Gateway Center at Bronx Terminal Market

BRONX, NEW YORK

Site Management Plan

NYSDEC Site Number: C203015

Prepared for:
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New York, NY

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Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	DEC Approval Date
1	08/25/2011	Updated SSD system inspection checklists (Appendix N)	08/25/2011
2	08/25/2011	Added – daily maintenance staff checklist for Retail A (Exterior Street Rounds Log Sheet, added to Appendix P)	08/25/2011
3	10/12/2011 and 10/28/2011	Pressure monitoring of Retail A changed from annual to every five years (modified Sections 11, Tables 2 and 3, and Appendix P)	11/04/2011
4	03/28/2012	Groundwater Monitoring terminated (modified Sections 12 and 21, and Tables 2 and 3)	

MARCH 2012

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1.0 INTRODUCTION

This document is prepared as a requirement for fulfillment of remedial action at Gateway Center at Bronx Terminal Market (hereafter referred to as the "Site") under the New York State (NYS) Brownfield Cleanup Program (BCP) administered by New York State Department of Environmental Conservation (NYSDEC). The Site was remediated in accordance with the Brownfield Cleanup Agreement (BCA) Index# W2-1032-04-11, Site # C203015, which was issued on December 23, 2004, amended on June 14, 2005, and further amended on October 26, 2005.

1.1 General

BTM Development Partners, LLC (BTMDP), the Developer, entered into a BCA with the NYSDEC in December 2004, to investigate and, where necessary, remediate a 16.5-acre parcel that is part of a larger, 85-year old, 34-acre industrial and commercial use area known as the Bronx Terminal Market (BTM) located in Bronx, New York (the "Site"). Refer to Figure 1 for the regional location of the Site. A new, commercial project, Gateway Center at Bronx Terminal Market, is being developed on the 16.5-acre parcel. When completed, the Site will include approximately 957,000 gross square feet of retail establishments and 2,600 parking spaces in a multi-level parking garage and at-grade parking.

The Brownfield Cleanup Program Application for the site was originally submitted in April 2004 and covered the entire 34-acre parcel. However, in a letter dated August 25, 2004, the Developer requested that the application be amended to delete certain portions of the property originally delineated in the application. The original BCA was amended to exclude the portion containing the Bronx House of Detention (BHOD); the portion west of Exterior Street, south of the interpier area located just north of the former East 150th Street, and north of the 149th Street Bridge; and the property east of Exterior Street and north of the ramp to the Major Deegan Expressway. The letter also requested that the balance of the property be divided into two distinct Sites with a separate BCA executed for each Site. With concurrence from NYSDEC, the Developer completed the administrative process of separating the Eastern Parcel and Park Area and the Western Parcel into separate BCAs. On December 23, 2004, NYSDEC executed a separate BCA for each respective Site, with the Sites designated: Gateway Center at Bronx Terminal Market, Eastern Parcel and Park Area (BCP Index No. W2-1032-04-11, Site

No. C203015); and the Gateway Center at Bronx Terminal Market, Western Parcel (BCP Index No. W2-1033-04-11, Site No. C203028). This Site Management Plan refers to the Eastern Parcel and Park Area (Site No. C203015) only.

The BCA for Gateway Center at Bronx Terminal Market, Eastern Parcel and Park Area was amended on June 14, 2005, to include the BHOD area. The BCA for Gateway Center at Bronx Terminal Market, Eastern Parcel and Park Area was further amended on October 26, 2005 to exclude the Park Area west of Exterior Street. The Amendment clarifies that the original BCA now relates to the Eastern Parcel (including the BHOD) exclusively. The Eastern Parcel (or the "Site") consists of a 16.5-acre portion of the 34-acre parcel. The boundary of this 16.5-acre BCP Site is more fully described in Appendix A – Metes and Bounds.

After completion of the remedial action described in the Remedial Work Plan, some contamination was left in the subsurface at this Site, which is hereafter referred to as 'residual contamination.'

This Site Management Plan (SMP) was prepared to manage residual contamination remaining at the Site in perpetuity or until removal of the Environmental Easement in accordance with 6 NYCRR Part 375. Remedial Action work on the Site began in October 2006, and was completed in December 2008. All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by Langan Engineering & Environmental Services, P.C. (Langan), on behalf of BTM Development Partners, LLC (Owner), in accordance with the requirements in NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation, dated December 2002, and the guidelines provided by NYSDEC. This SMP addresses the means for implementation of Institutional Controls (ICs) and Engineering Controls (ECs) implemented at the Site.

1.2 Purpose

The Site contains residual contamination that has been left after completion of the remedial action that has been performed under the BCP. ECs have been incorporated in the remedy for the Site to provide proper management of residual contamination in the future to ensure protection of public health and the environment. An Environmental Easement for the Site has been recorded with the Bronx County Clerk that provides an enforceable means of ensuring the continued and proper management of residual contamination and protection of public health and the environment. The Environmental Easement requires strict adherence to all ECs and all ICs placed on this Site by the grantor and any and all and grantor's successors. The ICs provide

restrictions on Site usage and mandate operation, maintenance, monitoring and reporting measures for those ECs and ICs. This SMP is a document that ensures compliance with all ECs and ICs required by the Environmental Easement for residual contamination at the Site. The SMP has been approved by the NYSDEC, and compliance with this Plan is required by the Grantor of the Environmental Easement and grantor's successors and assigns. This plan is subject to change by NYSDEC.

Site management is the last phase of the remedial process, which begins with the approval of the Final Engineering Report (FER) and issuance of the Certificate of Completion (COC) by NYSDEC. The SMP continues in perpetuity or until extinguished in accordance with 6 NYCRR Part 375. It is the responsibility of the Environmental Easement grantor, and its successors and assigns to ensure that all Site management responsibilities under this plan are performed.

The SMP is intended to provide a detailed description of the procedures required to manage residual contamination at the Site following completion of the Remedial Action in accordance with the NYS BCA with the NYSDEC. This includes (1) development, implementation, and management of all ECs and ICs; (2) development and implementation of monitoring systems and a Monitoring Plan; (3) development of a plan to operate and maintain any treatment, collection, containment, or recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual); (4) submittal of Site Management Reports, performance of inspections and certification of results, and demonstration of proper communication of Site information to NYSDEC; and (5) defining criteria for termination of treatment system operation.

This SMP includes four plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site monitoring; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems; and (4) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC.

Site management activities, reporting, and EC/IC certification will be scheduled on a certification period basis. The certification period will be annually.

Important notes regarding this SMP are as follows:

- This SMP defines Site-specific implementation procedures as required by the Environmental Easement. The penalty for failure to implement the SMP is revocation of the COC;

- The BCA (Index No. W2-1032-04-11; Site No. C203015) for the Site requires conformance with this SMP, and therefore, serves as a contractual binding authority under which this SMP is to be implemented. The BCP law itself also requires the preparation of a SMP in ECL 27-1415 and 27-1419. Therefore, the BCA is a binding contract and the BCP law is statutory authority under which this SMP is required and is to be implemented.
- The SMP and all Site documents are maintained at the NYSDEC Region 2 offices (or successor agency). At the time of SMP submission (April 2009), the Site documents can also be found in the repositories established for this project including:

New York Public Library
Melrose Branch
910 Morris Avenue
Bronx, New York 10451
Telephone: (718) 588-0110

Monday: 12 to 8 PM
Tuesday: 10 AM to 6 PM
Wednesday: 12 to 8 PM
Thursday: 10 AM to 6 PM
Friday: 10 AM to 6 PM
Saturday: 10 AM to 5 PM

NYSDEC Region 2 Office
47-40 21st Street
Long Island City, NY 11101
(call in advance) (718) 482-4891
Hours: Monday to Friday: 9 AM to 5 PM

2.0 SITE BACKGROUND

2.1 Site Location and Description

The Site is located in the West Haven neighborhood of The Bronx, New York and is identified as Tax Block 2356, Lot 20, Tax Block 2357, Lots 1 and 86, and Tax Block 2359, Lot 32 on the New York City Tax Map (pre-project). A site location map is provided as Figure 1. The Site is situated on an approximately 16.5-acre area and is roughly bounded by:

- East 149th Street to the south,
- a Major Deegan Expressway ramp (Ramp A), just south of the Macomb's Dam Bridge, and Yankee Stadium to the north,
- Exterior Street, with the Major Deegan elevated expressway above, to the west, and
- River Avenue and the Metro North railroad to the east. Metro North railroad belongs to the New York City Metropolitan Transportation Authority (MTA).

The boundary map showing Site boundaries, included in the BCA as required by Environmental Conservation Law (ECL) Title 14 Section 27-1419, is provided as Figure 2. The boundary of the 16.5-acre property is fully described in Appendix A – Metes and Bounds.

2.2 Site History

Situated on the banks of the Harlem River, the Bronx Terminal Market area was favored for recreation until the mid 18th century. In 1841, industrial development of the area began with the building of elevated railroads between Manhattan and the Bronx. According to research performed by Columbia University's Historic Preservation graduate program, it is estimated that in 1851, as part of the installation of the Harlem River Line, a large portion of the present site was filled, creating the current shoreline. Subsequent to filling, between 1891 and 1897, five slips and piers were constructed along the new shoreline to the west of the Site, and the waterfront block became an industrial area occupied by coal, asphalt, and oil storage companies. In the 1930's, the area, including the Site, was designated as a market area.

