

**86-90 WALTON STREET
BROOKLYN, NEW YORK 11206**

Remedial Action Report

NYC VCP Number: 15CVCP117K

E-Designation Site Number: 15RHAN331K

Prepared for:

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REMEDIAL ACTION REPORT

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LIST OF ACRONYMS

Acronym	Definition
CAMP	Community Air Monitoring Plan
DER-10	NYS DEC Division of Environmental Remediation Technical Guidance Manual 10
EC	Engineering Control
HASP	Health and Safety Plan
IC	Institutional Control
NYC VCP	New York City Voluntary Cleanup Program
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York City Department of Health and Mental Hygiene
NYC OER	New York City Office of Environmental Remediation
ORC	Oxygen Release Compound
PID	Photoionization Detector
QA/QC	Quality Assurance/Quality Control
QEP	Qualified Environmental Professional
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan
SCG	Standards, Criteria and Guidance
SCO	Soil Cleanup Objective
SMMP	Soil/Materials Management Plan
SMP	Site Management Plan
SVOCs	Semi-Volatile Organic Compounds
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

CERTIFICATION

I, Ariel Czemerinski, certify:

- I am currently a registered professional engineer licensed by the State of New York.
- I performed professional engineering services and had primary direct responsibility for implementation of the remedial program for the redevelopment project located at 86-90 Walton Street, Brooklyn, NY, site number 15CVCP117K.
- 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; (2) are accurately reflected in the text and drawings for as-built design reported in this Remedial Action Report; and (3) will achieve the goal of the Remedial Action Work Plan to prevent soil vapor intrusion and provide protection of public health for the occupants of the building.
- The OER-approved Remedial Action Work Plan dated April 2015 and Stipulations in a letter dated May 18, 2015, 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

Ariel Czemerinski

PE License Number

076508

Signature

Ariel Czemerinski

Date

11/6/17



I, Kimberly Somers, certify:

- I am a Qualified Environmental Professional.
- I had primary direct responsibility for implementation of the remedial program for the redevelopment project located at 86-90 Walton Street, Brooklyn, NY, site number 15CVCP117K.
- The OER-approved Remedial Action Work Plan dated April 2015 and Stipulations in a letter dated May 18, 2015, 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 Kimberly Somers

QEP Signature

Kimberly Somers

Date 11/6/17

EXECUTIVE SUMMARY

86-90 Walton Street LLC enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 86-90 Walton Street in East Williamsburg section of Brooklyn, New York. A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP). A remedial action was performed pursuant to an OER-approved RAWP in a manner that has rendered the Site protective of public health and the environment consistent with the proposed use of the property. This RAR describes the remedial action performed under the RAWP. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

Site Location and Prior Usage

The Site is located at 86-90 Walton Street in the East Williamsburg section of Brooklyn, New York, and is identified as Block 2250 and Lot 10 (which includes former lots 11 and 12). on the New York City Tax Map. The Site is 7,500-square feet (ft²) in size and is bounded by Walton Street to the north; three, 2-story manufacturing buildings and a 2-story institutional use (Yeshiva) to the west; a 3-story multi-family walk up (92 Walton Street) to the east; and a 4-story multi-family elevator building to the south.

Prior to redevelopment, the Site was developed with a single-story commercial/manufacturing building on Lot 12 that was previously occupied by a blacksmith, wagon builder, a truck body works, trucking company, and a warehouse. Lots 10 and 11 consisted of vacant lots were used for storage and parking.

Summary of Redevelopment Plan

A new 7-story residential apartment building with a full cellar has been constructed at the Site. The new building covers the first 65 feet of the lot from Walton Street and the remaining 35 feet in the southern portion of the lot is capped at grade with concrete.

The cellar extends below the entire new building and consists of five accessory building storage spaces, an electric meter room, a water sewer / sprinkler room, stairwells, an elevator, a trash compacter room and two bathrooms.

Excavation for the cellar level for the new building took place across the first 65 feet, approximately 4,875 ft², of the Site to a depth of 7 feet 6 inches below sidewalk grade with excavation to 12 ft in the center portion of the Site for an 8 foot 5-inch by 9 foot 11-inch elevator pit. Additional excavation was performed to approximately 1 foot for the rear 1,875 ft² portion of the Site in the courtyard area, with an additional excavation to approximately 3 feet below grade for a 16 foot by 16 foot area for the installation of a storm drain. A sloped excavation from grade to approximately 7 feet 6 inches was performed for a 750 ft² section between the new building and the rear yard. A total of 2,600.5 tons of soil was excavated and removed and disposed to an approved off-site facility. As part of the redevelopment, a waterproofing membrane/vapor barrier was installed beneath the cellar slab, elevator pit slab and foundation walls to grade.

The current zoning designation for the Site is R7A. The new use is consistent with existing zoning for the property.

Summary of Surrounding Property

The area immediately surrounding Site consists of a mix of new and older residential buildings, a Yeshiva to the west, and a school (IS 318) across Walton Street. No hospitals or daycare facilities are located within a 250 ft radius of the Site.

Surrounding Property Usage

Direction	Property Description
North – <i>Opposite side of Walton Street</i>	<u>Block 2246, Lot 1 – 140 Lorimer Street</u> A 120,000 ft ² school, Intermediate School 318.
South – <i>Adjacent Properties</i>	<u>Block 2250 Lot 7501 – 165 Harrison Avenue</u> A 13,125 ft ² lot developed with four 4-story multi-family elevator buildings
East – <i>Adjacent Property</i>	<u>Block 2250, Lot 13 – 92 Walton Street</u> A 2,500 ft ² lot developed with a 3-story multifamily walk up with a small front yard and the building located on the rear of the lot.
West – <i>Adjacent Property</i>	<u>Block 2250, Lots 4, 6, 7, and 8 – 157 and 161 Harrison Avenue</u>

	Three 2,500 ft ² lots (6-8) developed with a 2-story manufacturing building. A 5,000 ft ² lot developed with a Yeshiva.
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Summary of Past Uses of Site and Areas of Concern

A Phase I Screening was prepared for the Site by EBC in December 2014. The Phase I Screening identified the following Site history:

- In 1887 the property was developed with a three-story residential building on Lot 10, a three-story mixed-use building on Lot 11 and a one-story commercial building occupied by a blacksmith on Lot 12.
- By 1918, a truck builder occupied the commercial building on Lot 12.
- In 1934, the commercial building on Lot 12 was occupied by a wagon builder.
- By 1947 the residential building on Lot 10 had been removed.
- In 1960, the commercial building on Lot 12 was occupied by a truck body work shop.
- Sometime between 1947 and 1977 the mixed-use building on Lot 11 was removed.
- In 1973, the commercial building on Lot 12 was occupied by a trucking company.
- From 2001 through 2007, the building on Lot 12 was identified as a warehouse.

The AOCs identified for this Site included:

1. The presence of historic fill material to depths as great as 5 feet;
2. The Site was utilized by a truck builder from 1918 to at least 1960;
3. The Site was utilized as a trucking company from at least 1973 to through the mid-1980s; and,
4. The property was assigned an E-designation for Hazmat, Noise and Air (E-238) as part of the Broadway Triangle rezoning completed by the City (CEQR No. 09HPD019K).

Summary of the Work Performed under the Remedial Investigation

EBC performed the following scope of work at the Site in July 2014:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed 6 soil borings across the Site, and collected 12 soil for chemical analysis from the soil borings to evaluate soil quality;

3. Installed 3 groundwater monitoring wells throughout the Site and collected 3 groundwater samples and one duplicate groundwater sample for chemical analysis to evaluate groundwater quality; and
4. Installed 5 soil vapor probes across the Site and collected 5 samples for chemical analysis.

Summary of Findings from Remedial Investigation

1. The elevation of the Site is approximately 16 feet.
2. Depth to groundwater is estimated to be approximately 7 feet below sidewalk grade.
3. Regional groundwater flow is generally east/northeast.
4. Depth to bedrock is at the Site is greater than 100 feet.
5. The stratigraphy of the Site from the surface down consists of historic fill material to depths as great as 5 feet, underlain by native brown or grey silty sand.
6. Soil/fill samples results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives and Restricted Residential Soil Cleanup Objectives as presented in 6NYCRR Part 375-6.8 and CP51. Several VOCs, including 1,2,4-Trimethylbenzene (1 µg/kg), 2-isopropyltoluene (590 µg/kg), 4-methyl-2-pentanone (1.3 µg/kg), carbon disulfide (1.3 µg/kg), chloroform (1.1 µg/kg), methyl ethyl ketone (max. of 26 µg/kg), naphthalene (390 µg/kg), n-Butylbenzene (770 µg/kg), sec-butylbenzene (1,200 µg/kg), tert-butylbenzene (330) were detected in trace amounts in the soil samples. Two VOCs including acetone (120 µg/kg) and methylene chloride (max [maximum]. of 120 µg/kg) were detected above Unrestricted Use SCOs. Five SVOCs, including benz(a)anthracene (max. of 3,600 µg/kg), benzo(a)pyrene (max. of 2,900 µg/kg), benzo(b)fluoranthene (max. of 4,100 µg/kg), dibenz(a,h)anthracene (350 µg/kg), and indeno(1,2,3-cd)pyrene (max. of 1,300 µg/kg), were detected above Restricted Residential Use SCOs within two of six shallow soil samples. No SVOCs exceeded Unrestricted Use SCOs in deeper soils. One pesticide, 4,4'-DDT (max. of 14 µg/kg) and one PCB, PCB-1254 (430 µg/kg) were detected above Unrestricted Use SCOs. Several metals including barium (max. 652 mg/kg), cadmium (max. of 8.48 mg/kg), chromium (52.1 mg/kg), copper (max. of 462 mg/kg), lead (max. of 1,500 mg/kg), mercury (max. of 3.57 mg/kg), nickel (30.7 mg/kg), and zinc (max. of 569 mg/kg) exceeded Unrestricted Use SCOs within all shallow and

one deep soil samples. Of these metals, barium, cadmium, copper, lead, and mercury also exceeded Restricted Residential Use SCOs. Overall, the soil results were consistent with data identified at sites with urban fill material in NYC.

