578 5TH AVENUE

BROOKLYN, NEW YORK

Remedial Action Report

NYC VCP Project Number 17CVCP055K
E-Designation Project Number 16HAZ390K

Prepared For:

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JUNE 2019

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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

RCA Recycled concrete Aggregate
SPDES
NYS DEC
DUSR

CERTIFICATION

I, Ray Kahn, certify the following:

- 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 578 5th Avenue, Brooklyn site, site number 17CVCP055K.
- I have reviewed this document, to which my signature and seal are affixed.
  The vapor barrier, and composite cover system implemented as part of construction]constructed 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 vapor barrier, and composite cover system implemented as part of construction constructed during this remedial action were professionally observed by me or by a person under my direct supervision are accurately reflected in the text and drawings for as-built design reported in this Remedial Action Report.
- The OER-approved Remedial Action Work Plan dated January 2017 and Stipulations in a letter dated March 6, 2017 were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquid or other material from the property was taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

Name

Ray Kahn

PE License Number

075099

Signature

Date 11/20/2019

EXECUTIVE SUMMARY

Eight & Eight Development Inc., has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 578 5th Avenue in Park Slope 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 the 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 and complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

Site Location and Background

The Site is located at 578 5th Avenue in the Park Slope section in Brooklyn, New York and is identified as Block 1052 and Lot 46 on the New York City Tax Map. Figure 2 shows the Site location. The Site is 2,500-square feet and is bounded by a 9-story residential building to the northwest, 5th Avenue to the southeast, a 7-story residential building to the northeast, and a one-story medical and dental center to the southwest. Prior to redevelopment, the site contained a 2-story commercial building with a cellar. The building was demolished in January of 2016.

Summary of Redevelopment Plan

The site consists of a new five story building with a basement. The basement occupies the entire site and contains a commercial retail store and utility rooms. This mixed-use building houses 8 residential units on the 2nd-5th floors and has a retail store on the first floor. The building has a ground-floor area of 2,150 square feet, and a 350 square foot (14 feet by 25 feet) rear yard over the cellar and occupies the remainder of the site. The rear yard contains a concrete cover.

The entire site was excavated to a depth of 12 ft bgs and additional excavation was performed to 16 ft bgs for the elevator pit. The basement has a final basement height

of 10 feet. 1,625.43 tons of soil was excavated for the basement and an elevator pit that extends 4 feet beyond the cellar slab. Groundwater was not encountered during excavation.

Summary of Description of Surrounding Property

The surrounding area is mainly residential/commercial buildings. There are three day care facilities within a 500 feet radius from the site: Sofia's Daycare, Park Slope Schoolhouse Child Care Center, Inc. and Yoko's Daycare. No other sensitive uses are located within 500 feet of the Site.

The adjacent properties are listed in the table below.

Surrounding Property Usage

Direction	Property Description
Southwest *Adjacent Property*	One story Medical & Dental Building
Southeast	5th Avenue followed by mixed-use buildings
Northeast *Adjacent Property*	Five story Residential Building
Northwest *Adjacent*	Ten story residential building

Summary of Past Site Uses and Areas of Concern

Based on the available Sanborn Maps dated from 1888 to 2007, the Site was developed with a two story building, as shown on the 1888 Sanborn Map, and was shown consistently to the 2007 Sanborn Map. Based on a review of the city directories, the site was historically used for retail stores ranging from a day spa, travel agency, shoe store and dentist's office. There is only one identified area of concern for the site: the presence of up to 2 feet of historic fill.

Summary of the Work Performed under the Remedial Investigation

ESPL Environmental Consultants Corp, working for Eight and Eight Development Inc., performed the following scope of work:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed three soil borings across the entire project Site, and collected six soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. No groundwater monitoring wells were installed on the Site due to soil boring advancement being meet with refusal between 11 and 14 feet. OER briefed NYSDEC on December 22, 2016 and received groundwater investigation waiver;
4. Installed three soil vapor probes and collected three samples for chemical analysis. One ambient air sample was also collected

Summary of Findings of Remedial Investigation

A remedial investigation was performed and the results are documented in a companion document called "Remedial Investigation Report, 578 5th Avenue", dated November 2016 (RIR).