Prior to the current use, Sanborn Fire Insurance Maps show that the Site was used for industrial and commercial operations including rail yards; toy, photographic mounts and refrigerator manufacturing; a lumber yard; a saw mill; a New York Police Department (NYPD) motorcycle storage and/or maintenance facility; and a New York City Department of Sanitation

(NYCDOS) facility. Historic and current property use, adjacent and up-gradient to the Site, includes gasoline stations, garages, and maintenance facilities with underground gasoline and oil tanks, and a Con Edison auto and machine repair garage. In addition, coal yards and an asphalt paving company were formerly located immediately to the west of the Site.

Construction of the existing Bronx Terminal Market buildings began in the 1920s and was completed in the mid 1970s. Site structures included five buildings. In 2004, one of the buildings (a six-story refrigerated warehouse) was razed at the direction of New York City due to safety concerns; however, the foundation and slab were left in place and integrated into the current development. This former warehouse, referred to as WH-1, had a footprint of approximately 106,000 square feet and was located on the northern side of the Site. The remaining four structures, prior to demolition or renovation as part of development, included:

- BHOD – The building had a footprint of approximately 32,500 square feet and was located between River and Cromwell Avenues, to the north of Building S-1.
- Building S-1 – The building had a footprint of approximately 132,700 square feet and was a warehouse on the east side of the property between River and Cromwell Avenues. The building was occupied by market tenants selling various foods and spices.
- Exterior Street Market Building – The building had a footprint of approximately 56,000 square feet and was located on the west side of the Site, along Exterior Street. The building was partially occupied by tenants selling various foods and spices and a refrigerated display case refurbishing business.
- Prow Building – The building has a footprint of approximately 20,200 square feet and is located on the southern end of the Site, between Exterior Street and River Avenue. The building was occupied by a café and by market tenants that sold produce. This building is being reincorporated into the new development.

The Site is owned by the City of New York and leased to BTMDP.

2.3 Site Geology

Generally, the ground surface elevation (el) prior to the remediation and development was 5[1] across the majority of the site, with elevations up to el 27 in the northeast corner and up to el

[1] All elevations reported herein are referenced to the Borough President of Bronx Datum, which is 2.608 feet above the USGS NVGD at Sandy Hook, NJ.

15 in the southeast corner. Pre-development site cover included impervious surfaces such as concrete, asphalt, and cobblestone.

Fill typically extended from beneath the pre-development surface cover to el 0, where it is underlain by native soil. The type of fill within the fill layer is roughly separated by the historic shoreline. The historic shoreline is shown on Figure 3. Generally, fill to the west of the historic shoreline was "historic fill", as that term is generally used by NYSDEC and as it is defined in 6 New York State Codes, Rules, and Regulations (NYCRR) Part 375. The historic fill is primarily composed of brick, asphalt, slag, concrete, wood, coal, sand, and gravel. The fill to the east of the historic shoreline was generally historic fill to three feet below grade surface (bgs), with the remainder being general fill (to the depth of native soil) composed of sand, silt, and gravel. In the northeast portion of the Site, where the pre-development elevation was higher, the total fill layer generally rises to el 15.

On the west side of the Site the historic fill is underlain by native soil characterized by silty clay. The silty clay pinches out to the east near the historic shoreline. On the east side of the Site the fill is generally underlain by native soil characterized as sand. The elevation of bedrock ranges from el 0 to el -15 in the northeast corner of the Site and slopes down to the south and west to el -50 and el -65, respectively.

A bedrock elevation contour map is shown in Figure 3. Pre-development subsurface cross-sections of the Site are provided as Appendix B.

Post-development, the ground surface elevation across the majority of the Site is approximately el 10, with elevations up to el 15 at the southernmost point of the Site and down to el 7 in the northwest portion of the Site (near the loading ramp associated with Retail A).

Throughout the Site, Site Specific Soil Cleanup Objectives (SSSCO)-compliant fill extends from beneath the surface cover to approximately el 5, where it is underlain by historic fill to approximately el 0, and subsequently native soil.

2.4 Site Hydrogeology

The Harlem River, approximately 500 feet to the west of the Site, is the only nearby surface water body. There are no wetlands on or immediately adjacent to the Site.

Groundwater underlying the Site was encountered at el 1 to el 2.5, or approximately 8 feet below post-remediation grade (based on an approximate el 10 across the majority of the developed Site). Groundwater was found to flow to the southwest toward the Harlem River, based on area topography and the 15 wells installed and sampled on the Site in 2003 and 2004.

The groundwater flow direction is generally consistent with regional maps published by the United States Geological Survey (USGS). Groundwater in this area of New York City is not used as a potable (drinking) water source. New York City residents receive their drinking water supply from surface reservoirs located in upstate New York.

A groundwater flow contour map with groundwater monitoring well locations is shown in Figure 4.

3.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The SMP and all Site documents are maintained at the NYSDEC Region 2 offices (or successor agency). At the time of SMP submission, each of the reports discussed in this section can be found at the Region 2 NYSDEC offices in Long Island City, New York, and the Melrose Public Library in The Bronx, New York.

3.1 Summary of Remedial Investigation Findings

A combined Phase I and Phase II Environmental Site Assessment (ESA) was performed by Langan and documented in a report dated January 6, 2004. The report addressed the Site and adjacent parcels to the west and north. The Phase I/II ESA included a site reconnaissance, review of historic information and environmental databases, and the results of a limited subsurface investigation conducted in late 2003. Below is a summary of the findings:

- Soil staining and odors indicative of petroleum impacts were observed during the field investigation. However, no individual or total volatile organic compounds (VOC) or poly-chlorinated biphenyls (PCB) were detected above the most stringent guidelines in NYSDEC's Technical and Administrative Guidance Memo (TAGM) 4046 Recommended Soil Cleanup Objectives (RSCO). All soil samples exceeded one or more of the RSCOs for individual semi-volatile organic compounds (SVOC) and for metals, but the levels of total SVOCs were below 500 parts per million (ppm) (the RSCO for total SVOCs) and no free product was found.
- No exceedances of NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (AWQS) Class GA standards were found in the groundwater samples for VOCs, SVOCs of PCBs. Metal exceedances were limited to iron, magnesium, manganese and sodium.
- Seventeen underground storage tanks (UST) were identified through review of historic and regulatory documentation. Eleven of the seventeen USTs located at Building S-1 (aka 601 Cromwell Avenue), were closed in-place during the period of April to May 2001. In addition, four USTs with a capacity of 33,000 gallons were removed in May 2003 from the BHOD.
- An abandoned aboveground storage tank (AST) was identified in the basement of Site building WH-1 (located on the north side of the Site).

The Site was investigated in accordance with the scope of work presented in the NYSDEC-approved Remedial Investigation Work Plan (RIWP) dated November 2004, Supplemental

Remedial Investigation Work Plan (SRIWP) dated March 2005 and SRIWP Addenda 1 and 2, dated July 2005 and September 2005, respectively. The investigation was conducted between September 27, 2004 and January 28, 2005 in accordance with the RIWP, and between September 21, 2005 and October 7, 2005 in accordance with the SRIWP and Addenda. The purpose of the remedial investigation (RI) was to evaluate the nature and extent of contamination associated with potential areas of concern (PAOCs) that were identified in the combined Phase I/II ESA dated January 6, 2004. Below is a summary of the findings:

3.1.1 Soil

In accordance with the RIWP, 72 borings were completed and 125 soil samples were submitted for laboratory analysis. Generally, Langan collected one soil sample from the zone with the highest photo-ionization detector (PID) reading or visual impacts, and another from visually clean material beneath the apparently contaminated soil.

In accordance with the SRIWP, 12 borings were completed to delineate areas of known petroleum contamination and three soil samples were submitted for laboratory analysis. Additionally, 10 borings were completed to delineate three areas of atypical mercury and lead levels in the soil that had been identified during the Phase I/II ESA investigation and the investigation performed under the RIWP. From the 10 borings, 12 soil samples were submitted for laboratory analysis. Eight surface soil samples were also collected under the SRIWP using either a hand auger or a gloved hand (grab samples) for laboratory analysis from a depth of two to six inches bgs to evaluate potential contamination in the exposed surface soil from the adjacent railroad tracks.

Generally, the following three types of impacted soil material were identified and delineated:

1. Historic fill composed of brick, asphalt, concrete, slag, wood, coal, sand, and gravel with SVOCs and metals exceedances typical of historic urban fill in the New York City metropolitan area. This material was ubiquitous across the extent of the Site.
2. Native soil and historic fill material with observable (stained or odorous) petroleum contamination. Eight separate areas of petroleum-contaminated soil were delineated (identified as Areas P-1 thru P-8 in Section 5.1.2 of the RIR).
3. Historic fill containing atypical concentrations of mercury and lead, possibly associated with historic uses. Four areas of atypical mercury and/or lead concentrations were identified and delineated (identified as Areas M-1 thru M-4 in Section 5.1.3 of the RIR).

