highways; (e) promote overall safety in trucking; and (f) minimize off-Site line-ups (queuing) of trucks entering the property.

Operators of loaded trucks leaving the Site will be instructed not to stop or idle in the local neighborhood.

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

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

REMEDIAL ACTION WORK PLAN

1.0 Project Background

Long Island City Developers Group, LLC is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program and/or in the "E" Designation Program (E-218) to investigate and remediate a property located at 38-20 32nd Street, in the Long Island City section of Queens, New York (the "Site"). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides a remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, and complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 Site Location and Background

The Site is located at 38-20 32nd Street in the Long Island City section of Queens, New York, and is identified as Block 382 and Lot 24 on the New York City Tax Map (corresponding to an address of 38-24 32nd Street, which is also part of the Site). Figure 1.0 shows the Site location. The Site is 6,840-square feet in area and is bounded by residential and/or mixed-use properties to the north, south, and west, and by 32nd Street to the east. A map showing the Site boundary is shown on Figure 2.0; properties with potentially sensitive receptors (i.e., residential or adult day services uses) within a 500-foot radius of the Site boundary are shown on Figure 3.0.

Currently, the Site is used for commercial purposes; the building is a two-story masonry block and brick building. The ground floor is divided into two (2) separate commercial units of approximately equal size. The southern unit is a photography studio, and the northern unit is utilized by a limousine company for office space and storage of vehicles. The second floor of the building is currently vacant.

1.2 Redevelopment Plan

The proposed future use of the Site is as a mixed-use hotel and commercial building, The specific layout of the proposed site redevelopment includes a basement across the entire building footprint, with excavation of the entire parcel to a depth of at least twelve (12) feet below ground surface (see Appendix 1.0). The basement level is proposed to be used as the hotel lobby, with a parking garage on the first and second floors, an ambulatory diagnostic health care facility on the third floor, and hotel rooms occupying the remaining floors. The current zoning designation is M1-3 for light industrial purposes. The proposed use is consistent with the planned rezoning of the area surrounding the Site (CEQR 08DCP021Q, Queens Plaza Rezoning).

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

1.3 Description of Surrounding Property

The properties located directly adjoining and surrounding the Site to the north, south, and west are mixed-use (residential and/or commercial) in nature. The property across 32nd Street from the Site is occupied by the AHRC Cyril Weinberg Center (address of 32-03 39th Avenue), which is a day service center for adults with developmental disabilities. The residential and adult day service center uses represent potential sensitive receptors for the Site. Land use surrounding the Site and properties with potentially sensitive receptors (i.e., residential or adult day services uses) within a 500-foot radius of the Site boundary is shown on Figure 3.0.

1.4 Summary of Past Site Uses and Areas of Concern

The Site has been occupied since circa 1940 for industrial and commercial purposes including general contracting, electrical manufacturing, plumbing supply storage, carpentry, auto body and auto repair work, and as a car dispatch office. The current Site occupants include a photography studio and a limousine company.

The AOCs identified for this site in the 2015 Phase I ESA Report, and as part of the 2015 and 2016 Site investigations included:

1. Two (2) USTs located in the northeastern and southeastern corner of the building at the Site.
2. Four (4) ASTs located in the basement of the Site building.
3. Impacted soil and groundwater beneath the Site building.

1.5 Summary of Work Performed under the Remedial Investigation

LEA on behalf of Long Island City Developers Group, LLC performed the following scope of work (2017 sample locations are shown on Figure 5.0):

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed four (4) soil borings (SB-A through SB-D, see Figure 5.0) to a depth of ten feet, across the entire project Site, and collected eight (8) soil samples for chemical analysis from the soil borings to evaluate soil quality. Two (2) soil samples were collected for laboratory analysis from each soil boring location, from depths of 0-2' and 8-10' below the building floor;
3. Four (4) groundwater samples were collected from the existing on-Site monitoring wells for chemical analysis to evaluate groundwater quality (the monitoring wells were properly abandoned after sampling);
4. Installed three (3) soil vapor probes around Site and collected three (3) sub-slab soil vapor samples for chemical analysis.

Due to access constraints within the Site building, the RI sampling activities were conducted in two phases, in June 2017 and August 2017. The initial phase of sampling was conducted on June 16, 2017 in the northern portion of the building prior to complete occupancy of this area by the limousine company, and included soil sampling at SB-C and SB-D, groundwater sampling at MW-3 and MW-4, and sub-slab soil vapor sampling at SV-1 and SV-2. Access to the southern portion of the building for sampling was not available until August 2017, due to concerns about disruptions to the photographer's business by the sampling (the business closed for vacation

during August, allowing sampling to be conducted unimpeded). As a result, the remainder of the sampling program was conducted on August 2, 2017 (groundwater sampling at MW-1 and MW-2) and August 3, 2017 (soil sampling as SB-A and SB-B, and sub-slab soil sampling at SV-3).

1.6 Summary of Findings of Remedial Investigation

A remedial investigation was performed, and the results are documented in a companion document called "Remedial Investigation Report, 38-20 32nd Street, Block 382, Lot 24, Queens, New York", dated May 2018 (RIR).

1. Elevation of the property is 31 feet.
2. Depth to groundwater ranges from 13.20 to 15.10 feet at the Site.
3. Groundwater flow is generally from the west to the east beneath the Site.
4. Depth to bedrock is estimated to be 73 feet at the Site.
5. The stratigraphy of the site, from the surface below the concrete floor of the Site building within the four (4) soil borings advanced during the 2017 investigation generally consisted of tan to brown-black silt and clay or silty clay to a depth of 2 to 4 feet. This material was underlain by 2 to 6 feet of silty fine sand (although was absent at SB-A), followed by tan silty clay to sandy clay to 10 feet, the terminal depths of the borings (except at SB-C where the silty sand was observed from 4 to 10 feet). At SB-B, the zone from 3 to 6.5 feet was comprised of tan silty fine sand. Photoionization detector (PID) readings of 0.1 parts per million (ppm) to 38 ppm (this reading was measured in the 0 to 2-foot interval at boring SB-C, which was collected for analysis) were measured in the soil samples, and no odors were noted in any of the soil samples. These materials are similar to those previously recorded for the Site, as documented in boring logs from previous investigations.
6. The soil sampling results were compared to NYSDEC 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives (UUSCOs) and Restricted-Residential Use Soil Cleanup Objectives (RRSCOs). Soil/fill samples collected during the RI showed only two (2) soil samples, SB-A 0-2' and SB-C 0-2', that contained any analytes at concentrations exceeding the Unrestricted Use SCOs, including copper, lead, and

mercury in both samples, plus zinc in the SB-C 0-2' sample. These metals were not detected at concentrations exceeding Track 1 SCOs in the deeper samples from borings SB-A or SB-C. VOCs, SVOCs, pesticides and PCBs were not detected in any soil sample. Overall, soil chemistry is unremarkable and does not indicate any disposal of waste.

