

**527 FLUSHING AVENUE  
BROOKLYN, NEW YORK**

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# **Remedial Action Report**

**NYC VCP Number: 13CVCP087K**

**Prepared for:**

527 Flushing Avenue, LLC  
694 Myrtle Avenue, Suite 560  
Brooklyn, NY 11205

**Prepared by:**

***EBC***

***ENVIRONMENTAL BUSINESS CONSULTANTS***

1808 Middle Country Road  
Ridge, NY 11961

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**JUNE 2015**

# REMEDIAL ACTION REPORT

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## LIST OF ACRONYMS

| <b>Acronym</b> | <b>Definition</b>  |
|----------------|--|
| 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, 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 527 Flushing Avenue, Brooklyn, NY, site number 13CVCP087K. I certify to the following:

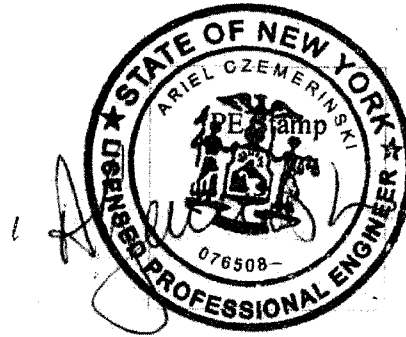
- I have reviewed this document, to which my signature and seal are affixed.
- Engineering Controls implemented during this remedial action were designed by me or a person under my direct supervision and achieve the goals established in the Remedial Action Work Plan for this site.
- The Engineering Controls constructed during this remedial action were professionally observed by me or by a person under my direct supervision and (1) are consistent with the Engineering Control design established in the Remedial action Work Plan; (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 August 2012 and Stipulations in a letter dated October 2, 2012, 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

Date **7/2/15**



I, Kevin Brussee, am a Qualified Environmental Professional. I had primary direct responsibility for implementation of the remedial program for the redevelopment project located at 527 Flushing Avenue, Brooklyn, NY, site number 13CVCP087K. I certify to the following:

- The OER-approved Remedial Action Work Plan dated August 2012 and Stipulations in a letter dated October 2, 2012, 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

*KEVIN BRUSSEE*

QEP Signature

*[Handwritten Signature]*

Date

*7/2/15*

## EXECUTIVE SUMMARY

### Site Location and Prior Usage

The Site is located at 527 Flushing Avenue in the Williamsburg section of Brooklyn, New York and is identified as Block 2263, Lot 56 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 2,500-square feet and is bounded by Block 2263, Lot 48 (developed with a 2-story commercial/office building) to the north, Flushing Avenue to the south, Block 2263, Lot 55 (developed with a 4-story residential building with first floor commercial space) to the east, and Block 2263, Lot 57 (developed with a 3-story residential building with first floor commercial space) to the west. A map of the Site boundary is shown in Figure 2. Prior to redevelopment, the Site was undeveloped, vacant, and uncapped.

The Site is located on the north side of Flushing Avenue between Lee Avenue and Bedford Avenue. The lot consists of approximately 25 feet of frontage on Flushing Avenue and is 100 feet deep for a total of 2,500 square feet (0.057 acres).

### Summary of Proposed Redevelopment Plan

The proposed future use of the Site consisted of a new 6-story residential apartment building that would occupy the first 65 feet of the 100 foot deep lot. The current zoning designation is R71 with a C2-4 commercial overlay. The proposed use is consistent with existing zoning for the property.

The 6-story apartment building has a full basement. The front portion of the basement consists of storage rooms for the building's occupants, a sprinkler room, meter room and an elevator. The rear portion of the basement consists of two bedrooms, a playroom, a laundry closet, a utility closet (boiler and AC units) and a bathroom for use by the 1st floor occupant. Two rear stairwells provide access to the rear yard from the two bedrooms. Layout of the proposed Site development is presented in Figure 3.

The top of the basement slab is approximately 5 feet 1 inch below sidewalk grade. Therefore, construction of the building's foundation required excavation to a depth of approximately 7 to 8 feet below grade. The total excavated volume of soil for the entire Site was estimated to be approximately 400 yd<sup>3</sup> (600 tons). The rear cellar level court yard is capped with concrete.

## Summary of Past Uses of Site and Environmental Findings

Based on the City Directory Listings, historic Sanborn maps, New York City Department of Building Records, and internet search results, the Site was developed prior to 1887 with a 2-story building utilized by “J. Reeber and Company”, which was a large second hand building material and lumber facility that occupied both the Site and several adjacent properties to the east and north. By 1904, the Site was redeveloped with a new 4-story residential building with a first floor store. The “J. Reeber and Company” lumber yard appeared to continue operations on the adjacent properties to the north, but the Site no longer operated as a portion of the lumber yard. From 1965 to 1993, Sanborn maps noted the 4-story building as vacant and open. This matches the City Directory Listings which recorded no residential or store listings between the years 1949 and 1997. In 1997, a residential listing was recorded for the building, and in 2005, a City Directory search and internet search revealed the building was used by “Chicho French Cleaner”, a laundry service. Internet search results revealed Chicho French Cleaner offered garment pressing and dry cleaning, but on-Site dry cleaning operations are not suspected. Between 2006 and 2007 the 4-story building was demolished and the Site has remained undeveloped and vacant since.

The AOCs identified for this Site include:

- An urban fill layer approximately 6 to 8 feet thick across the entire Site that contains SVOCs and metals above Unrestricted Use SCOs and/or Restricted Residential SCOs.

## Summary of Environmental Findings

1. The elevation of the property is approximately 12 feet.
2. Depth to groundwater is approximately 9 feet at the Site.
3. Groundwater flow is generally from east-southeast to west-northwest beneath the Site.
4. Depth to bedrock is over 100 feet at the Site.
5. The stratigraphy of the Site, from the surface down, consists of 6 to 8 feet of an urban fill layer underlain by a native silt and clayey silt.
6. Soil samples collected during the RI showed no PCBs at detectable concentrations. No VOCs were detected above Unrestricted Use SCOs. The only chlorinated VOC detected in soil was tetrachloroethylene, which was detected well below its Unrestricted Use SCO at a concentration of 8.2 ppb in one of the shallow soil samples. Of the petroleum-related

VOCs detected in soil, only naphthalene (1.3 ppm) and sec-butylbenzene (0.490 ppm) were detected above trace levels (less than 0.030 ppm). One pesticide (4,4,4-DDT) was detected above Unrestricted Use SCOs in one shallow soil sample. Nine metals were detected above Unrestricted Use SCOs in all three shallow soil samples and one of the deep soil samples, and of these metals, lead (2,730 ppm), copper (844 ppm), and barium (3,030 ppm) also exceeded Restricted Residential SCOs in one shallow sample. Seven SVOCs were detected above their Unrestricted Use and Restricted Residential Use SCOs in shallow soil. These SVOCs are all polycyclic aromatic hydrocarbons (PAHs), and their concentrations and distributions are indicative of historic urban fill material. Overall, these findings are consistent with historic fill material which is present to a depth of approximately 8 feet across the Site. Data collected during the RI is sufficient to delineate the vertical and horizontal distribution of contaminants in soil/fill at the Site.

7. No PCBs or pesticides were detected in groundwater. Groundwater samples collected during the RI showed chlorinated VOCs in one of two groundwater samples. Tetrachloroethene was found above its GQS at a concentration of 22 µg/L, and trichloroethene (TCE) was found below its GQS at 1.3 µg/L. Because PCE was identified in soil at a concentration (0.008 ppm) well below its groundwater protection standard of 1.3 ppm, an off-site source is suspected. Four SVOCs, all PAHs, were detected above their corresponding GQSs in one groundwater sample, and may be associated with turbidity in that sample based on findings in soil. The metals beryllium, iron, magnesium, manganese, and sodium were identified in dissolved groundwater above GQSs, but these metals are not linked with on-Site soil contamination. Overall, soil results were unremarkable and the RI did not reveal any substantial source of contaminants on-Site.
8. Soil vapor samples collected during the RI showed petroleum-related and chlorinated hydrocarbons at trace-to-moderate concentrations. Petroleum-related VOCs were detected at generally trace-to-low levels (total concentrations less than 50 µg/m<sup>3</sup>). PCE was detected within both soil vapor samples at a maximum concentration of 346 µg/m<sup>3</sup>, which is within the monitor/mitigate range established by NYSDOH, while TCE was also detected in both soil vapor samples at a max concentration of 4.89 µg/m<sup>3</sup>, which is below its monitor/mitigate range established by NYSDOH.

## Summary of the Remedy

A Pre-Application Meeting was held on January 24, 2012. A Remedial Investigation (RI) was performed between in January 2012 and a RI Report dated August 2012 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 August 2012 was prepared and released with a Fact Sheet on September 12, 2012, for a 30-day public comment period. The RAWP with a Stipulation List dated October 1, 2012, was approved by the New York City Office of Environmental Remediation (OER) on December 12, 2012. A pre-construction meeting was held on January 3, 2013, and remedial action began in March of 2013 and completed in December 2014.

The following remedial action activities were performed:

1. Prepared a Community Protection Statement and implemented a Citizen Participation Plan;
2. Mobilized site security, equipment, utility mark outs and marking & staking excavation areas;
3. Implemented of storm-water pollution prevention measures in compliance with applicable laws and regulations;
4. Performed a Community Air Monitoring Program for particulates and volatile organic carbon compounds during soil disturbance activities;
5. Established Track 4 Site-Specific Soil Cleanup Objectives (SCOs). Collected and analyzed end-point samples to determine the performance of the remedy with respect to attainment of Track 4 Site-Specific SCOs. Excavated soil/fill in excess of Track 4 Site-Specific SCOs from within building footprint. Endpoints did not achieve Track 4 SCOs but have been determined to be protective of public health with engineering and institutional controls. Excavated 617.29 tons for disposal at Soil Safe - Logan;
6. Screened excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID;
7. Installed and operating an active sub-slab depressurization system equipped with a blower, a manometer to measure system pressure, and an alarm;

8. Installed Raven Industries' *VaporBlock Plus 20* as a vapor barrier system beneath the building slab and behind foundation walls;
9. Constructed an engineered composite cover consisting of the building's 6 inch concrete slab and the rear courtyard 4 inch thick concrete slab to prevent human exposure to residual soil/fill remaining under the Site;
10. Imported of materials to be used for backfill in compliance with this plan and in accordance with applicable laws and regulations;
11. Performed all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations;
12. 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; and describes the remedial activities including any changes from the RAWP;
13. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of soil and soil vapor, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency; and
14. Continued registration of the property as an E-Designated property at the NYC Department of Buildings.

# REMEDIAL ACTION REPORT

## 1.0 SITE BACKGROUND

527 Flushing Avenue LLC has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 527 Flushing Avenue in Williamsburg section of Brooklyn, New York. The boundary of the property subject to this Remedial Action is shown in Figure 1 and include, in their entirety, Brooklyn, Block 2263 and Lot 56. 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 527 Flushing Avenue in the Williamsburg section of Brooklyn, New York and is identified as Block 2263, Lot 56 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 2,500-square feet and is bounded by Block 2263, Lot 48 (developed with a 2-story commercial/office building) to the north, Flushing Avenue to the south, Block 2263, Lot 55 (developed with a 4-story residential building with first floor commercial space) to the east, and Block 2263, Lot 57 (developed with a 3-story residential building with first floor commercial space) to the west. A map of the Site boundary is shown in Figure 2. Prior to redevelopment, the Site was undeveloped, vacant, and uncapped.

The Site is located on the north side of Flushing Avenue between Lee Avenue and Bedford Avenue. The lot consists of approximately 25 feet of frontage on Flushing Avenue and is 100 feet deep for a total of 2,500 square feet (0.057 acres).

### 1.2 Proposed Redevelopment Plan

The proposed future use of the Site consisted of a new 6-story residential apartment building that would occupy the first 65 feet of the 100 foot deep lot. The current zoning designation is R71

with a C2-4 commercial overlay. The proposed use is consistent with existing zoning for the property.

The 6-story apartment building has a full basement. The front portion of the basement consists of storage rooms for the building's occupants, a sprinkler room, meter room and an elevator. The rear portion of the basement consists of two bedrooms, a playroom, a laundry closet, a utility closet (boiler and AC units) and a bathroom for use by the 1st floor occupant. Two rear stairwells provide access to the rear yard from the two bedrooms. Layout of the proposed Site development is presented in Figure 3.

The top of the basement slab is approximately 5 feet 1 inch below sidewalk grade. Therefore, construction of the building's foundation required excavation to a depth of approximately 7 to 8 feet below grade. The total excavated volume of soil for the entire Site was estimated to be approximately 400 yd<sup>3</sup> (600 tons). The rear cellar level court yard is capped with concrete.

### 1.3 Description of Surrounding Property

Block 2263, bounded by Lee Avenue to the east, Bedford Avenue to the west, Flushing Avenue to the south and Wallabout Street to the north, was formerly zoned M1-2. The manufacturing area also extended to the south along Flushing Avenue. However, as a part of the Wallabout Street Rezoning, Block 2263 was rezoned to an R7-1 with a C2-4 commercial overlay. Numerous lots from Block 2263 have already begun redevelopment, and the former manufacturing/industrial area has changed into a residential neighborhood. Figure 4 shows the surrounding land usage. No schools, hospitals or day care facilities were identified within a 500 ft radius of the Site. A description of each of the adjacent properties is provided in the table below.

| Direction                                 | Property Description  |
|---|---|
| <p><b>North</b><br/>Adjacent Property</p> | <p><u>Block 2263 Lot 48</u> (264 Lee Avenue) – A 4,925 ft<sup>2</sup> irregular shaped lot that fronts Leff Avenue. The lot is currently developed with a 1-story commercial building that was recently refinished and divided into two retail spaces. The lot is zoned R71 with no commercial overlay.</p> |

|  |  |
|--|--|
| <p><b>South</b><br/>Opposite Side<br/>of Flushing<br/>Avenue</p> | <p><u>Block 1718 Lot 32</u> (502 Flushing Avenue) – A 16,260 ft<sup>2</sup> irregular shaped corner lot developed with a 1-story industrial/manufacturing building. The lot is zoned M1-2.</p>   |
| <p><b>East</b><br/>Adjacent<br/>Property</p>                     | <p><u>Block 2263 Lot 55</u> (529 Flushing Avenue) – A 2,500 ft<sup>2</sup> lot developed with a 4-story residential building with first floor retail space. The top three floors consist of apartments and the first floor retail space is currently occupied by Lee Gardens Supermarket. The lot is zoned R71 with a C2-4 commercial overlay.</p> |
| <p><b>West</b><br/>Adjacent<br/>Property</p>                     | <p><u>Block 2263 Lot 57</u> (525 Flushing Avenue) – A 2,500 ft<sup>2</sup> lot developed with a 3-story residential building with first floor retail space. The top two floors consist of apartments, the first floor is currently occupied by Gormans Cleaning &amp; Tailoring. The lot is zoned R71 with a C2-4 commercial overlay.</p>          |

#### 1.4 Remedial Investigation

A remedial investigation was performed and the results are documented in a document called “*Remedial Investigation Report, 527 Flushing Avenue*”, dated August 2012 (RIR).