Table 1 in the FER presents a summary of site characterization soil samples analyzed for the RI. Tables 2 and 3 in the FER show exceedances of TAGM 4046 RSCOs for this soil/fill. Results from the RI were compared to TAGM 4046 criteria since Part 375 was not finalized at the time of the RI. Figures 5A thru 5E in the FER are spider maps that show the locations and summarize exceedances of TAGM 4046 RSCOs for all soil/fill prior to the remedy.

3.1.2 On-Site and Off-Site Groundwater

Prior to the RI in November 2003, one round of groundwater samples was collected from monitoring wells B1/OW and B2/OW as part of the Phase I/II ESA conducted by Langan.

During the RI, two rounds of groundwater samples were collected; the first in accordance with the RIWP and the second with the SRIWP. The first round of groundwater samples were collected in October 2004 from monitoring wells B1/OW, B2/OW, and MW-7 through MW-17. The second round of groundwater samples were collected in October 2005 from monitoring wells B1/OW, B2/OW, MW-7 through MW-15, MW-17, and the recently installed MW-18 through MW-23. MW-16 was destroyed during the demolition of WH-1 and was consequently not sampled during the second round.

Generally, two types of impacted groundwater were identified; VOC- and SVOC-contaminated groundwater, and brackish groundwater. VOC and SVOC exceedances were detected in the groundwater samples collected at MW-13 (a downgradient well) and MW-17 (an upgradient well). Compounds such as iron, magnesium, manganese, and sodium were detected in most of the groundwater samples collected and are common in brackish water.

Table 4 in the FER presents a summary of site characterization groundwater samples analyzed for the RI. Tables 5 and 6 in the FER show exceedances of NYSDEC TOGS 1.1.1 AWQS Class GA groundwater standards in these groundwater samples. A spider map that indicates the locations of and summarizes exceedances from of Class GA groundwater standards prior to the remedy is shown in Figure 6 in the FER.

3.1.3 Soil Vapor

Fifteen soil vapor samples were collected to evaluate the presence of volatile constituents in areas beneath both the proposed and the existing Site buildings in accordance with the SRIWP. Nine soil vapor samples were collected using the subsurface vapor sampling method and six soil vapor samples were collected using the sub-slab vapor sampling method. The subsurface vapor sampling method was used at locations where no building foundation or slab was

currently in place. The sub-slab vapor sampling method was selected at locations where a building foundation or slab was currently in place.

Generally, two types of soil vapor impacts were identified; methane and VOCs.

Methane is a naturally-occurring subsurface gas and there are no workplace limits or residential standards for methane allowed in air. Methane was detected in most soil vapor samples at concentrations below one percent. Methane levels were detected at 15% in one sample (sample ID: SG-9), located in the immediate vicinity of petroleum–contaminated Area P-8.

1,1,1-Trichloroethane (1,1,1-TCA) was detected in soil vapor sample SG-2 and SG-5 at 13 µg/m3 and 59 µg/m3, respectively, but the concentrations were below the soil vapor screening values (i.e., 100 µg/m3) used in Matrix 2 of the NYSDOH Guidance for Evaluating Soil Vapor Intrusion. Tetrachloroethene (PCE) was detected in soil vapor sample SG-5 at 140 µg/m3. This concentration is above the soil vapor screening values (i.e., 100 µg/m3) used in Matrix 2 of the NYSDOH Guidance for Evaluating Soil Vapor Intrusion. The sample from SG-5 was collected beneath the River Avenue sidewalk adjacent to the current Retail B Building. The source of these soil vapors is unknown. PCE was not detected in the soil or groundwater samples collected and there are no suspected historic uses of this solvent on the Site.

Ambient air samples contained ethanol, acetone, and toluene at concentrations that were generally lower than the NYSDOH background indoor air concentrations.

Table 7 in the FER presents a summary of site characterization soil vapor samples analyzed for the RI. A summary of soil vapor sample VOC and methane detections prior to the remedy is provided as Table 8 in the FER. A spider map that indicates the location(s) of and summarizes soil vapor data prior to the remedy is shown in Figure 7 in the FER.

3.1.4 Underground Storage Tanks

Geophysical surveys were performed in 2004, 2005, and 2006 to investigate the presence of suspected USTs at the Site.

The RI found that the Site contained 16 known and one suspected USTs as follows:

- BHOD: four approximately 6-foot high by 10 foot diameter fiberglass tanks installed in 2004.
- Building S-1: two 3,000-gallon and nine 1,500-gallon tanks; closed in place in 2001.
- Exterior Street Market Building: one tank of unknown size that was identified by an observed fill port and geophysical survey.

- Prow Street Building: one suspected tank of unknown size that was identified on Sanborn Fire Insurance Maps and by observation of a fill port. The geophysical survey performed as part of the RI was inconclusive.

4.0 DESCRIPTION OF REMEDIAL ACTIONS

The Site was remediated in accordance with the scope of work presented in the NYSDEC-approved RWP dated December 16, 2005; Addendum 1 to the RWP dated January 31, 2006; RWP Stipulation List (de facto Addendum 2) and associated appendices dated May 9, 2006; and Addendum 3 to the RWP dated June 26, 2006. RWP deviations approved by the NYSDEC are discussed herein.

In accordance with DER-10 and ECL § 27-1415, the goal for the remedial action was to be protective of public health and the environment, provided that the Site was developed into a new retail complex. In addition, where identifiable sources of contamination were found on-site, the sources were removed or eliminated to the greatest extent feasible, regardless of presumed risk or intended use of the Site.

The remedy that was chosen for the Site Included the removal of all fill and soil exceeding the calculated Track 4 Site SSSCOs (described in the draft NYSDEC Brownfield Cleanup Program Guide and 6 NYCRR Part 375 and included in Appendix C, remediation of grossly contaminated soil and Site source areas causing groundwater to be impacted with VOCs and SVOCs, removal and mitigation of site soils exhibiting elevated methane levels, and the removal of the Site USTs, along with any required remediation of the surrounding soils.

Below is a summary of the Remedial Actions required and implemented at the Site:

1. Excavation and removal of impacted material from the RI-identified and contingency (area discovered during remediation) areas of concern (i.e., areas with Contaminants of Concern (COCs) exceeding the Track 4 SSSCOs listed in Appendix C).
2. Chemical oxidation of groundwater to address residual VOCs identified during the RI at one monitoring well location (MW-13) on the west side of the Site.
3. Treatment, as necessary, of groundwater that was pumped as part of construction or remedial related dewatering;
4. Removal of potential methane source (fill material in the area of elevated methane concentrations) located on the east side of the former Exterior Street Market Building;
5. Removal of 16 RI-identified USTs and three contingency USTs;

6. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during intrusive Site work;
7. Collection and analysis of endpoint samples to evaluate the performance of the remedy with respect to attainment of the Track 4 SSSCOs;
8. Appropriate off-site disposal of material removed from the Site in accordance with Federal, State and local rules and regulations for handling, transport, and disposal;
9. Backfilling all excavation areas with Site fill or crushed Site building material with no exceedances of the Track 4 SSSCOs;
10. Import of materials to be used for backfill and cover in compliance with: (1) NYSDEC TAGM 4046 RSCOs; (2) all Federal, State and local rules and regulations for handling and transport of material;
11. Construction and maintenance of an engineered composite cover consisting of concrete, asphalt, or a one-foot cover of TAGM-clean soil to prevent human exposure to residual contaminated soils remaining under the Site;
12. Recording of an Environmental Easement, including Institutional Controls and "notice of use restrictions" on the land and groundwater, to prevent future exposure to any residual contamination remaining at the Site (a copy of the Environmental Easement is provided in Appendix D).
13. Publication of this Site Management Plan (SMP) for long term management of residual contamination as required by the Environmental Easement, including plans for: (1) institutional and engineering controls, (2) monitoring, (3) operation and maintenance and (4) reporting;
14. All responsibilities associated with the Remedial Action, including permitting requirements and pretreatment requirements, addressed in accordance with all applicable Federal, State and local rules and regulations.
15. Certification of the completion of the remedy in the Final Engineering Report.

4.1 Deviations from the RWP

4.1.1 Reuse of Building Materia

In November 2006, five reuse samples (building concrete and brick, etc.) were found to have exceedances of the Track 4 SSSCOs. These five samples represented three approximately 300 CY stockpiles (total of 900 CY) separated by gradation; a stockpile of 2-inch minus material (samples CC-SP1-102306, CCSP2-110106, and WCR-ESB-SP1-SPC-111306), a stockpile of 4-inch minus material (sample WCR-ESB-SP2-SPC-111306), and a stockpile of 6-inch minus material (sample WCR-ESB-SP3-SPC-111306). All three stockpiles were crushed from the same source material, with separate material stockpiles being created during separation into the different sizes. The samples showed Track 4 SSSCO exceedances for total cPAHs, with one sample (WCR-ESB-SP3-SPC-111306) exceeding the Track 4 SSSCOs for total VOCs and SVOCs. The results were not consistent with results normally observed with building material samples and other building material results from the Site.

Upon inspection of these stockpiles, it was apparent that the stockpiles contained asphalt material. Based on subsequent sampling of other building debris piles and confirmation that no asphalt components were present in the building debris, it was determined that the asphalt in the three stockpiles caused the Track 4 SSSCO exceedances. NYSDEC was notified of the exceedance in the November 2006 Monthly Progress Report. The reuse of this material is described below and was documented in the December 2006 Monthly Progress Report.