7. Groundwater samples collected during the RI showed that two (2) VOCs were detected in groundwater at concentrations exceeding their New York State 6 NYCRR Part 703.5 Class GA groundwater quality standards (GQSs), including benzene (at 19 ug/L) in the sample from MW-1 and trichlorofluoromethane in the samples from MW-1, MW-2, and MW-4 at a maximum concentration of 160 ug/L. Two SVOCs were detected in groundwater at concentrations exceeding their GQSs, including bis (2-ethylhexyl) phthalate in the sample from MW-4 at 24 .7ug/L and naphthalene in the samples from MW-2 and MW-4 at maximum concentration of 17.2 ug/L. No pesticides or PCBs were detected in any of the groundwater samples. Several metals were identified and only antimony, magnesium, manganese, and sodium exceeded their respective GQSs in dissolved samples.

8. Soil vapor results were conservatively compared to the indoor air guidelines in Table 3.1 Air Guideline Values (AGVs) presented in the New York State Department of Health (NYSDOH)'s *Final Guidance for Evaluating Soil Vapor Intrusion*, dated October 2006. Soil vapor samples collected during the RI showed 23 individual VOCs that were detected in the soil vapor samples. Soil vapor samples detected low levels of petroleum related and elevated concentrations of chlorinated compounds. Highest concentrations were detected for trichlorofluoromethane at 11,000 ug/m^3.Tthree (3) chlorinated VOCs including 1,1,1-trichloroethane detected in two samples at maximum concentration of 150 ug/m^3, tetrachloroethene (PCE) detected in all three samples ranging from 63 ug/m^3 to 4,300 ug/m^3, and trichloroethene (TCE) detected in two samples at maximum concentration of 37 ug/m^3. Concentrations of above chlorinated compounds are above the guidance values established by NYSDOH and require mitigation. Although indoor air samples were not collected as part of the RI, per the May 2017 updated matrices in the NYSDOH guidance, the

PCE concentration detected in sample SV-1 (4,300 micrograms per cubic meter ug/m^3) would yield a decision of “mitigate”, no matter what the PCE concentration in the indoor air.

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

2.0 Remedial Action Objectives

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

Soil

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

Groundwater

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

Soil Vapor

- Prevent exposure to contaminants in soil vapor.
- Prevent migration of soil vapor into the Site building.

3.0 Remedial Alternatives Analysis

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

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

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

Alternative 1:

- Utilization of 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
- Removal of the two (2) abandoned-in-place USTs and excavation of any apparently contaminated soil associated with the USTs, for characterization and proper disposal.
- Removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs have been achieved with post-excavation endpoint sampling. If soil/fill containing analytes at concentrations above

Unrestricted Use SCOs is still present at the base of the excavation after removal of all soil required for construction of the new building's cellar level is complete, additional excavation would be performed to ensure complete removal of soil/ fill that does not meet Track 1 Unrestricted Use SCOs.

- Collection of post-remediation samples from the bottom of excavations and from hotpot areas for laboratory analysis of petroleum-related (CP-51 list) VOCs and petroleum-related (CP-51 list) SVOCs.
- All excavated soil/fill exceeding Track 1 Unrestricted Use SCOs will be directly loaded onto trucks (to the maximum extent possible) then transported to an appropriate facility. Based on analytical results from the endpoint samples, additional excavation and follow-up endpoint sampling will be conducted as needed to remove all soil that exceeds Track 1 SCOs.
- No Engineering or Institutional Controls are required for a Track 1 cleanup. However, as part of development, a composite cover and a vapor barrier would be installed to prevent potential exposures from soil vapor in the future.

Alternative 2:

- Establishment of Track 4 Site Specific SCOs for copper (270 mg/kg), lead (1,000 mg/kg), and mercury (2.5 mg/kg), to be utilized in conjunction with 6NYCRR Part 375 Restricted Residential Soil Cleanup Objectives (SCOs) for other parameters.
- Removal of the two (2) abandoned-in-place USTs and excavation of any apparently contaminated soil associated with the USTs, for characterization and proper disposal.
- Collection of post-remediation samples from the bottom of excavations and from UST excavations (four (4) from each excavation sidewall, one (1) from each excavation base, and one (1) along each piping run) for laboratory analysis of petroleum-related (CP-51 list) VOCs and petroleum-related (CP-51 list) SVOCs.
- Removal of all soil/fill exceeding Track 4 Site-specific SCOs and confirmation that Track 4 Site-specific SCOs have been achieved with post-excavation end point sampling. Based on the results of the Investigation, it is expected that this alternative would be achieved by removing hotspot areas identified; however, approximately 12 feet of excavation across the entire Site is required for the construction of a new cellar. If soil/fill containing

analytes at concentrations above Track 4 Site-specific SCOs is still present at the base of the excavation, additional excavation would be performed to meet Track 4 Site-Specific SCOs.

- All excavated soil/fill exceeding Track 4 SCOs will be directly loaded onto trucks (to the maximum extent possible) then transported to an appropriate facility. Based on analytical results from the endpoint samples, additional excavation and follow-up endpoint sampling will be conducted as needed to remove all soil that exceeds Track 4 SCOs.
- The foundation of the new building will act as a composite cover, as the planned building will encompass the entire parcel.
- Installation of a vapor barrier system beneath the building slab and along foundation sidewalls to mitigate soil vapor intrusion and prevent potential exposures from soil vapor.
- Installation and operation of an active SSDS.
- Execution of deed restrictions for operation of active SSDS.
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site; prohibitions of restricted Site uses, such as farming or vegetable gardening, to prevent future exposure pathways; and prohibition of a higher level of land use without OER approval;
- Establishment of an approved Site Management Plan (SMP) to ensure long-term management of these Engineering and Institutional Controls including the performance of periodic inspections and certification that the controls are performing as they were intended. The SMP will note that the property owner and property owner's successors and assigns must comply with the approved SMP.