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

Based on the City Directory Listings, historic Sanborn maps, New York City Department of Building Records, and internet search results, the Site was developed prior to 1887 with a 2-story building utilized by “J. Reeber and Company”, which was a large second hand building material and lumber facility that occupied both the Site and several adjacent properties to the east and north. By 1904, the Site was redeveloped with a new 4-story residential building with a first floor store. The “J. Reeber and Company” lumber yard appeared to continue operations on the adjacent properties to the north, but the Site no longer operated as a portion of the lumber yard. From 1965 to 1993, Sanborn maps noted the 4-story building as vacant and open. This matches the City Directory Listings which recorded no residential or store listings between the years 1949 and 1997. In 1997, a residential listing was recorded for the building, and in 2005, a City Directory search and internet search revealed the building was used by “Chicho French Cleaner”, a laundry service. Internet search results revealed Chicho French Cleaner offered garment pressing and dry cleaning, but on-Site dry cleaning operations are not suspected. Between 2006 and 2007 the 4-story building was demolished. The Site has remained undeveloped/vacant since.

The AOCs identified for this Site include:

- An urban fill layer approximately 6 to 8 feet thick across the entire Site that contains SVOCs and metals above Unrestricted Use SCOs and/or Restricted Residential SCOs.

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

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed 3 soil borings across the entire project Site, and collected 6 soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed 2 groundwater monitoring wells throughout the Site and collected 2 groundwater samples for chemical analysis to evaluate groundwater quality;
4. Installed 2 soil vapor probes around Site perimeter and collected 2 samples for chemical analysis.

### **Summary of Environmental Findings**

1. The elevation of the property is approximately 12 feet.
2. Depth to groundwater is approximately 9 feet at the Site.
3. Groundwater flow is generally from east-southeast to west-northwest beneath the Site.
4. Depth to bedrock is over 100 feet at the Site.
5. The stratigraphy of the Site, from the surface down, consists of 6 to 8 feet of an urban fill layer underlain by a native silt and clayey silt.
6. Soil samples collected during the RI showed no PCBs at detectable concentrations. No VOCs were detected above Unrestricted Use SCOs. The only chlorinated VOC detected in soil was tetrachloroethylene, which was detected well below its Unrestricted Use SCO at a concentration of 8.2 ppb in one of the shallow soil samples. Of the petroleum-related VOCs detected in soil, only naphthalene (1.3 ppm) and sec-butylbenzene (0.490 ppm) were detected above trace levels (less than 0.030 ppm). One pesticide (4,4,4-DDT) was detected above Unrestricted Use SCOs in one shallow soil sample. Nine metals were detected above Unrestricted Use SCOs in all three shallow soil samples and one of the deep soil samples, and of these metals, lead (2,730 ppm), copper (844 ppm), and barium (3,030 ppm) also exceeded Restricted Residential SCOs in one shallow sample. Seven SVOCs were detected above their Unrestricted Use and Restricted Residential Use SCOs

in shallow soil. These SVOCs are all polycyclic aromatic hydrocarbons (PAHs), and their concentrations and distributions are indicative of historic urban fill material. Overall, these findings are consistent with historic fill material which is present to a depth of approximately 8 feet across the Site. Data collected during the RI is sufficient to delineate the vertical and horizontal distribution of contaminants in soil/fill at the Site.

7. No PCBs or pesticides were detected in groundwater. Groundwater samples collected during the RI showed chlorinated VOCs in one of two groundwater samples. Tetrachloroethene was found above its GQS at a concentration of 22 µg/L, and trichloroethene (TCE) was found below its GQS at 1.3 µg/L. Because PCE was identified in soil at a concentration (0.008 ppm) well below its groundwater protection standard of 1.3 ppm, an off-site source is suspected. Four SVOCs, all PAHs, were detected above their corresponding GQSs in one groundwater sample, and may be associated with turbidity in that sample based on findings in soil. The metals beryllium, iron, magnesium, manganese, and sodium were identified in dissolved groundwater above GQSs, but these metals are not linked with on-Site soil contamination. Overall, soil results were unremarkable and the RI did not reveal any substantial source of contaminants on-Site.
8. Soil vapor samples collected during the RI showed petroleum-related and chlorinated hydrocarbons at trace-to-moderate concentrations. Petroleum-related VOCs were detected at generally trace-to-low levels (total concentrations less than 50 µg/m<sup>3</sup>). PCE was detected within both soil vapor samples at a maximum concentration of 346 µg/m<sup>3</sup>, which is within the monitor/mitigate range established by NYSDOH, while TCE was also detected in both soil vapor samples at a max concentration of 4.89 µg/m<sup>3</sup>, which is below its monitor/mitigate range established by NYSDOH.

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

## 2.0 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 Pre-Application Meeting was held on January 24, 2012. A Remedial Investigation (RI) was performed between in January 2012 and a RI Report dated August 2012 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 August 2012 was prepared and released with a Fact Sheet on September 12, 2012, for a 30-day public comment period. The RAWP with a Stipulation List dated October 1, 2012, was approved by the New York City Office of Environmental Remediation (OER) on December 12, 2012. A pre-construction meeting was held on January 3, 2013, and remedial action began in March 2013 and completed in December 2014.

The following remedial actions were completed in this program:

1. Prepared a Community Protection Statement and implemented a Citizen Participation Plan;
2. Mobilized site security, equipment, utility mark outs and marking & staking excavation areas;
3. Implemented of storm-water pollution prevention measures in compliance with applicable laws and regulations;
4. Performed a Community Air Monitoring Program for particulates and volatile organic carbon compounds during soil disturbance activities;
5. Established Track 4 Site-Specific Soil Cleanup Objectives (SCOs). Collected and analyzed end-point samples to determine the performance of the remedy with respect to attainment of Track 4 Site-Specific SCOs. Excavated soil/fill in excess of Track 4 Site-Specific SCOs from within building footprint. Endpoints did not achieve Track 4 SCOs

- but have been determined to be protective of public health with engineering and institutional controls. Excavated 617.29 tons for disposal at Soil Safe – Logan;
6. Screened excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID;
  7. Installed and operating an active sub-slab depressurization system equipped with a blower, a manometer to measure system pressure, and an alarm;
  8. Installed Raven Industries' *VaporBlock Plus 20* as a vapor barrier system beneath the building slab and behind foundation walls;
  9. Constructed an engineered composite cover consisting of the building's 6 inch thick concrete slab and the rear courtyard 4 inch thick concrete slab to prevent human exposure to residual soil/fill remaining under the Site;
  10. Imported of materials to be used for backfill in compliance with this plan and in accordance with applicable laws and regulations;
  11. Performed all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations;
  12. 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; and describes the remedial activities including any changes from the RAWP;
  13. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of soil vapor, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency; and
  14. Continued registration of the property as an E-Designated property at the NYC Department of Buildings.

Track 4 Site-Specific Soil Cleanup Objectives established for the Site were the following:

| <b>Contaminant</b> | <b>Track 4 Site Specific SCOs</b> |
|--------------------|-----------------------------------|
| Total SVOCs        | 250 ppm                           |
| Lead               | 1,200 ppm                         |
| Copper             | 750 ppm                           |
| Barium             | 750 ppm                           |

### **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 C.

#### **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**

Following several attempts to remove soil from the base of the excavation in order to achieve SCO's for this project, it was determined that SCO's established for the project could not be achieved. Following discussion with OER, it was decided that it would be protective of public health and the environment to manage remaining material in place. The majority of historical fill

was removed during the removal action and all remaining fill material would be present under a permanent cover, eliminating any potential for public health exposure. The cover will be inspected and maintained over the long term under a Site Management Plan ensuring that the cover remains intact and functioning as designed. Further, any future excavation on the property would be controlled by continued registration of the E-Designation and adherence to the Soil and Materials/Management Plan to ensure safe handling and proper reconstruction of the cover when work was complete. The historical fill did not cause groundwater quality standard contravention for the parameters that exceeded SCO's and thus do not pose a threat to the environment. Onsite groundwater use prohibitions for potable supply would ensure that there are no direct exposures through ingestion of groundwater.

## **4.0 REMEDIAL PROGRAM**

### **4.1 Project Organization**

The PE responsible for implementation of the remedial action for this project was Ariel Czmerinski P.E., AMC Engineering. On-Site air monitoring in accordance with the CHASP and CAMP, soil screening and soil sampling was performed by either Kevin Waters, Kristen Discenza or Kevin Brussee of EBC. The Qualified Environmental Professional which implemented the remedial action was Kevin Brussee, Project Manager-EBC.

The excavation and foundation contractor was Dedeeto and Son, and the developer was CNS Builders, LLC.

### **4.2 Site Controls**

#### ***Site Preparation***

Plans for the new building (NYC DOB Job numbers NB-320368277) were approved on December 20, 2012. Waste characterization soil sampling was performed on December 27, 2012, prior to mobilization to obtain soil disposal approval and to minimize the need for on-Site soil stockpiles. On March 20, 2013, equipment was mobilized to the Site to begin excavation of on-Site soil.

#### ***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. Excavation at the Site commenced with the removal of historic fill which was encountered across the Site to a depth of approximately 8 feet below grade. No physical or olfactory evidence of a spill was observed during Site excavation.

#### ***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. However, 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.

### ***Truck Inspection***

Due to the small size of the Site, trucks were staged on the concrete sidewalk and directly loaded with soil. Before exiting the Site, trucks were examined for evidence of contaminated soil on the undercarriage, body, and wheels. All soil/debris that fell on the sidewalk during loading 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***

No petroleum or other odors were detected during soil screening and no complaints were reported. 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 forwarded to the OER project manager for construction days in which soil disturbance activities were performed (soil excavation/loading). A copy of each of the daily status reports is included in Appendix D.

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

## **4.3 Materials Excavation and Removal**

Historic Fill was encountered across the Site from grade to a depth of at least 8 feet. Excavation and removal of the soil to a depth of approximately 8 feet across the first 85 feet of the Site was completed in March and April of 2013. Additional excavation of the rear yard area was performed in July of 2013 to attempt to achieve Track 4 - SCOs. A total of 617.29 tons of soil was removed and transported to Soil Safe - Logan Facility. A map showing the location where excavations were performed is shown in Figure 5. No material was reused on-Site.

### ***End Point Sample Results***

Following excavation for the new building, EBC collected two endpoint samples from within the building footprint (EP1 and EP2), and three endpoint soil samples from the rear yard area (EP3-EP5). The location of each of the endpoint soil samples is shown on Figure 6. Dedicated disposable sampling equipment was utilized to collect each endpoint sample, eliminating the need for field equipment (rinsate) blanks.

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 through EP5 were submitted to Phoenix Environmental Laboratories, Inc. located at 587 East Middle Turnpike, in Manchester, CT 06040 (NYS ELAP Certification No. 11301). Each of the endpoint samples were submitted 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 E. A tabular summary of the end-point soil sample results is included on Table 2 (SVOCs) and Table 4 (metals), and Track 4 SCO exceedences are posted on and Figure 6. The laboratory results of the three soil samples soil samples collected at the final excavation depth during the RI (10-12 feet below grade) are summarized on Tables 1 through 4. As shown in Tables 2 and 4, no SVOCs or metals were detected above Track 4 SCOs within the two endpoint samples collected from within the building footprint (EP1 and EP2). However, elevated concentrations of metals and SVOCs above Track 4 SCOs were detected within each of the endpoint samples collected from the rear yard (EP3, EP4 and EP5). On July 9, 2012, additional excavation of the top 6 inches to 1 foot was performed across the rear yard, and follow-up endpoint soil samples (EP3A, EP4A, EP5A and EP6) were collected on July 10, 2014. Elevated concentrations of metals and SVOCs were reported above Track 4 SCOs for each of the four follow-up endpoint samples. Another 6 inches to 1 foot of soil was removed across the rear yard area on July 19, 2012 when

the soil pile was loaded into the last 3 trucks for transport to Soil Safe - Logan facility.

Following discussion with OER, it was decided that it would be protective of public health and the environment to manage remaining material in place. The majority of historical fill was removed during the removal action and all remaining fill material would be present under a permanent cover, eliminating any potential for public health exposure. The cover will be inspected and maintained over the long term under a Site Management Plan ensuring that the cover remains intact and functioning as designed. Further, any future excavation on the property would be controlled by continued registration of the E-Designation and adherence to the Soil and Materials/Management Plan to ensure safe handling and proper reconstruction of the cover when work was complete. The historical fill did not cause groundwater quality standard contravention for the parameters that exceeded SCO's and thus do not pose a threat to the environment. Onsite groundwater use prohibitions for potable supply would ensure that there are no direct exposures through ingestion of groundwater.

#### **4.4 Materials Disposal**

Waste characterization soil sampling was performed on December 27, 2012. Historic fill (brown silty sand with brick and concrete) was encountered from grade to a depth of approximately 8 feet below grade. EBC formed one 5-pt composite soil sample from 5 test pits excavated at the Site. The laboratory results, profile form and a formal letter describing the sampling process and material type, was forwarded to Soil Safe to obtain soil disposal approval at Soil Safe - Logan Facility. A copy of the soil disposal request letter with the sampling plan and laboratory results is attached in Appendix F. A copy of the soil disposal acceptance letter issued by Soil Safe is attached in Appendix G.

From March 20, 2013 to July 19, 2013, a total 617.29 tons of historic fill was excavated and loaded into 10-wheel dump trucks for transport to Soil Safe - Logan facility. Copies of each of the non-hazardous manifests and associated scale tickets are included in Appendix H.