1. Elevation of the property ranges from 78 to 82 feet above sea level.
2. Depth to groundwater ranges from 35 to 40 feet at the Site.
3. Estimated groundwater flow is generally from south to northwest beneath the Site.
4. Depth to bedrock is approximately 12 feet at the Site.
5. The stratigraphy of the site, from the surface down, consists of 4 feet of soil/fill underlain by 4 feet of sandy silty soil and 4 feet of clay or rock.
6. Soil samples results were compared to New York State Department of Environmental Conservation (NYSDEC) Track 1 Unrestricted Use Soil Cleanup Objectives and Track 2 Restricted Residential Use Soil Cleanup Objectives (SCOs) as presented in 6NYCRR Part 375-6.8. No PCBs were detected during the remedial investigation, and no VOCs or SVOCs were detected above Track 1

Unrestricted Use SCOs. Only one metal, mercury, was encountered in SB-3 (10-11) at 1.1 ppm, which is above Track 2 Restricted Residential SCOs. No other metals were detected above Track 1 SCOs. Pesticides including 4,4'-DDE (max 12 ppb), 4,4'-DDT (max 22 ppb), and dieldrin (max of 170 ppb) were detected above Unrestricted Use SCOs, and aldrin (max of 200 ppb) was detected above Track 2 Restricted Residential SCOs. Overall the results were consistent with historic fill sites in NYC.

7. Groundwater samples were not collected due to refusal encountered at various locations. OER briefed NYSDEC on December 22, 2016 and received groundwater investigation waiver.

8. Soil vapor samples collected during the RI were compared to the monitoring and mitigation levels listed in Vapor Intrusion Matrices listed in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion dated October 2006. Soil vapor samples collected during the RI showed low levels of BTEX compounds (500 $\mu g/m^3$). BTEX compounds were also detected in ambient air at 61 $\mu g/m^3$. Low-level concentrations of chlorinated VOCs were detected. 1,1,1-TCA was detected at 5.9 $\mu g/m^3$, carbon tetrachloride was detected at 0.94 $\mu g/m^3$, tetrachloroethylene (PCE) was detected at 5.31 $\mu g/m^3$, and trichloroethylene (TCE) was detected at 0.52 $\mu g/m^3$. Cis-1,2-dichloroethene, 1,1-dichloroethene and vinyl chloride were not detected in any samples. All of the chlorinated VOCs were detected at levels below their respective monitoring ranges as indicated in the NYSDOH matrices and do not require monitoring or mitigation.

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; addressed applicable standards, criteria, and guidance; reduced mobility, toxicity and volume of contaminants; was cost effective and implementable; and used standard methods that are well established in the industry. The remedial action is effective in the short-term and long-term.

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

- A Pre-Application Meeting was held on June 29, 2016.
- A Remedial Investigation (RI) was performed from September 2016 to October 2016.
- A RI Report was prepared to evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP).
- A Site Contact List was established. A draft RAWP was prepared and released with a Fact Sheet on February 21, 2017 for a 30-day public comment period.
- The RAWP and Stipulation List dated March 6, 2017 was approved by the New York City Office of Environmental Remediation (OER) on March 16, 2017.
- Site briefing was conducted with New York State Department of Environmental Conservation (NYSDEC) and NYC Department of Mental Health and Hygiene (DOHMH) on December 22, 2016.
- NYC DOHMH approved proposed remedial action on May 22, 2017.
- A Pre-Construction Meeting was held on August 2, 2017.
- A Fact Sheet providing notice of the start of the remedial action was issued in August 2017.
- The remedial action was begun in October 4, 2017 and completed in August 2018.

The remedial action consisted of the following tasks:

1. Prepared a Community Protection Statement and implemented a Citizen Participation Plan.
2. Mobilized site security and equipment (October 2017); completed utility mark outs; and marked and staked excavation areas.
3. Performed Waste Characterization Study prior to excavation activities. One waste characterization sample was collected on August 23, 2017. Two additional waste characterization samples were collected December 27, 2017 and one final

sample was collected on January 15, 2018. Waste characterization samples were collected at a frequency dictated by disposal facility(s).