7. Groundwater samples results were compared to the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (GQS) for Class GA (drinking water). The samples showed no PCBs or pesticides at detectable concentrations. No VOCs were detected above GQS; however, acetone (max. of 8.8 µg/L), chloroform (max of 0.73 µg/L), chloromethane (0.49 µg/L), and isopropylbenzene (max of 0.92 µg/L), were detected at trace amounts in all three groundwater samples and the trip blank. Five SVOCs including, benzo(a)anthracene (max. of 0.08 µg/L), benzo(a)pyrene (max. of 0.03 µg/L), benzo(b)fluoranthene (max. of 0.05 µg/L), benzo(k)fluoranthene (0.02 µg/L), and chrysene (max. of 0.27 µg/L) were detected above the GQS in the three groundwater samples. Several metals were identified, but only iron (max. of 1.47 mg/L), manganese (max. of 0.523 mg/L) and sodium (max. of 26.2 mg/L) exceeded their respective GQS in the three groundwater samples.
8. Soil vapor samples collected during the 2014 EBC RI were compared to the New York State Department of Health (NYSDOH) Final Guidance on Soil Vapor Intrusion (October 2006) Matrix 1 and Matrix 2 values. Samples indicated petroleum-related VOCs were present at low concentrations and chlorinated VOCs present at low to moderate concentrations. The total concentration of petroleum-related VOCs (BTEX) ranged from 30.43 µg/m³ to 102.66 µg/m³. The chlorinated VOC, trichloroethylene (TCE) was not detected in any of the soil gas samples. Tetrachloroethylene (PCE) was detected in four of the five soil gas samples ranging in concentration from 0.339 µg/m³ to 1.15 µg/m³. The NYSDOH Final Guidance on Soil Vapor Intrusion (October 2006) notes monitoring is the recommended action for a PCE concentration above 100 µg/m³ in soil gas. Carbon tetrachloride (maximum of 0.629 µg/m³) was detected in all five of the soil gas samples. The TCE, carbon tetrachloride and TCA concentrations are below the monitoring level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

Summary of the Remedial Action

The remedial action achieved protection of public health and the environment for the intended use of the property. The remedial action achieved all of the remedial action objectives established for the project and addressed applicable standards, criterion, and guidance; was effective in both the short-term and long-term goals of reducing mobility, toxicity and volume of contaminants; was cost effective and implementable; and used standards and methods that are well established in the industry.

A summary of the milestones achieved in the Remedial Action is as follows:

- A Pre-Application Meeting was held on December 9, 2014.
- A Remedial Investigation (RI) was performed in March 2015. A RI Report dated March 2015 was prepared to evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP).
- A Site Contact List was established and a RAWP dated April 2015 was prepared and released with a Fact Sheet on April 1, 2015, for a 30-day public comment period.
- The RAWP with a Stipulation List dated May 18, 2015, was approved by the New York City Office of Environmental Remediation (OER) on May 18, 2015.
- NYC DOHMH approved remedial action on September 23, 2015.
- A pre-construction meeting was held on June 9, 2015.
- A Fact Sheet providing notice of the start of the remedial action was issued on May 4, 2016. The remedial action was begun on May 23, 2016 and completed in August 2016.

The remedial action consisted of the following actions:

1. Prepared a Community Protection Statement and implemented a Citizen Participation Plan;
2. Performed a Community Air Monitoring Program for particulates and volatile organic carbon compounds. PID readings in the range of 130 ppm were observed within the center of the Site at approximately 9 feet below grade during the excavation of the elevator pit. A slight petroleum-like odor was noted within the work zone, but no odors or elevated PID readings were recorded during implementation of the CAMP;

3. Established Site-Specific (Track 4) Soil Cleanup Objectives (SCOs). The following Track 4 Site-Specific SCOs were utilized: SVOCs 150 ppm, barium 600 ppm, lead 1,000 ppm, and mercury 2.5 ppm;
4. Mobilized site security, equipment (May 9, 2016), utility mark outs and marking & staking excavation areas;
5. Performed Waste Characterization Study prior to excavation activities. Three 5-point composite samples and three grab samples for waste characterization soil samples were collected on March 8, 2016. Waste characterization samples were collected at a frequency dictated by disposal facility(s) Hazardous (TCLP) lead was identified. To further delineate lead area, nine additional samples were obtained from test pit. Results identified two lead hotspots;
6. Excavation of the fill material began on May 9, 2016 and was completed by June 20, 2016. The following excavations were performed to remove contaminated soils and for development purposes:
 - First 65 feet of site (approximately 4,875 ft²) was excavated to approximately 7 feet 6 inches below grade; with an excavation to 12 ft in the center portion of the Site for an 8 foot 5-inch by 9 foot 11-inch elevator pit;
 - The 1,875 ft² rear yard was excavated to approximately 1 foot below grade;
 - excavated an area 16 foot by 16 foot to three foot below grade for the installation of a storm drain within the rear yard section of the site;
 - A sloped excavation from grade to approximately 7 feet 6 inches was performed for a 750 ft² section between the new building and the rear yard;
 - Additional excavations were performed to approximately 10 feet below grade adjacent to the elevator pit where petroleum-impacted soils were encountered at approximately 9 feet below grade; and
 - and to 10 below grade for a 3 foot by 3 foot area in the northwestern portion of the Site (at the location of endpoint sample EP4A).
7. A total of 2,600.5 tons of soil/fill were excavated and removed from the property. Transported and disposed all 2600 tons of soil/fill material at permitted facilities in

accordance with all applicable laws and regulations for handling, transporting, and disposing, and the RAWP to the following facilities:

- excavated 1,657.77 tons of non-hazardous historic fill material/soil and disposed at the former NJ Zinc Site located at 1120 Mauch Chunk Road, Palmerton, New Jersey;
 - excavated 370.03 tons of clean native soil (from June 6, 2016 to June 8, 2016) for disposal at the Impact Reuse & Recovery Center (IRRC) located at 1000 Page Avenue, Lyndhurst, New Jersey; and
 - excavated 572.43 tons of hazardous fill/soil for disposal at Clean Earth of North Jersey (located at 105 Jacobus Avenue, Kearny, New Jersey).
8. Screened excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
 9. Conducted materials management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
 10. Removed a 550-gallon underground storage tank (UST) located in the center of the Site. Certification of tank removal was notarized on June 7, 2016.
 11. Daily reports were submitted during days of excavation activities starting from March 8, 2016 through August 2, 2016.
 12. Collected and analyzed four end-point samples to determine the performance of the remedy with respect to attainment of Track 4 Site-Specific SCOs. Track 4 SCOs for this project were achieved for EP1 through EP3; however, EP4 failed to meet the Track 4 SCOs for lead; therefore, EP4 was excavated an additional two feet and re-sampled. Additional clean sample was obtained from the tank bottom area in rear yard. Track 4 Site Specific SCOs were achieved for the Site.
 13. As part of development, installed a waterproofing/vapor barrier system. The waterproofing membrane/vapor barrier Grace Preprufe® 300R (a 1.2 mm /0.046in thick HDPE film with a pressure sensitive adhesive that bonds to the poured concrete) was installed directly beneath the cellar slab and beneath the elevator pit. Grace Preprufe®160R (a 0.8 mm /0.032in thick HDPE film) was installed on the exterior

eastern and western foundation walls to grade. Grace Procor® 75 waterproofing was sprayed at a thickness of 60-mil on the exterior of the northern and southern foundation walls. The waterproofing contractor for the Procor spray was Drip Drop Waterproofing. The Grace 300R/160R waterproofing membrane was installed by Braga Corporation.

14. As part of development, installed a composite cover consisting of the following:
 - Cellar Slab – The building cellar foundation consisting of the following:
 1. 30-inch thick concrete slab underlain by a 46-mil waterproofing membrane/vapor barrier (Grace Preprufe® 300R HDPE) on a 2-inch gravel sub-base; and
 2. A 2-inch layer of ¾-inch virgin mined blue stone installed below the footings.
 - Rear Courtyard - 6-inch thick concrete slab.