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

**Table 6 - Disposal Quantities and Disposal Facilities**

| <b>Destination</b>         | <b>Type of Material</b> | <b>Quantity</b> |
|----------------------------|-------------------------|-----------------|
| Soil Safe - Logan facility | Historic Fill           | 617.29 tons     |

#### **4.5 Backfill Import**

In July of 2013, 1 truck load (approximately 30 cubic yards) of 3/8 inch crushed concrete (RCA) was imported for use beneath the cellar slab from Evergreen Recycling of Corona, Inc. located at 127-50 Northern Boulevard, Flushing, New York 11368. Evergreen Recycling of Corona, Inc. is a NYSDEC Active Registered C&D Debris Processing Facility. The RCA was spread across the entire basement area to a depth of approximately 4 to 6 inches, and was utilized to backfill the over excavated rear yard. No other backfill was imported to the Site. A copy of the import trucking ticket for the RCA is attached in Appendix I.

## 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:

- 4-inch thick concrete cellar slab underlain the 20 mil vapor barrier and SSDS piping within a 6 inch layer of RCA subgrade;
- 4-inch thick concrete slab underlain by 2-4 inches of RCA subgrade within the rear yard;
- Demarcation barrier (orange plastic safety fence) under 3inch thick pavers installed around tree in rear yard.

The Composite Cover System was installed by the foundation contractor, Braga Corp. Figure 6 shows the location of each cover type built at the Site. Photographs of construction of the Composite Cover System are included in Appendix B.

### Vapor Barrier System

Migration of soil vapor is mitigated with a combination of building slab and vapor barrier. A high density polyethylene vapor barrier liner (HPDE) was installed over the SSDS prior to pouring the building's concrete slab. The vapor barrier consists of Raven Industries' VaporBlock Plus 20, which is a seven-layer co-extruded 20 mil vapor barrier made from state-of-the-art polyethylene and EVOH resins. The vapor barrier extends throughout the area occupied by the footprint of the new building and extends upward behind the side, front and rear walls of the building. All vapor barrier seams, penetrations, and repairs were sealed utilizing the tape method, in accordance with to the manufacturer's installation instructions. Photos of the vapor barrier being installed are included in Appendix B and the approximate layout is shown on Figure 7. The vapor barrier was installed by the foundation contractor, Braga Corp.

### Active Sub-Slab Depressurization System

Migration of soil vapor is mitigated with an active sub-slab depressurization system. The SSDS installed beneath the basement slab of the building (total of 1,625 sf) consists of a single venting

zone (loop) in accordance with USEPA sub-slab depressurization design specifications which recommend a separate vent loop for every 4,000 sf of slab area. The venting zone is constructed of a continuous loop of perforated 4-inch HDPE smooth interior pipe fitted with a filter sock and installed within the 4 to 6" layer of crushed concrete installed below the concrete building slab. The loop connects to a 6-inch schedule 40 pvc riser pipe that extends to the roof to discharge. A blower (Radonaway model No. RP265) is fitted to the top of the 6-inch PVC discharge pipe at the roof level. The system is hardwired to an electric source. The exhaust from the blower is located a minimum of 10 feet from windows and ventilation inlets.

A Dwyer 0-5 inches of water manometer and a Radonaway alarm is installed immediately below the SSDS blower within the roof access stairwell. Following initial start up of the active SSDS, an initial vacuum gauge reading using a Magnahelic Manometer was recorded. The system is designed to establish a vacuum of 0.4 inches of water or higher.

The approximate layout of the SSDS piping is shown on Figure 7 and photos of the SSDS piping being installed are included in Appendix B. Inspection details and inspection frequency are specified below in Section 7.0. The active SSDS was installed by Braga Corp.

Ariel Czemerinski, P.E. performed evaluated the effectiveness of the sub-slab depressurization system on April 15, 2015, by collecting to sub-slab vacuum readings. The sub-slab vacuum readings were collected from ½" diameter holes drilled through the concrete slab and vapor barrier. Rigid tubing was inserted into each hole and connected to a Dwyer Series 476A Single Pressure Digital Manometer that reads from -20.0 to +20.0 inches H<sub>2</sub>O. One sub-slab vacuum reading was obtained from the electric meter room. A vacuum reading of -0.27 inches H<sub>2</sub>O was recorded. A second sub-slab vacuum reading was obtained from a storage room. A vacuum reading of -0.12 inches H<sub>2</sub>O was recorded. A copy of the completed April 15, 2015, SSDS inspection report is included in Appendix J. The vacuum readings obtained below the slab indicate the sub-slab depressurization system operates as designed.

## 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 (527 Flushing Avenue 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 three Engineering Controls. These are:

- Soil Vapor Barrier System;
- Composite Cover System; and
- Active Sub-Slab Depressurization System.

### **Operation and Maintenance of the Composite Cover System**

The composite cover system is comprised of the new building's 4-inch thick concrete cellar slab and sub-base materials, the rear yard's 4-inch thick concrete slab and sub-base materials, and the rear yard's paver system and demarcation barrier around the tree. 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 Vapor Barrier System utilized in this Remedial Action and provides as-built design details and the system location. The Vapor Barrier System is a permanent Engineering Control for the Site. The system will be inspected and its performance certified at specified intervals defined in this SMP.

The 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 vapor barrier layers and sealing the newly constructed materials with equivalent barrier materials in accordance with manufacturer specifications.

### **Operation and Maintenance of Active Sub-Slab Depressurization System**

Chapter 5 describes the Active SSDS utilized in this Remedial Action. The system will be inspected and its performance certified at specified intervals defined in this SMP. The Active SSDS will be operated and maintained as prescribed below. SSD system components to be evaluated include, but are not limited to, the following:

- Radonaway blower (Model No. RP265);
- Joints between the piping and blower
- Exposed system piping;
- Radonaway Alarm; and
- Dwyer 0-5 inches of water manometers.

The manometer and alarm are installed immediately below the SSDS blower within the roof access stairwell. Following initial start up of the active SSDS, an initial vacuum gauge reading

using a Magnahelic Manometer was recorded on the Inspection Checklist. The system is designed to establish a vacuum of 0.4 inches of water or higher. If the blower is found to be non-operational by the building superintendent during a monthly inspection, or if the blower is operating, but no vacuum reading is observed on the vacuum gauge, the blower must be replaced or repaired. The Owner's representative(s) shall immediately contact the appropriate parties from the contact list provided below. These emergency contact lists will be maintained by the building superintendent and in a package secured to the SSDS discharge pipe.

A complete list of components to be checked is provided in the Inspection Checklist, presented in Appendix L.

### **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, 2016 (for calendar year 2015), July 31, 2019 (for calendar years 2016 through 2018) and every three years thereafter. In addition to these inspections, the building owner will inspect condition of the operation of the blower and the vacuum gauges on a monthly basis. The building owner will fill out a log established by the QEP for the active SSDS operational inspections. EBC will provide training for building superintendent staff on the methods for proper monthly inspection of the operation of the blower and the vacuum gauges and proper contacts in case a malfunction is identified.

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 single building which has a full cellar level. The rear of the cellar consists of accessory living space for the 1<sup>st</sup> floor apartment, and the front of the cellar consists of storage rooms, electric meter room, and sprinkler room. Inspection of the composite cover will consist of a visual inspection of the concrete cellar slab, the concrete capped rear yard and the paver system around the base of the tree in the rear yard. 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 N). Inspections by building superintendent will identify any obvious damage to the composite cover system.

### **Inspection of Vapor Barrier System**

The vapor barrier system will be inspected by a qualified environmental professional to assure that it is functioning properly. The 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 foundation walls. If the inspector observes a failure in the slab or foundation walls that exposes the vapor barrier, then the underlying vapor barrier will be inspected for any damage, including tears or perforations, which would prevent the vapor barrier from completing its intended purpose. Cracks, holes, perforations or slab disturbances shall be recorded on the Inspection Checklist (Appendix L) and remediated as appropriate.

### **Active SSDS**

The components of the Active SSDS will be inspected by a qualified environmental professional to assure that the Active SSDS is functioning properly. Unscheduled inspections and/or sampling may take place when a suspected failure of the SSD system has been reported or an emergency occurs that is deemed likely to affect the operation of the system.

A visual inspection of the complete system will be conducted by a QEP at the intervals specified and by a building superintendent on a monthly basis. SSD system components to be monitored include, but are not limited to, the following:

- Radonaway blower (Model No. RP265);
- Joints between the piping and blower;
- Exposed system piping;
- Radonaway Alarm; and
- Dwyer 0-5 inches of water manometer.

The vacuum gauge should have a minimum vacuum of 0.4 inches of water. If any equipment readings are not above this minimum range, maintenance and repair will be performed to reestablish required vacuum levels in the system. A complete list of components to be checked is provided in the Inspection Checklist, presented in Appendix L. Inspection frequency is subject to change by NYC OER.

### **Site Use Prohibitions**

Inspections to evaluate the status of site use prohibitions will include 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, 2016 (for calendar year 2015), July 31, 2019 (for calendar years 2016 through 2018) and by July 31 every third 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 10 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 shown on Figure 8. 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 ( $\text{mcg}/\text{m}^3$ ) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed  $150 \text{ mcg}/\text{m}^3$  above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than  $150 \text{ mcg}/\text{m}^3$  above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within  $150 \text{ mcg}/\text{m}^3$  of the upwind level and in preventing visible dust migration.

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

## **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:<br>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 |

# **TABLES**

TABLE 1  
527 Flushing Avenue, Brooklyn, New York  
Soil Analytical Results  
Volatile Organic Compounds

| COMPOUND                         | NYSDEC Part 375.6<br>Unrestricted Use Soil<br>Cleanup Objectives* | NYDEC Part 375.6 Restricted<br>Residential Soil Cleanup<br>Objectives* | B1                | B2                | B3                |
|----------------------------------|---|--|-------------------|-------------------|-------------------|
|                                  |   |  | (10-12')<br>µg/Kg | (10-12')<br>µg/Kg | (10-12')<br>µg/Kg |
| 1,1,1,2-Tetrachloroethane        |   |  | ND                | ND                | ND                |
| 1,1,1-Trichloroethane            | 680   | 100,000  | ND                | ND                | ND                |
| 1,1,2,2-Tetrachloroethane        |   |  | ND                | ND                | ND                |
| 1,1,2-Trichloroethane            |   |  | ND                | ND                | ND                |
| 1,1-Dichloroethane               | 270   | 26,000   | ND                | ND                | ND                |
| 1,1-Dichloroethene               | 330   | 100,000  | ND                | ND                | ND                |
| 1,1-Dichloropropene              |   |  | ND                | ND                | ND                |
| 1,2,3-Trichlorobenzene           |   |  | ND                | ND                | ND                |
| 1,2,3-Trichloropropane           |   |  | ND                | ND                | ND                |
| 1,2,4-Trichlorobenzene           |   |  | ND                | ND                | ND                |
| 1,2,4-Trimethylbenzene           | 3,600   | 52,000   | ND                | ND                | ND                |
| 1,2-Dibromo-3-chloropropane      |   |  | ND                | ND                | ND                |
| 1,2-Dichlorobenzene              | 1,100   | 100,000  | ND                | ND                | ND                |
| 1,2-Dichloroethane               | 20  | 3,100  | ND                | ND                | ND                |
| 1,2-Dichloropropane              |   |  | ND                | ND                | ND                |
| 1,3,5-Trimethylbenzene           | 8,400   | 52,000   | ND                | ND                | ND                |
| 1,3-Dichlorobenzene              | 2,400   | 4,900  | ND                | ND                | ND                |
| 1,3-Dichloropropane              |   |  | ND                | ND                | ND                |
| 1,4-Dichlorobenzene              | 1,800   | 13,000   | ND                | ND                | ND                |
| 2,2-Dichloropropane              |   |  | ND                | ND                | ND                |
| 2-Chlorotoluene                  |   |  | ND                | ND                | ND                |
| 2-Hexanone (Methyl Butyl Ketone) |   |  | ND                | ND                | ND                |
| 2-Isopropyltoluene               |   |  | ND                | ND                | ND                |
| 4-Chlorotoluene                  |   |  | ND                | ND                | ND                |
| 4-Methyl-2-Pentanone             |   |  | ND                | ND                | ND                |
| Acetone                          | 50  | 100,000  | ND                | ND                | ND                |
| Acrylonitrile                    |   |  | ND                | ND                | ND                |
| Benzene                          | 60  | 4,800  | ND                | ND                | ND                |
| Bromobenzene                     |   |  | ND                | ND                | ND                |
| Bromochloromethane               |   |  | ND                | ND                | ND                |
| Bromodichloromethane             |   |  | ND                | ND                | ND                |
| Bromoform                        |   |  | ND                | ND                | ND                |
| Bromomethane                     |   |  | ND                | ND                | ND                |
| Carbon Disulfide                 |   |  | ND                | ND                | ND                |
| Carbon tetrachloride             | 760   | 2,400  | ND                | ND                | ND                |
| Chlorobenzene                    | 1,100   | 100,000  | ND                | ND                | ND                |
| Chloroethane                     |   |  | ND                | ND                | ND                |
| Chloroform                       | 370   | 49,000   | ND                | ND                | ND                |
| Chloromethane                    |   |  | ND                | ND                | ND                |
| cis-1,2-Dichloroethene           | 250   | 100,000  | ND                | ND                | ND                |
| cis-1,3-Dichloropropene          |   |  | ND                | ND                | ND                |
| Dibromochloromethane             |   |  | ND                | ND                | ND                |
| Dibromoethane                    |   |  | ND                | ND                | ND                |
| Dibromomethane                   |   |  | ND                | ND                | ND                |
| Dichlorodifluoromethane          |   |  | ND                | ND                | ND                |
| Ethylbenzene                     | 1,000   | 41,000   | ND                | ND                | ND                |
| Hexachlorobutadiene              |   |  | ND                | ND                | ND                |
| Isopropylbenzene                 |   |  | ND                | ND                | ND                |
| m&p-Xylenes                      | 260   |  | ND                | ND                | ND                |
| Methyl Ethyl Ketone (2-Butanone) | 120   | 100,000  | ND                | ND                | ND                |
| Methyl t-butyl ether (MTBE)      | 930   | 100,000  | ND                | ND                | ND                |
| Methylene chloride               | 50  | 100,000  | ND                | ND                | ND                |
| Naphthalene                      |   |  | ND                | ND                | ND                |
| n-Butylbenzene                   | 12,000  | 100,000  | ND                | ND                | ND                |
| n-Propylbenzene                  | 3,900   | 100,000  | ND                | ND                | ND                |
| o-Xylene                         | 260   | 100,000  | ND                | ND                | ND                |
| p-Isopropyltoluene               |   |  | ND                | ND                | ND                |
| sec-Butylbenzene                 | 11,000  | 100,000  | <b>490</b>        | ND                | ND                |
| Styrene                          |   |  | ND                | ND                | ND                |
| tert-Butylbenzene                | 5,900   | 100,000  | ND                | ND                | ND                |
| Tetrachloroethene                | 1,300   | 19,000   | ND                | ND                | ND                |
| Tetrahydrofuran (THF)            |   |  | ND                | ND                | ND                |
| Toluene                          | 700   | 100,000  | ND                | ND                | ND                |
| Total Xylenes                    |   |  | ND                | ND                | ND                |
| trans-1,2-Dichloroethene         | 190   | 100,000  | ND                | ND                | ND                |
| trans-1,3-Dichloropropene        |   |  | ND                | ND                | ND                |
| trans-1,4-dichloro-2-butene      |   |  | ND                | ND                | ND                |
| Trichloroethene                  | 470   | 21,000   | ND                | ND                | ND                |
| Trichlorofluoromethane           |   |  | ND                | ND                | ND                |
| Trichlorotrifluoroethane         |   |  | ND                | ND                | ND                |
| Vinyl Chloride                   | 20  | 900  | ND                | ND                | ND                |
| <b>Total VOCs Concentration</b>  |   |  | <b>490</b>        | <b>0.0</b>        | <b>0.0</b>        |