Because the material was observed to contain asphalt material post-sampling, it was determined that the material should not be used as crushed building material meeting SSSCOs; rather, it should be considered asphalt material and used in accordance with RWP Stipulation List Item No. 6. This use is conservative and consistent with the intent of the remediation at this site, the RWP, and the Stipulations. Hence, the concrete mixed with asphalt was backfilled above the groundwater table in portions of Grids B13 through B14, and C12 through C14. This material was backfilled in the upper elevations (placed above the groundwater table) of portions of Remedial Excavation 8A and 8B (± el 3 to ± el 5 Borough President of Bronx Datum), and was used to stabilize the surface grade of Grids B13 through B14, and C12 through C14 (± el 4 to ± el 5). The designated grids correspond with areas of the Site associated with the new Open Parking Structure and adjacent paved roadways and will be covered with new asphalt pavement. These locations comply with both requirements of Stipulation List Item No. 6. The approximate volume of this material is 650 CY.

Approximately 250 cubic yards of the concrete mixed with asphalt was temporarily backfilled in Remedial Excavation 4A, which lies in portions of Grids C10, C11, D10, and D11. The placement of this material in Excavation 4A was necessary due to safety concerns. Excavation 4A was adjacent to the BHOD demolition activity and it was backfilled to prevent collapse of the sidewalls. Since this mixed concrete and asphalt backfill in Excavation 4A was not in an area to be covered by asphalt, all Excavation 4A backfill material was excavated by the Remediation Contractor following completion of the BHOD demolition. This material was disposed off-Site in accordance with the requirements of the RWP and Stipulation List Item No. 6. Section 5.4.4 of the FER provides further detail.

4.1.2 Site Utility Trench Backfill Material

On August 10, 2007, NYSDEC agreed to amend Remedial Work Plan Stipulation List Item No. 61, which addresses use of site material as backfill for Site utility trenches. Remedial Work Plan Stipulation List Item No. 61 was amended to allow for the use of a mix of graded native soil material and crushed building material sourced from the site provided it meets the 6 NYCRR Part 375-6.8(b) Restricted Use Soil Cleanup Objectives (SCOs) for Protection of Public Health, Commercial Use. This agreement is documented in a letter to NYSDEC dated August 23, 2007, and is provided as Appendix R of the FER.

4.1.3 Soil Vapor Mitigation Design Modifications – Retail A

A progress meeting was held on January 14, 2008 with NYSDEC, which included a discussion of soil vapor mitigation designs for the new Site structures, specifically a modification of the soil vapor mitigation design for the building Retail A. This modification is a variation from RWP Stipulation List Item No. 4(b) for the Site. The modification is to install a positive pressure vapor mitigation system in the Retail A structure instead of a sub-slab depressurization (SSD) system. The modification request was submitted to NYSDEC and NYSDOH in a letter dated January 30, 2008 (Appendix R of the FER).

In an email dated March 14, 2008, NYSDEC and NYSDOH indicated that use of a modified HVAC system to provide a positive pressure soil vapor mitigation system for the Retail A building would be acceptable provided that a long-term monitoring plan, including indoor air sampling and/or pressure testing, is implemented to ensure that the building is operating under positive pressure. In a telephone conversation on September 4, 2008, NYSDOH further clarified that the long-term monitoring should be annual pressure monitoring, considering the use of the building would prevent the collection of reliable indoor air sampling data. The use of HVAC modification is in accordance with the NYSDOH Guidance for Evaluation of Soil Vapor

Intrusion in the State of New York, dated October 2006, Section 4.1.1. Section 4.1.1 allows for HVAC modification if the SSD system "is not a practicable alternative or that exposures will be mitigated concurrently by a method selected to remediate subsurface contamination…" HVAC modification is allowable in this case because the SSD system for the Retail A Building is not a practicable alternative.

The modification plan stipulated that positive pressure conditions at the Retail A building must be checked and indoor and outdoor air sampling must be conducted. To this end, annual monitoring of the operation of the HVAC positive pressure system will be performed to verify that the HVAC system continues to operate as designed and installed. The positive pressure HVAC system is described in Section 6.2. Monitoring of the HVAC ventilation system is described in Section 11.2 of the SMP and will be performed and documented as part of the annual BCP engineering controls inspection.

4.2 Removal of Contaminated Materials from the Site

Site material was divided into six categories (Category 1 thru Category 6) depending on known or suspected levels of the contaminants of concern. The categories of material were separately managed to 1) avoid co-mingling of contaminated and potentially contaminated material with apparently clean material, and 2) handle and characterize material for on-site reuse or off-site dispose at an approved facility. The categories and management protocols were documented in Sections 5.3.1 and 5.3.4 of the FER, respectively.

A map of the location of original sources and areas where excavation was performed is shown in Figure 5.

A contour map showing thickness of all cuts and fills is included in Figure 6.

4.3 On-Site Treatment Systems

Groundwater, or surface water (stormwater) that was removed from Site excavations or depressions within impacted material was pumped to a treatment system prior to disposal in the New York City sewer system. A discussion of the treatment system components, discharge rate, and dates of operation are discussed in Section 5.3.11 of the FER.

4.4 Residual Contamination

4.4.1 Soil

As per the Remedial Work Plan (RWP), the Site remains underlain by fill material across the Site that contains contaminant concentrations above the NYSDEC TAGM 4046 RSCOs but below the Track 4 SSSCOs. In addition, isolated areas with petroleum contamination remain under

the Prow Building and the former WH-1 slab (Retail A Building). These areas were left in place because the building or elements of the buildings were re-incorporated into the new development.

The new structures and the composite cover system in place at the Site (e.g., asphalt covered roads, concrete covered sidewalks, concrete building slabs, or clean soil) will prevent human exposure to impacted soil as well as prevent contaminant leaching into groundwater. Figure 7 shows the type of cover used throughout the Site to create the Site-wide Composite Cover System.

No soil or fill remains on the Site that exceeds the Track 4 SSSCOs.

Residual contaminated soil left in place beneath the composite cover system is referred to as the Residuals Management Zone, and requires strict adherence to special conditions for disturbance of contaminated residual soils as described in Section 7.2 – Soil Management Plan. In areas which are covered by asphalt or concrete pavement, or structures, the asphalt or concrete overlying the contaminated fill will serve as the demarcation layer for the top of the Residuals Management Zone. In locations that are covered with clean soil, a physical demarcation layer consisting of orange snow fencing material has been placed to provide a visual reference of the top of the Residuals Management Zone. The survey map of the top elevation of the Residual Contamination Zone is shown in Figures 8A-8C.

4.4.2 Groundwater

During the Remedial Investigation, VOCs and SVOCs were detected in groundwater at the Site, exceeding their respective NYSDEC TOGS 1.1.1 AWQS in wells MW-13 (downgradient) and MW-17 (upgradient). The historic, regional groundwater flow direction at the Site was to the south-southwest. Following excavation of petroleum contaminated soil in the area of MW-13, a chemical oxidant was applied to address residual VOCs and SVOCs and to limit leaching of contaminants into the groundwater. As per the RWP Stipulation List, a quarterly groundwater monitoring program will be implemented and continued for a minimum period of 2 years to ensure that remedial actions have stopped off-site migration of contaminants.

As per the RWP Stipulation List, a quarterly groundwater monitoring program is being implemented and continued for a period of two years to ensure that remedial actions have stopped off-site migration of contaminants of concern.

First quarter 2008 groundwater samples collected from monitoring wells MW-13b and MW-13c showed a reduction in all VOC and SVOC compounds to below the NYSDEC TOGS 1.1.1

AWQS, with the exception of one naphthalene exceedance in well MW-13c. Although still an exceedance, the naphthalene concentration (24.7 ug/L in MW-13c) had been reduced by more than an order of magnitude from pre-remediation levels (620 ug/L in 2004 and 510 ug/L in 2005).

The First Quarter 2008 Report concluded that the bulk source removal and application of the Oxygen Release Compound (ORC) was effective and rebound was unlikely due to the period of time since the ORC application.

No VOC or SVOC compounds exceeded the TOGS guidance values during the second quarter 2008 sampling event. The results of the Second Quarter 2008 monitoring support the First Quarter 2008 conclusions; naphthalene concentrations were being effectively reduced and the single exceedance of naphthalene had been reduced below the AWQS and all other analytical parameters remained below the AWQS, confirming that there is no rebound.

Monitoring wells MW-13b and MW-13c will be used to monitor for VOC and SVOC contaminant concentrations at the western Site boundary in accordance with the RWP.

4.4.3 Soil Vapor

Prior to implementation of the RWP, soil vapor consisting of VOCs and methane were identified at the Site. Post-remediation indoor air and sub-slab vapor samples will be used as described in this SMP to determine the extent of the expected residual soil vapor at the Site. These samples will be used to determine whether or not the sub-slab depressurization systems, sub-slab components which were installed in structures Retail C, E1, E2, and F, will be operated in accordance with the Engineering Controls section of this SMP.

The operation, maintenance, and monitoring of SSD systems, which will include periodic pressure testing, will be conducted in accordance with this SMP.

4.5 Engineering and Institutional Controls

Since residual contamination is present at this Site, Engineering Controls and Institutional Controls will be implemented to protect public health and the environment in the future.