The contractor for the cover construction was Braga Corporation.

15. Imported approximately 49.95 tons of ¾-inch clean blue stone (placed under cellar slab) from Impact Reuse and Recovery Center (IRRC) located at 1000 Page Avenue, Lyndhurst, New Jersey.
16. Demarcation Layer under the concrete slab in rear yard was not installed.
17. Performed all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
18. Implemented storm water pollution prevention measures in compliance with applicable laws and regulations.
19. Submitted a Sustainability Report;
20. Submitted a RAR that: certifies that the remedial requirements have been achieved; defines the Site boundaries; describes all Engineering and Institutional Controls applicable to the Site; includes a Site Management Plan; and describes the remedial activities including any changes from the RAWP;
21. Submitted a Site Management Plan (SMP) for long-term management of residual soil, including plans for inspection and certification of the performance of Engineering

- Controls and Institutional Controls. Inspections will be performed annually. Inspection and Certification reports will be submitted by July 31, 2026 (for calendar years 2016-2025), and by July 31 every tenth year thereafter. Inspection and Certification Reports will cover all calendar years since the prior reporting period; and
22. The property will continue to be registered with an E-Designation by the NYC Department of Buildings. Engineering Controls and Institutional Controls will be managed in compliance with the SMP. Institutional Controls will include prohibition of the following: (1) prohibition of vegetable gardening and farming in residual soil; (2) prohibition of the use of groundwater beneath the site without treatment rendering it safe for the intended use; (3) prohibition of disturbance of residual soil material unless it is conducted in accordance with the SMP; and (4) prohibition of higher levels of land usage than the restricted residential uses addressed by this remedial action without prior notification and approval by OER.

REMEDIAL ACTION REPORT

1.0 OVERVIEW

86-90 Walton Street LLC enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 86-90 Walton Street in East Williamsburg section of Brooklyn, New York. The boundary of the property subject to this Remedial Action is shown in Figure 2 and includes, in its entirety, Brooklyn, Block 2250, Lot 10 (which includes former lots 11 and 12). The Remedial Action was performed pursuant to the OER-approved RAWP in a manner that has rendered the property protective of public health and the environment consistent with its intended use. This RAR describes the remedial action performed under the RAWP. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 Site Location and Prior Usage

The Site is located at 86-90 Walton Street in the East Williamsburg section of Brooklyn, New York, and is identified as Block 2250, Lot 10 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 7,500-square feet (ft²) in size located on the south side of Walton Street between Harrison Avenue and Throop Avenue. The Site is bounded by Walton Street to the north; three, 2-story manufacturing buildings and a 2-story institutional use (Yeshiva) to the west; a 3-story multi-family walk up (92 Walton Street) to the east; and a 4-story multi-family elevator building to the south. A map of the site boundary is shown in Figure 2.

Prior to redevelopment, the Site was developed with a single-story commercial building historically occupied by a truck builder, truck body work use, a trucking company and a warehouse.

1.2 Summary of Redevelopment Plan

The Site has been redeveloped with a new 7-story residential building with a full cellar. The new building covers approximately 65% of the lot and the remaining section in the southern portion of the lot consists of a concrete-capped rear courtyard. The current zoning designation for the Site is R7A. The new use is consistent with existing zoning for the property.

Excavation for the cellar level for the new building took place across the first 65 feet, approximately 4,875 ft², of the Site to a depth of 7 feet 6 inches below sidewalk grade with excavation to 12 ft in the center portion of the Site for an 8 foot 5-inch by 9 foot 11-inch elevator pit. Additional excavation was performed to approximately 1 foot for the rear 1,875 ft² portion of the Site in the courtyard area, with an additional excavation to approximately 3 feet below grade for a 16 foot by 16 foot area for the installation of a storm drain within the rear yard. A sloped excavation from grade to approximately 7 feet 6 inches was performed for a 750 ft² section between the new building and the rear yard. A total of 2,600.23 tons of soil was excavated and removed and disposed to an approved off-site facility. As part of the redevelopment, a waterproofing membrane/vapor barrier was installed beneath the cellar slab, elevator pit slab and foundation walls to grade. Layout of the proposed site development is presented in Figure 3.

1.3 Description of Surrounding Property

The area immediately surrounding Site consists of a mix of new and older residential buildings, a Yeshiva to the west, and a school (IS 318) across Walton Street. Figure 4 shows the surrounding land usage of the adjacent properties listed below as well as additional properties located up to 500 feet away from the Site. No hospitals or daycare facilities are located within a 250 ft radius of the Site.

Surrounding Property Usage

Direction	Property Description
North – Opposite side of Walton Street	<u>Block 2246, Lot 1 – 140 Lorimer Street</u> A 120,000 ft ² school, Intermediate School 318.
South – Adjacent Properties	<u>Block 2250 Lot 7501 – 165 Harrison Avenue</u> <u>A 13,125 ft² lot developed with four 4-story multi-family elevator buildings</u>
East – Adjacent Property	<u>Block 2250, Lot 13 – 92 Walton Street</u> A 2,500 ft ² lot developed with a 3-story multifamily walk up with a small front yard and the building located on the rear of the lot.
West – Adjacent Property	<u>Block 2250, Lots 4, 6, 7, and 8 – 157 and 161 Harrison Avenue</u> Three 2,500 ft ² lots (6-8) developed with a 2-story manufacturing building. A 5,000 ft ² lot developed with a Yeshiva.

1.4 Remedial Investigation

A remedial investigation was performed and the results are documented in a document called “*Remedial Investigation Report, 86-90 Walton Street*” dated March 2015 (RIR) by EBC.

Summary of Past Uses of Site and Areas of Concern

- EBC was able to establish the following site history based upon Sanborn maps dating back to 1887: Prior to 1887, the Site was developed with a 3-story residential building on Lot 10; a 3-story residential building with storefront on lot 11; and a 1-story blacksmith on Lot 12.
- In 1918, both buildings on lots 10 and 11 are shown as residences with a truck builder located on Lot 12.
- By 1947, the building on lot 10 was removed.
- By 1977, the building on lot 11 was removed.
- From 1986 through 1996, the building on lot 12 was identified as a manufacturing use.
- From 2001 through 2007, the building on lot 12 was identified as a warehouse.

Lots 10 and 11 were listed with residential tenants in historical city directories for intermittent years from 1934 through 1973. Lot 12 was listed with commercial uses, including a wagon builder (1934), a truck body works (1960), and by a trucking company (1973).

The AOCs identified for this Site included:

1. The presence of historic fill material to depths as great as 5 feet;
2. The Site was utilized by a truck builder from 1918 to at least 1960; and
3. The Site was utilized as a trucking company from at least 1973 to through the mid-1980s.

Summary of the Work Performed under the 2015 Remedial Investigation

EBC performed the following scope of work for 86-90 Walton Street:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed 6 soil borings across the Site, and collected 12 soil for chemical analysis from the soil borings to evaluate soil quality;

3. Installed 3 groundwater monitoring wells throughout the Site and collected 3 groundwater samples and one duplicate groundwater sample for chemical analysis to evaluate groundwater quality; and
4. Installed 5 soil vapor probes across the Site and collected 5 samples for chemical analysis.

Summary of Environmental Findings

1. The elevation of the Site is approximately 16 feet.
2. Depth to groundwater is estimated to be approximately 7 feet below sidewalk grade.
3. Regional groundwater flow is generally east/northeast.
4. Depth to bedrock is at the Site is greater than 100 feet.
5. The stratigraphy of the Site from the surface down consists of historic fill material to depths as great as 5 feet, underlain by native brown or grey silty sand.
6. Soil/fill samples results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives and Restricted Residential Soil Cleanup Objectives as presented in 6NYCRR Part 375-6.8 and CP51. Several VOCs, including 1,2,4-Trimethylbenzene (1 µg/kg), 2-isopropyltoluene (590 µg/kg), 4-methyl-2-pentanone (1.3 µg/kg), carbon disulfide (1.3 µg/kg), chloroform (1.1 µg/kg), methyl ethyl ketone (max. of 26 µg/kg), naphthalene (390 µg/kg), n-Butylbenzene (770 µg/kg), sec-butylbenzene (1,200 µg/kg), tert-butylbenzene (330) were detected in trace amounts in the soil samples. Two VOCs including acetone (120 µg/kg) and methylene chloride (max [maximum]. of 120 µg/kg) were detected above Unrestricted Use SCOs. Five SVOCs, including benz(a)anthracene (max. of 3,600 µg/kg), benzo(a)pyrene (max. of 2,900 µg/kg), benzo(b)fluoranthene (max. of 4,100 µg/kg), dibenz(a,h)anthracene (350 µg/kg), and indeno(1,2,3-cd)pyrene (max. of 1,300 µg/kg), were detected above Restricted Residential Use SCOs within two of six shallow soil samples. No SVOCs exceeded Unrestricted Use SCOs in deeper soils. One pesticide, 4,4'-DDT (max. of 14 µg/kg) and one PCB, PCB-1254 (430 µg/kg) were detected above Unrestricted Use SCOs. Several metals including barium (max. 652 mg/kg), cadmium (max. of 8.48 mg/kg), chromium (52.1 mg/kg), copper (max. of 462 mg/kg), lead (max. of 1,500 mg/kg), mercury (max. of 3.57 mg/kg), nickel (30.7 mg/kg),

and zinc (max. of 569 mg/kg) exceeded Unrestricted Use SCOs within all shallow and one deep soil samples. Of these metals, barium, cadmium, copper, lead, and mercury also exceeded Restricted Residential Use SCOs. Overall, the soil results were consistent with data identified at sites with urban fill material in NYC.