Notes:

\* - 6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives

ND - Not-detected

**Bold/highlighted-** Indicated exceedance of the NYSDEC UUSCO Guidance Value

**Bold/highlighted-** Indicated exceedance of the NYSDEC RRSCO Guidance Value

TABLE 2  
527 Flushing Avenue, Brooklyn, New York  
Soil Analytical Results  
Semi-Volatile Organic Compounds

| COMPOUND                      | NYSDEC Part 375.6<br>Unrestricted Use Soil<br>Cleanup Objectives | NYDEC Part 375.6 Restricted<br>Residential Soil Cleanup<br>Objectives* | Remedial Investigation |                  |                  |                  |                  |                  | Endpoint Samples |       |                  |       |                  |       |                  |       |                  |       |                  |       |
|-------------------------------|--|--|------------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
|                               |  |  | B1                     |                  | B2               |                  | B3               |                  | EP1<br>6/20/2013 |       | EP2<br>6/20/2013 |       | EP3<br>6/20/2013 |       | EP4<br>6/20/2013 |       | EP5<br>6/20/2013 |       | EP6<br>7/10/2013 |       |
|                               |  |  | (10-12)<br>µg/Kg       | (10-12)<br>µg/Kg | (10-12)<br>µg/Kg | (10-12)<br>µg/Kg | (10-12)<br>µg/Kg | (10-12)<br>µg/Kg | Result           | RL    | Result           | RL    | Result           | RL    | Result           | RL    | Result           | RL    | Result           | RL    |
|                               |  |  | µg/Kg                  | µg/Kg            | µg/Kg            | µg/Kg            | µg/Kg            | µg/Kg            | µg/Kg            | µg/Kg | µg/Kg            | µg/Kg | µg/Kg            | µg/Kg | µg/Kg            | µg/Kg | µg/Kg            | µg/Kg | µg/Kg            | µg/Kg |
| 1,2,4,5-Tetrachlorobenzene    |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 2,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 1,400            |       |
| 1,2,4-Trichlorobenzene        |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 1,2-Dichlorobenzene           |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 1,3-Dichlorobenzene           |  |  | ND                     | ND               | ND               | ND               | 370              | ND               | 370              | ND    | 10,000           | ND    | 380              | ND    | 400              | ND    | 2,000            | ND    | 390              |       |
| 1,4-Dichlorobenzene           |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 2,4,5-Trichlorophenol         |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 2,4,6-Trichlorophenol         |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 2,4-Dichlorophenol            |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 2,4-Dimethylphenol            |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 2,4-Dinitrophenol             |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 2,4-Dinitrotoluene            |  |  | ND                     | ND               | ND               | ND               | 590              | ND               | 590              | ND    | 16,000           | ND    | 600              | ND    | 640              | ND    | 3,100            | ND    | 630              |       |
| 2,6-Dinitrotoluene            |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 2-Chloronaphthalene           |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 2-Chlorophenol                |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 2-Methylnaphthalene           |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 2-Methylphenol (o-cresol)     |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 740              | ND    | 1,400            | ND    | 270              |       |
| 2-Nitroaniline                |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 2-Nitrophenol                 |  |  | ND                     | ND               | ND               | ND               | 590              | ND               | 590              | ND    | 16,000           | ND    | 600              | ND    | 640              | ND    | 3,100            | ND    | 630              |       |
| 3&4-Methylphenol (m&p-cresol) |  |  | <b>530</b>             | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 3,3'-Dichlorobenzidine        |  |  | ND                     | ND               | ND               | ND               | 370              | ND               | 370              | ND    | 10,000           | ND    | 380              | ND    | 400              | ND    | 2,000            | ND    | 390              |       |
| 3-Nitroaniline                |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 4,6-Dinitro-2-methylphenol    |  |  | ND                     | ND               | ND               | ND               | 590              | ND               | 590              | ND    | 16,000           | ND    | 600              | ND    | 640              | ND    | 3,100            | ND    | 630              |       |
| 4-Bromophenyl phenyl ether    |  |  | ND                     | ND               | ND               | ND               | 1,100            | ND               | 1,100            | ND    | 30,000           | ND    | 1,100            | ND    | 1,200            | ND    | 5,700            | ND    | 1,100            |       |
| 4-Chloro-3-methylphenol       |  |  | ND                     | ND               | ND               | ND               | 370              | ND               | 370              | ND    | 10,000           | ND    | 380              | ND    | 400              | ND    | 2,000            | ND    | 390              |       |
| 4-Chloroaniline               |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 4-Chlorophenyl phenyl ether   |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 4-Nitroaniline                |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| 4-Nitrophenol                 |  |  | ND                     | ND               | ND               | ND               | 590              | ND               | 590              | ND    | 16,000           | ND    | 600              | ND    | 640              | ND    | 3,100            | ND    | 630              |       |
| Acenaphthene                  | 20,000   | 100,000  | ND                     | ND               | ND               | ND               | 1,100            | ND               | 1,100            | ND    | 30,000           | ND    | 1,100            | ND    | 1,200            | ND    | 5,700            | ND    | 1,100            |       |
| Acenaphthylene                | 100,000  | 100,000  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 2,600            | ND    | 1,400            | ND    | 4,400            |       |
| Acetophenone                  |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 1,600            | ND    | 1,400            | ND    | 1,500            |       |
| Aniline                       |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| Anthracene                    |  | 100,000  | ND                     | ND               | ND               | ND               | 1,100            | ND               | 1,100            | ND    | 30,000           | ND    | 1,100            | ND    | 1,200            | ND    | 5,700            | ND    | 1,100            |       |
| Azobenzene                    |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 5,100            | ND    | 2,200            | ND    | 16,000           |       |
| Benzo(a)anthracene            | 1,000  | 1,000  | ND                     | ND               | ND               | ND               | 280              | ND               | 280              | ND    | 7,200            | ND    | 280              | ND    | 16,000           | ND    | 7,400            | ND    | 27,000           |       |
| Benzenidine                   |  |  | ND                     | ND               | ND               | ND               | 440              | ND               | 440              | ND    | 12,000           | ND    | 450              | ND    | 480              | ND    | 2,300            | ND    | 470              |       |
| Benzo(a)pyrene                | 1,000  | 1,000  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 12,000           | ND    | 1,800            | ND    | 21,000           |       |
| Benzo(b)fluoranthene          | 1,000  | 1,000  | ND                     | ND               | ND               | ND               | 320              | ND               | 320              | ND    | 7,200            | ND    | 320              | ND    | 4,500            | ND    | 9,800            | ND    | 27,000           |       |
| Benzo(g,h,i)perylene          | 100,000  | 100,000  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 6,800            | ND    | 1,400            | ND    | 5,500            |       |
| Benzo(k)fluoranthene          | 800  | 3,900  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 5,400            | ND    | 2,800            | ND    | 4,500            |       |
| Benzoic Acid                  |  |  | ND                     | ND               | ND               | ND               | 1,100            | ND               | 1,100            | ND    | 30,000           | ND    | 1,100            | ND    | 1,200            | ND    | 5,700            | ND    | 1,100            |       |
| Butyl benzyl phthalate        |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| Bis(2-chloroethoxy)methane    |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| Bis(2-chloroethyl)ether       |  |  | ND                     | ND               | ND               | ND               | 370              | ND               | 370              | ND    | 10,000           | ND    | 380              | ND    | 400              | ND    | 2,000            | ND    | 390              |       |
| Bis(2-chloroisopropyl)ether   |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| Bis(2-ethylhexyl)phthalate    |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 1,800            | ND    | 1,400            | ND    | 270              |       |
| Carbazole                     |  |  | ND                     | ND               | ND               | ND               | 590              | ND               | 590              | ND    | 15,000           | ND    | 920              | ND    | 3,300            | ND    | 3,800            | ND    | 9,400            |       |
| Chrysene                      | 1,000  | 3,900  | ND                     | ND               | ND               | ND               | 270              | ND               | 260              | ND    | 7,200            | ND    | 3,900            | ND    | 14,000           | ND    | 7,800            | ND    | 27,000           |       |
| Dibenzo(a,h)anthracene        | 330  | 330  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 650              | ND    | 2,200            | ND    | 1,400            | ND    | 2,000            |       |
| Dibenzofuran                  |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 400              | ND    | 2,000            | ND    | 1,400            | ND    | 4,000            |       |
| Diethyl phthalate             |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| Dimethyl phthalate            |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| Di-n-butylphthalate           |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| Di-n-octylphthalate           |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| Fluoranthene                  | 100,000  | 100,000  | ND                     | ND               | ND               | ND               | 440              | ND               | 260              | ND    | 16,000           | ND    | 7,000            | ND    | 39,000           | ND    | 18,000           | ND    | 83,000           |       |
| Fluorene                      | 30,000   | 100,000  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 460              | ND    | 2,300            | ND    | 1,400            | ND    | 4,800            |       |
| Hexachlorobenzene             |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| Hexachlorobutadiene           |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| Hexachlorocyclopentadiene     |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| Hexachloroethane              |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| Indeno(1,2,3-cd)pyrene        | 500  | 500  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 2,200            | ND    | 5,500            | ND    | 1,400            | ND    | 11,000           |       |
| Isophorone                    |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 340              | ND    | 260              | ND    | 1,400            | ND    | 270              |       |
| Naphthalene                   | 12,000   | 100,000  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 340              | ND    | 260              | ND    | 1,400            | ND    | 270              |       |
| Nitrobenzene                  |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| N-Nitrosodimethylamine        |  |  | ND                     | ND               | ND               | ND               | 370              | ND               | 370              | ND    | 10,000           | ND    | 380              | ND    | 400              | ND    | 2,000            | ND    | 390              |       |
| N-Nitrosodi-n-propylamine     |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| N-Nitrosodiphenylamine        |  |  | ND                     | ND               | ND               | ND               | 370              | ND               | 370              | ND    | 10,000           | ND    | 380              | ND    | 400              | ND    | 2,000            | ND    | 390              |       |
| Pentachloronitrobenzene       |  |  | ND                     | ND               | ND               | ND               | 370              | ND               | 370              | ND    | 10,000           | ND    | 380              | ND    | 400              | ND    | 2,000            | ND    | 390              |       |
| Pentachlorophenol             |  |  | ND                     | ND               | ND               | ND               | 370              | ND               | 370              | ND    | 10,000           | ND    | 380              | ND    | 400              | ND    | 2,000            | ND    | 390              |       |
| Phenanthrene                  | 100,000  | 100,000  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 21,000           | ND    | 7,200            | ND    | 5,400            | ND    | 13,000           | ND    | 79,000           |       |
| Phenol                        |  |  | ND                     | ND               | ND               | ND               | 260              | ND               | 260              | ND    | 7,200            | ND    | 260              | ND    | 280              | ND    | 1,400            | ND    | 270              |       |
| Pyrene                        | 100,000  | 100,000  | ND                     | ND               | ND               | ND               | 420              | ND               | 260              | ND    | 14,000           | ND    | 6,100            | ND    | 34,000           | ND    | 15,000           | ND    | 76,000           |       |
| Pyridine                      |  |  | ND                     | ND               | ND               | ND               | 370              | ND               | 370              | ND    | 10,000           | ND    | 380              | ND    | 400              | ND    | 2,000            | ND    | 390              |       |

Notes:

\* - 6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives

ND - Not-detected

RL - Reporting Limit

Bold/highlighted- Indicated exceedance of the NYSDEC UUSCO Guidance Value

Bold/highlighted- Indicated exceedance of the NYSDEC RRSCO Guidance Value

TABLE 3  
527 Flushing Avenue, Brooklyn, New York  
Soil Analytical Results  
Pesticides / PCBs

| COMPOUND           | NYSDEC Part 375.6<br>Unrestricted Use Soil<br>Cleanup Objectives* | NYDEC Part 375.6<br>Restricted Residential Soil<br>Cleanup Objectives* | Remedial Investigation |                   |                   |
|--------------------|---|--|------------------------|-------------------|-------------------|
|                    |   |  | B1                     | B2                | B3                |
|                    |   |  | (10-12')<br>µg/Kg      | (10-12')<br>µg/Kg | (10-12')<br>µg/Kg |
| PCB-1016           | 1,000   | 1,000  | ND                     | ND                | ND                |
| PCB-1221           | 1,000   | 1,000  | ND                     | ND                | ND                |
| PCB-1232           | 1,000   | 1,000  | ND                     | ND                | ND                |
| PCB-1242           | 1,000   | 1,000  | ND                     | ND                | ND                |
| PCB-1248           | 1,000   | 1,000  | ND                     | ND                | ND                |
| PCB-1254           | 1,000   | 1,000  | ND                     | ND                | ND                |
| PCB-1260           | 1,000   | 1,000  | ND                     | ND                | ND                |
| PCB-1262           | 1,000   | 1,000  | ND                     | ND                | ND                |
| PCB-1268           | 1,000   | 1,000  | ND                     | ND                | ND                |
| 4,4-DDD            | 3.3   | 13,000   | ND                     | ND                | ND                |
| 4,4-DDE            | 3.3   | 8,900  | ND                     | ND                | ND                |
| 4,4-DDT            | 3.3   | 7,900  | ND                     | ND                | ND                |
| a-BHC              | 20  | 480  | ND                     | ND                | ND                |
| Alachlor           |   |  | ND                     | ND                | ND                |
| Aldrin             | 5   | 97   | ND                     | ND                | ND                |
| b-BHC              | 36  | 360  | ND                     | ND                | ND                |
| Chlordane          | 94  | 4,200  | ND                     | ND                | ND                |
| d-BHC              | 40  | 100,000  | ND                     | ND                | ND                |
| Dieldrin           | 5   | 200  | ND                     | ND                | ND                |
| Endosulfan I       | 2,400   | 24,000   | ND                     | ND                | ND                |
| Endosulfan II      | 2,400   | 24,000   | ND                     | ND                | ND                |
| Endosulfan Sulfate | 2,400   | 24,000   | ND                     | ND                | ND                |
| Endrin             | 14  | 11,000   | ND                     | ND                | ND                |
| Endrin aldehyde    |   |  | ND                     | ND                | ND                |
| Endrin ketone      |   |  | ND                     | ND                | ND                |
| gamma-BHC          |   |  | ND                     | ND                | ND                |
| Heptachlor         | 42  | 2,100  | ND                     | ND                | ND                |
| Heptachlor epoxide |   |  | ND                     | ND                | ND                |
| Methoxychlor       |   |  | ND                     | ND                | ND                |
| Toxaphene          |   |  | ND                     | ND                | ND                |