4.5.1 Engineering Controls

The Site has four primary Engineering Controls. These are: (1) Sub-Slab Depressurization (SSD) systems; (2) a positive pressure 'heating, ventilation, and air conditioning (HVAC) system; (3) sub-slab vapor barriers; and (4) a composite cover system consisting of asphalt covered roads,

concrete covered sidewalks, one foot of clean soil and/or concrete building slabs. Details of each of these Engineering Controls are presented below:

Sub-Slab Depressurization Systems

Four active SSD systems installed as engineering controls in the Retail C, E1, E2, and F structures will be operated, if necessary (based on post-remediation sampling), to mitigate soil vapor intrusion related to residual contamination. Sub-slab components for each of these systems were installed as part of construction of the new buildings. Installation and operation of the complete systems (roof-mounted blowers or ventilators and connecting piping) will be determined by sub-slab soil vapor sampling to be conducted upon completion of the buildings as part of this SMP.

Positive Pressure HVAC System

A positive pressure HVAC soil vapor mitigation system was installed in the Retail A Building. The use of HVAC modification is in accordance with the NYSDOH Guidance for Evaluation of Soil Vapor Intrusion in the State of New York, dated October 2006, Section 4.1.1. HVAC modification was used as an alternative to a SSD System because it was discovered during excavation that the SSD System for the Retail A Building was not practical due to subsurface structures. For further description of the design modification see Section 4.1.3.

Sub-Slab Vapor Barriers

In order to be protective of the health of future residents, vapor barriers were installed in new buildings (Retail A, C, E2, and F) to prevent potential infiltration of soil vapors into the building. The barrier is composed of a continuous 20 millimeter high density polyethylene (HDPE) vapor membrane installed beneath the foundation slab. Conduit and pipe penetrations through the slab were sealed.

Site-Wide Composite Cover System

A site-wide composite cover system was installed at the Site that is comprised of asphalt roadways, concrete sidewalks, one foot of clean soil and/or concrete building slabs. The cover system serves as an engineering control for the protection of human health by establishing an incomplete exposure pathway to impacted subsurface soil. The total area of the Site is approximately 721,000 square feet. The new building footprints provide cover over an area approximately 464,000 square feet. The remaining cover system (asphalt roadways, concrete sidewalks, clean soil, etc.) consists of approximately 257,000 square feet of the Site.

Figure 7 shows the type of cover used throughout the Site to create the Site-Wide Composite Cover System.

4.5.2 Institutional Controls

A series of Institutional Controls are required to implement, maintain and monitor these Engineering Controls, as defined in this SMP. The Environmental Easement requires compliance with these Institutional Controls. These Institutional Controls consist of the following:

- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls on the Controlled Property (the Site) must be inspected and certified at a frequency and in a manner defined in this SMP;
- Groundwater, soil vapor, and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to Site management for the Controlled Property must be reported at the frequency and in a manner defined in this SMP;
- On-site environmental monitoring devices, including but not limited to, groundwater monitor wells and soil vapor probes, must be protected and replaced as necessary to ensure continued functioning in the manner specified in this SMP.
- Compliance with the Environmental Easement by the Grantor and the Grantor's successors and assigns with all elements of this SMP.
- A composite cover system consisting concrete building slabs, asphalt covered roads, concrete covered sidewalks, concrete building slabs, and/or one-foot of clean soil cover must be inspected, certified and maintained as required in this SMP;
- The Sub-Slab Depressurization System under the Retail C, E1, E2, and F building structures must be inspected, certified, operated, and maintained as required by this SMP;
- Positive pressure must be maintained in the Retail A building and monitored as required in this SMP;
- The vapor barriers beneath Retail A, C, E2, and F building slabs must be inspected, certified, and maintained as required in this SMP;

- Engineering Controls may not be discontinued without an amendment or the extinguishment of this Environmental Easement.

The Controlled Property has a series of Institutional Controls in the form of Site restrictions. Adherence to these Institutional Controls is required under the Environmental Easement. Site restrictions that apply to the Controlled Property are:

- Vegetable gardens and farming on the Controlled Property are prohibited;
- The use of the groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for intended purpose. Any change to this restriction requires NYSDEC and NYSDOH approval;
- All future activities on the Controlled Property that will disturb residual contaminated material protected under this environmental easement are prohibited unless they are conducted in accordance with the soil management provisions in this SMP;
- The Controlled Property may be used for restricted commercial use only provided that the long-term Engineering and Institutional Controls included in this SMP remain in use;
- The Grantor and its successors and assigns must submit to NYSDEC and NYSDOH an annual report which is a written statement certified by the Remedial Engineer, under penalty of perjury, that: (A) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC and NYSDOH; and, (B) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP;
- Grantor shall provide all persons who acquire any interest in the Controlled Property a true and complete copy of this SMP and all Department-approved amendments to this SMP;
- The Controlled Property may not be used for a higher level of use, such as unrestricted commercial or restricted residential use and the above stated Engineering Controls may not be discontinued without an amendment or the extinguishment of this Environmental Easement.
- Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of Article 71, Title 36 of the ECL,

the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an environmental easement held by the New York State Department of Environmental Conservation pursuant of Title 36 to Article 71 of the Environmental Conservation Law.

- Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.
- Grantor covenants and agrees that it shall annually, or such time as NYSDEC may allow, submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This annual statement must be certified by an expert that the NYSDEC finds acceptable.

These EC/ICs should:

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards;
- Prevent contact with or inhalation of volatiles from contaminated groundwater;
- Restore groundwater to pre-disposal/pre-release conditions, to the extent practicable;
- Prevent the discharge of contaminants to surface water;
- Remove the source of ground or surface water contamination;
- Prevent ingestion/direct contact with contaminated soil; and

- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

II. ENGINEERING AND INSTITUTIONAL CONTROL PLAN

5.0 INTRODUCTION

5.1 General

Remedial activities completed at the Site were conducted in accordance with the NYSDEC-approved RWP for Gateway Center at Bronx Terminal Market dated December 16, 2005; Addendum No. 1 to the RWP dated January 31,2006; RWP Stipulation List (de facto Addendum No. 2) and associated appendices dated May 9, 2006; and Addendum No. 3 to the RWP dated June 26, 2006. The remedial goals included attainment of Track 4 site-specific soil cleanup objectives (SSSCOs) for restricted commercial use. The Track 4 SSSCOs were approved by NYSDEC and are listed in Appendix C.

Since post-remediation residual contaminated soil, groundwater, and soil vapor exist beneath the Site, the EC/ICs are required to eliminate or mitigate the potential human health exposure to adverse environmental conditions existing under the Site. All procedures necessary to assure that these controls remain in place are documented in this SMP.

This Engineering and Institutional Control Plan will discuss protocol for the implementation and management of EC/ICs at the Site. This Plan is not to be used as a stand-alone document, but as a component document of the SMP. The Engineering and Institutional Control Plan is subject to NYSDEC revision.

The ICs are listed and described in Section 7. The ECs are described in Section 6 and a summary of the ECs implemented at the Site is listed below. These controls are recorded in an Environmental easement to prevent future exposure to contamination remaining at the Site (a copy of the environmental easement is provided in Appendix D).

Engineering Controls

- A composite cover system consisting of concrete building slabs, asphalt covered roads, one foot of clean soil cover, and/or concrete covered sidewalks must be inspected, certified and maintained as required in the SMP;
- The Sub-Slab Depressurization System under Retail C, Retail E1, Retail E2 and Retail F building structures must be inspected, certified, operated and maintained as required by the SMP;

- Positive pressure must be maintained in Retail A building and monitored as required in the SMP; and
- The vapor barrier beneath Retail A, Retail C, Retail E2 and Retail F building slabs must be inspected, certified and maintained as required in the SMP.

5.2 Purpose

The purpose of this Plan is to provide:

- A description of all EC/ICs on the Site
- The basic operation and intended role of each implemented EC/IC;
- The key components of the ICs created as stated in the environmental easement;
- The issues that should be evaluated during each annual inspection and compliance certification period;
- Appropriate plans for implementation of EC/ICs, such as the maintenance of the environmental easement, and the implementation of the Soil Management Plan for the safe handling of residual contaminated soils that may have to be removed during maintenance or redevelopment work on the Site; and
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the Site remedy, as determined by the NYSDEC.

6.0 ENGINEERING CONTROL COMPONENTS

The engineering control components are being implemented to minimize the potential human health exposure risk to contaminated media existing under the Site. Residual contaminated fill and/or soil, soil vapor and groundwater remains in place throughout the Site. ECs were implemented to remedy, and/or prevent potential exposure of Site occupants and the public to sub-surface soil, soil vapor, and groundwater contamination. The ECs established at the Site are discussed below and include:

- Sub-Slab Depressurization Systems
- Positive Pressure HVAC System,
- Sub-Slab Vapor Barriers
- Composite Cover System

The Monitoring Plans and Operation and Maintenance Plan for all of the ECs are included in this SMP in Sections III and IV, respectively.