7. Groundwater samples results were compared to the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (GQS) for Class GA (drinking water). The samples showed no PCBs or pesticides at detectable concentrations. No VOCs were detected above GQS; however, acetone (max. of 8.8 µg/L), chloroform (max of 0.73 µg/L), chloromethane (0.49 µg/L), and isopropylbenzene (max of 0.92 µg/L), were detected at trace amounts in all three groundwater samples and the trip blank. Five SVOCs including, benzo(a)anthracene (max. of 0.08 µg/L), benzo(a)pyrene (max. of 0.03 µg/L), benzo(b)fluoranthene (max. of 0.05 µg/L), benzo(k)fluoranthene (0.02 µg/L), and chrysene (max. of 0.27 µg/L) were detected above the GQS in the three groundwater samples. Several metals were identified, but only iron (max. of 1.47 mg/L), manganese (max. of 0.523 mg/L) and sodium (max. of 26.2 mg/L) exceeded their respective GQS in the three groundwater samples.
8. Soil vapor samples collected during the 2014 EBC RI were compared to the New York State Department of Health (NYSDOH) Final Guidance on Soil Vapor Intrusion (October 2006) Matrix 1 and Matrix 2 values. Samples indicated petroleum-related VOCs were present at low concentrations and chlorinated VOCs present at low to moderate concentrations. The total concentration of petroleum-related VOCs (BTEX) ranged from 30.43 µg/m³ to 102.66 µg/m³. The chlorinated VOC, trichloroethylene (TCE) was not detected in any of the soil gas samples. Tetrachloroethylene (PCE) was detected in four of the five soil gas samples ranging in concentration from 0.339 µg/m³ to 1.15 µg/m³. The NYSDOH Final Guidance on Soil Vapor Intrusion (October 2006) notes monitoring is the recommended action for a PCE concentration above 100 µg/m³ in soil gas. Carbon tetrachloride (maximum of 0.629 µg/m³) was detected in all five of the soil gas samples. The TCE, carbon tetrachloride and TCA concentrations are below the monitoring level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

For more detailed results, consult the RIR found in Appendix A.

2.0 DESCRIPTION OF REMEDIAL ACTIONS

The remedial action was performed in accordance with an OER approved Remedial Action Work Plan and achieved the remedial action objectives established for the project. The remedial action was evaluated in an alternatives analysis and was determined to be protective of human health and the environment, compliant with standards, criteria, and guidelines (SCGs), effective in the short-term, effective in the long-term, capable of attaining appropriate levels of reduction of toxicity, mobility, or volume of contaminated material, implementable, cost effective, acceptable to the community, consistent with land uses, and sustainable.

- A summary of the milestones achieved in the Remedial Action is as follows:
- A Pre-Application Meeting was held on December 9, 2014.
- A Remedial Investigation (RI) was performed in March 2015. A RI Report dated March 2015 was prepared to evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP).
- A Site Contact List was established and a RAWP dated April 2015 was prepared and released with a Fact Sheet on April 1, 2015, for a 30-day public comment period.
- The RAWP with a Stipulation List dated May 18, 2015, was approved by the New York City Office of Environmental Remediation (OER) on May 18, 2015.
- NYC DOHMH approved remedial action on September 23, 2015.
- A pre-construction meeting was held on June 9, 2015.
- A Fact Sheet providing notice of the start of the remedial action was issued on May 4, 2016. The remedial action was begun on May 23, 2016 and completed in August 2016.

The remedial action consisted of the following actions:

1. Prepared a Community Protection Statement and implemented a Citizen Participation Plan;
2. Performed a Community Air Monitoring Program for particulates and volatile organic carbon compounds. PID readings in the range of 130 ppm were observed within the center of the Site at approximately 9 feet below grade during the excavation of the elevator pit. A slight petroleum-like odor was noted within the work zone, but no odors or elevated PID readings were recorded during implementation of the CAMP;

3. Established Site-Specific (Track 4) Soil Cleanup Objectives (SCOs). The following Track 4 Site-Specific SCOs were utilized: SVOCs 150 ppm, barium 600 ppm, lead 1,000 ppm, and mercury 2.5 ppm;
4. Mobilized site security, equipment (May 9, 2016), utility mark outs and marking & staking excavation areas;
5. Performed Waste Characterization Study prior to excavation activities. Three 5-point composite samples and three grab samples for waste characterization soil samples were collected on March 8, 2016. Waste characterization samples were collected at a frequency dictated by disposal facility(s) Hazardous (TCLP) lead was identified. To further delineate lead area, nine additional samples were obtained from test pit. Results identified two lead hotspots;
6. Excavation of the fill material began on May 9, 2016 and was completed by June 20, 2016. The following excavations were performed to remove contaminated soils and for development purposes:
 - First 65 feet of site (approximately 4,875 ft²) was excavated to approximately 7 feet 6 inches below grade; with an excavation to 12 ft in the center portion of the Site for an 8 foot 5-inch by 9 foot 11-inch elevator pit;
 - The 1,875 ft² rear yard was excavated to approximately 1 foot below grade;
 - excavated an area 16 foot by 16 foot to three foot below grade for the installation of a storm drain within the rear yard section of the site;
 - A sloped excavation from grade to approximately 7 feet 6 inches was performed for a 750 ft² section between the new building and the rear yard;
 - Additional excavations were performed to approximately 10 feet below grade adjacent to the elevator pit where petroleum-impacted soils were encountered at approximately 9 feet below grade; and
 - and to 10 below grade for a 3 foot by 3 foot area in the northwestern portion of the Site (at the location of endpoint sample EP4A).
7. A total of 2,600.5 tons of soil/fill were excavated and removed from the property. Transported and disposed all 2600 tons of soil/fill material at permitted facilities in

accordance with all applicable laws and regulations for handling, transporting, and disposing, and the RAWP to the following facilities:

- excavated 1,657.77 tons of non-hazardous historic fill material/soil and disposed at the former NJ Zinc Site located at 1120 Mauch Chunk Road, Palmerton, New Jersey;
 - excavated 370.03 tons of clean native soil (from June 6, 2016 to June 8, 2016) for disposal at the Impact Reuse & Recovery Center (IRRC) located at 1000 Page Avenue, Lyndhurst, New Jersey; and
 - excavated 572.43 tons of hazardous fill/soil for disposal at Clean Earth of North Jersey (located at 105 Jacobus Avenue, Kearny, New Jersey).
8. Screened excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
 9. Conducted materials management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
 10. Removed a 550-gallon underground storage tank (UST) located in the center of the Site. Certification of tank removal was notarized on June 7, 2016.
 11. Daily reports were submitted during days of excavation activities starting from March 8, 2016 through August 2, 2016.
 12. Collected and analyzed four end-point samples to determine the performance of the remedy with respect to attainment of Track 4 Site-Specific SCOs. Track 4 SCOs for this project were achieved for EP1 through EP3; however, EP4 failed to meet the Track 4 SCOs for lead; therefore, EP4 was excavated an additional two feet and re-sampled. Additional clean sample was obtained from the tank bottom area in rear yard. Track 4 Site Specific SCOs were achieved for the Site.
 13. As part of development, installed a waterproofing/vapor barrier system. The waterproofing membrane/vapor barrier Grace Preprufe® 300R (a 1.2 mm /0.046in thick HDPE film with a pressure sensitive adhesive that bonds to the poured concrete) was installed directly beneath the cellar slab and beneath the elevator pit. Grace Preprufe®160R (a 0.8 mm /0.032in thick HDPE film) was installed on the exterior

eastern and western foundation walls to grade. Grace Procor® 75 waterproofing was sprayed at a thickness of 60-mil on the exterior of the northern and southern foundation walls. The waterproofing contractor for the Procor spray was Drip Drop Waterproofing. The Grace 300R/160R waterproofing membrane was installed by Braga Corporation.

14. As part of development, installed a composite cover consisting of the following:
 - Cellar Slab – The building cellar foundation consisting of the following:
 1. 30-inch thick concrete slab underlain by a 46-mil waterproofing membrane/vapor barrier (Grace Preprufe® 300R HDPE) on a 2-inch gravel sub-base; and
 2. A 2-inch layer of ¾-inch virgin mined blue stone installed below the footings.
 - Rear Courtyard - 6-inch thick concrete slab.

The contractor for the cover construction was Braga Corporation.