4. Performed a Community Air Monitoring Program (CAMP) for particulates and volatile organic carbon compounds. CAMP was performed from August 23, 2017 to August 2, 2018. There were no exceedances for Particulates and VOCs during CAMP implementation.
5. Selected NYSDEC Part 375 Track 1 Unrestricted Use Soil Cleanup Objectives (SCOs).
6. Collected and analyzed three end-point samples to determine attainment of SCOs. Two endpoint samples showed slight exceedances of Unrestricted Use SCOs for mercury (0.43 ppm) and the pesticides 4,4'-DDT (4.3 ppb), aldrin (5.9 ppb) and dieldrin (10 ppb). Therefore, Track 2 Residential remedy is achieved.
7. The following excavations were performed: the soil from the entire footprint of the building area (100% of the property) was removed to a depth of 12 feet from grade. The elevator pit was excavated to a depth of 16 feet from grade. A total of 1,625.43 tons of soil/fill was excavated and removed from the property.
8. Transported and disposed all soil/fill material at permitted facilities in accordance with all applicable laws and regulations for handling, transporting, and disposing, and the RAWP. A total of 1,625.43 cubic yards of non-hazardous soil/fill were excavated and transported to Soil Safe Incorporated-Metro 12, 300 Salt Meadow Road, Carteret, NJ 07008 for final disposal.
9. Screened excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
10. 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.
11. As part of development, constructed an engineered Composite Cover System consisting of 4 inches of concrete slab underlain by 6 inches of gravel to prevent human exposure to residual soil/fill remaining under the Site. The contractor for the cover construction was NY Fast General Contracting Corp.

12. As part of development, installed a Vapor Barrier System that consisted of a 31 mil Barrier-Bac VB-350 beneath the building slab and outside foundation walls. The vapor barrier was be placed beneath the footings and sealed with Barrier-Bac Seam tape at the footing-wall connections. Joints were overlapped a minimum of 12" and sealed between overlaps with 2-sided Barrier-Bac Seam Tape. Utility penetrations were sealed according to manufacturer's specifications. The contractor for the Vapor Barrier System construction was NY Fast General Contracting Corp.
13. Performed all activities required for the Remedial Action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
14. Implemented storm-water pollution prevention measures in compliance with applicable laws and regulations.
15. Submitted intermittent daily reports during construction oversight activities. Daily reports were submitted from August 23, 2017 to August 2, 2018. Monthly reports were submitted through September 27, 2017.
16. Submitted a Sustainability Report.
17. Submitted this RAR that describes the Remedial Action; certifies that the remedial requirements defined in the RAWP have been achieved; defines the Site boundaries; and lists any changes from the RAWP.

REMEDIAL ACTION REPORT

1.0 SITE BACKGROUND

Eight & Eight Development Inc. has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 578 5th Avenue in Park Slope section of Brooklyn, New York. The boundary of the property subject to this Remedial Action is shown in Figure 1 and includes, in its entirety, Brooklyn Block 1052 and Lot 46. 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 and complies with applicable environmental standards, criteria and guidance (SCGs) and applicable laws and regulations.

1.1 SITE LOCATION AND BACKGROUND

The Site is located at 578 5th Avenue in the Park Slope section in Brooklyn, New York and is identified as Block 1052 and Lot 46 on the New York City Tax Map. Figure 2 shows the Site location. The Site is 2,500-square feet and is bounded by a 9-story residential building to the northwest, 5th Avenue to the southeast, a 7-story residential building to the northeast, and a one-story medical and dental center to the southwest. A map of the site boundary is shown in Figure 1. Prior to redevelopment, the Site contained a 2-story commercial building with a cellar. The building was demolished in January of 2016.

The Site Location Map is shown in Figure 2. The Site Boundary Map is shown in Figure 1.

1.2 REDEVELOPMENT PLAN

The site consists of a new five story building with a basement. The basement occupies the entire site and contains a commercial retail store and utility rooms. This mixed-use building houses 8 residential units on the 2nd-5th floors and has a retail store on the first floor. The building has a ground-floor area of 2,150 square feet, and a 350 square foot (14 feet by 25 feet) rear yard over the cellar and occupies the remainder of the site. The rear yard contains a concrete cover.