6.1 Sub-Slab Depressurization (SSD) Systems

SSD system sub-slab components were installed in buildings Retail C, Retail E1, Retail E2, and Retail F. Blowers or ventilators and interconnecting piping will be installed and activated, subject to review and approval by NYSDEC and NYSDOH, based on the results of indoor air and sub-slab vapor samples that will be collected in each building after the ground floor building envelope and HVAC systems are in-place. The sampling will be conducted under a NYSDEC-approved work plan. If the SSD systems are activated, blowers or ventilators will be designed to mitigate potential human health exposure hazard associated with potential soil vapor intrusion from VOCs. Refer to Appendices E through H for design drawings of SSD systems and Appendix I for system component manuals.

Portions of the Engineering and Institutional Control Plan related to the SSD systems are based on the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006).

6.1.1 Conceptual Remedial Process

A SSD system creates a depressurized (low vacuum) field beneath the existing building basement floor slabs by extracting the sub-slab air with a vacuum blower or ventilator mounted on the roof of each building. This low vacuum field reverses the natural pressure gradient and

diverts potentially impacted vapors from the subsurface of buildings, to the atmosphere at the building rooftop level. This reduces the potential for intrusion into the building.

6.1.2 Design of Building Systems

The SSD systems are comprised of a series of suction (depressurization) pits and trenches used as conduits to draw soil vapor to the roof mounted blowers or ventilators, where the vapor is discharged to the atmosphere. Each suction pit is comprised of 4 or 6 inch black steel piping covered by galvanized wire mesh placed in an approximately 4' x 4' x 2' pit that is filled with 1-inch gravel and sealed with concrete.

The designs for the SSD systems were based on EPA Draft Guidance Document EPA/6251R-92 concerning sub-slab depressurization of large buildings and schools and the NYSDOH document entitled "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" (October 2006). The SSD system as-built and design drawings and documentation are included as Appendices E through H. Revised as-built drawings will be appended if the system is activated.

Details of each individual system are discussed below:

6.1.2.1 Retail C SSD System

The Retail C system consists of depressurization pits, connected to a roof-mounted blower or ventilator. Sub-slab pore space connectivity is provided by a sub-slab 6-inch layer of ¾-inch aggregate material and perforated piping. Penetrations through the slab were sealed. The sub-slab system components were incorporated in the construction of the new building. If the roof-mounted blower is required, it has a minimum specified flow rate of 180 cubic feet per minute (CFM) and a minimum vacuum of 25 inches water column (WC) (see Appendix E for the system design drawings).

6.1.2.2 Retail E1 SSD System

The Retail E1 system consists of depressurization pits, connected to a roof-mounted blower or ventilator. The sub-slab system components were retrofitted to the existing building. If the roof-mounted blower is required, it has a specified flow rate of 180 cubic feet per minute (CFM) and a vacuum of 35 inches water column (WC) (see Appendix F for the system design drawings).

6.1.2.3 Retail E2 SSD System

The Retail E2 system consists of a depressurization pit, connected to a roof-mounted blower or ventilator. Sub-slab pore space connectivity is provided by a sub-slab 6-inch layer of ¾-inch aggregate material. All penetrations through the slab were sealed. The sub-slab system components were incorporated in the construction of the new building. If the roof-mounted blower is required, it has a specified flow rate of 80 cubic feet per minute (CFM) and a vacuum of 25 inches water column (WC) (see Appendix G for the system design drawings).

6.1.2.4 Retail F SSD System

The Retail F system consists of depressurization pits, connected to a roof-mounted blowers or ventilators. Sub-slab pore space connectivity is provided by a sub-slab 6-inch layer of ¾-inch aggregate material and perforated piping. All penetrations through the slab were sealed. The sub-slab system components were incorporated in the construction of the new building. If the roof-mounted blowers are required, they have a cumulative specified flow rate of 320 cubic feet per minute (CFM) and a vacuum of 25 inches water column (WC) (see Appendix H for the system design drawings).

6.1.3 System Installation

Installation of a SSD system included the following tasks:

- Compacting the soil subgrade;
- Placing geotextile fabric over the footprint of the building on the compacted subgrade;
- Placing a 6-inch layer of approximately ¾-inch aggregate on the geotextile fabric and perforated piping;
- Running 6-inch SSD system sub-slab piping through the aggregate layer and creating depressurization pits at the terminus of the pipe;
- Stubbing-up through future slab where the risers for the SSD system piping will be located (if required);
- Placing 20-millimeter polyethylene sheets (Described in Section 6.3) across the 6-inch aggregate layer and sealing all seams to create the sub-slab vapor barrier;
- Pouring concrete slab on top of vapor barrier and sealing concrete slab joints to maximize depressurization;

- Sealing conduit and pipe penetrations through the slab.

If required, based on results of sub-slab sampling, the following tasks will be conducted:

- Installation of 6-inch riser pipes that connect the sub-slab pipe rums to the rooftop blower or ventilator systems;
- Installation of electric roof-mounted blower or passive ventilator systems to generate the appropriate pressure conditions; and
- Confirmatory testing of the systems, as outlined in the Operation and Maintenance Plan, will be completed to confirm that the systems functioned as designed, prior to being placed in full operation.

6.1.4 Operation, Maintenance, and Monitoring

The procedures for operating and maintaining the SSD systems are documented in the Operation and Maintenance Plan (Section IV within the SMP). The procedures for monitoring the systems are included in the Monitoring Plan (Section III within the SMP). These Plans address the annual inspection and certification requirements for these systems (i.e., ensuring that ECs perform as designed, that the appropriate media are sampled and analyzed, etc.).

6.2 HVAC System

An HVAC positive pressure soil vapor mitigation system was installed for the Retail A Building. The use of HVAC modification is in accordance with the NYSDOH Guidance for Evaluation of Soil Vapor Intrusion in the State of New York, dated October 2006, Section 4.1.1. Section 4.1.1 allows for HVAC modification if the SSD system "is not a practicable alternative or that exposures will be mitigated concurrently by a method selected to remediate subsurface contamination…" HVAC modification is allowable because the SSD system for the Retail A Building is not a practicable alternative.

The Retail A system consists of a combination of air handling equipment which distributes conditioned air throughout the building, outdoor supply fans and exhaust fans. The supply fans convey the required outdoor ventilation air to the floor/space via ductwork within a vertical shaft and then directly to the air handling equipment; specifically, a mixing (with return air) box/plenum.

This system was incorporated in the new construction of the building. Refer to Appendix J for Retail A HVAC as-built drawings and Appendix K for Retail A HVAC system component manuals.

6.2.1 Positive Pressure System Design Summary

The building's ventilation system consists of a combination of air handling equipment which distributes conditioned air throughout the building, outdoor supply fans and exhaust fans. The supply fans convey the required outdoor ventilation air to the floor/space via ductwork within a vertical shaft and then directly to the air handling equipment; specifically, a mixing (with return air) box/plenum.

Since the building's HVAC system is provided with a waterside economizer, under normal occupied conditions the amount of outdoor air is constant based on the set point controlling the outdoor intake damper. In order to prevent the over-pressurization of the indoor space (to allow for comfort and ease of opening doors, for example), the design includes exhaust fans, some of which will operate continuously during normal hours such as those for restrooms, and there are others that provide general exhaust and or exhaust provisions for spaces such as utility rooms, etc which will be controlled by timers or manual switches. During nominally un-occupied hours (time when the retail stores will be closed to the public but will still be occupied by employees), both supply and mechanical exhaust systems continue to re-circulate air to maintain desired indoor temperature set points. Because of the variety of retail operations in the building, the building will be occupied most of the time and it is unlikely that the systems will be shut down for more than a few hours. The HVAC system must be continuously operated whenever the building is occupied.

Regarding the pressurization of the building's interior space, the design fresh air supply volume exceeds the current applicable New York City Mechanical code. This building, with a slab on grade finished footprint of +/- 145,150sf (about 1/3 of the building total area), has a ventilation index that, by NYC code, requires a minimum of 18,175cfm, but, per the above noted design requirements, has actually been designed for 30,415 cfm, a 67% increase above that required by the NYC code. We have estimated that about 60% or less will be leaving the building via mechanical exhaust systems and by natural gravity (e.g.: restroom exhaust, general exhaust, specialty equipment exhaust systems, ex-filtration due to exterior door openings, mechanical and gravity relief provisions, etc).

Based on the above, the volumetric rate of outside air supply exceeds the volumetric rate of the exhausted air, thus maintaining a positive pressure condition within the interior space of the building.

6.2.2 Operation, Maintenance, and Monitoring

Initial pressure testing was conducted in October 2008 to test the efficacy of the HVAC system in preventing soil vapor intrusion. Six pressure monitoring locations were installed at select locations throughout the building footprint to monitor the pressure differential between the interior space and the sub-slab. Pressure monitoring locations were installed on October 8 through 10, 2008, by Laurel Environmental of Huntington, New York, under the supervision of a Langan engineer. On October 10, 2008, a Langan engineer conducted differential pressure testing on the six pressure monitoring point locations. Test results demonstrated that all pressure measurements within the first floor space were greater than the sub-slab pressure measurements, which demonstrated that positive pressure was being maintained in Retail A. The quantitative results of the HVAC positive pressure testing and a figure showing the monitoring locations was submitted to the NYSDEC and NYSDOH in a report dated January 27, 2009.

The procedures for operating and maintaining the HVAC system are documented in the Operation and Maintenance Plan (Section IV within the SMP). The procedures for monitoring the systems are included in the Monitoring Plan (Section III within the SMP). These Plans address the annual inspection and certification requirements for these systems (i.e., that ECs continue to perform as designed, that the appropriate media are sampled and analyzed, etc.).