3.1 Threshold Criteria

Protection of Public Health and the Environment

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

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

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

Alternative 2 would achieve comparable protections of human health and the environment by excavation and removal of most of the historic fill exceeding Track 4 SCO's at the Site and by ensuring that remaining soil/fill on-Site meets Track 4 SCO's, as well as by placement of Institutional and Engineering Controls, including a composite cover system. The composite cover system would prevent direct contact with any remaining on-Site soil/fill. Implementing Institutional Controls including a Site Management Plan and continuing the E-designation. Establishment of Track 4 SCO's would minimize the risk of any residual contamination leaching into groundwater, as would construction of the planned building, which act as a composite cover across the entire parcel.

For both Alternatives, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan, an approved Soil/Materials Management Plan, and Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would be prevented as its use is prohibited by city laws and regulations. Potential future migration of off-Site soil vapors into the new building would be prevented by installing a vapor barrier below the building slab and outside foundations walls below grade. Specific to Alternative 2, installation and operation of an active SSDS will be implemented as part of the selected remedial action.

3.2 Balancing Criteria

Compliance with Standards, Criteria and Guidance (SCGs)

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

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

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

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

Short-Term Effectiveness and Impacts

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

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

Both Alternative 1 and 2 have similar short-term effectiveness during their implementation, as each requires excavation of historic fill material. Both alternatives would result in potential short-term dust generation impacts associated with excavation, handling, load out of materials, and truck traffic. Short-term impacts would potentially be higher for Alternative 1 since excavation of greater amounts of contaminated soil/historical fill material would take place. An additional short-term adverse impact and risks to the community associated with both remedial alternatives would be increased truck traffic. Truck traffic will be routed on the most direct course using major thoroughfares where possible and flag persons will be used to protect pedestrians at Site entrances and exits, as needed.

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

Long-term effectiveness and permanence

This evaluation criterion addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual contamination remaining at the Site after response objectives have been met, such as permanence of the remedial alternative, magnitude of remaining contamination, adequacy of controls including the adequacy and suitability of Engineering Controls/Institutional Controls (ECs/ICs) that may be used to manage contaminant

residuals that remain at the Site and assessment of containment systems and ICs that are designed to eliminate exposures to contaminants, and long-term reliability of ECs.

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

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

Reduction of toxicity, mobility, or volume of contaminated material

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

Alternative 1 will permanently eliminate the toxicity, mobility, and volume of contaminants from on-Site soil by removing all soil in excess of Track 1 Unrestricted Use SCO's.
Alternative 2 would remove most of the historic fill at the Site, and all remaining on-Site soil/fill will meet Track 4 SCO's. ICs and ECs would be implemented and installed in areas exceeding Track 4 SCO's and exposure of contamination soil to the public would be eliminated.

Alternative 1 would remove a greater total mass of contaminants from the Site.

Implementability

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

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

Cost effectiveness

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

Contamination at the Site was detected in the surface soils, within the 0 to 2-foot interval, but not in the deeper soils, within the 8 to 10-foot interval. The entire property will be excavated to depths of 12 feet below grade for new development. The costs associated with both Alternative 1 and Alternative 2 will likely be comparable. Costs associated with Alternative 1 are expected to be slightly higher as this alternative involves disposal of a larger volume of contaminated soil. However, long-term costs for Alternative 2 are likely higher than Alternative 1 based on implementation of the engineering control (the active SSDS) and Site Management Plan as part of Alternative 2.

The remedial plan would couple the remedial action with the redevelopment of the Site, lowering total costs. The remedial plan will also consider the selection of the most appropriate disposal facilities to reduce transportation and disposal costs during cleanup and redevelopment of the Site.

Community Acceptance

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

This RAWP will be subject to a public review under the NYC VCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedy. This public comment will be considered by OER prior to approval of this plan. The Citizen Participation Plan for the project is provided in Appendix 3.0. Observations here will be supplemented by public comment received on the RAWP. Under both alternatives, the overall goals of the remedial program, to protect public health and the environment and eliminate potential contaminant exposures, have been broadly supported by citizens in NYC communities.

Land use

This evaluation criterion addresses the proposed use of the property. This evaluation has considered reasonably anticipated future uses of the Site and takes into account: current use and historical and/or recent development patterns; applicable zoning laws and maps; NYS Department of State's Brownfield Opportunity Areas (BOA) pursuant to section 970-r of the general municipal law; applicable land use plans; proximity to real property currently used for residential use, and to commercial, industrial, agricultural, and/or recreational areas; environmental justice impacts, Federal or State land use designations; population growth patterns and projections; accessibility to existing infrastructure; proximity of the site to important cultural resources and natural resources, potential vulnerability of groundwater to contamination that might emanate from the site, proximity to flood plains, geography and geology; and current Institutional Controls applicable to the site.

The current, intended, and reasonably anticipated future land use of the Site and its surroundings are compatible with the selected remedy of soil remediation. The proposed future use of the Site will be a 12-story mixed-use, hotel and commercial building with a basement that encompasses the entire parcel. Following remediation, the Site will meet either Track 1 Unrestricted Use or Track 4 Site Specific SCOs, both of which are protective of public health and the environment for its planned use. The proposed use is compliant with the property's anticipated re-zoning and is consistent with recent development patterns in the area. The area surrounding the site is urban and consists of predominantly mixed residential and commercial buildings in zoning districts designated for commercial and residential uses. The development would remediate a contaminated lot and provide a modern mixed-use hotel and commercial building. The proposed development would clean up the property and make it safer, create new employment opportunities, and other economic benefits from land revitalization.

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

The Site is not in close proximity to important cultural resources, including federal or state historic or heritage sites or Native American religious sites, natural resources, waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species. The Site is located in an urban area and not in proximity to fish or wildlife and neither alternative would result in any potential exposure pathways of contaminant migration affecting fish or wildlife. The remedial action is also protective of groundwater natural resources, as the planned Site redevelopment will remove all soil (including any contaminated soil) to a depth of 12 feet below ground surface and the planned building foundation will prevent migration of any residual contamination to groundwater. The Site does not lie in a Federal Emergency Management Agency (FEMA)-designated flood plain. Both alternatives are equally protective of natural resources and cultural resources. Improvements in the current environmental condition of the property achieved by both alternatives considered in this plan are consistent with the City's goals for cleanup of contaminated land.