15. Imported approximately 49.95 tons of ¾-inch clean blue stone (placed under cellar slab) from Impact Reuse and Recovery Center (IRRC) located at 1000 Page Avenue, Lyndhurst, New Jersey.
16. Demarcation Layer under the concrete slab in rear yard was not installed.
17. Performed all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
18. Implemented stormwater pollution prevention measures in compliance with applicable laws and regulations.
19. Submitted a Sustainability Report;
20. Submitted a RAR that: certifies that the remedial requirements have been achieved; defines the Site boundaries; describes all Engineering and Institutional Controls applicable to the Site; includes a Site Management Plan; and describes the remedial activities including any changes from the RAWP;
21. Submitted a Site Management Plan (SMP) for long-term management of residual soil, including plans for inspection and certification of the performance of Engineering

- Controls and Institutional Controls. Inspections will be performed annually. Inspection and Certification reports will be submitted by July 31, 2026 (for calendar years 2016-2025), and by July 31 every tenth year thereafter. Inspection and Certification Reports will cover all calendar years since the prior reporting period; and
22. The property will continue to be registered with an E-Designation by the NYC Department of Buildings. Engineering Controls and Institutional Controls will be managed in compliance with the SMP. Institutional Controls will include prohibition of the following: (1) prohibition of vegetable gardening and farming in residual soil; (2) prohibition of the use of groundwater beneath the site without treatment rendering it safe for the intended use; (3) prohibition of disturbance of residual soil material unless it is conducted in accordance with the SMP; and (4) prohibition of higher levels of land usage than the restricted residential uses addressed by this remedial action without prior notification and approval by OER.

3.0 COMPLIANCE WITH REMEDIAL ACTION WORK PLAN

3.1 Construction Health & Safety Plan (CHASP)

The remedial construction activities performed under this program were in compliance with the Construction Health and Safety Plan and applicable laws and regulations. The Site Safety Coordinator was Kevin Waters - EBC.

3.2 Community Air Monitoring Plan (CAMP)

The Community Air Monitoring Plan provided for the collection and analysis of air samples during remedial construction activities to ensure proper protections were employed to protect workers and the neighboring community. Monitoring was performed in compliance with the Community Air Monitoring Plan in the approved RAWP. The results of Community Air monitoring are shown in Appendix E.

3.3 Soil/Materials Management Plan

The Soil/Materials Management Plan in the RAWP provided detailed plans for managing all soils/materials that were disturbed at the Site, including excavation, handling, storage, transport and disposal. It also included a series of controls to assure effective, nuisance free remedial activity in compliance with applicable laws and regulations. Remedial construction activities performed under this program were in full compliance with the SMMP in the approved RAWP.

3.4 Storm-Water Pollution Prevention

Storm water pollution prevention included physical methods and processes to control and/or divert surface water flows and to limit the potential for erosion and migration of Site soils, via wind or water. Remedial construction activities performed under this program were in full compliance with methods and processes defined in the RAWP for storm water prevention and applicable laws and regulations.

3.5 Deviations from the Remedial Action Work Plan

Deviations from the Remedial Action Work Plan are summarized below:

- The excavation for the new building's cellar was increased to a final excavation depth of 7 feet 6 inches below grade for the cellar and to 12 feet below grade for the elevator pit.
- A stairwell for maintenance use was added to the redevelopment plan in the rear of the cellar. This addition required additional excavation at a 1:1 slope from the rear yard to the final excavation depth.
- The RAWP specified the Grace Preprufe® 300R and 160R waterproofing membrane/vapor barrier for the Site. The waterproofing membrane/vapor barrier that was installed at the Site consisted of Grace Preprufe 160® on the exterior of the eastern and western foundation walls to grade; Grace Preprufe® 300R beneath the cellar slab and elevator pit; and Grace Procor® 75 applied to the exterior of the northern and southern cellar foundation walls to grade. Procor® 75 is a two component, synthetic rubber, cold vulcanized, fluid applied waterproofing membrane. OER was not notified of the change in material. The same design for the originally proposed vapor barrier was followed; Grace Preprufe® 160R or Procor® 75 was installed behind the foundation walls as

proposed in the Remedial Action Work Plan; therefore, providing the same protection as the previously proposed system. This deviation of the vapor barrier brand from the approved Remedial Action Work Plan is protective of public health and the environment.

No other significant deviations from the Remedial Action Work Plan occurred during implementation of the Remedial Action Work Plan.

4.0 REMEDIAL PROGRAM

4.1 Project Organization

The PE responsible for implementation of the remedial action for this project was Ariel Czemerinski P.E., AMC Engineering. On-Site air monitoring in accordance with the CHASP and CAMP, soil screening and soil sampling was performed by EBC. The Qualified Environmental Professional which implemented the remedial action was Kimberly Somers, P.G., Project Manager-EBC.

The excavation and foundation contractor was Braga Corporation, and the developer was JIH Builders Group LLC.

4.2 Site Controls

Site Preparation

Plans for the building alteration for 86-90 Walton Street (NYC DOB Job number NB-321064389) were approved by NYC DOB on December 26, 2014. Waste characterization soil sampling was performed on March 8, 2016, prior to mobilization to obtain soil disposal approval and to minimize the need for on-Site soil stockpiles. On May 6, 2016, an IHI Compact Excavator was mobilized to the Site to begin excavation of on-site soil. A larger excavator (Doosan Dx300LC) was mobilized to the Site on May 23, 2016 to replace the compact excavator.

Soil Screening

All intrusive soil excavation activities were overseen by an EBC qualified environmental professional (QEP). In addition to extensive sampling and chemical testing of soils on the Site, excavated soil was screened continuously using hand-held instruments, by sight, and by smell to ensure proper material handling and management, and community protection. Soil consisting of historic fill was excavated to depths as great as 5 feet below grade for the new building. Native soil was encountered at the base of the excavation.

Black stained soils with PID readings in the range of 130 ppm were observed within the center of the Site at approximately 9 feet below grade during the excavation of the elevator pit. Visibly stained soils were excavated to 10 feet and stockpiled on polysheeting (approximately 18 cy).

EBC field screened the bottom of the excavation and collected one soil sample (sample ID “Elevator Pit Bottom”) from 12 feet below grade for laboratory analysis of VOC via EPA Method 8560 (CP-51 list) and SVOCs via EPA Method 8270 (CP-51 list). The laboratory results of the sample are summarized in Tables 1 (VOCs) and 2 (SVOCs). The results of the soil sample indicated that no further excavation beyond 10 feet was required. The stockpile of the impacted soils was disposed to the NJ Zinc Site (Palmerton, NJ).

All other soil inspected showed no visible or olfactory evidence of contamination.

Stockpile Management

For the majority of the project, soil was excavated from the ground and live loaded into trucks to eliminate the need for stockpiling. Any soil stockpiles that were generated and kept overnight were covered with 6-mil poly-sheeting to prevent dust. Stockpile covers were inspected by the EBC QEP. Stockpiles at the site consisted of hazardous soils in preparation for trucking the following day and soils from beneath the tank location to segregate soils until laboratory results of the soil was received.

Truck Inspection

A stabilized construction entrance was constructed at the front of the Site, which exited and entered from Walton Street. The stabilized entrance was constructed of a bed of crushed concrete which was sloped back toward the interior of the Site. The stabilized entrance was inspected on a daily basis during soil loading activities and reinforced as needed with additional concrete material to prevent the accumulation of ruts, mud or soil, and to minimize the potential for impacted soil to be dispersed beyond the Site boundary.

Before exiting the Site, trucks were examined for evidence of contaminated soil on the undercarriage, body, and wheels. If soil/debris was observed, it was removed utilizing brooms or shovels.

Site Security

An 8-ft high construction fence was constructed across the front of the Site. The fence was locked with a chain and padlock during non-working hours/days.

Nuisance Controls

Slight petroleum odors were encountered during the excavation of the black stained soils in the center portion of the Site at approximately 9 feet below grade. The petroleum-impacted soil was immediately excavated, stockpiled, and covered with plastic sheeting until it could be loaded into trucks for disposal. A slight petroleum-like odor was noted within the work zone, but no odors or elevated PID readings were recorded during implementation of the CAMP.

Dust was minimized by excavating and live-loading directly into trucks, and covering stockpiles with 6-mil poly sheeting overnight during off-work hours.

Reporting

Daily status reports were prepared and submitted to the OER project manager for construction days in which soil disturbance activities were performed (soil excavation/loading). Daily reports were submitted during days of excavations from March 8, 2016 to August 2, 2016. A copy of each of the daily status reports is included in Appendix D.

Digital photographs of the remedial action are included in Appendix C.