The entire site was excavated to a depth of 12 ftbgs and additional excavation was performed to 16 ftbgs for the elevator pit. The basement has a final basement height of 10 feet. 1,625.43 tons of soil was excavated for the basement and an elevator pit that extends 4 feet beyond the cellar slab. Groundwater was not encountered during excavation.

A map showing the building location, basement location and open space location is shown in the Development Plan in Figure 3.

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The surrounding area is mainly residential/commercial buildings. There are three day care facilities within a 500 feet radius from the site: Sofia's Daycare, Park Slope Schoolhouse Child Care Center, Inc. and Yoko's Daycare. No other sensitive uses are located within 500 feet of the Site.

The adjacent properties are listed in the table below.

Surrounding Property Usage

Direction	Property Description
Southwest *Adjacent Property*	One story Medical & Dental Building
Southeast	5th Avenue followed by mixed-use buildings
Northeast *Adjacent Property*	Five story Residential Building
Northwest *Adjacent*	Ten story residential building

1.4 SUMMARY OF PAST SITE USES AND AREAS OF CONCERN

Based on the available Sanborn Maps dated from 1888 to 2007, the Site was developed with a two story building, as shown on the 1888 Sanborn Map, and was shown consistently to the 2007 Sanborn Map. Based on a review of the city directories, the site was historically used for retail stores ranging from a day spa, travel agency, shoe store and dentist's office. There is only one identified area of concern for the site: the presence of up to 2 feet of historic fill.

1.5 SUMMARY OF WORK PERFORMED UNDER THE REMEDIAL INVESTIGATION

ESPL Environmental Consultants Corp, working for Eight and Eight Development Inc., performed the following scope of work:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed three soil borings across the entire project Site, and collected six soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. No groundwater monitoring wells were installed on the Site due to soil boring advancement being meet with refusal between 11 and 14 feet;
4. Installed three soil vapor probes and collected three samples for chemical analysis. One ambient air sample was also collected

1.6 SUMMARY OF FINDINGS OF REMEDIAL INVESTIGATION

A remedial investigation was performed and the results are documented in a companion document called "Remedial Investigation Report, 578 5th Avenue", dated November 2016 (RIR).

1. Elevation of the property ranges from 78 to 82 feet above sea level.
2. Depth to groundwater ranges from 35 to 40 feet at the Site.
3. Estimated groundwater flow is generally from south to northwest beneath the Site.
4. Depth to bedrock is approximately 12 feet at the Site.
5. The stratigraphy of the site, from the surface down, consists of 2 feet of soil/fill underlain by 4 feet of sandy silty soil and 4 feet of clay or rock.
6. Soil samples results were compared to New York State Department of Environmental Conservation (NYSDEC) Track 1 Unrestricted Use Soil Cleanup Objectives and Track 2 Restricted Residential Use Soil Cleanup Objectives (SCOs) as presented in 6NYCRR Part 375-6.8. No PCBs were detected during the remedial investigation, and no VOCs or SVOCs were detected above Track 1 Unrestricted Use SCOs. Only one metal, mercury, was encountered in SB-3 (10-11) at 1.1 ppm, which is above Track 2 Restricted Residential SCOs. No other metals were detected above Track 1 SCOs. Pesticides including 4,4'-DDE (max 12 ppb), 4,4'-DDT (max 22 ppb), and dieldrin (max of 170 ppb) were detected above Unrestricted Use SCOs, and aldrin (max of 200 ppb) was detected above Track 2 Restricted Residential SCOs. Overall the results were consistent with historic fill sites in NYC.
7. Groundwater samples were not collected due to refusal encountered at various locations. OER briefed NYSDEC on December 22, 2016 and received groundwater investigation waiver.
8. Soil vapor samples collected during the RI were compared to the monitoring and mitigation levels listed in Vapor Intrusion Matrices listed in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion dated October 2006. Soil vapor samples collected during the RI showed low levels of BTEX compounds (500 $\mu g/m^3$). BTEX compounds were also detected in ambient air at 61 $\mu g/m^3$. Low-level concentrations of chlorinated

VOCs were detected. 1,1,1-TCA was detected at 5.9 µg/m^3, carbon tetrachloride was detected at 0.94 µg/m^3, tetrachloroethylene (PCE) was detected at 5.31 µg/m^3, and trichloroethylene (TCE) was detected at 0.52 µg/m^3. Cis-1,2-dichloroethene, 1,1-dichloroethene and vinyl chloride were not detected in any samples. All of the chlorinated VOCs were detected at levels below their respective monitoring ranges as indicated in the NYSDOH matrices and do not require monitoring or mitigation.