Sustainability of the Remedial Action

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

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

Selection of the Preferred Remedy

The preferred remedy for the site is Alternative 2, Site Specific Use (Track 4) Cleanup. Data generated during the site investigation support the conclusion that Alternative 1 is achievable for soil as the entire lot will be excavated to 12 feet below grade for construction of the new cellar, but vapor mitigation is required in the form of active SSDS. Engineering controls including active SSDS is not allowed under Unrestricted Use remedies. If end point sample results determine that soils achieve Unrestricted Use SCOs and active SSDS can be switched to passive system, Track 1 remedial action will be achieved.

The Alternative 2 remedy will remove all soil/fill exceeding Site Specific Use SCOs throughout the Site, which will be confirmed with post-excavation sampling. Engineering Controls are required for Track 4 cleanups. A concrete slab covering the entire site and vapor barrier membrane installed as part of new development will perform as Engineering Controls.

Additional soil vapor management would be required as operation of active SSDS. Use restrictions will be imposed on the site and deed restrictions will be placed for SSDS.

4.0 Remedial Action

4.1 Summary of Preferred Remedial Action

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

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds during implementation of the remedial action portion of Site redevelopment.
3. Selection of Restricted Residential Soil Cleanup Objectives (SCOs), with site-specific SCOs established for copper (270 mg/kg), lead (1,000 mg/kg), and mercury (2.5 mg/kg).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking/staking excavation areas.
5. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil sampling will be conducted at a frequency dictated by disposal facility(s).
6. Removal of two abandoned-in-place USTs, one located in the northern portion of the Site and the other located in the southern portion of the Site (see Figure 5.0). The USTs are currently listed with the NYSDEC as abandoned-in-place; the NYSDEC registration will be amended upon removal of the USTs. Reporting of any petroleum spills associated with USTs will be made and appropriate closure of these petroleum spills will be conducted in compliance with applicable local, State and Federal laws and regulations.

7. Excavation and removal of soil/fill exceeding Site Specific Track 4 (Restricted Residential Use SCOs, with site-specific SCOs for copper, lead, and mercury) from the entire site to the depths of 12 feet below grade including in a 10-foot by 10-foot by 5-foot deep area surrounding RI boring SB-A. Approximately, 4500 tons of soil/fill will be excavated and removed from this development.
8. Observation and screening of soil excavated during construction of the building basement (after completion of the hot-spot and UST excavation program) for indications of contamination by visual means, odor, and monitoring with a PID.
9. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site or direct loading, as warranted and feasible.
10. Collection and analysis of endpoint samples from the bottom of excavations and in USTs excavations and SB-A excavation as described above, to confirm that the remedy meets Track 4 SCOs. Additional four endpoint samples will be obtained from the bottom of excavations.
11. Management of excavated materials including temporarily stockpiling and segregating, if required and feasible, in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
12. Transportation and off-Site disposal of all contaminated soil/fill material at licensed or permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan.
13. Performance of all activities required for the remedial action, including acquisition of required permits and attainment of pretreatment requirements, in compliance with applicable laws and regulations.
14. Dewatering is not anticipated to be required for the remedial action or Site redevelopment, however, if needed, dewatering will be conducted in compliance with city, state, and federal laws and regulations.
15. Implementation of storm-water pollution prevention measures as needed in compliance with applicable laws and regulations.
16. Construction of an engineered composite cover consisting of a minimum six-inch thick concrete building slab with an 8-inch clean granular sub-base beneath all building areas.

17. Installation of a vapor barrier system consisting of vapor barrier beneath the building slab and exterior of sub-grade foundation sidewalls to mitigate soil vapor migration into the building. The vapor barrier will consist of a Barrier Bac VBC-350 Vapor Barrier. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration.
18. Installation and operation of an active SSDS consisting of a network of perforated schedule 40 4-inch PVC horizontal pipes set in the middle of a gas permeable layer immediately beneath the building slab and vapor barrier system and connected to a 6-inch steel riser pipe that penetrates the slab and travels through the building to the roof. The SSDS will include pressure gauges and alarms. The active SSDS is an Engineering Control for the remedial action. The remedial engineer will certify in the RAR that the active SSDS was designed and properly installed to establish a vacuum in the gas permeable layer and a negative pressure gradient across the building slab to prevent vapor migration into the building.
19. A deed restriction will be placed on the property to document the installation of, and continued operation, of an active SSDS. The deed restriction can be removed if OER determines that the active SSDS has achieved its goals and is no longer warranted.
20. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, and lists any changes from this RAWP.
21. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

4.2 Soil Cleanup Objectives and Soil/ Fill Management

Track 4 SCOs are proposed for this project and SCOs are defined in 6 NYCRR Part 375, Table 6.8(b) Restricted Residential Use, with site-specific SCOs for copper, lead, and mercury. The following Track 4 Site-Specific SCOs will be utilized for this project:

Contaminant	Site-Specific SCO's
Lead	1,000 mg/kg)
Mercury	2.5 mg/kg
Copper	270 mg/kg

Soil and materials management on-Site and off-Site, including excavation, handling and disposal, will be conducted in accordance with the Soil/Materials Management Plan in Appendix 5.0. Discrete contaminant sources (such as hotspots) identified during the remedial action will be identified by GPS or surveyed. This information will be provided in the Remedial Action Report.

Waste Characterization

The Waste Characterization Study will include advancing four (4) additional soil borings (one in each quadrant of the property) to characterize the soil in areas of the Site not previously sampled, to evaluate whether the soil to be excavated during construction of the building basement can be disposed utilizing the New York City Clean Soil Bank. Each of these borings will include collection of soil samples at depths of 3 to 4 feet, 7 to 8 feet, and 11 to 12 feet below ground surface, for laboratory analysis of TCL VOCs, TCL SVOCs, TCL pesticides, TCL PCBs, and TAL metals. Analytical results will be reviewed and provided to OER for acceptance by the New York City Clean Soil Bank.

Soil/Fill Excavation and Removal

The total quantity of soil/fill expected to be excavated and disposed off-Site to a permitted and licensed facility is an estimated 4500 tons of impacted soil/fill. For each disposal facility to be used in the remedial action, a letter from the developer/QEP to the receiving facility requesting approval for disposal and a letter back to the developer/QEP providing approval for disposal will be submitted to OER prior to any transport and disposal of soil at a facility.

The proposed disposal locations for Site-derived impacted materials will be identified as the initial step in implementing the RAWP. Disposal facilities will be reported to OER when they are identified and prior to the start of remedial action. Additionally, a map showing the truck route from the Site to the disposal facility will be provided to NYCOER when the disposal facility has been identified.