4.3 Materials Excavation and Removal

4.3.1 Waste Characterization Soil Sampling

Waste characterization soil sampling for the Site was performed on March 8, 2016. Five test pits were excavated across the Site. Historic fill (brown silty sand with brick, concrete, and wood) was encountered from grade to a depth of approximately 5 feet below grade, underlain by brown native sand to 8 feet below grade. EBC formed two 5-point composite soil samples representing the interval 0 to 3 feet and the 3-5 feet below grade intervals; and one 5-point composite soil sample representing the interval 5 feet to 8 feet below grade interval. The laboratory results reported TCLP lead concentrations at hazardous levels (15.2 mg/Kg). In an effort to delineate the extent of the hazardous soil, nine test pits were excavated across the Site to from the 0-3 foot interval. One grab sample from each test pit was retained for laboratory analysis of TCLP lead and total lead. Although laboratory results of the delineation samples did not identify lead at hazardous levels in any of the grab samples, two apparent lead hotspots were identified. Based on this data, the mid-to-southern portion (0-3 foot interval) of the Site was disposed of a

hazardous. Prior to removal of the hazardous soil layer, an EPA ID number NYR000226365 was obtained to ensure proper disposal. New waste characterization samples were collected from five test pits in the mid to lower portion of the Site. Lab results of the samples from this portion of the Site were not reported with lead at hazardous levels and therefore, this material was classified as non-hazardous.

The laboratory results, profile form, Historic Fill & Soil Disposal Notification Form, and a formal letter describing the sampling process and material type, was forwarded to Clean Earth to obtain soil disposal approval for the 0-3 feet below grade hazardous soil at Clean Earth of North Jersey. The laboratory results, profile form, Historic Fill & Soil Disposal Notification Form, and a formal letter describing the sampling process and material type, was forwarded to Impact Environmental to obtain soil disposal approval for the 0-3 feet below grade non-hazardous and 3-5 feet non hazardous fill material to the NJ Zinc Site (Palmerton, NJ). A copy of the Historic Fill & Soil Disposal Notification Form, and the soil disposal request letters with the sampling plan and laboratory results are attached in Appendix G. Copies of the soil disposal acceptance letters issued by Clean Earth for the hazardous historic fill layer and Impact Environmental for the non-hazardous fill layer are attached in Appendix H.

The laboratory results, profile form, Historic Fill & Soil Disposal Notification Form, and a formal letter describing the sampling process and material type, was forwarded to Impact Reuse and Recovery Center (IRRC) to obtain soil disposal approval for the native soil layer (5 to 8 feet below grade). A copy of the Historic Fill & Soil Disposal Notification Form, and the soil disposal request letter with the sampling plan and laboratory results is attached in Appendix G. A copy of the soil disposal acceptance letter issued by Impact Environmental for the native soil (5 to 8 feet) is also attached in Appendix H.

4.3.2 Historic Fill Excavation

Historic fill material was encountered across the Site from grade to depths as great as 5 feet below grade. Excavation of the fill material began on May 9, 2016 and was completed by June 20, 2016. Historic fill material was excavated from the across the Site and segregated from petroleum contaminated and clean native soil. Approximately 1,657.77 tons of historic fill

material was transported to the NJ Zinc Site located at 1120 Mauch Chunk Road, Palmerton, New Jersey.

4.3.3 Hazardous Soil Removal

Waste characterization sampling of the 0-3 foot interval showed the presence of hazardous lead soil in the mid to upper portions of the Site. The laboratory results, profile form, Historic Fill & Soil Disposal Notification Form, and a formal letter describing the sampling process and material type, was forwarded to Clean Earth of North Jersey to obtain soil disposal approval for hazardous lead soil. A copy of the Historic Fill & Soil Disposal Notification Form, and the soil disposal request letter with the sampling plan and laboratory results is attached in Appendix G. A copy of the soil disposal acceptance letter issued by Clean Earth of North Jersey for the hazardous lead soil is attached in Appendix H. On May 23, 2016 through May 26, 2016, the hazardous lead soil was loaded onto trucks (approximately 572.43 tons) for disposal at Clean Earth of North Jersey located at 105 Jacobus Avenue, Kearny, New Jersey.

4.3.4 Native Soil Excavation

From June 6, 2016 to June 8, 2016, a total of approximately 370.03 tons of clean native soil was excavated from the 5 to 8 feet below grade for the new building's cellar level for transport to the Impact Reuse and Recovery Center, located at 1000 Page Avenue, Lyndhurst, New Jersey, New Jersey. A map showing the location where excavations were performed is shown in Figure 5.

After excavation of the Site was completed, EBC collected four endpoint soil samples. The approximate collection location of the endpoint soil samples is shown on Figure 6. No material was reused on-Site.

4.3.5 Endpoint Sample Results

Following excavation for the cellar level, EBC collected four endpoint soil samples (EP1 through EP4) and one duplicate endpoint soil sample (collected from EP1) on June 6th and 9th 2016. Dedicated disposable sampling equipment was utilized to collect each endpoint sample, eliminating the need for field equipment (rinsate) blanks. The locations of the endpoint soil samples are shown on Figure 6.

The endpoint soil samples were appropriately packaged, placed in a cooler and picked up by laboratory courier for transport to the analytical laboratory. The samples were containerized in laboratory provided glassware and shipped in plastic coolers preserved utilizing ice or “cold-paks” to maintain a temperature of 4°C.

Endpoint samples EP1, EP2, EP3 and EP4, as well as the duplicate sample, were submitted to Phoenix Environmental Laboratories, Inc. located at 587 East Middle Turnpike, in Manchester, CT 06040 (NYS ELAP Certification No. 11301) for laboratory analysis utilizing the following methodology:

- Semi-volatile organic compounds by EPA Method 8270; and
- Target Analyte List metals.

A copy of each of the laboratory reports for the endpoint soil samples is attached in Appendix F. A tabular summary of the end-point soil sample results is included on Table 2 (SVOCs) and Table 4 (metals). Track 4 SCOs for this project were achieved for EP1 through EP3; however, EP4 failed to meet the Track 4 SCOs for lead; therefore, EP4 was excavated an additional 2 feet and re-sampled for metals as EP4A. Track 4 SCOs were achieved for the Site.

4.4 Materials Disposal

Non-hazardous fill material was excavated across the entire building footprint to depths of 5 feet below grade; and from approximately 1 to 5 feet in the rear courtyard and transported to the former NJ Zinc Site located at 1120 Mauch Chunk Road, Palmerton, New Jersey. The former NJ Zinc Site is a Regulated Fill Site operating under New Jersey Department of Environmental Protection (NJDEP) Permit No. WMGR096NE003. From June 6, 2016, to June 20, 2016 a total of approximately 1,657.77 tons of non-hazardous soil/fill was transported the former NJ Zinc Site. Copies of each of the non-hazardous manifests are included in Appendix I.

A total of 572.43 tons of hazardous lead soil/fill material was loaded into 10-wheel dump trucks for transport to the Clean Earth of North Jersey (CENJ) located at 105 Jacobus Avenue, Kearny, New Jersey, under approval number 163080645. The CENJ facility is a Class B Recycling Center operating under NJDEP Permit No. HWP140002. The hazardous material was removed from the Site under USEPA Hazardous Waste Generator ID No. NYR000226365. Copies of

each of the hazardous manifests and associated scale tickets are included in Appendix K.

From June 6, 2016 to June 8, 2016, a total of 370.03 tons of clean native soil was excavated to 7 feet 6 inches below grade for the building footprint, to 12 feet at the location of the elevator pit, and to approximately 3 feet at the rear yard storm drain location, and loaded into 10-wheel dump trucks for transport to Impact Recovery and Reuse Center (IRRC) (located at 1000 Page Avenue, Lyndhurst). The IRRC (ID# 121888) is a Class B Recycling Center operating under NJDEP Permit No. CBG070002. Copies of each of the non-hazardous manifests and associated scale tickets are included in Appendix J. A scale report produced by IRRC is included in Appendix J. The scale report summarizes the shipping date, manifest number, trucking company name and truck number, and tonnage for each truck load.

The volume/tonnage and destination of material removed and disposed off-Site is presented below:

Table 6 - Disposal Quantities and Disposal Facilities

Destination	Type of Material	Quantity (tons)
NJ Zinc Site 1120 Mauch Chunk Road, Palmerton	Historic Fill	1,657.77
Clean Earth of North Jersey 105 Jacobus Avenue, Kearny, New Jersey	Hazardous Lead Soil/Fill	572.43
Impact Reuse and Recovery Center 1000 Page Avenue, Lyndhurst	Clean Native Soil	370.03

4.5 Backfill Import

On May 23, 2016, two truck loads (approximately 40 yards) of 3-inch stone were imported to Site for the stabilized truck ramp. This stone was later removed from the Site during the final disposal for the fill layer to the former NJ Zinc Site facility. Delivery tickets for the 3-inch stone imported to the Site are included in Appendix N.

On June 20, 2016, approximately 49.95 tons of ¾-inch clean blue stone was imported to the Site from Impact Reuse and Recovery Center (IRRC) located at 1000 Page Avenue, Lyndhurst, New Jersey. The ¾-inch clean blue stone was laid beneath the cellar slab at a thickness of approximately 6 inches for the slab subbase. Copies of the manifests for the stone imported to

the Site are included in Appendix N.

No other backfill was imported to the Site.

5.0 ENGINEERING CONTROLS

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

Composite Cover System

Exposure to residual soil/fill is prevented by an engineered Composite Cover System that has been built on the Site. This Composite Cover System is comprised of the following:

- 30-inch thick concrete cellar slab underlain by 46-mil waterproofing membrane/vapor barrier (Grace Preprufe® 300R HDPE) and 2 inch layer of ¾" gravel sub-base; and
- 6-inch thick concrete slab capping the entire rear yard.