Appendix 1 includes the RIR.

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 June 29, 2016.
- A Remedial Investigation (RI) was performed from September to October 2016. A RI Report was prepared to evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP).
- A Site Contact List was established.
- A RAWP was prepared and released with a Fact Sheet on February 21, 2017 for a 30-day public comment period.
- The RAWP and Stipulation List dated March 6, 2017 was approved by the New York City Office of Environmental Remediation (OER) on March 16, 2017.
- Site briefings were conducted with New York State Department of Environmental Conservation (NYSDEC) and NYC Department of Mental Health and Hygiene (DOHMH) on December 22, 2016.
- NYC DOHMH approved proposed remedial action on May 22, 2017.
- A Pre-Construction meeting was held on August 2, 2017.
- A Fact Sheet providing notice of the start of the remedial action was issued in August 2017.
- The remedial action was begun on October 4, 2017 and completed on August 2, 2018.

  Appendix 2 includes the RAWP.

The remedial action consisted of the following tasks:

1. Prepared a Community Protection Statement and implemented a Citizen Participation Plan.
2. Mobilized site security and equipment (October 2017); completed utility mark outs; and marked and staked excavation areas.
3. Performed Waste Characterization Study prior to excavation activities. One waste characterization sample was collected on August 23, 2017. Two additional waste characterization samples were collected December 27, 2017 and one final sample was collected on January 15, 2018. Waste characterization samples were collected at a frequency dictated by disposal facility(s).
4. Performed a Community Air Monitoring Program (CAMP) for particulates and volatile organic carbon compounds. CAMP was performed from August 23, 2017 to August 2, 2018. There were no exceedances for particulates and VOCs during CAMP.
5. Selected NYSDEC Part 375 Track 1 Soil Cleanup Objectives (SCOs).
6. Collected and analyzed three end-point samples to determine attainment of SCOs. Two endpoint samples showed slight exceedances of Unrestricted Use SCOs for mercury (0.43 ppm) and the pesticides 4,4'-DDT (4.3 ppb), aldrin (5.9 ppb) and dieldrin (10 ppb). Therefore, Track 2 Residential remedy is achieved.
7. The following excavations were performed: the soil from the entire footprint of the building area (100% of the property) was removed to a depth of 12 feet from grade. The elevator pit was excavated to a depth of 16 feet from grade. A total of 1,625.43 tons of soil/fill was excavated and removed from the property.
8. Transported and disposed all soil/fill material at permitted facilities in accordance with all applicable laws and regulations for handling, transporting, and disposing, and the RAWP. A total of 1,625.43 cubic yards of non-hazardous soil/fill were excavated and transported to Soil Safe Incorporated-Metro 12, 300 Salt Meadow Road, Carteret, NJ 07008 for disposal.

9. Screened excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
10. 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.
11. As part of development, constructed an engineered Composite Cover System consisting of 4 inches of concrete slab underlain by 6 inches of gravel to prevent human exposure to residual soil/fill remaining under the Site. The contractor for the cover construction was NY Fast General Contracting Corp.
12. As part of development, a Vapor Barrier System has been built at the site. This Vapor Barrier System consists of a 31 mil Barrier-Bac VB-350 liner. The vapor barrier Barrier Bac was used beneath the footings but Vapor Block was still used along foundation walls and under slab. The vapor barrier was be placed beneath the footings and sealed with Raven Butyl Seal tape at the footing-wall connections. Joints were overlapped a minimum of 12" and sealed between overlaps with 2-sided Barrier-Bac Seam Tape. Utility penetrations were sealed according to manufacturer's specifications. The professional engineer for the Vapor Barrier System was Ray Kahn. The contractor for the Vapor Barrier System construction was NY Fast General Contracting Corp.
13. Performed all activities required for the Remedial Action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
14. Implemented storm-water pollution prevention measures in compliance with applicable laws and regulations.
15. Submitted intermittent daily reports during construction oversight activities. Daily reports were submitted from August 23, 2017 to August 2, 2018. Monthly reports were submitted through September 27, 2017.
16. Submitted a Sustainability Report.
17. Submitted this RAR that describes the Remedial Action; certifies that the remedial requirements defined in the RAWP have been achieved; defines the Site boundaries; and lists any changes from the RAWP..