End-point Sampling

As discussed above, the endpoint samples collected from the excavation at RI boring SB-A will be analyzed for compounds and elements as described below utilizing the following methodologies:

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

In accordance with NYSDEC procedures, the endpoint samples collected from the UST excavation will be analyzed for compounds as described below utilizing the following methodologies:

- CP-51 VOCs by EPA Method 8260; and
- CP-51 SVOCs by EPA Method 8270;

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

Confirmation End-point Sampling

Removal actions for development purposes under this plan will be performed in conjunction with confirmation end-point soil sampling. Eight (8) confirmation samples will be collected from the two UST excavations after removal of the USTs, and two (2) confirmation samples will be collected from the UST piping runs, after removal of the piping. In addition, four (4) end point

samples will be obtained from the bottom of excavations. To evaluate attainment of Track 4 SCOs, analytes will include those described above.

Hotspot End-point Sampling

End-point samples will be collected from the sidewalls and base of excavation at the hotspot location (RI boring SB-A) identified in the Remedial Investigation, according to the procedure listed below. End-point samples will be analyzed for the parameters presented above. Four (4) sidewall and one (1) base confirmation samples will be collected from the hotspot excavation at RI boring SB-A.

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

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

Quality Assurance/Quality Control

The following QA/QC procedures will be utilized for the analytical program:

- Samples will be collected utilizing new, disposable tools (plastic scoops, etc.).
- Since disposable sampling equipment will be utilized, no field decontamination will be conducted.
- Sample containers will be provided by the laboratory, and will be appropriate for the analyses to be conducted (i.e., En-Core or TerraCore samplers for VOCs, appropriately-sized glass jars for other parameters). Filled sample containers will be maintained at 4^{o}C until delivery to the laboratory.

- Adherence to all sample holding times will be maintained by the laboratory. Samples will be delivered to the laboratory via laboratory courier in a timely manner after collection.
- The laboratory will follow all required QA/QC protocols, including calibration and lab blanks
- Detection levels will be appropriate for the medium of concern (i.e., soil) and will be sufficiently low to allow comparison to SCGs (Track 4 SCOs)

Import of Soils

Soil import is not planned for this project.

Reuse of Onsite Soils

Soil reuse is not planned for this project.

4.3 Engineering Controls

Engineering Controls will be employed in the remedial action to address residual contamination remaining at the site. The Site will have three primary Engineering Control Systems, which include:

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

Composite Cover System

Exposure to residual soil/fill will be prevented as the building foundation will act as the composite cover system and encompass the entire lot area. This composite cover system will be comprised of 6 inches of reinforced concrete slab underlain by 8 inches of clean sub-base material in building areas.

Figure 7.0 shows the typical design for each remedial cover type used on this Site.

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

Vapor Barrier System

Migration of soil vapor from onsite or offsite sources into the building will be mitigated with a combination of building slab and vapor barrier. The vapor barrier will consist of a Barrier Bac VBC-350 31-millimeter vapor retarder system (or similar)[s1]. All welds, seams and penetrations will be properly sealed with specialized vapor barrier tape to prevent preferential pathways for vapor migration. The vapor barrier will extend throughout the area occupied by the footprint of the new building and up the foundation sidewalls and will be installed in accordance with manufacturer specifications.

A plan view showing the location of the proposed vapor barrier system is provided in Figure 8.0. Product specification sheets are provided in Appendix 2.0. The Remedial Action Report will include as-built drawings and diagrams; manufacturer documentation; and photographs.

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

Sub-Slab Depressurization System

Migration of soil vapor into the building will be mitigated with the construction and operation of an active Sub-Slab Depressurization System (SSDS), consisting of a network of horizontal pipe set in the middle of a gas permeable layer immediately beneath the building slab and vapor barrier system. The SSDS will be designed and signed/sealed by the New York State-licensed

Professional Engineer. Although subject to change based on the final SSDS design, it is currently expected that the SSDS will likely include:

1. horizontal piping consisting of fabric wrapped, perforated schedule 40 4-inch PVC pipe connected to a 6-inch steel riser pipe that penetrates the slab and travels through the building to the roof.
2. gas permeable layer consisting of a minimum 6-inch thick layer of material as specified in the SSDS design documents.
3. the active SSDS will be hardwired and will include a minimum of two (2) blowers installed on the roof line, with pressure gauges and alarms located in an accessible area of the basement.
4. the riser piping will be finished at the roof line with 6-inch goose necks to prevent rain infiltration.

The remedial engineer will certify in the RAR that the active SSDS was designed and properly installed to establish a vacuum in the gas permeable layer and a negative pressure gradient across the building slab to prevent vapor migration into the building. The SSDS is a permanent engineering control. The system will be inspected, and its performance certified at specified intervals as required by this RAWP and the Site Management Plan. Maintenance of this SSDS will be described in the Site Management Plan in the Remedial Action Report. The location and layout of the a typical SSDS overlain the proposed development plan is shown in Figure 9.0.

4.4 Institutional Controls

A series of Institutional Controls (ICs) are required under this Remedial Action to assure permanent protection of public health by elimination of exposure to residual materials. These IC's define the program to operate, maintain, inspect and certify the performance of Engineering Controls and Institutional Controls on this property. Institutional Controls would be implemented in accordance with a Site Management Plan included in the final Remedial Action Report (RAR). Institutional Controls would be:

- Recording of an OER-approved Declaration of Covenant and Restrictions (DCR) with the City Register or county clerk, as appropriate. The DCR will include a description of all ECs and ICs, will summarize the requirements of the SMP, and will note that the

property owner and property owner's successors and assigns must comply with the DCR and the approved SMP. The recorded DCR will be submitted in the Remedial Action Report. The DCR will be recorded prior to OER issuance of the Notice of Completion;

- Submittal of a SMP in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, inspection, and certification of ECs and IC's. SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determine by OER in the SMP and will comply with RCNY §43-1407(l)(3).
- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;
- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP;
- The Site will be used for mixed-use (hotel and commercial) and will not be used for a higher level of use without prior approval by OER.

4.5 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 this RAWP. The Site Management Plan is submitted as part of the RAR but will be written in a manner that allows its use as an independent document. Site Management continues until terminated in writing by OER. The

property owner is responsible to ensure that all Site Management responsibilities defined in the Site Management Plan are implemented.