The Composite Cover System was installed by the foundation contractor, Braga Corporation. Figure 8 shows the as-built design for each remedial cover type built at the Site. Photographs of construction of the Composite Cover System are included in Appendix C.

Vapor Barrier System

Migration of soil vapor is mitigated with a combination of building slab and waterproofing system/vapor barrier. The waterproofing membrane/vapor barrier Grace Preprufe® 300R was installed directly beneath the cellar slab and elevator pit. The Grace Preprufe® 300R is a 1.2 mm /0.046in thick HDPE film with a pressure sensitive adhesive that bonds to the poured concrete. The Grace Preprufe®160R, a 0.8 mm /0.032in thick HDPE film, was installed on the exterior eastern and western foundation walls to grade. Grace Procor® 75 waterproofing (spray grade) with Hydroduct® drainage composite boards was applied on the northern and southern exterior foundation walls at a thickness of 60-mil. Procor® 75 is a two component, synthetic rubber, cold vulcanized, fluid applied waterproofing membrane. The waterproofing contractor for the Procor spray was Drip Drop Waterproofing. The Grace 300R/160R waterproofing membrane was installed by Braga Corporation.

All seams, penetrations, and repairs were sealed utilizing the tape method, in accordance with to the manufacturer's installation instructions. Photos of the waterproofing membrane/vapor barrier being installed are included in Appendix C and the approximate layout is shown on Figure 7.

6.0 INSTITUTIONAL CONTROLS

A series of Institutional Controls are required under this Remedial Action to implement, maintain, inspect and certify Engineering Controls and prevent future exposure to residual contamination by controlling disturbances of the subsurface soil. Adherence to these Institutional Controls is required under this remedial action and will be implemented under the Site Management Plan included in this RAR. These Institutional Controls for the Site are:

- (1) The property will continue to be registered with an E-Designation with the NYC Department of Buildings. Property owner and property owner's successors and assigns are required to comply with the approved SMP;
- (2) Compliance with an OER-approved Site Management Plan including procedures for appropriate operation, maintenance, inspection, and certification of performance of EC's and IC's. The property owner and property owner's successors and assigns will inspect EC's and IC's and submit to OER a written certification that evaluates their performance in a manner and at a frequency to be determined by OER;
- (3) Engineering Controls will not be discontinued without prior OER approval;
- (4) OER has the right to enter the Site upon notice for the purpose of evaluating the performance of EC's and IC's;
- (5) The Site will be used for restricted residential use and will not be used for a higher level of use without prior approval by OER.
- (6) Vegetable gardens and farming in residual soil/fill on the Site are prohibited;
- (7) Use of groundwater underlying the Site without treatment rendering it safe for its intended use is prohibited;
- (8) All future activities on the Site that will disturb residual soil/fill must be conducted pursuant to the Soil/Materials Management provisions of the SMP, or otherwise approved by OER;
- (9) The Site is intended to be used for restricted residential use and will not be used for a higher level of use without prior approval by OER.

7.0 SITE MANAGEMENT PLAN

Site management is the last phase of the remedial process and begins after the approval of the Remedial Action Report (RAR) and issuance of the Notice of Completion (NOC) by OER. It is the responsibility of the property owner (Harrison Walton Property Management LLC) to ensure that all Site management responsibilities are performed. The penalty for failure to implement the SMP includes revocation of the Notice of Completion and all associated certifications and liability protections. If the building is sold, the new owners will be notified of the SMP requirements.

Engineering Controls (ECs) and Institutional Controls (ICs) have been incorporated into this remediation to ensure that the Site remains protective of public health and the environment. EC's provide physical protective measures. ICs provide restrictions on Site usage and provide operation, maintenance, inspection and certification measures. This SMP includes all methods necessary ensure compliance with ECs and ICs required for the property.

The SMP provides a detailed description of procedures required to manage residual material at the Site following the completion of remedial construction in accordance with the NYC Voluntary Cleanup Agreement with OER. This includes: (1) operation and maintenance of Engineering Controls (2) periodic inspections of IC's and EC's and (3) certification of Engineering Controls and Institutional Controls.

ENGINEERING AND INSTITUTIONAL CONTROLS

Engineering Controls

Engineering Controls are employed in the remedial action to address residual materials remaining at the Site. The Site has a two Engineering Controls. These are:

- Soil Vapor Barrier System; and
- Composite Cover System

Operation and Maintenance of the Composite Cover System

The composite cover system is comprised of the cellar's 30-inch thick concrete slab and 2-inch gravel sub-base, and the 6-inch thick concrete cap covering the rear yard. The composite cover system is a permanent engineering control for the Site. The composite cover system does not

require any special operation or maintenance in order to perform as designed in the RAWP. A Soil/Materials Management Plan is included in this Site Management Plan to outline the procedures to be followed in the event that the composite cover system and underlying residual soil/material must be disturbed after the remedial action is complete.

The system will be inspected and its performance certified at specified intervals defined in this SMP. Procedures for the inspection and maintenance of this cover are provided below.

Operation and Maintenance of Vapor Barrier System

Chapter 5 describes the Waterproofing/Vapor Barrier System utilized in this Remedial Action and provides as-built design details and the system location. The Waterproofing/Vapor Barrier System is a permanent Engineering Control for the Site. The Waterproofing/Vapor Barrier System is not visible and cannot be directly inspected; however, it can be inspected in concert with inspection of the building slab and its performance certified at specified intervals defined in this SMP.

The Waterproofing/Vapor Barrier System does not require any special operation or maintenance activities. If the system is breached during future construction activities, the system will be rebuilt by reconstructing the waterproofing membrane layers and sealing the newly constructed materials with equivalent barrier materials in accordance with manufacturer specifications.

Institutional Controls

A series of Institutional Controls 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. These Institutional Controls will be implemented in accordance with the Site Management Plan included in this RAR.

Institutional Controls for this property are:

- (1) The property will continue to be registered with an E-Designation with the NYC Department of Buildings. Property owner and property owner's successors and assigns are required to comply with the approved SMP;

- (2) Compliance with an OER-approved Site Management Plan including procedures for appropriate operation, maintenance, inspection, and certification of performance of EC's and IC's. The property owner and property owner's successors and assigns will inspect EC's and IC's and submit to OER a written certification that evaluates their performance in a manner and at a frequency to be determined by OER;
- (3) Engineering Controls will not be discontinued without prior OER approval;
- (4) OER has the right to enter the Site upon notice for the purpose of evaluating the performance of EC's and IC's;
- (5) The Site will be used for restricted residential use and will not be used for a higher level of use without prior approval by OER.
- (6) Vegetable gardens and farming in residual soil/fill on the Site are prohibited;
- (7) Use of groundwater underlying the Site without treatment rendering it safe for its intended use is prohibited;
- (8) All future activities on the Site that will disturb residual soil/fill must be conducted pursuant to the Soil/Materials Management provisions of the SMP, or otherwise approved by OER;
- (9) The Site is intended to be used for restricted residential use and will not be used for a higher level of use without prior approval by OER.

INSPECTIONS

Engineering Controls and Institutional Controls will be inspected by a qualified environmental professional and certification of inspection shall be submitted by July 31, 2026 (for calendar year 2017-2026), and every ten years thereafter.

The QEP inspections will evaluate the following:

- If Engineering Controls or Institutional Controls employed at the Site continue to perform as designed and continue to be protective of human health and the environment;
- If anything has occurred that impairs the ability of the Engineering Controls or Institutional Controls to protect public health and the environment;
- If changes are needed to the remedial systems or controls;
- If compliance with this SMP has been maintained;

- If site records are complete and up to date; and
- General Site conditions at the time of inspection.

In an addition, if an emergency occurs, such as a natural disaster, or if an unforeseen failure of any of the Engineering Controls occurs, an inspection of the Site will be performed within 30 days to evaluate the Engineering Controls and a letter report of findings will be submitted to OER.

Engineering Control Inspection

Inspection of Composite Cover System

The Site consists of a seven story apartment building with a full cellar level and a rear courtyard. Inspection of the composite cover will consist of a visual inspection of the concrete cellar slab, and the concrete slab covering the southern portion of the property, and concrete slab covering the sidewalk area in front of the building entrance. The inspection will include all accessible locations including the site perimeter and all internal access points on the cellar level. The inspector will document any faulty or defective conditions observed during the inspection, broken or damaged concrete, or any failure in the integrity of the floor that would compromise the ability of the composite cover to perform as an engineering control. Cracks, holes, perforations or slab disturbances shall be recorded on the Inspection Checklist (Appendix O). Inspections by building superintendent will identify any obvious damage to the composite cover system.

Inspection of Vapor Barrier System

The Waterproofing/Vapor Barrier System will be inspected by a qualified environmental professional to assure that it is functioning properly. The Waterproofing/Vapor Barrier System is not visible and cannot be directly inspected. However, it can be inspected in concert with inspection of the building slab. If the inspector observes a failure in the slab that exposes the waterproofing membrane, then the underlying waterproofing membrane will be inspected for any damage, including tears or perforations, which would prevent the waterproofing membrane/vapor barrier from completing its intended purpose. Cracks, holes, perforations or

slab disturbances shall be recorded on the Inspection Checklist (Appendix O) and remediated as appropriate.