**Notes:**

\* - 6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives

ND - Not-detected

**Bold/highlighted-** Indicated exceedance of the NYSDEC UUSCO Guidance Value

**Yellow highlighted-** Indicated exceedance of the NYSDEC RRSCO Guidance Value

TABLE 4  
527 Flushing Avenue, Brooklyn, New York  
Soil Analytical Results  
Metals

| COMPOUND  | NYSDEC Part 375.6<br>Unrestricted Use Soil<br>Cleanup Objectives* | NYDEC Part 375.6 Restricted<br>Residential Soil Cleanup<br>Objectives* | Remedial Investigation  |                         |                         | Endpoint Samples          |      |                           |      |                           |      |                            |      |                           |      |                            |      |                           |      |                            |      |                           |      |
|-----------|---|--|-------------------------|-------------------------|-------------------------|---------------------------|------|---------------------------|------|---------------------------|------|----------------------------|------|---------------------------|------|----------------------------|------|---------------------------|------|----------------------------|------|---------------------------|------|
|           |   |  | B1<br>(10-12')<br>mg/Kg | B2<br>(10-12')<br>mg/Kg | B3<br>(10-12')<br>mg/Kg | EP1<br>6/20/2013<br>mg/Kg |      | EP2<br>6/20/2013<br>mg/Kg |      | EP3<br>6/20/2013<br>mg/Kg |      | EP3A<br>7/10/2013<br>mg/Kg |      | EP4<br>6/20/2013<br>mg/Kg |      | EP4A<br>7/10/2013<br>mg/Kg |      | EP5<br>6/20/2013<br>mg/Kg |      | EP5A<br>7/10/2013<br>mg/Kg |      | EP6<br>7/10/2013<br>mg/Kg |      |
|           |   |  |                         |                         |                         | Result                    | RL   | Result                    | RL   | Result                    | RL   | Result                     | RL   | Result                    | RL   | Result                     | RL   | Result                    | RL   | Result                     | RL   | Result                    | RL   |
|           |   |  |                         |                         |                         |                           |      |                           |      |                           |      |                            |      |                           |      |                            |      |                           |      |                            |      |                           |      |
| Aluminum  |   |  | 13,900                  | 19,200                  | 11,900                  | 3,150                     | 53   | 8,760                     | 61   | 5,750                     | 57   | -                          | -    | 5,850                     | 64   | -                          | -    | 5,800                     | 59   | -                          | -    | 6,230                     | 57   |
| Antimony  |   |  | <4.4                    | <5.3                    | <3.7                    | BRL                       | 3.5  | BRL                       | 4.1  | BRL                       | 3.8  | -                          | -    | BRL                       | 4.2  | -                          | -    | BRL                       | 5    | -                          | -    | BRL                       | 3.8  |
| Arsenic   | 13  | 16   | <0.89                   | <1.1                    | <0.73                   | 0.8                       | 0.7  | 7.2                       | 0.8  | 5.1                       | 0.8  | 22.7                       | 0.8  | 12.2                      | 0.8  | 22.2                       | 0.9  | 18.6                      | 0.8  | 31.6                       | 0.8  | 7.7                       | 0.8  |
| Barium    | 350   | 400  | 57                      | 111                     | 49.6                    | 23.2                      | 0.35 | 172                       | 0.41 | 132                       | 0.38 | 2,120                      | 4    | 2,010                     | 4.2  | 3,200                      | 4.5  | 506                       | 0.39 | 2,690                      | 4.1  | 348                       | 0.38 |
| Beryllium | 7.2   | 72   | <0.36                   | <0.42                   | 7.79                    | BRL                       | 0.28 | 0.47                      | 0.32 | 0.34                      | 0.3  | -                          | -    | 0.4                       | 0.34 | -                          | -    | 0.45                      | 0.31 | -                          | -    | 0.39                      | 0.31 |
| Cadmium   | 2.5 c   | 4.3  | 0.64                    | 0.54                    | 0.73                    | BRL                       | 0.35 | 0.46                      | 0.41 | 1.14                      | 0.38 | 3.43                       | 0.4  | 3.02                      | 0.42 | 2.93                       | 0.45 | 2.84                      | 0.39 | 6.45                       | 0.41 | 0.7                       | 0.38 |
| Calcium   |   |  | 1,640                   | 5,640                   | 1,640                   | 822                       | 5.3  | 5,750                     | 6.1  | 2,470                     | 5.7  | -                          | -    | 28,000                    | 64   | -                          | -    | 3,130                     | 5.9  | -                          | -    | 5,590                     | 5.7  |
| Chromium  | 30 c  | 180 - trivalent  | 21.8                    | 20.6                    | 21.7                    | 7.57                      | 0.38 | 18                        | 0.41 | 16.7                      | 0.38 | 28                         | 0.4  | 26.4                      | 0.42 | 40.5                       | 0.45 | 20.8                      | 0.39 | 55.7                       | 0.41 | 15.8                      | 0.38 |
| Cobalt    |   |  | 8.37                    | 6.58                    | 9.92                    | 2.76                      | 0.35 | 5.76                      | 0.41 | 4.82                      | 0.38 | -                          | -    | 5.79                      | 0.42 | -                          | -    | 7.7                       | 0.39 | -                          | -    | 5.37                      | 0.38 |
| Copper    | 50  | 270  | 19.8                    | 21.6                    | 17.9                    | 10.8                      | 0.35 | 43.1                      | 0.41 | 147                       | 0.38 | -                          | -    | 299                       | 4.2  | -                          | -    | 548                       | 3.9  | -                          | -    | 872                       | 3.8  |
| Iron      |   |  | 21,100                  | 10,300                  | 23,000                  | 11,400                    | 53   | 20,000                    | 61   | 16,200                    | 57   | -                          | -    | 22,000                    | 64   | -                          | -    | 20,800                    | 59   | -                          | -    | 16,900                    | 57   |
| Lead      | 63 c  | 400  | 10.3                    | 62.8                    | 65.2                    | 20.3                      | 0.35 | 265                       | 4.1  | 511                       | 3.8  | 1,850                      | 40   | 2,160                     | 42   | 2,720                      | 45   | 2,030                     | 39   | 2,840                      | 41   | 377                       | 3.8  |
| Magnesium |   |  | 2,260                   | 1,760                   | 2,010                   | 1,100                     | 5.3  | 2,450                     | 6.1  | 2,240                     | 5.7  | -                          | -    | 2,390                     | 6.4  | -                          | -    | 1,980                     | 5.9  | -                          | -    | 1,900                     | 5.7  |
| Manganese | 1600 c  | 2,000  | 512                     | 178                     | 705                     | 274                       | 3.5  | 355                       | 4.1  | 260                       | 3.8  | -                          | -    | 364                       | 4.2  | -                          | -    | 323                       | 3.9  | -                          | -    | 286                       | 3.8  |
| Mercury   | 0.18 c  | 0.81   | 0.11                    | <0.11                   | <0.09                   | 0.34                      | 0.07 | 2.34                      | 0.07 | 42.2                      | 0.77 | 6.7                        | 0.39 | 11.1                      | 0.74 | 12.3                       | 0.46 | 4.77                      | 0.09 | 5.97                       | 0.45 | 4.36                      | 0.09 |
| Nickel    | 30  | 310  | 15.1                    | 14.3                    | 13.9                    | 6.52                      | 0.35 | 14.1                      | 0.41 | 22.5                      | 0.38 | -                          | -    | 27.4                      | 0.42 | -                          | -    | 35.3                      | 0.39 | -                          | -    | 13.8                      | 0.38 |
| Potassium |   |  | 1,120                   | 848                     | 1,240                   | 515                       | 5.3  | 959                       | 6.1  | 734                       | 5.7  | -                          | -    | 765                       | 6.4  | -                          | -    | 745                       | 5.9  | -                          | -    | 836                       | 5.7  |
| Selenium  | 3.9c  | 180  | <1.8                    | <2.1                    | <1.5                    | BRL                       | 1.4  | BRL                       | 1.6  | BRL                       | 1.5  | BRL                        | 1.6  | BRL                       | 1.7  | BRL                        | 1.8  | BRL                       | 1.6  | BRL                        | 1.6  | BRL                       | 1.5  |
| Silver    | 2   | 180  | <0.44                   | <0.53                   | <0.37                   | BRL                       | 0.35 | BRL                       | 0.41 | BRL                       | 0.38 | 1.5                        | 0.4  | BRL                       | 1    | 1.05                       | 0.45 | BRL                       | 2    | 4.57                       | 0.41 | 0.75                      | 0.38 |
| Sodium    |   |  | 67.2                    | 132                     | 80.6                    | 56.6                      | 5.3  | 127                       | 6.1  | 110                       | 5.7  | -                          | -    | 132                       | 6.4  | -                          | -    | 89.2                      | 5.9  | -                          | -    | 147                       | 5.7  |
| Thallium  |   |  | <4.0                    | <4.7                    | <3.3                    | BRL                       | 0.6  | BRL                       | 0.6  | BRL                       | 0.6  | -                          | -    | BRL                       | 0.7  | -                          | -    | BRL                       | 0.6  | -                          | -    | BRL                       | 0.6  |
| Vanadium  |   |  | 34                      | 24.9                    | 35.2                    | 15.6                      | 0.35 | 25.5                      | 0.41 | 19.6                      | 0.38 | -                          | -    | 40.5                      | 0.42 | -                          | -    | 48.6                      | 0.39 | -                          | -    | 23.9                      | 0.38 |
| Zinc      | 109 c   | 10,000   | 37                      | 36.8                    | 35.2                    | 21.1                      | 0.35 | 116                       | 0.41 | 412                       | 3.8  | -                          | -    | 1,560                     | 4.2  | -                          | -    | 679                       | 3.9  | -                          | -    | 245                       | 3.8  |

Notes:

\* - 6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives

RL - Reporting Limit

**Bold/highlighted**- Indicated exceedance of the NYSDEC UUSCO Guidance Value

**Bold/highlighted**- Indicated exceedance of the NYSDEC RRSO Guidance Value

**TABLE 5**  
**Soil Cleanup Objectives**

| <b>Contaminant</b>                | <b>CAS Number</b> | <b>Track 4<br/>SCOs</b> |
|-----------------------------------|-------------------|-------------------------|
| <b>METALS</b>                     |                   |                         |
| Arsenic                           | 7440-38 -2        | 16f                     |
| Barium                            | 7440-39 -3        | 750                     |
| Beryllium                         | 7440-41 -7        | 72                      |
| Cadmium                           | 7440-43 -9        | 4.3                     |
| Chromium, hexavalent <sup>h</sup> | 18540-29-9        | 110                     |
| Chromium, trivalent <sup>h</sup>  | 16065-83-1        | 180                     |
| Copper                            | 7440-50 -8        | 750                     |
| Total Cyanide <sup>h</sup>        |                   | 27                      |
| Lead                              | 7439-92 -1        | 1,200                   |
| Manganese                         | 7439-96 -5        | 2,000f                  |
| Total Mercury                     |                   | 0.81j                   |
| Nickel                            | 7440-02 -0        | 310                     |
| Selenium                          | 7782-49 -2        | 180                     |
| Silver                            | 7440-22 -4        | 180                     |
| Zinc                              | 7440-66 -6        | 10,000 d                |
| <b>PESTICIDES / PCBs</b>          |                   |                         |
| 2,4,5-TP Acid (Silvex)            | 93-72-1           | 100a                    |
| 4,4'-DDE                          | 72-55-9           | 8.9                     |
| 4,4'-DDT                          | 50-29-3           | 7.9                     |
| 4,4'-DDD                          | 72-54-8           | 13                      |
| Aldrin                            | 309-00-2          | 0.097                   |
| alpha-BHC                         | 319-84-6          | 0.48                    |
| beta-BHC                          | 319-85-7          | 0.36                    |
| Chlordane (alpha)                 | 5103-71 -9        | 4.2                     |
| delta-BHC                         | 319-86-8          | 100a                    |
| Dibenzofuran                      | 132-64-9          | 59                      |
| Dieldrin                          | 60-57-1           | 0.2                     |
| Endosulfan I                      | 959-98-8          | 24i                     |
| Endosulfan II                     | 33213-65-9        | 24i                     |
| Endosulfan sulfate                | 1031-07 -8        | 24i                     |
| Endrin                            | 72-20-8           | 11                      |
| Heptachlor                        | 76-44-8           | 2.1                     |
| Lindane                           | 58-89-9           | 1.3                     |
| Polychlorinated biphenyls         | 1336-36 -3        | 1                       |
| <b>SEMI-VOLATILES</b>             |                   |                         |
| Acenaphthene                      | 83-32-9           | 100a                    |
| Acenaphthylene                    | 208-96-8          | 100a                    |
| Anthracene                        | 120-12-7          | 100a                    |
| Benz(a)anthracene                 | 56-55-3           | 1f                      |
| Benzo(a)pyrene                    | 50-32-8           | 1f                      |
| Benzo(b) fluoranthene             | 205-99-2          | 1f                      |
| Benzo(g,h,i) perylene             | 191-24-2          | 100a                    |
| Benzo(k) fluoranthene             | 207-08-9          | 3.9                     |
| Chrysene                          | 218-01-9          | 3.9                     |
| Dibenz(a,h) anthracene            | 53-70-3           | 0.33e                   |
| Fluoranthene                      | 206-44-0          | 100a                    |
| Fluorene                          | 86-73-7           | 100a                    |
| Indeno(1,2,3-cd) pyrene           | 193-39-5          | 0.5f                    |
| m-Cresol                          | 108-39-4          | 100a                    |
| Naphthalene                       | 91-20-3           | 100a                    |
| o-Cresol                          | 95-48-7           | 100a                    |
| p-Cresol                          | 106-44-5          | 100a                    |
| Pentachlorophenol                 | 87-86-5           | 6.7                     |
| Phenanthrene                      | 85-01-8           | 100a                    |
| Phenol                            | 108-95-2          | 100a                    |
| Pyrene                            | 129-00-0          | 100a                    |
| Total SVOCs                       | 129-00-0          | 250                     |