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

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

4.6 Qualitative Human Health Exposure Assessment

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

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

Known and Potential Contaminant Sources

The Areas of Concern include two abandoned-in-place USTs (that will be removed) and shallow impacted soils at the location of RI boring SB-A, as analytical results indicate exceedances of Track 4 SCOs. In regards to soil vapor and groundwater, the Areas of Concern include the entire parcel as impacted soil vapor and groundwater were detected at several locations; however, since the contaminants detected in the groundwater and soil vapor samples were generally not also detected at significant concentrations in on-Site soil samples, the RIR concluded that the impacts to groundwater and soil vapor were derived from off-Site sources.

Based on the results of the RIR, the contaminants of concern are:

Soil: lead and mercury were detected in the 0 to 2-foot sample from SB-A at concentrations exceeding Restricted Residential SCOs.

Groundwater: Concentrations of benzene, trichlorofluoromethane, bis(2-ethylhexyl)phthalate, naphthalene, antimony, magnesium, manganese, and sodium exceeding Class GA groundwater standards were detected in one or more groundwater samples.

Soil Vapor: Twenty-three (23) VOCs were detected in soil vapor samples, with a maximum detected concentration of 4,300 microgram per cubic meter (PCE in SV-1). Since indoor air samples were not collected during the RI, no assessment of detected VOC concentrations with respect to the NYSDOH Soil Vapor Matrices could be made.

Nature, Extent, Fate and Transport of Contaminants

Soil: Contaminants of concern in soil are copper, lead, and mercury, which were detected within the shallow soil at SB-A, in the middle portion of the property, at concentrations above Restricted Residential SCOs; no exceedances of Track 1 SCOs were identified for any parameter in the deeper sample at this location. Exposures to contaminants of concern within the shallow soils would only occur during soil excavation in the form of dust.

Groundwater: Since the contaminants detected in the groundwater and soil vapor samples were generally not detected at significant concentrations in on-Site soil samples, the RIR concluded that the impacts to groundwater and soil vapor were derived from off-Site sources. As a result, impacted groundwater may migrate onto the Site from off-Site and likely flow off-Site in the downgradient direction. Volatile contaminants from impacted groundwater may also migrate into soil vapor.

Soil Vapor: Similar to groundwater, the source of the soil vapor contaminants is likely from an offsite source as the contaminants found in the soil vapor were not detected in the on-Site soil. Impacted soil vapor may migrate into the on-Site building.

Receptor Populations

On-Site Receptors: The Site is currently developed with a two-story commercial building that is occupied by a photography studio and a limousine company (the second floor is currently vacant). On-Site receptors are limited to building workers and visitors. During construction, potential on-Site receptors will include construction workers, site representatives, and visitors. Under proposed future conditions, potential on-Site receptors will include Site visitors and workers.

Off-Site Receptors: Potential off-site receptors within a 500-foot radius of the Site include adult and child residents of residential properties, commercial and construction workers in the Site vicinity, pedestrians, and workers and clients of the nearby adult day services facility. Properties with potentially sensitive receptors (i.e., residential or adult day services uses) within a 500-foot radius of the Site boundary are shown on Figure 3.0.

Potential Routes of Exposure

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

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

- Dermal absorption of contaminants from groundwater or fill/soil.

Potential Exposure Points

Current Conditions: The site is currently capped with the existing building and there are no potential exposure pathways from ingestion, inhalation, or dermal absorption of soil/fill. Groundwater is not exposed at the Site. The Site is served by the public water supply and groundwater is not used at the Site or Site vicinity for potable supply. Therefore, there is no potential for exposure. Although the site is currently developed with a one-story commercial building, the building is vacant. Accumulation of soil vapor within the building should not be exposed to anyone as the building is vacant. Exposure to contaminants is limited to site visiting representatives.

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

Proposed Future Conditions: Under future remediated conditions, all soils in excess of Track 4 SCOs will be removed. The Site will be fully capped, preventing potential direct exposure to impacted soil and groundwater remaining in place, and engineering controls (vapor barrier/SSDS) will prevent any potential exposure due to inhalation by preventing soil vapor intrusion into the new building. The Site is served by the public water supply, and groundwater is not currently used at the Site, not will be used in the future (an IC preventing groundwater use at the Site will be put in place as part of the remedial action). There are no plausible off-site pathways for oral, inhalation, or dermal exposure to contaminants derived from the Site.

Overall Human Health Exposure Assessment

There are potentially complete exposure pathways for the current Site condition. There are also potentially complete exposure pathways that will require mitigation during implementation of the remedy. There are no complete exposure pathways under future conditions after the Site has been redeveloped. This assessment takes into consideration the reasonably anticipated planned future use of the Site, which includes a mixed-use hotel/commercial structure encompassing the entire parcel and a subsurface vapor barrier system and active SSDS for the building. During remedial construction, on-Site and off-Site exposures to contaminated dust from historic fill material will be addressed through dust controls, and through the implementation of the Community Air Monitoring Program, the Soil/Materials Management Plan, and a Construction Health and Safety Plan.

5.0 Remedial Action Management

5.1 Project Organization and Oversight

Principal personnel who will participate in the remedial action include Professional Geologist Scott A. Yanuck, Professional Geologist Kenneth P. Wenz, and Geologist Albert Kim. The Professional Engineer (PE) for this project is Edward Wong and Qualified Environmental Professionals (QEP) for this project is Scott A. Yanuck. .

5.2 Site Security

Site access will be controlled by existing doorways into the building. Upon demolition of the current building, access to the Site will be limited by fencing.

5.3 Work Hours

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

5.4 Construction Health and Safety Plan

The Health and Safety Plan is included in Appendix 6.0. The Site Safety Coordinator will be Brian McCabe. Remedial work performed under this RAWP will be in full compliance with applicable health and safety laws and regulations, including Site and OSHA worker safety requirements and HAZWOPER requirements. Confined space entry, if any, will comply with OSHA requirements and industry standards and will address potential risks. The parties performing the remedial construction work will ensure that performance of work is in compliance with the HASP and applicable laws and regulations. The HASP pertains to remedial and invasive work performed at the Site until the issuance of the Notice of Completion.

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

Personnel entering any exclusion zone will be trained in the provisions of the HASP and will comply with all requirements of 29 CFR 1910.120. Site-specific training will be provided to field personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

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

5.5 Community Air Monitoring Plan

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

Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil and sediment samples. Periodic monitoring during sample collection, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while overturning soil, 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. Exceedances of action levels observed during performance of the Community Air Monitoring Plan (CAMP) will be reported to the OER Project Manager and included in the Daily Report.