Site Use Prohibitions

Inspections to evaluate the status of site use prohibitions will include all of the institutional controls and an evaluation of whether the Site has been used for a higher level of use other than the restricted residential use addressed by the Remedial Action.

INSPECTION AND CERTIFICATION LETTER REPORT

Results of inspections performed during a reporting period and certification of performance of all Engineering Controls and Institutional Controls will be included in an Inspection and Certification Letter Report to be submitted by July 31, 2026 (for calendar years 2017-2026), and by July 31 every tenth year thereafter. Inspection and Certification Letter Reports will be submitted to OER in digital format. The letter report will include, at a minimum:

- Date of inspections;
- Personnel conducting inspections;
- Description of the inspection activities performed;
- Any observations, conclusions, or recommendations;
- Copy of any inspection forms;
- Certification of the performance of Engineering Controls and Institutional Controls, as discussed below; and
- Confirmation of regular periodic inspection of engineering controls by building superintendent.

The certification of the performance of EC's and IC's will establish:

- If Engineering Controls or Institutional Controls employed at the Site continue to be in place and perform as designed and continue to be protective of human health and the environment;
- If anything has occurred that impairs the ability of Engineering Controls or Institutional Controls to protect public health and the environment;
- If changes are needed to the remedial systems or controls;

- If compliance with this Site Management Plan has been maintained;
- If the Site has been used for a higher level of use other than the restricted residential use addressed by the Remedial Action;
- If site records are complete and up to date;
- If the Site continues to be registered as an E-Designated property by the NYC Department of Buildings;
- OER may enter the Site upon notice for the purpose of evaluating the performance of EC's & IC's.

NOTIFICATIONS

Notifications are to be submitted by the property owner to OER as described below:

- 60-day advance notice of any proposed changes in Site use to Unrestricted Use that is not contemplated is the Remedial Action.
- Notice within 30 days of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the Site.

SOIL/MATERIALS MANAGEMENT PLAN

Any future intrusive work that will disturb residual soil/fill beneath the property, including modifications or repairs to the existing composite cover system, will be performed in compliance with this Soil/Materials Management Plan (SMMP). Intrusive work will also be conducted in accordance with the procedures defined in the Community Air Monitoring Plan (CAMP) in this plan and a Construction Health and Safety Plan (HASP). The HASP is the responsibility of the property owner and should be in compliance with NYSDEC DER-10 Technical Guide and 29 CFR 1910 and 1926, and all other applicable Federal, State and City regulations. Intrusive construction work should be compliant with this SMMP and described in the next Inspection and Certification Letter Report.

Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed under the supervision of a Qualified Environmental Professional (QEP). Soil screening will be performed during any future intrusive work.

Stockpile Methods

Stockpiles will be used to isolate excavated soil 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 6-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.

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. Excavated soil will only be reused on-site with prior approval by OER.

Materials Excavation, Load-Out and Departure

The PE/QEP overseeing the remedial action will:

- oversee intrusive 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 management plan;
- ensure that Site maintenance activities and maintenance-related grading cuts will not interfere with, or otherwise impair or compromise the remedial measures established during the remediation construction phase;
- 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 intrusive work.

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.

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.

Outbound truck transport routes are as follows:

- a) Continue northeast on Walton Street, past Throop Avenue to Broadway
- b) Turn left on Broadway continue northwest to Heyward Street
- c) Turn left on Heyward Street continue west to Kent Avenue
- d) Turn Left on Kent Avenue to Flushing Avenue
- e) Turn right on Flushing Avenue and follow signs to Brooklyn Queens Expressway

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.

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 Brooklyn, New York 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.

Documentation associated with disposal of all material will include records and approvals for receipt of the material. 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 retained and included in the following Inspection and Certification Report. A manifest system for off-Site transportation of exported materials will be employed. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

Materials Reuse On-Site

All of the soil excavated during any future repair or construction purposes will be placed in the same excavation it was derived from or will be disposed of off-site unless otherwise approved by OER beforehand.

Repair of Remedial Systems

After completion of invasive work, any damage of the engineering controls (composite cover system, vapor barrier, etc.) will be restored to the original condition established during initial construction.

Import of Backfill Soil from Off-Site Sources

In the event that soil importation is needed for the backfilling purposes, this Section presents the requirements for imported fill materials. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site. The backfill and cover soil quality objectives including NYSDEC Part 375 Track 2 Residential SCOs and groundwater protections standards. A process will be established to evaluate sources of backfill and cover soil to be imported to the Site, and will include an examination of source location, current and historical use(s), and any applicable documentation. Material from industrial sites, spill sites, environmental remediation sites or other potentially contaminated sites will not be imported to the Site.

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

- Clean soil from construction projects at non-industrial sites in compliance with applicable laws and regulations;
- Clean soil from roadway or other transportation-related projects in compliance with applicable laws and regulations;
- Clean recycled concrete aggregate (RCA) from facilities permitted or registered by the regulations of NYS DEC; and
- Virgin quarried material or other materials with an approved Beneficial Use Determination (BUD) from NYSDEC for reuse as clean fill.

All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with provisions in this SMP. The Inspection and Certification Report will report the source of the fill, evidence that an inspection was performed on the source, chemical sampling results, frequency of testing, and a Site map indicating the locations where backfill or soil cover was placed.

Source Screening and Testing

Inspection of imported fill material will include visual, olfactory, and PID screening for evidence of contamination. Materials imported to the Site will be subject to inspection, as follows:

- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
- The PE/QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and
- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.

Composite samples of imported material from the identified clean soil sources will be taken at a minimum frequency of one sample for every 500 cubic yards of material. One composite sample will be collected from each source of virgin quarried material or other material with an NYSDEC approved BUD, unless otherwise approved by OER. Once it is determined that the fill material meets imported backfill or cover soil chemical requirements and is non-hazardous, and lacks petroleum contamination, the material will be loaded onto trucks for delivery to the Site.

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

Fluids Management

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported, and disposed in accordance with applicable laws and regulations. Liquids discharged into the New York City sewer system will receive prior approval by New York City Department of Environmental Protection (NYC DEP). The NYC DEP regulates discharges to the New York City sewers under Title 15, Rules of the City of New York Chapter 19. If discharge

to the City sewer system is not appropriate, the dewatering fluids will be managed by transportation and disposal at an off-Site treatment facility. Discharge of water generated during remedial construction to surface waters (i.e. a stream or river) is prohibited without a SPDES permit issued by NYSDEC.

Storm-water Pollution Prevention

Applicable laws and regulations pertaining to storm-water pollution prevention will be addressed during the remedial program. All existing stormwater systems will be inspected to ensure proper operation.

Odor Control

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

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

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.

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/QEPs.

Noise

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

COMMUNITY AIR MONITORING PLAN

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

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

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

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

CONTINGENCY PLAN

Emergency Telephone Numbers

In the event of any emergency condition pertaining to this remedial system, or if the building slab is disturbed, removed or altered, the Owner's representative(s) should contact the appropriate parties from the contact list below. Prompt contact should also be made to Environmental Business Consultants. These emergency contact lists must be maintained in an easily accessible location at the Site.

Emergency Contact Numbers

Medical, Fire, and Police:	911
One Call Center: 3 day notice required for utility markout	(800) 272-4480
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362

Contact Numbers

Environmental Business Consultants	(631) 504-6000
Office of Environmental Remediation	(212) 788-8841; 311

APPENDIX P

SUSTAINABILITY REPORT

This Remedial Action Work Plan provides for sustainable remediation and redevelopment through a variety of means that are defined in this Sustainability Report.

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 that could impede future redevelopment. Recontamination can arise from future releases that occur within the property or by influx of existing contamination from off-Site.

As a part of construction, a waterproofing system/vapor barrier system was installed to eliminate the risk of future migration of soil vapor contamination from off-Site. In addition, the entire Site is capped with concrete, which would prevent future on-Site spills from impacting sub-surface spills. The area of the Site that utilizes recontamination controls under this plan is 100% of the property, or 4,875 square feet.

Conversion to Clean Fuels. Use of clean fuel improves NYC's air quality by reducing harmful emissions. Natural gas is now utilized as the principal fuel in the new building.

Paperless Brownfield Cleanup Program. Harrison Walton Property Management LLC participated in OER's Paperless Brownfield Cleanup Program. Under this program, submission of electronic documents replaced submission of hard copies for the review of project documents, communications and milestone reports. A best estimate of the mass (pounds) of paper saved under this plan is 25 lbs.

Low-Energy Project Management Program. Harrison Walton Property Management LLC participated in OER's low-energy project management program. Under this program, whenever possible, meetings were held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion

associated with personal transportation. A gross estimate of the number of miles of personal transportation that was conserved in this process is 300 miles.

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. The number of trees planted as part of this redevelopment is 3.