3.0 COMPLIANCE WITH REMEDIAL ACTION WORK PLAN

3.1 CONSTRUCTION HEALTH & SAFETY PLAN

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 Victor Fung.

3.2 COMMUNITY AIR MONITORING PLAN

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 from August 23, 2017 to August 2, 2018 in compliance with the Community Air Monitoring Plan in the approved RAWP. There were no exceedances during the monitoring.

3.3 SOIL/MATERIALS MANAGEMENT PLAN

The Soil/Materials Management Plan provided detailed plans for managing all soil/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 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

The following deviations from the RAWP occurred during remediation:

- Track 1 Unrestricted Use SCOs were not achieved. Instead, a Track 2 Residential cleanup was achieved. Since the building will be used for residential use, this cleanup is appropriate.
- During excavation, stockpiled soil was not covered with plastic sheeting to prevent dust from being generated.
- CAMP data was not recorded for this project.
- Due to the unavailability of the 20 mil VaporBlock® Plus™ HDPE, Barrier-Bac VB-350, 31 mil, was used instead.
- The vapor barrier Barrier Bac was used beneath the footings but Vapor Block was still used along foundation walls and under slab.

4.0 REMEDIAL PROGRAM

4.1 PROJECT ORGANIZATION

Principal personnel who participated in the remedial action include:

- Ray Kahn P.E.
- Victor Fung, Site Manager
- Eight & Eight Development Inc., Developer
- NY Fast General Contracting Corp. General Contractor

4.2 SITE CONTROLS

Site Preparation

Mobilization

Mobilization was conducted on October 4, 2017 as necessary for each phase of work at the Site. Mobilization included field personnel orientation, equipment mobilization, and utility mark-outs.

Fencing

The site was secured with plywood fencing along the front of the site.

Utility Marker Layout

The presence of utilities and easements on the Site were fully investigated prior to the performance of invasive work such as excavation or drilling under the plan by using, the One-Call System (811). All invasive activities were performed in compliance with applicable laws and regulations to assure safety. Utility companies and other responsible authorities were contacted to locate and mark the locations, by the contractor prior to the start of drilling, excavation and other invasive subsurface operations.

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

Acquisition of agency approvals

Permits or government approvals required for remedial construction were obtained prior to the start of remedial construction. Construction permits were acquired from the NYCDOB. An OER Project Notice was at the project entrance and was in place during all phases of the Remedial Action. The following is a list of permits obtained from the Department of Buildings.

Permit Number	Job Type	Issue Date	Expiration Date
31152177-01-EQFN	DM-DEMO	07/25/2016	07/25/2017
31152177-01-DM	DM-DEMO	07/26/2016	07/26/2016
321185169-01-EQ FN	NB - NEWB	11/21/2018	11/21/2019

Soil Screening

Field screening of soils being excavated and removed from Site were completed using visual, olfactory, and PID measurements. Constant CAMP PID and dust monitoring was conducted during excavation of onsite soils. Monitoring was performed from August 23, 2017 to August 2, 2018. During excavation and soil removal, on-site screening of the air quality was performed and no exceedance was detected.

Stockpile Management

Soil excavated from known and identified areas of contamination was stockpiled separately and segregated from historic fill/other soil, and construction and demolition debris materials. Stockpiles were generated only when necessary to prepare for planned trucking events and were removed as quickly as the construction schedule allowed. Excavated soil was stockpiled during construction activities. However, stockpiles were not covered with plastic sheeting at the end of each work day prior to off-site trucking and disposal. Covering stockpiles is an important measure to prevent the generation of dust. This is a deviation from the Remedial Action Work Plan.

Truck Inspection

It was ensured that trucks were covered prior to departing the Site with the materials. Due to the small size of the site, a truck pad was not used at the site entrance. . However, each truck was inspected prior to leaving the Site to ensure soil was not tracked off-site to the surrounding community. In the event that minor debris was tracked out the sidewalk and street were swept as necessary for the duration of the work day and at the

end of each work day to mitigate off-site transport of material into the surrounding streets and local community.