VOC Monitoring, Response Levels, and Actions

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

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

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

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring

particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

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

5.6 Agency Approvals

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

5.7 Site Preparation

Pre-Construction Meeting

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

Mobilization

Mobilization will be conducted as necessary for each phase of work at the Site. Mobilization includes field personnel orientation, equipment mobilization (including securing all sampling

equipment needed for the field investigation), marking/staking sampling locations and utility mark-outs. Each field team member will attend an orientation meeting to become familiar with the general operation of the Site, health and safety requirements, and field procedures.

Utility Marker Layouts, Easement Layouts

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

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

Dewatering

Dewatering is not anticipated to be required for the remedial action or construction associated with during Site redevelopment. However, any dewatering needed to facilitate excavation of soil below the water table (expected to be thirteen to fourteen feet below grade) during remediation or Site redevelopment will be conducted in compliance with city, state, and federal laws and regulations. Extracted groundwater will either be containerized for off-site licensed or permitted disposal or will be treated under a permit from NYCDEP to meet pretreatment requirements prior to discharge to the sewer system. If needed, dewatering site will utilize a pumping system,

and possibly settling tanks and/or a treatment system prior to discharge into the city sewer system. All permit requirements will be followed permits for dewatering.

Equipment and Material Staging

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

Stabilized Construction Entrance

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

Truck Inspection Station

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

Extreme Storm Preparedness and Response Contingency Plan

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

Storm Preparedness

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

Storm Response

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

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

Storm Response Reporting

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

5.8 Traffic Control

Drivers of trucks leaving the Site with soil/fill will be instructed to proceed without stopping in the vicinity of the Site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the site will be provided upon designation of disposal facilities.

5.9 Demobilization

Demobilization will include:

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

Equipment will be decontaminated and demobilized at the completion of all field activities. Investigation equipment and large equipment (e.g., soil excavators) will be washed at the truck inspection station as necessary. In addition, all investigation and remediation derived waste will be appropriately disposed.

5.10 Reporting and Record Keeping

Daily reports

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

- Project number and statement of the activities and an update of progress made and locations of excavation and other remedial work performed;
- Quantities of material imported and exported from the Site;
- Status of on-Site soil/fill stockpiles;

- A summary of all citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- A summary of CAMP results noting all excursions. CAMP data may be reported;
- Photograph of notable Site conditions and activities.

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

Record Keeping and Photo Documentation

Job-site record keeping for all remedial work will be performed. These records will be maintained on-Site during the project and will be available for inspection by OER staff. Representative photographs will be taken of the Site prior to any remedial activities and during major remedial activities to illustrate remedial program elements and contaminant source areas. Photographs will be submitted at the completion of the project in the RAR in digital format (i.e. jpeg files).

5.11 Complaint Management

All complaints from citizens will be promptly reported to OER. Complaints will be addressed and outcomes will also be reported to OER in daily reports. Notices to OER will include the nature of the complaint, the party providing the complaint, and the actions taken to resolve any problems.

5.12 Deviations From The Remedial Action Work Plan

All changes to the RAWP will be reported to, and approved by, the OER Project Manager and will be documented in daily reports and reported in the Remedial Action Report. The process to

be followed if there are any deviations from the RAWP will include a request for approval for the change from OER noting the following:

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

6.0 Remedial Action Report

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

- Information required by this RAWP;
- Text description with thorough detail of all engineering and institutional controls (if Track 1 remedial action is not achieved)
- As-built drawings for all constructed remedial elements;
- Manifests for al soil or fill disposal;
- Photographic documentation of remedial work performed under this remedy;
- Site Management Plan (if Track 1 remedial action is not achieved);
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents;
- Tabular summary of all end point sampling results (including all soil test results from the remedial investigation for soil that will remain on site) and all soil/fill waste characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all soil or fill material removed from the Site including a map showing the location of these excavations and hotspots, tanks or other contaminant source areas;

- Full accounting of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material;
- Account of the origin and required chemical quality testing for material imported onto the Site;
- Continue registration of the property with a Restrictive Declaration by the NYC Department of Buildings (if Track 1 remedial action is not achieved);
- The RAWP and Remedial Investigation Report will be included as appendices to the RAR;
- Reports and supporting material will be submitted in digital form and final PDF's will include bookmarks for each appendix.

Remedial Action Report Certification

I, Edward Wong, am currently a registered professional engineer licensed by the State of New York. I performed professional engineering services and had primary direct responsibility for implementation of the remedial program for the 38-20 32nd Street, Long Island City site, site number 17TMP0828Q, 17EHAZ311Q. I certify to the following:

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

Name

PE License Number

Signature

Date

PE Stamp

I, Scott Yanuck, am a Qualified Environmental Professional. I had primary direct responsibility for implementation of the remedial program for the 38-20 32nd Street, long Island City site, site number 17TMP0828Q, 17EHAZ311Q. I certify to the following:

- The OER-approved Remedial Action Work Plan dated August 15, 2012 and Stipulations in a letter dated September 10, 2014 were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

QEP Name

QEP Signature

Date

7.0 Schedule

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a 6-week remediation period is anticipated, including the UST removal and hotspot excavation (including endpoint sample analysis), waste characterization, and monitoring during excavation of the remaining basement area.

Schedule Milestone	**Weeks from Remedial Action Start**	**Duration (weeks)**
OER Approval of RAWP	0	2
Fact Sheet 2 announcing start of remedy	3	1
Mobilization	4	1
Remedial Excavation	5	6
Demobilization	11	1
Submit Remedial Action Report	15	4

APPENDIX 1.0

PROPOSED DEVELOPMENT PLANS

APPENDIX 3.0

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and Scott Yanuck have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYC VCP, Scott Yanuck 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, Isabel McRae, 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.

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

Queens Library at Long Island City
37-44 21st Street, Long Island City, NY 11101
(718) 752-3700
Monday: 9am – 8pm
Tuesday: 1pm – 6pm
Wednesday: 10am – 6pm
Thursday: 12pm – 8pm
Friday: 10am – 6pm
Saturday: 10am – 5pm
Sunday: Closed

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

Issues of Public Concern: No Issues of Public Concern have been identified for the Site.