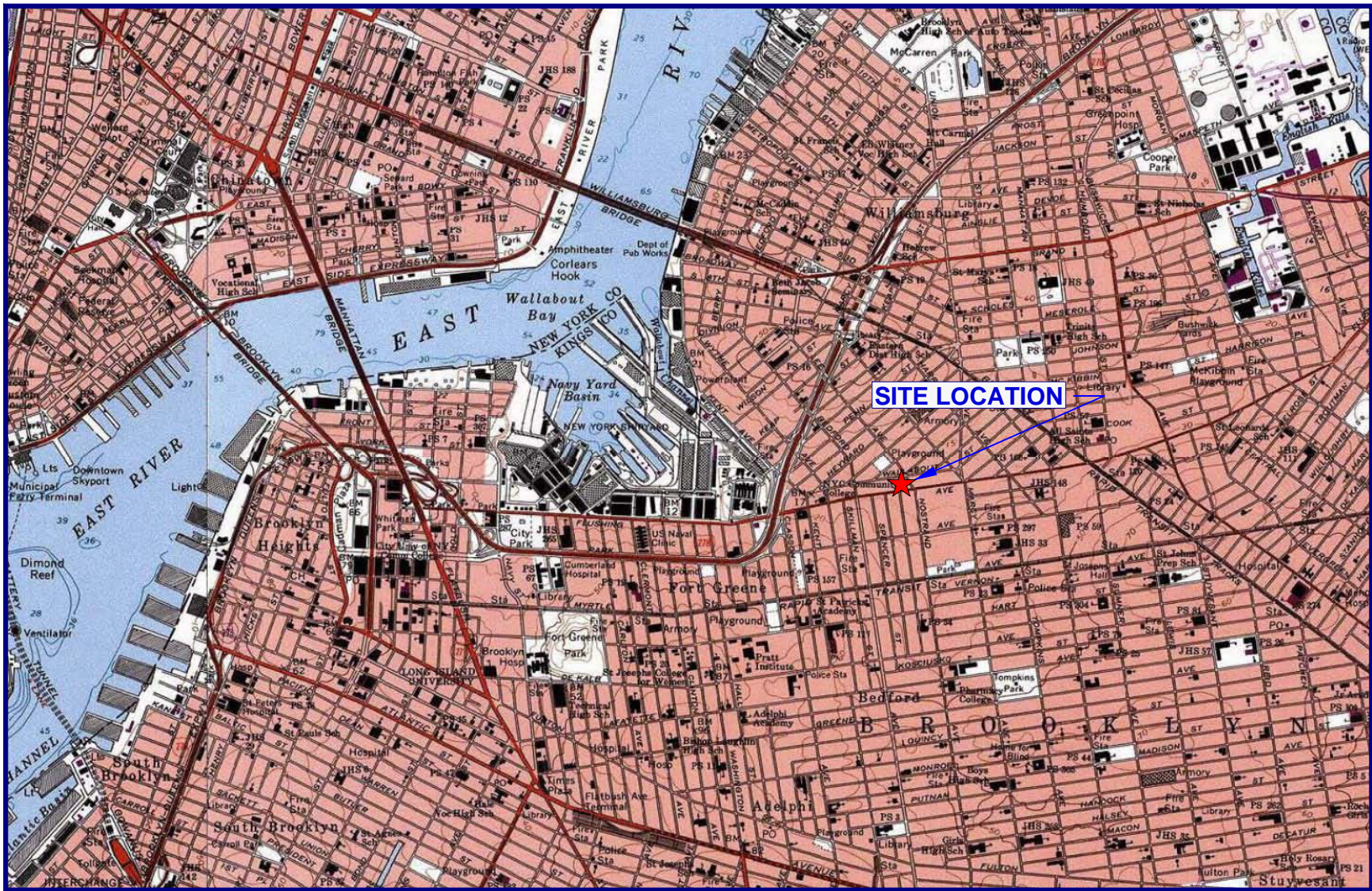
**TABLE 5**  
**Soil Cleanup Objectives**

| <b>Contaminant</b>       | <b>CAS Number</b> | <b>Track 4<br/>SCOs</b> |
|--------------------------|-------------------|-------------------------|
| <b>VOLATILES</b>         |                   |                         |
| 1,1,1-Trichloroethane    | 71-55-6           | 100a                    |
| 1,1-Dichloroethane       | 75-34-3           | 26                      |
| 1,1-Dichloroethene       | 75-35-4           | 100a                    |
| 1,2-Dichlorobenzene      | 95-50-1           | 100a                    |
| 1,2-Dichloroethane       | 107-06-2          | 3.1                     |
| cis-1,2-Dichloroethene   | 156-59-2          | 100a                    |
| trans-1,2-Dichloroethene | 156-60-5          | 100a                    |
| 1,3-Dichlorobenzene      | 541-73-1          | 49                      |
| 1,4-Dichlorobenzene      | 106-46-7          | 13                      |
| 1,4-Dioxane              | 123-91-1          | 13                      |
| Acetone                  | 67-64-1           | 100b                    |
| Benzene                  | 71-43-2           | 4.8                     |
| Butylbenzene             | 104-51-8          | 100a                    |
| Carbon tetrachloride     | 56-23-5           | 2.4                     |
| Chlorobenzene            | 108-90-7          | 100a                    |
| Chloroform               | 67-66-3           | 49                      |
| Ethylbenzene             | 100-41-4          | 41                      |
| Hexachlorobenzene        | 118-74-1          | 1.2                     |
| Methyl ethyl ketone      | 78-93-3           | 100a                    |
| Methyl tert-butyl ether  | 1634-04 -4        | 100a                    |
| Methylene chloride       | 75-09-2           | 100a                    |
| n-Propylbenzene          | 103-65-1          | 100a                    |
| sec-Butylbenzene         | 135-98-8          | 100a                    |
| tert-Butylbenzene        | 98-06-6           | 100a                    |
| Tetrachloroethene        | 127-18-4          | 19                      |
| Toluene                  | 108-88-3          | 100a                    |
| Trichloroethene          | 79-01-6           | 21                      |
| 1,2,4-Trimethylbenzene   | 95-63-6           | 52                      |
| 1,3,5-Trimethylbenzene   | 108-67-8          | 52                      |
| Vinyl chloride           | 75-01-4           | 0.9                     |
| Xylene (mixed)           | 1330-20 -7        | 100a                    |

All soil cleanup objectives (SCOs) are in parts per million (ppm). NS=Not specified. See Technical Support Document (TSD). Footnotes

- a The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm. See TSD section 9.3.
- b The SCOs for commercial use were capped at a maximum value of 500 ppm. See TSD section 9.3.
- c The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm. See TSD section 9.3.
- d The SCOs for metals were capped at a maximum value of 10,000 ppm. See TSD section 9.3.
- e For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.

# **FIGURES**



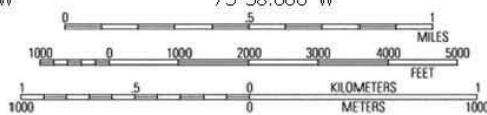
74°00.000' W

73°59.000' W

73°58.000' W

73°57.000' W

WGS84 73°56.000' W



USGS Brooklyn Quadrangle 1995, Contour Interval = 10 feet



**ENVIRONMENTAL BUSINESS CONSULTANTS**  
1808 MIDDLE COUNTRY ROAD, RIDGE, NY 11961

Phone 631.504.6000  
Fax 631.924.2780

**527 FLUSHING AVENUE  
BROOKLYN, NY**

**FIGURE 1** SITE LOCATION MAP

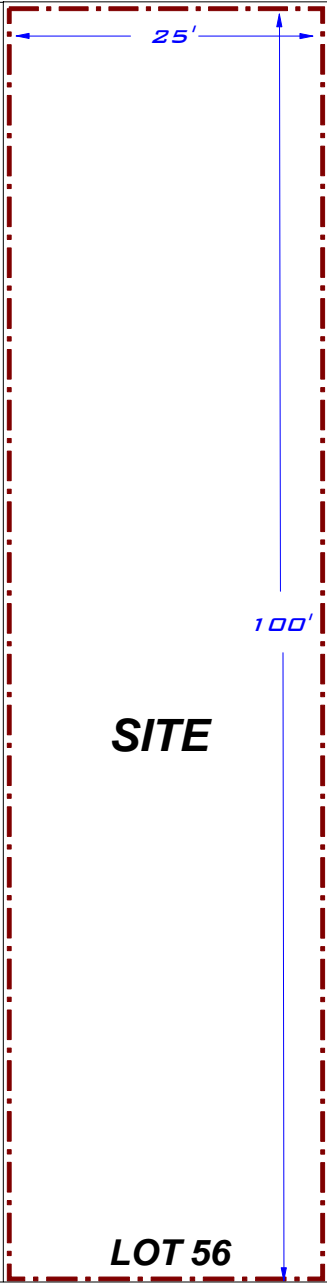
ADJACENT PROPERTY  
264 LEE AVENUE  
  
1-STORY BRICK  
COMMERCIAL BUILDING  
WITH TWO RETAIL SPACES

LOT 48



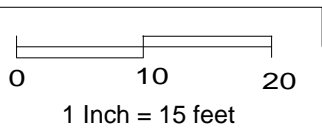
ADJACENT PROPERTY  
525 FLUSHING AVENUE  
  
3-STORY WOOD FRAME  
APARTMENT BUILDING  
W/ 1st FLOOR RETAIL SPACE

ADJACENT PROPERTY  
529 FLUSHING AVENUE  
  
4-STORY BRICK  
APARTMENT BUILDING  
W/ 1st FLOOR RETAIL SPACE



**SITE**

SCALE:



LOT 57

LOT 56

LOT 55

SIDEWALK

FLUSHING AVENUE

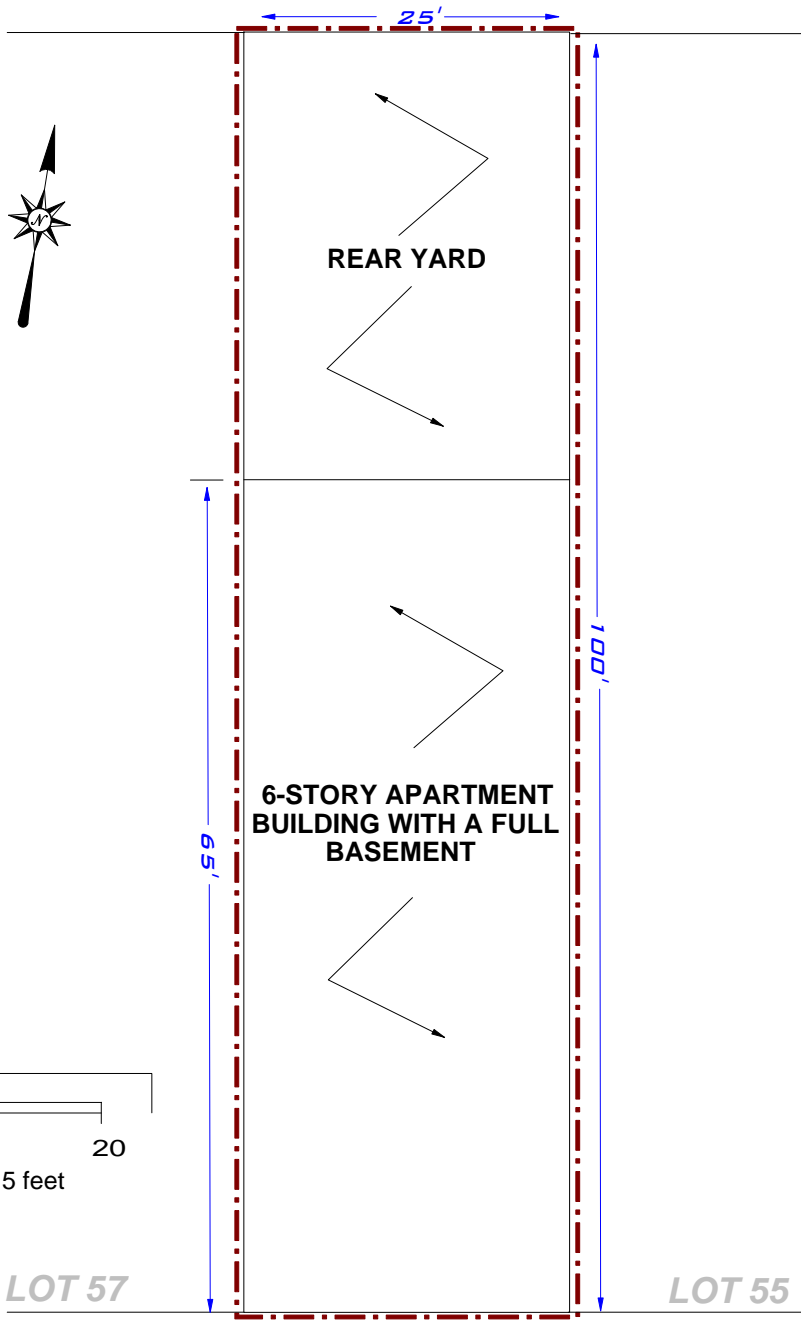


Phone 631.504.6000  
Fax 631.924.2870

Figure No.  
**2**

|                |                                   |
|----------------|-----------------------------------|
| Site Name:     | Redevelopment Project             |
| Site Address:  | 527 Flushing Avenue, Brooklyn, NY |
| Drawing Title: | Site Plan                         |