Site Security

The front of the Site was secured using 8' high plywood fence. A padlock was used to secure the front gate. The Site was secured at night in accordance with NYCDOB Construction Codes.

Nuisance Controls

Suitable actions were taken to prevent off-Site odor and dust nuisances, including steps to be taken if nuisances are detected. Generally, dust was managed by application of physical covers and spraying of water.

Reporting

All daily and monthly reports are included in Appendix 3. Digital photographs of the Remedial Action are included in Appendix 4.

4.3 MATERIALS EXCAVATION AND REMOVAL ACTION

Soil/Fill Excavation and Removal

The following excavations were performed: the soil from the entire footprint of the building area (100% of the property) was removed to a depth of 12 feet from grade. The elevator pit was excavated to a depth of 16 feet from grade. A map showing the approximate locations where excavations were performed and approximate thickness of excavated material is shown in Figure 5. A total of 1,625.43 tons of historic soil/fill were excavated and removed from the property during the Removal Action. The Removal Action was performed under the oversight of Ray Kahn, P.E.

Excavation activities started on October 4, 2017 to install shoring beams and lagging in the southwestern portion of site. During the demolition of the previous build, the cellar was filled with construction debris. This debris was removed and disposed of by Regal Recycling. Excavation continued along the perimeter of the rear portion of the site to install shoring beams and lagging. On-site soil was used during this phase and later removed with the rest of the excavated soil. The soil was placed in a stockpile and removed on the same day by Metro 12. Foundation walls were poured in the rear portion

of the site.

Excavation continued towards the center of the site, along both the northern and southern boundaries of the site to continue with installation of the vapor barrier and foundation wall. In the western portion of the site that was previously excavated to 12 feet, additional excavation occurred for installation of grade beams. Excavation continued east along the northern and southern foundation walls with additional excavation in the center of the site to install additional grade beams.

Once the foundation wall was complete, excavation took place for installation of another grade beam and the elevator pit. After completion of the elevator pit, remaining soil onsite was moved to the front of the site for subsequent disposal on February 13, 2018.

Onsite Reuse

Temporary reuse of soil was required during the lagging portion of the project. Soil was reused for the rear lagging against the back building and against the building on the west side of the lot. Once the lagging was installed all reused soil was removed and transported for disposal.

Soil Cleanup Objectives

The SCOs for this Remedial Action are NYSDEC Part 375 Track 1 Unrestricted Use SCOs.

End Point Sample Results

The Track 1 Unrestricted Use SCOs for this project were not achieved. Phoenix Environmental Laboratories, Inc. in Manchester, CT, a New York State DOH ELAP certified lab, was used for end-point samples analyses. A map of end-point sample locations is shown in Figure 4. A tabular summary of end-point sampling results compared to SCO's is shown in Tables 1-5. Three end-point samples, (EP-1, EP-2 and EP-3) were collected at the bottom of excavation at 13 fbgs. Dedicated disposable sampling materials were used for the collection of endpoint samples. Collected samples were appropriately packaged, placed in coolers and delivered directly to the laboratory by

field personnel. One soil sample collected during the remedial investigation, SB1 (12-14), represents soil still remaining onsite. This sample met Unrestricted Use SCOs.

Samples were analyzed using the following methodology:

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

Samples results indicated that Track 1 SCO's were not achieved due to exceedance of mercury, 4,4'-DDT, Aldrin and Dieldrin as summarized below:

- The following exceeded the Track 1 Unrestricted Use SCOs:
- EP-2: mercury at 0.43 mg/kg; 4,4'-DDT at 4.3ug/kg; Aldrin at 5.9 ug/kg and Dieldrin at 10 ug/kg
- EP-3: Dieldrin at 5.4 ug/kg

Therefore, the Site meets Track 2 Residential Use SCOs, which are appropriate for the Site's proposed use.

A map of end-point sample locations is shown in Figure 4. A tabular summary of end-point sampling results compared to SCOs is included in Table 1-5. Full laboratory reports are included in Appendix 8.