Public Notice and Public Comment: Public notice to all members of the Project Contact List is required at three major steps during the performance of the cleanup program (listed below) and at other points that may be required by OER. Notices will include Fact Sheets with descriptive project summaries, updates on recent and upcoming project activities, repository

information, and important phone and email contact information. All notices will be reviewed and approved by OER prior to distribution and mailed by the Enrollee. Public comment is solicited in public notices for all work plans developed under the NYC Voluntary Cleanup Program. Final review of all work plans by OER will consider all public comments. Approval will not be granted until the public comment period has been completed.

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

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

APPENDIX 4.0

SUSTAINABILITY STATEMENT

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

Reuse of Clean, Recyclable Materials and Reduced Consumption of Non-Renewable Resources: Reuse of clean, locally-derived recyclable materials reduces consumption of non-renewable virgin resources and can provide energy savings and greenhouse gas reduction.

Soil that meets the Clean Soil Bank requirements will be submitted into the Clean Soil Bank for local re-use.

An estimate of the quantity (in tons) of clean, non-virgin materials (reported by type of material) reused under Clean Soil Bank will be quantified and reported in the RAR.

Reduced Energy Consumption and Promotion of Greater Energy Efficiency:

Reduced energy consumption lowers greenhouse gas emissions, improves local air quality, lessens in-city power generation requirements, can lower traffic congestion, and provides substantial cost savings.

Best efforts will be made to quantify energy efficiencies achieved during the remediation and will be reported in the Remedial Action Report (RAR). Where energy savings cannot be easily quantified, a gross indicator of the amount of energy saved or the means by which energy savings was achieved will be reported.

Conversion to Clean Fuels: Use of clean fuel improves NYC's air quality by reducing harmful emissions.

Clean diesel and low sulfur fuels will be used for construction and natural gas will be utilized for fuel in the new building.

An estimate of the volume of clean fuels used during remedial activities will be quantified and reported in the RAR.

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

A vapor barrier and active sub-slab depressurization system that can eliminate the risk of future migration of soil vapor contamination from off-Site sources will installed during construction. The entire Site approximately 6,840 square feet in area, will utilize recontamination controls under this plan.

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

Paperless Voluntary Cleanup Program: Long Island City Developers, LLC is participating in OER's Paperless Voluntary Cleanup Program. Under this program, submission of electronic documents will replace submission of hard copies for the review of project documents, communications and milestone reports.

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

Trees and Plantings: Trees and other plantings provide habitat and add to NYC's environmental quality in a wide variety of ways. Native plant species and native habitat provide optimal support to local fauna, promote local biodiversity, and require less maintenance.
An estimate of the land area that will be vegetated, including the number of trees planted or preserved, will be reported in square feet in the RAR. However, as currently planned, the new building will cover the entire parcel, so the opportunity for significant vegetation is limited.

APPENDIX 5.0

SOIL/MATERIALS MANAGEMENT PLAN

1.1 Soil Screening Methods

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

1.2 Stockpile Methods

Excavated soil from suspected areas of contamination (e.g., hot spots, USTs, drains, etc.) will be stockpiled separately and will be segregated from clean soil and construction materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.
All stockpile activities will be compliant with applicable laws and regulations. Soil stockpile areas will be appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials shall be located at least of 50 feet from the property boundaries, where possible. Hay bales or equivalent will surround soil stockpiles except for areas where access by equipment is required. Silt fencing and hay bales will be used as needed near catch basins, surface waters and other discharge points.

1.3 Characterization of Excavated Materials

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

1.4 Materials Excavation, Load-Out, and Departure

The PE/QEP overseeing the remedial action will:

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

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

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

1.5 Off-Site Materials Transport

Loaded vehicles leaving the Site will comply with all applicable materials transportation requirements (including appropriate covering, manifests, and placards) in accordance with applicable laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364. If loads contain wet material capable of causing leakage from trucks, truck liners will be used. Queuing of trucks will be performed on-Site, when possible in order to minimize off Site disturbance. Off-Site queuing will be minimized.

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

1.6 Materials Disposal Off-Site

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

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

All impacted soil/fill or other waste excavated and removed from the Site will be managed as regulated material and will be disposed in accordance with applicable laws and regulations. Historic fill and contaminated soils taken off-Site will be handled as solid waste and will not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility). Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be

reported in the final remedial report. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the final remedial report. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

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

1.7 Materials Reuse On-Site

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

Since the Site is currently completely covered by an existing building (to be demolished during Site redevelopment), no clearing or grubbing will be conducted under this plan.

1.8 Demarcation

Based on the redevelopment plan for the Site, no backfilling is anticipated. As a result, no demarcation is required.

1.9 Import of Backfill Soil From Off-Site Sources

Based on the redevelopment plan for the Site, no backfilling is anticipated. As a result, importation of backfill will not be required.

1.10 Fluids Management

Based on the redevelopment plan for the Site, no dewatering is anticipated. However, any liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable laws and regulations. Liquids discharged into the New York City sewer system will receive prior approval by NYCDEP, which regulates discharges to the New York City sewers under Title 15, Rules of the City of New York Chapter 19. Discharge to the New York City sewer system will require an authorization and sampling data demonstrating that the groundwater meets the City's discharge criteria. The dewatering fluid will be pretreated as necessary to meet the NYC DEP discharge criteria. If discharge to the City sewer system is not appropriate, the dewatering fluids will be managed by transportation and disposal at an off-Site treatment facility.

1.11 Stormwater Pollution Prevention

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

1.12 Contingency Plan for Unknown Contamination Sources

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown contamination source areas during invasive Site work will be promptly communicated to OER's Project Manager. Petroleum spills will be reported to the NYSDEC 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 VOCs and SVOCs, and TCL pesticides and PCBs, as appropriate.

1.13 Odor, Dust, and Nuisance Control

Odor Control

All necessary means will be employed to prevent on- and off-Site odor nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations related to the remediation program to the maximum extent possible; (b) shrouding open excavations with tarps and other covers; and (c) use of foams to cover exposed odorous soils. If odors develop and cannot otherwise be controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-Site disposal; and (e) use of chemical odorants in spray or misting systems.

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

Dust Control

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

- Use of a dedicated water spray methodology for roads, excavation areas and stockpiles.

- Use of properly anchored tarps to cover stockpiles.
- Exercise extra care during dry and high-wind periods.
- Use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface.

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

Other Nuisances

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

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

APPENDIX 6.0

CONSTRUCTION HEALTH AND SAFETY PLAN