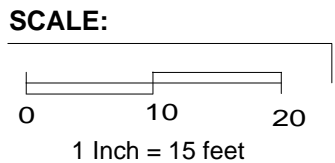
LOT 48



SIDEWALK

---

FLUSHING AVENUE



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ENVIRONMENTAL BUSINESS CONSULTANTS

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Fax 631.924.2870

527 FLUSHING AVENUE, BROOKLYN, NY

**FIGURE 3 REDEVELOPMENT PLAN**

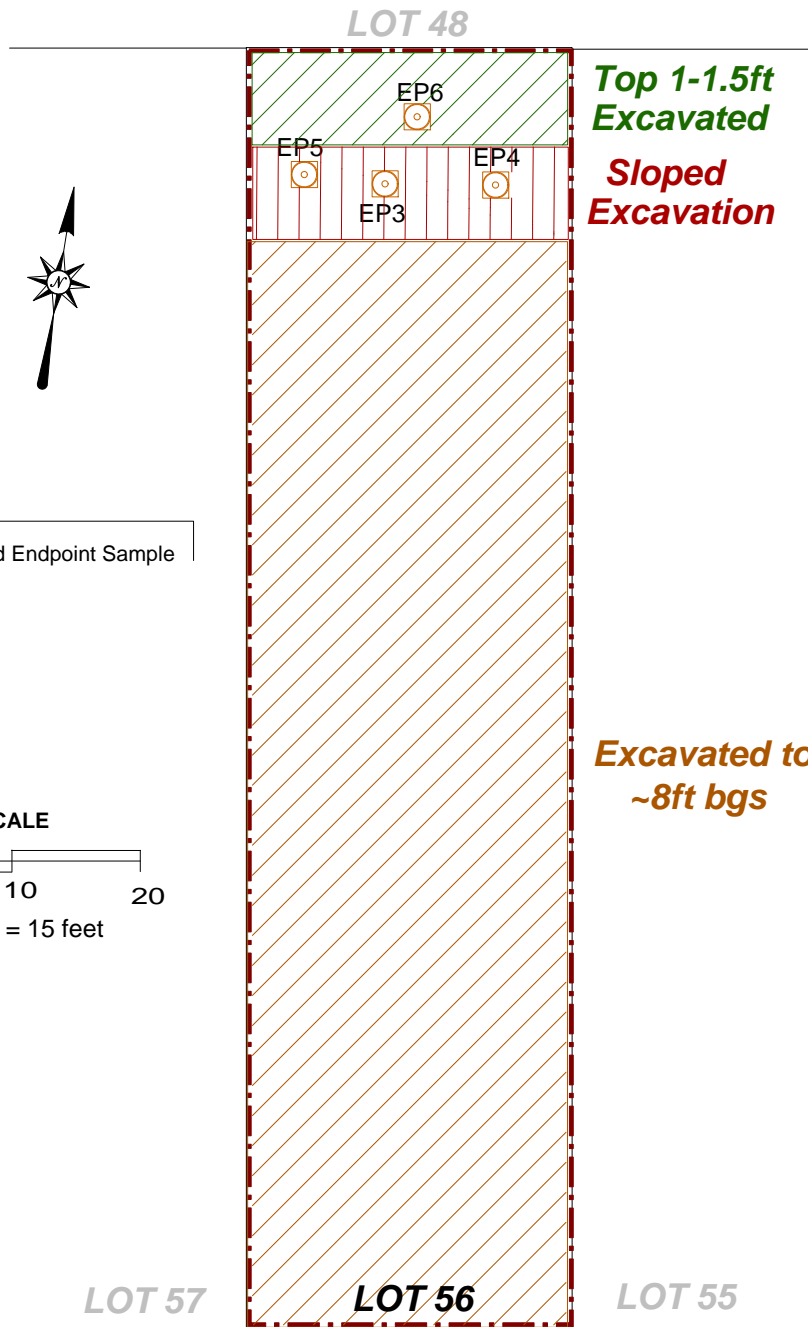


**FIGURE 4**  
**SURROUNDING LAND USE MAP**



527 FLUSHING AVENUE, BROOKLYN NY  
 HAZARDOUS MATERIALS REMEDIAL INVESTIGATION REPORT



**ENVIRONMENTAL BUSINESS CONSULTANTS**  
 1808 MIDDLE COUNTRY ROAD, RIDGE, NEW YORK 11961  
 PHONE: (631) 504-6000 FAX: (631) 924-2870