End Point Data Usability Summary

Data usability summary report was not prepared.

4.4 MATERIALS DISPOSAL

Prior to soil excavation, waste characterization of onsite materials was conducted on August 23, 2017. After onsite material was characterized, soil disposal acceptance was received from Soil Safe Metro 12 on September 20, 2017. On December 27, 2017 additional soil was collected for waste characterization since the excavated amount was

nearing allowable 400 cys. This sample was collected approximately at a 14 foot depth. An additional letter of approval was received on January 9, 2018 for an additional 400 cy. The type, quantity and disposal location of each material removed and disposed off-Site is presented below:

Table 7 – Disposal Quantities and Disposal Facilities

Disposal Location/Address	Type of Material	Quantity
Soil Safe Incorporated-Metro 12 300 Salt Meadow Road Carteret, NJ 07008	Non-Hazardous Soil/Fill	1,625.43 tons
Regal Recycling 17021 Douglas Avenue Jamaica, NY 11434	Construction & Demolition Waste	20 cubic yards

Letters from Eight & Eight Development Inc., to disposal facility providing materials type, source and data, and acceptance letters from disposal facility stating it is approved to accept above materials are attached in Appendix 5. Manifests are included in Appendix 6. Waste characterization report is presented in Appendix 7. A table of individual truck transport and material disposal quantities is included in Table 8 located in Appendix 6.

4.5 BACKFILL IMPORT

Backfill was not imported to the site during this Remedial Action or development.

5.0 ENGINEERING CONTROLS

A Track 2 Residential Remedial Action was achieved and Engineering Controls are not required. However, as part of construction, several protective systems were installed. These are:

(1) Composite Cover System;

(2) Vapor Barrier System;

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Composite Cover System

As part of development, an engineered Composite cover System has been built at the site. This Composite Cover System is comprised of 4 inches of concrete slab underlain by 6 inches of gravel in building areas (across entire site). The contractor for the Composite Cover System construction was NY Fast General Contracting Corp.

Figure 7 shows the as-built design for each cover type used in the Composite Cover System on this Site. Figure 6 shows a map of the location of each Composite Cover System type built at the Site. Photographs of construction of the Composite Cover System are included in Appendix 4.

Vapor Barrier System

As part of development, a Vapor Barrier System has been built at the site. This Vapor Barrier System consists of a 31 mil Barrier-Bac VB-350 liner . The vapor barrier Barrier Bac was used beneath the footings but Vapor Block was still used along foundation walls and under slab. The vapor barrier was be placed beneath the footings and sealed with Raven Butyl Seal tape at the footing-wall connections. Joints were overlapped a minimum of 12" and sealed between overlaps with 2-sided Barrier-Bac Seam Tape. Utility penetrations were sealed according to manufacturer's specifications.

The professional engineer for the Vapor Barrier System was Ray Kahn. The contractor for the Vapor Barrier System construction was NY Fast General Contracting Corp.

Photographs of installation of the Vapor Barrier System are included in Appendix 4. A copy of manufacturer's specifications for the Vapor Barrier System is included in Appendix 9.

6.0 INSTITUTIONAL CONTROLS

A Track 2 Residential Remedial Action was achieved and Engineering Controls and Institutional Controls are not required.

7.0 SITE MANAGEMENT PLAN

A Track 2 Residential Remedial Action was achieved and Site Management is not required.

8.0 SUSTAINABILITY REPORT

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

Reduced Energy Consumption and Promotion of Greater Energy Efficiency. Reduced energy consumption lowers greenhouse gas emissions, improves local air quality, lessens in-city power generation requirements, and can lower traffic congestion and provide substantial cost savings.

The following means were used to reduce energy consumption in this project: Efficient loading times of trucks to prevent extensive idling times, and consolidating the number of days that soil was shipped from the Site to reduce truck traffic in the neighborhood.

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

Natural gas is utilized as the principal fuel in the new building..

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 contamination from off-Site.

The area of the Site that utilizes recontamination controls under this plan is 2,500 square feet.

Paperless Brownfield Cleanup Program. Eight & Eight Development Inc. participated in OER's paperless Voluntary 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 50 pounds.

Low-Energy Project Management Program. Eight & Eight Development Inc. 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 200 miles.