**KEY:**

-  Proposed Endpoint Sample Location
-  Lot Line

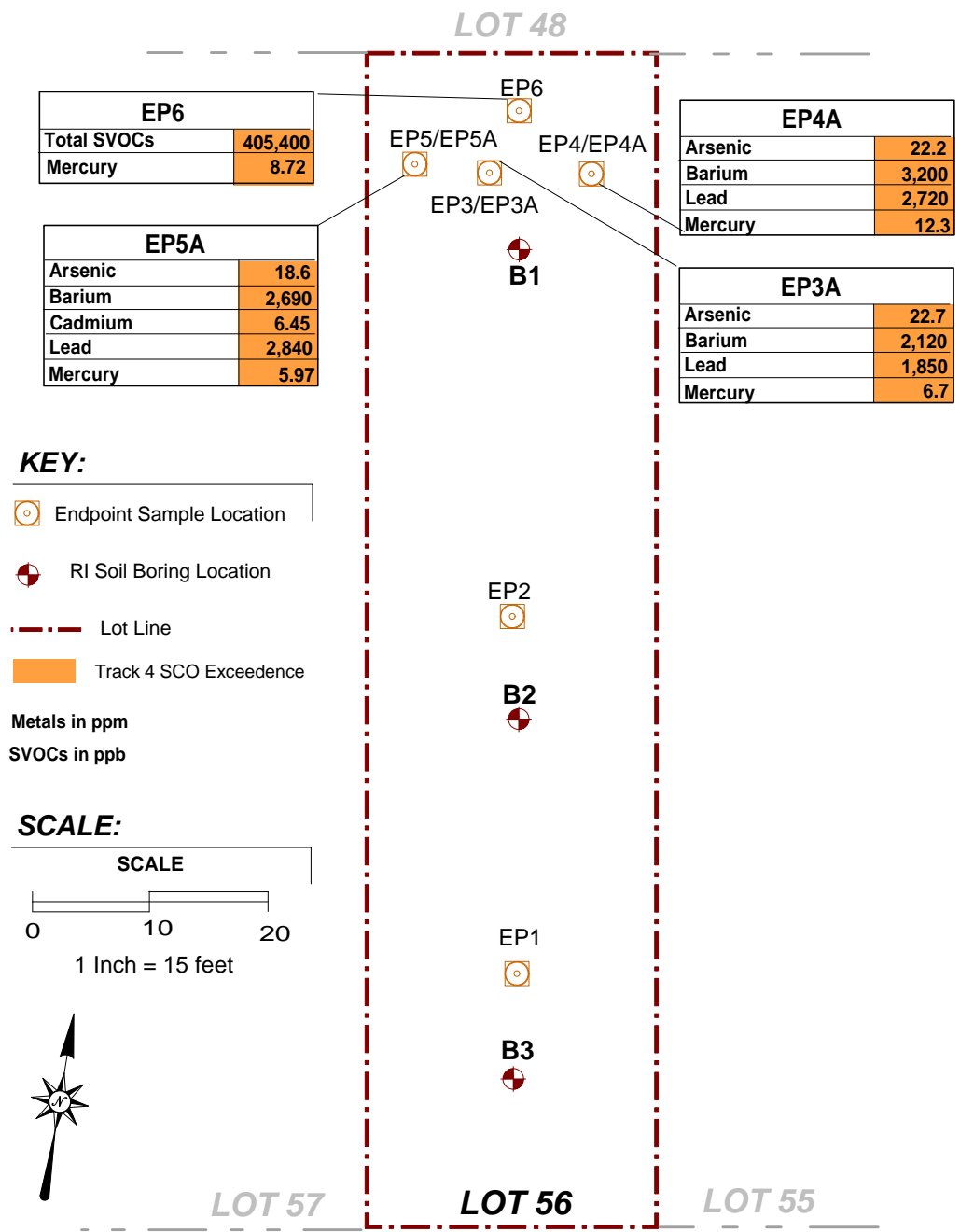
**SCALE**

0      10      20

1 Inch = 15 feet

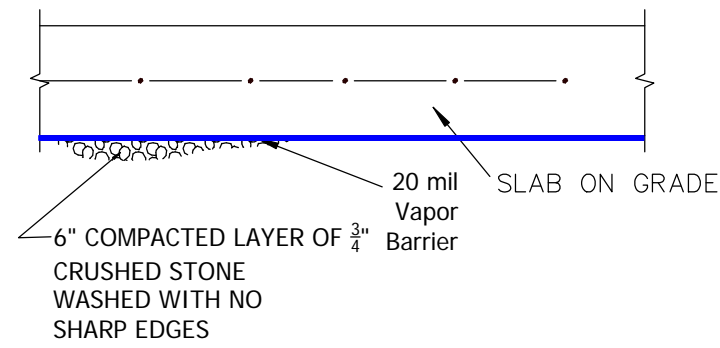
SIDEWALK

FLUSHING AVENUE

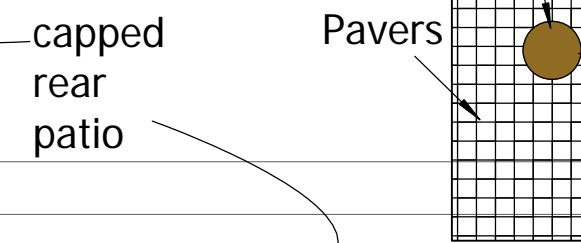
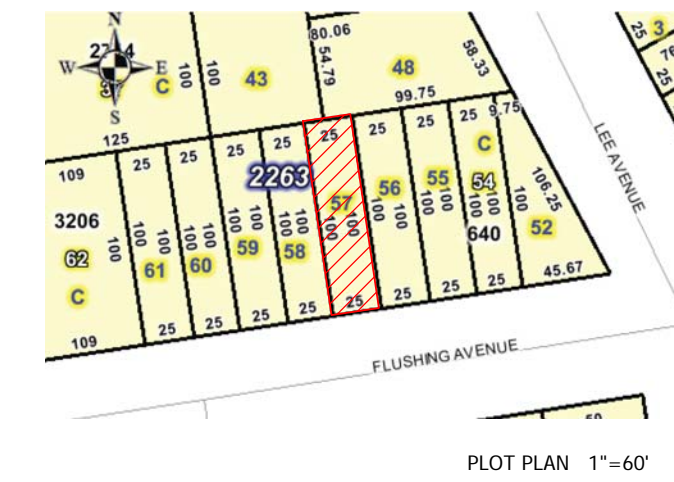
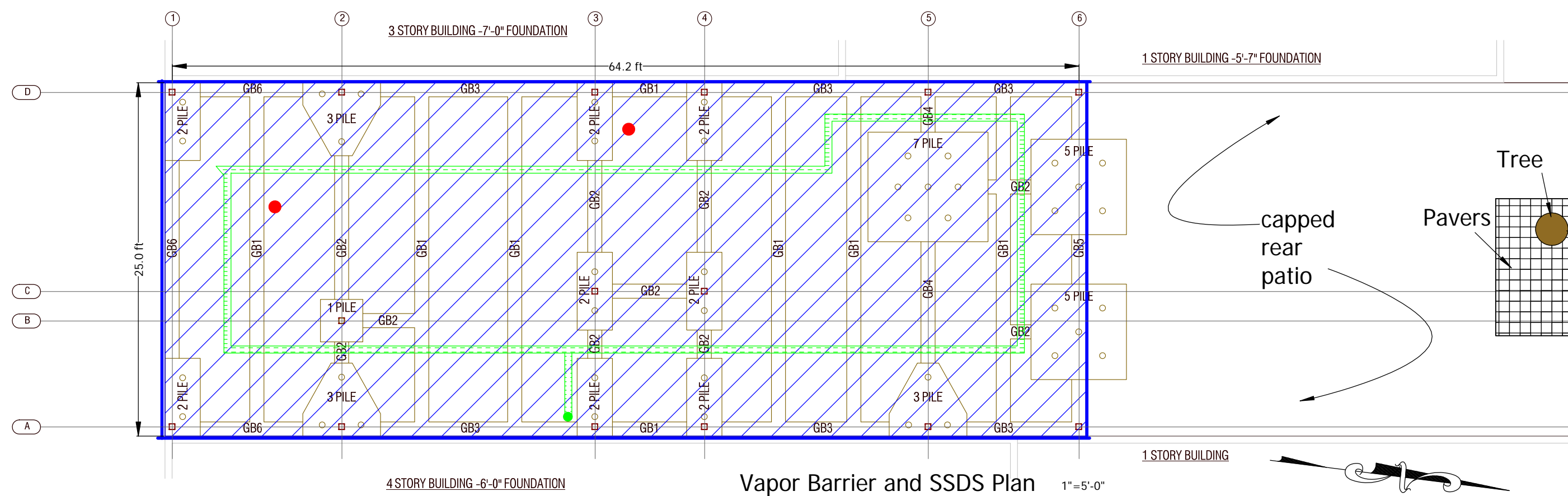
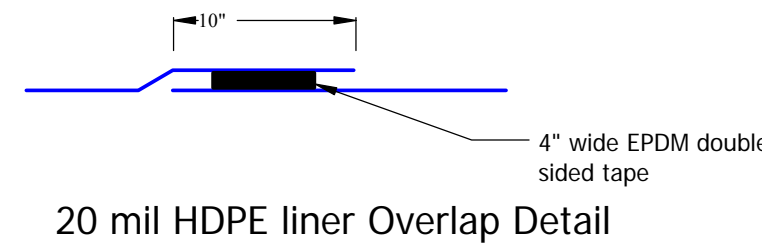
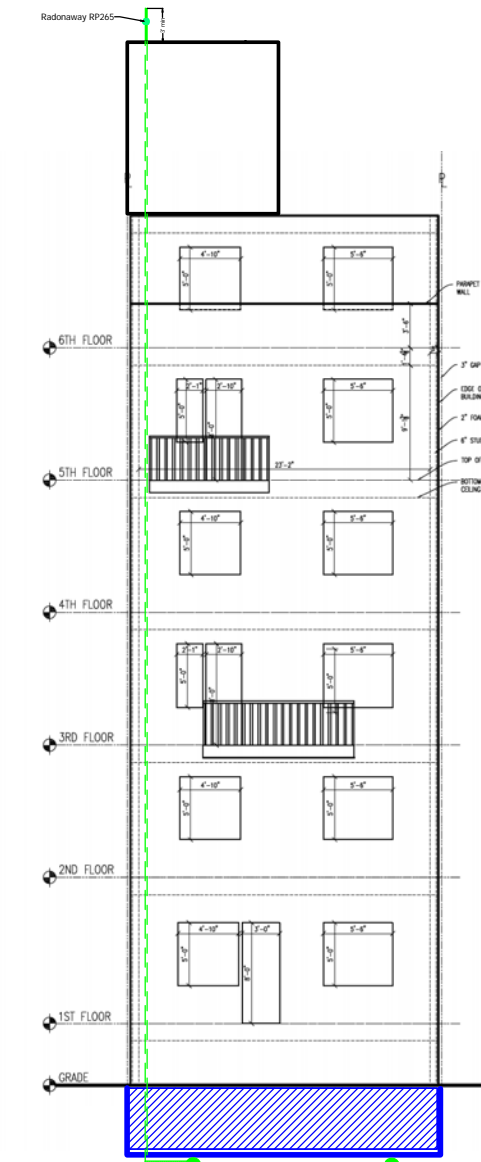
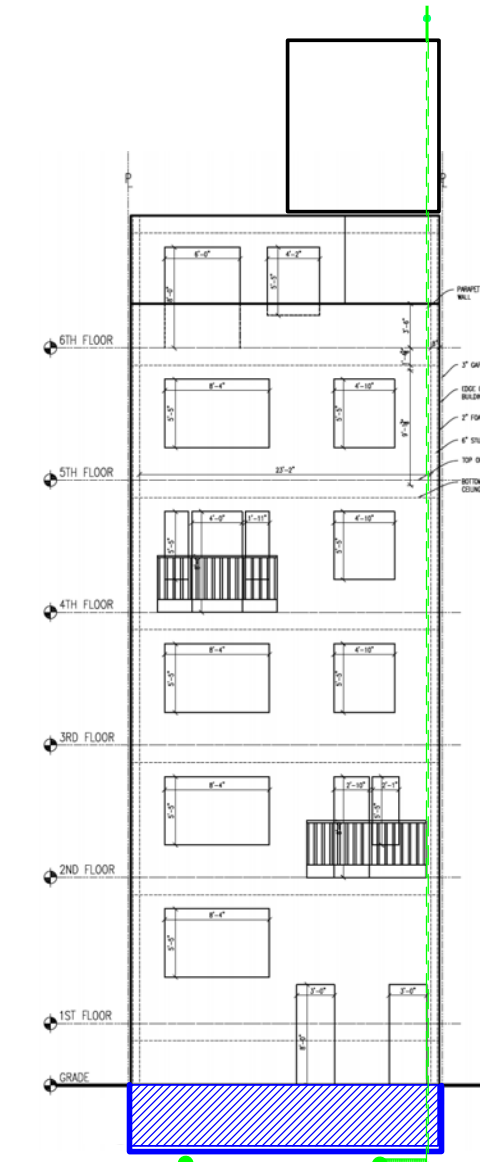
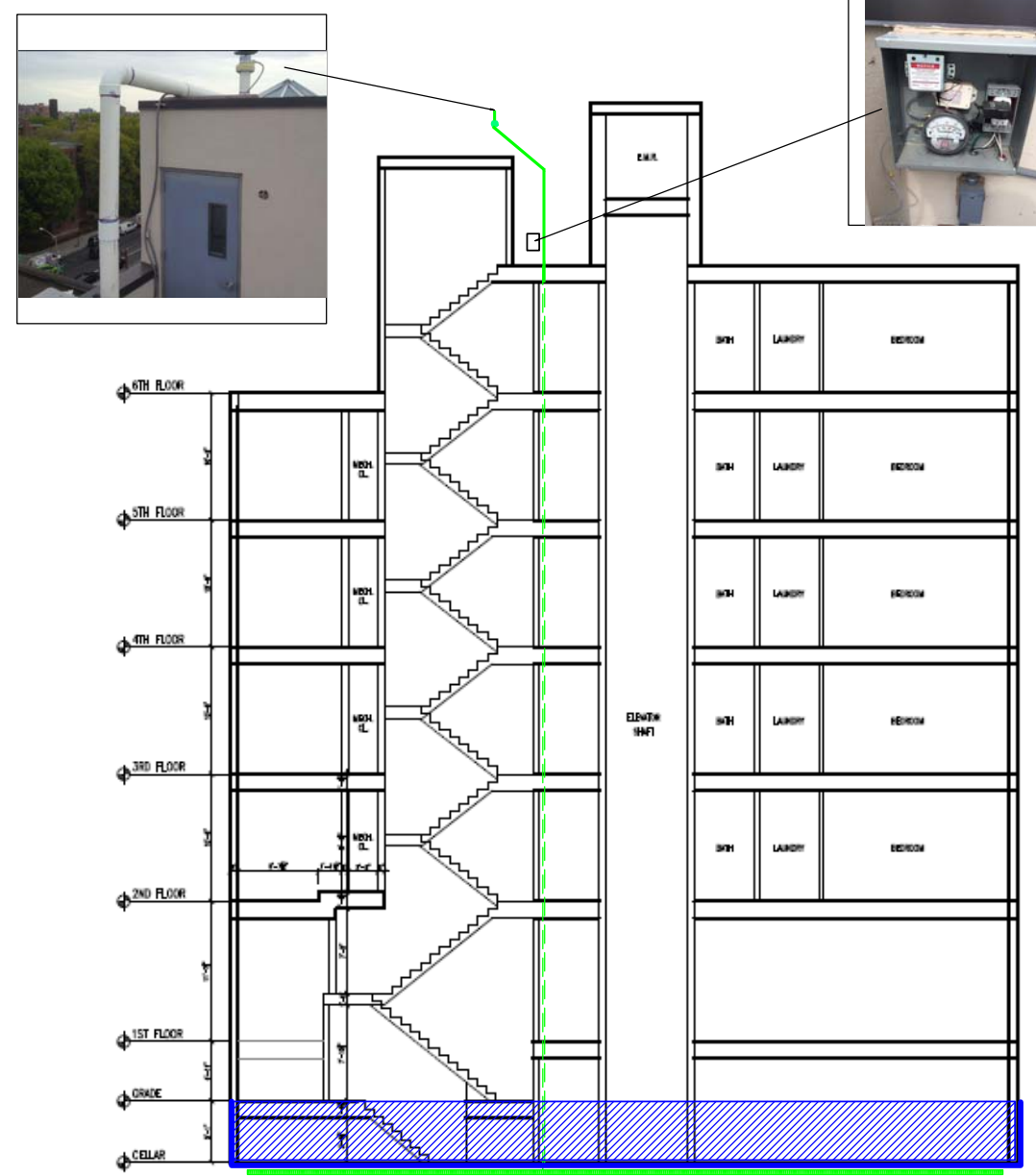
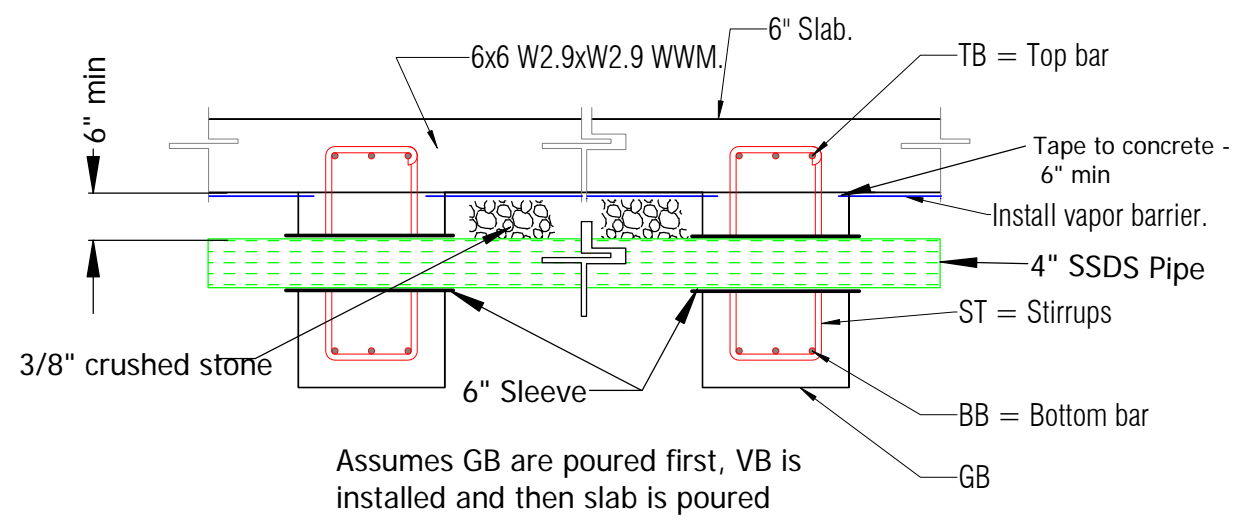


**Figure No.**  
**6**

|                |                                   |
|----------------|-----------------------------------|
| Site Name:     | Redevelopment Project             |
| Site Address:  | 527 Flushing Avenue, Brooklyn, NY |
| Drawing Title: | Endpoint Sample Locations         |



SLAB ON GRADE  
N.T.S.



- Notes:  
Dimensions obtained from Avishay I. Mazor PE and must be field verified.  
Controlled Inspections:  
1. Substrate Preparation  
2. Materials  
3. Pipe Installation  
4. Vapor Barrier Installation  
5. Seal around penetrations and perimeter. Contact points of VB to concrete.  
6. Risers  
7. Fan and start up.

- Legend  
4" HDPE CORRUGATED PIPE SMOOTH INTERIOR  
6" PVC SCH 80 RISER PIPE  
20 MIL HSPE GSE VAPOR BARRIER OR APPROVED EQUAL  
TROWEL 60 MIL MIN PROCOR 20 (GRACE) OR APPR'D EQUAL  
20 GSE HDPE VAPOR BARRIER BLIND SIDE INSTALLATION  
Location of Monitoring Point



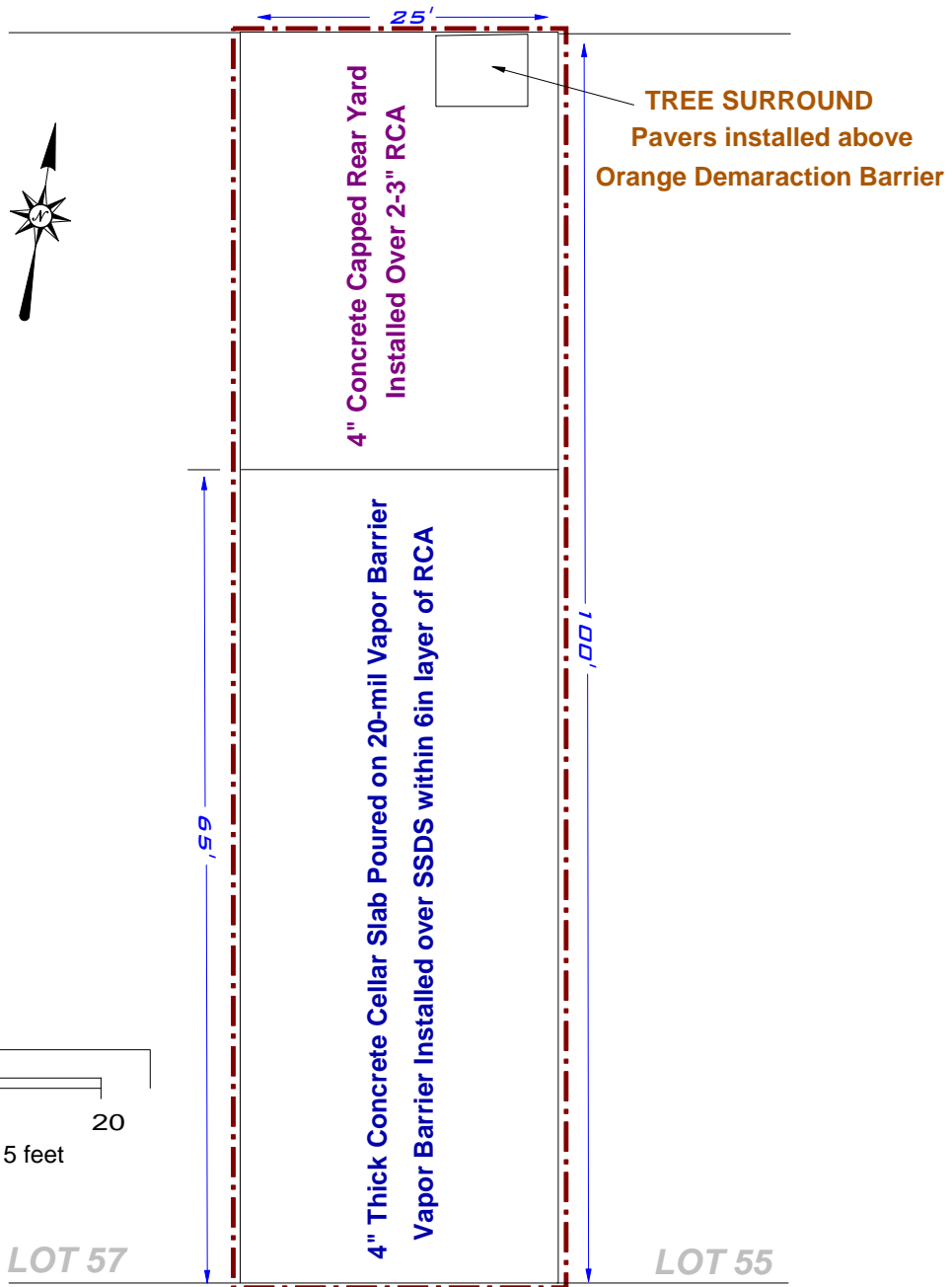
AMC ENGINEERING PLLC  
99 Jericho Turnpike  
Jericho, NY 11753  
516-417-8588

PROJECT  
527 FLUSHING AVENUE  
BROOKLYN, NY

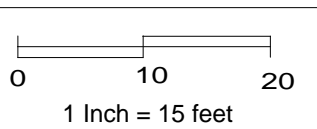
TITLE  
SSDS AND VAPOR BARRIER  
AS BUILT

DATE: 06/30/2015  
PROJECT No.:  
DRAWING BY: AC  
CHK BY:  
DWG No.: ENV-01-01

1 of 1



SCALE:



SIDEWALK

FLUSHING AVENUE