6.3 Sub-Slab Vapor Barriers

A continuous 20-millimeter polyethylene sub-slab vapor membrane barrier was installed between the porous gravel layer and the building slab to prevent infiltration from soil vapor through potential cracks in the slab. This sub-slab vapor barrier was installed in all newly constructed buildings that did not have a ground floor parking garage or structure, including Retail A, Retail C, Retail E2 and Retail F. Sub-slab components of Retail E1 were retrofitted to the existing building slab and therefore no vapor barrier was installed.

6.4 Composite Cover System

The Site remains underlain by material with elevated levels of SVOCs and metals. This material is below the Track 4 SSSCOs but above the NYSDEC TAGM 4046 RSCOs. Additionally, isolated areas with petroleum-contaminated material were left in-place under the Retail A and Retail E1 building slabs at the Site. Exposure to these residual contaminated soils is restricted by the composite cover system that exists across the Site. No portion of the Site provides

direct exposure to subsurface soils. This composite cover system is comprised of asphalt covered roads, concrete covered sidewalks, concrete building slabs, or a minimum of one-foot of clean material. Figure 7 shows the NYSDEC-approved design for each remedial cover type used on this Site. The surface between the residually contaminated soil and the TAGM-compliant material was demarcated with orange snow fencing. A Soil Management Plan which outlines the procedures required in the event the composite cover system is breached and the underlying residual contamination disturbed is discussed in Section 7.2 of this EC/IC Plan.

6.5 Criteria for Termination of Remedial Systems

6.5.1 SSD Systems

SSD systems will not be turned off without NYSDEC and NYSDOH approval in writing. A proposal to turn them off based on confirmatory data justifying such a request may be made by the property owner in accordance with the NYSDOH Final October 2006 Guidance document. Systems required in accordance with this SMP will remain in-place and operational until permission to discontinue their use is granted by NYSDEC and NYSDOH in writing.

6.5.2 HVAC System

The HVAC system will not be turned off without NYSDEC and NYSDOH approval in writing and must be continuously operated at all times when the building is occupied. A proposal to turn it off based on confirmatory data justifying such a request may be made by the property owner in accordance with the NYSDOH Final October 2006 Guidance document. The system will remain in-place and operational until permission to discontinue its use is granted by NYSDEC and NYSDOH in writing. Monitoring of the HVAC system, as described in Section 11.2, will continue until permission is granted by NYSDEC and NYSDOH to discontinue the monitoring program.

6.5.3 Sub-Slab Vapor Barriers

The sub-slab vapor barriers are a permanent control and the quality and integrity of these systems will be maintained or repaired if disturbed by future work.

6.5.4 Composite Cover System

The composite cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals (annually) in perpetuity. The composite cover system will be maintained and repaired as necessary if disturbed by future site work.

7.0 INSTITUTIONAL CONTROL COMPONENTS

7.1 Institutional Controls

Since not all contaminated material was removed from the Site or remediated, Institutional Controls (IC) are required to: (1) implement, maintain, and monitor Engineering Control systems; (2) prevent future exposure to contamination by controlling disturbances of the subsurface contamination; and (3) restricting the use of the Site to commercial uses only. Adherence to these ICs on the Site is required under the Environmental Easement and will be implemented under this SMP. As stated in the Environmental Easement, the Controlled Property (the Site) may be used for commercial use as long as the following long-term engineering controls are employed and the land use restrictions specified below are adhered to.

These Institutional Controls are:

- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls on the Controlled Property (the Site) must be inspected and certified at a frequency and in a manner defied in the SMP.
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in this SMP;
- On-Site environmental monitoring devices, including but not limited to, groundwater monitor wells and soil vapor probes, must be protected and replaced as necessary to ensure the devices function in the manner specified in this SMP.
- Compliance with the Environmental Easement by the Grantor and the Grantor's successors and assigns and adherence to all elements of this SMP is required;
- A composite cover system consisting concrete building slabs, asphalt covered roads, concrete covered sidewalks, concrete building slabs, and/or one-foot of clean soil cover must be inspected, certified and maintained as required in this SMP;
- The Sub-Slab Depressurization System under the Retail C, E1, E2, and F building structures must be inspected, certified, operated, and maintained as required by this SMP;
- Positive pressure must be maintained in the Retail A building and monitored as required in this SMP;

- The vapor barriers beneath Retail A, C, E2, and F building slabs must be inspected, certified, and maintained as required in this SMP;
- Engineering Controls may not be discontinued without an amendment or the extinguishment of this Environmental Easement.

The Site Controlled Property has a series of Institutional Controls in the form of Site restrictions. Adherence to these Institutional Controls is required by the Environmental Easement. Site restrictions that apply to the Controlled Property are:

- Vegetable gardens and farming on the Controlled Property are prohibited;
- The use of the groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for the intended use. Any change to this restriction requires NYSDEC and NYSDOH approval;
- All future activities on the Controlled Property that will disturb residual contaminated material are prohibited unless they are conducted in accordance with the soil management provisions in this SMP;
- The Controlled Property may be used for restricted commercial use only provided that the long-term Engineering and Institutional Controls included in this SMP remain in use;
- The Grantor and its successors and assigns must submit to NYSDEC and NYSDOH an annual report which is a written statement certified by a Professional Engineer, under penalty of perjury, that: (A) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC and NYSDOH; and, (B) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP;
- Grantor shall provide all persons who acquire any interest in the Controlled Property a true and complete copy of this SMP and all Department-approved amendments to this SMP;
- The Controlled Property may not be used for a higher level of use, such as unrestricted commercial or restricted residential use and the above stated Engineering Controls may not be discontinued without an amendment or the extinguishment of this Environmental Easement.

- Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

  This property is subject to an environmental easement held by the New York State Department of Environmental Conservation pursuant of Title 36 to Article 71 of the Environmental Conservation Law.

- Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.
- Grantor covenants and agrees that it shall annually, or such time as NYSDEC may allow, submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This annual statement must be certified by an expert that the NYSDEC finds acceptable.

7.2 Soil Management Plan

The Site has been fully remediated for restricted commercial use. Any future intrusive construction work at the Site that will disturb the residual contamination and modifications or repairs to the existing composite cover system, will be performed in compliance with the Soil Management Plan which is included in this SMP. Any intrusive construction work must be conducted in accordance with the procedures defined in the Health and Safety Plan (HASP), Soil Management Plan, and Community Air Monitoring Plan (CAMP) prepared for the Site. The HASP and the CAMP are presented in Appendix L of this SMP. The HASP is the responsibility of the property owner or lessee and should be in compliance with DER-10 Technical Guide and

29 CFR 1910 and 1926, and all other applicable Federal, State, and local regulations. Any intrusive construction work must be certified as compliant with the SMP and included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan.

A summary of key points of the Soil Management Plan are as follows:

7.2.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed by a qualified environmental professional during all future remedial and development excavations into known or potentially contaminated material (Residual Contamination Zone). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Screening will be performed by qualified environmental professionals. Resumes will be provided in the Annual Site Management Report for all personnel conducting invasive work field screening (i.e. those representing the owner/lessee or their Remedial Engineer) for unknown contaminant sources during remediation and development work.

7.2.2 Stockpile Methods

Soil stockpile areas, if needed, will be constructed for staging of site soil, pending loading or characterization testing. Separate stockpile areas will be constructed to avoid co-mingling materials of differing types. All stockpile areas will meet the following minimum requirements:

- The excavated soil will be placed onto double layers of a minimum 8-mil low-permeability liner of sufficient strength and thickness to prevent puncture during use.
- Equipment and procedures will be used to place and remove the soil that will minimize the potential to jeopardize the integrity of the liner.
- Stockpiles will be covered at the designated times (see below) with minimum 8-mil plastic sheeting or tarps which will be securely anchored to the ground. Stockpiles will be routinely inspected and broken sheeting covers will be promptly replaced.
- Stockpiles will be covered upon reaching their capacity of approximately 2,000 cu. yards until ready for loading. Stockpiles that have not reached their capacity will be covered at the end of each work day.

- Each pile will be staked and labeled with a number to coincide with labeling on the associated sample container for proper correlation of the analytical results to the pile.
- Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC.
- Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.
- Soil stockpiles will be continuously encircled with silt fences. Hay bales will be used as needed near catch basins, surface waters and other discharge points.
- A dedicated water truck equipped with a water cannon will be available on-Site for dust control, if necessary.

7.2.3 Materials Excavation and Load Out

This section describes all methods to be followed for materials loading and on-site management prior to leaving the Site.

- The Remedial Engineer or a qualified environmental professional under his/her supervision will oversee all invasive work and the excavation and load-out of all excavated material.
- The owner of the Controlled Property and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.
- The presence of utilities and easements on the Site will be investigated by the Owner/lessee or their Remedial Engineer. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the Site.
- Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).
- A truck wash will be operated onsite when trucks will be driving on impacted material. The Remedial Engineer will be responsible for ensuring that all outbound trucks are clean before leaving the Site until the remedial construction is complete.

- Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-site sediment tracking.
- The Owner/lessee or their Remedial Engineer will be responsible for ensuring that all egress points for truck and equipment transport from the Site will be clean of dirt and other materials derived from the Site during Site remediation and development. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.
- The Applicant and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all invasive work, the structural integrity of excavations, and for structures that may be affected by excavations (such as building foundations and bridge footings).
- Mechanical processing of historical fill and contaminated soil on-Site is prohibited.

7.2.4 Materials Transport Off-Site

This section describes all methods to be followed for materials management while in transport off-Site.

- All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.
- Truck transport routes are as follows: Trucks hauling materials will most likely require roundtrips via the George Washington Bridge in Manhattan. The most direct route to this bridge is via the Major Deegan Expressway, which is adjacent to the Site. Access to the Major Deegan Expressway is via the access ramp located at the northwest corner of the Site on Exterior Street. Access from the Major Deegan will be from the Exit 5 ramp to Exterior Street, whose intersection is also located in the northwest corner of the Site. It is not anticipated that trucks will have to use the heavily trafficked East 149th Street. All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes.
- Proposed in-bound and out-bound truck routes to the Site are shown in Figure 9. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting 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; (g) community input (where necessary).

- Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site.
- Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during Site remediation and development.
- Queuing of trucks will be performed on-Site in order to minimize off-Site disturbance. Off-Site queuing will be prohibited.
- Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.
- All trucks will be clean prior to leaving the Site. Truck wash waters, if generated, will be collected and disposed of off-Site in an appropriate manner.

7.2.5 Materials Disposal Off-Site

This section describes all methods to be followed for materials disposal off-Site.

- The disposal locations will be identified and reported to NYSDEC in the Annual Site Management Report.
- The total quantity of material expected to be disposed off-site will be reported to NYSDEC prior to performance of work. This will include quantity, breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc.
- All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC's Project Manager. Unregulated off-Site management of materials from this Site is prohibited without formal NYSDEC approval.
- Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

- The following documentation will be obtained and reported by the Owner/lessee or their Remedial Engineer for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the Site conforms with all applicable laws: (1) a letter from the owner or lessee or their designated representative to the receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This letter will state that material to be disposed is contaminated material generated at an environmental remediation site in New York State. The letter will provide the project identity and the name and phone number of the Owner/lessee or their Remedial Engineer. The letter will include as an attachment a summary of all chemical data for the material being transported; and (2) a letter from all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material.
- Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2
- Historical fill and contaminated soils from the Site are prohibited from being disposed at Part 360-16 Registration Facilities (also known as Soil Recycling Facilities).
- Soils that are contaminated but non-hazardous and are being removed from the Site are considered by the Division of Solid & Hazardous Materials (DSHM) in NYSDEC to be Construction and Demolition (C/D) materials with contamination not typical of virgin soils. These soils may be sent to a permitted Part 360 landfill. They may be sent to a permitted C/D processing facility without permit modifications only upon prior notification of NYSDEC Region 2 DSHM. This material is prohibited from being sent or redirected to a Part 360-16 Registration Facility. In this case, as dictated by DSHM, special procedures will include, at a minimum, a letter to the C/D facility that provides a detailed explanation that the material is derived from a DER remediation Site, that the soil material is contaminated and that it must not be redirected to on-Site or off- Site Soil Recycling Facilities. The letter will provide the project identity and the name and phone number of the Owner/lessee or their Remedial Engineer. The letter will include as an attachment a summary of all chemical data for the material being transported.
- The Annual Site Management Report will include an accounting of the destination of all material removed from the Site during work performed under this plan, including

excavated soil, contaminated soil, historic fill, solid waste, and hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. This information will also be presented in a tabular form in the Annual Site Management Report.

- Bill of Lading system or equivalent will be used for off-site movement of non-hazardous wastes and contaminated soils. This information will be reported in the Annual Site Management Report.
- Hazardous wastes derived from on-Site will be stored, transported, and disposed of in full compliance with applicable local, State, and Federal regulations.
- Appropriately licensed haulers will be used for material removed from this Site and will be in full compliance with all applicable local, State and Federal regulations.
- Waste characterization will be performed for off-Site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the Annual Site Management Report. All data available for soil/material to be disposed at a given facility must be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

7.2.6 Materials Reuse On-Site

This section provides details for methods to be followed for materials reuse on-site. 'Reuse on-Site' means reuse on-site of material that is originally derived from the Site and which did not leave the Site during the remedy.

- The site soil, historic fill, and on-site building material that do not exceed the Track 4 SSSCOs may be reused on site as structural fill wherever possible.
- Prior to reuse, the excavated materials will be sampled for the Track 4 SSSCOs. Any excavated material that does not meet the Track 4 SSSCOs will be segregated from the reusable material and properly disposed offsite. Acceptable demolition material (that which does not exceed the Track 4 SSSCOs) proposed for reuse on-Site, if any, will be sampled for asbestos.
- Building material and site soil that have been selected for reuse will be stockpiled (as described in subsection 3.2.3) and composite samples from each stockpile will

be tested at a frequency of one sample per 2,000 cubic yards to confirm adherence to the Track 4 SSSCOs.

- Any excavated material reuse stockpile that does not pass the Track 4 SSSCO or contains asbestos will be properly disposed offsite.
- The reuse stockpile composite samples will be sent to an ELAP-approved laboratory for comparison to the Track 4 SSSCOs by Method 8270 for the SVOCs and Method 6010B for mercury and lead. Asbestos will be sampled by Method 600R.
- Chemical criteria for on-Site reuse of material has been approved by NYSDEC. This criteria is listed in Appendix C (SSSCOs). The Owner/lessee or their Remedial Engineer will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material will not remain on-Site.
- Concrete crushing or processing on-Site is prohibited unless specially designed devices that are self-contained and capable of providing misting or dust control are used. If dust-free operations are not achieved with such devices, this exception will be revoked. Requests for concrete crushing or processing on-Site must be approved by NYSDEC.
- Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site is prohibited for reuse on-Site.
- Contaminated on-Site material, including historic fill and contaminated soil, removed for grading or other purposes will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

7.2.7 Fluids Management

- All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Liquids discharged into the New York City sewer system will be addressed through approval by NYCDEP.
- Dewatered fluids will not be recharged back to the land surface or subsurface of the Site. Dewatering fluids will be managed off-site.
- Discharge of water generated during remedial construction to surface waters (i.e. a local pond, stream or river) is prohibited without a SPDES permit.

7.2.8 Demarcation

After the completion of soil removal and any other invasive remedial construction activities and prior to backfilling, as necessary, a land survey was performed by a New York State licensed surveyor. The survey defined the top elevation of residual contaminated soils. A physical demarcation layer, consisting of orange snow fencing material or equivalent material was placed on this surface to provide a visual reference. This demarcation layer constitutes the top of the 'Residuals Management Zone', the zone that requires adherence to special conditions for disturbance of contaminated residual soils defined in this Site Management Plan. The survey measured the grade covered by the demarcation layer before the placement of cover soils, pavement and sub-soils, structures, or other materials. This survey and the demarcation layer placed on this grade surface constitute a modification of the physical and written record of the upper surface of the 'Residuals Management Zone' in the Site Management Plan. A map showing the survey results will be included in the Annual Site Management Report and updates to the Site Management Plan.

7.2.9 Backfill from Off-Site Sources

This section describes all methods to be followed for import and usage of backfill material from off-Site.

- All materials proposed for import onto the Site will be approved by the Remedial Engineer and will be in compliance with provisions in this SMP prior to receipt at the Site.
- Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site.
- All imported soils will meet NYSDEC approved backfill or cover soil quality objectives for this Site. These NYSDEC approved backfill or cover soil quality objectives are the lower of the protection of groundwater or the protection of public health soil cleanup objectives for restricted commercial use as set forth in Table 375-6.8(b) of 6 NYCRR Part 375. Non-compliant soils will not be imported onto the Site without prior approval by NYSDEC. Nothing in the approved SMP or its approval by NYSDEC should be construed as an approval for this purpose.
- Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site

without prior approval by NYSDEC. Nothing in this SMP should be construed as an approval for this purpose.

- Solid waste will not be imported onto the Site.
- Trucks entering the Site with imported soils will be securely covered with tight fitting covers.

7.2.10 Stormwater Pollution Prevention

NYSDEC requires the implementation of protective measures to minimize the effect of erosion and sediment impacts from construction activities involving soil disturbance. The Stormwater Pollution Prevention Plan (SWPPP) was developed in accordance with accepted engineering practices to offer protective measures to minimize sediment transport during construction activities and to describe the implementation of control measures that were used to reduce pollutant loadings from stormwater runoff during construction activities. The erosion and sediment controls were developed in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control and the RWP and are as follows:

- Barriers and hay bale checks will be installed where required and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.
- Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.
- All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.
- Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.
- Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters
- Silt fencing or hay bales will be installed around the entire perimeter of the remedial construction area.

For all activities involving disturbance of residual contamination, work will be performed in compliance with the existing permit under the NYSDEC General Stormwater Permit (No. GP-02-01), and the Stormwater Pollution Prevention Plan (SWPPP) will be implemented. The SWPPP applicable to construction activities is provided in Appendix M.

7.2.11 Contingency Plan

During construction activities, excavated soil will be continuously monitored using field screening techniques to identify additional soil that may exceed the Track 4 SSSCOs for this Site. Any soil identified will be confirmed by collecting and analyzing a soil sample in accordance with the methods described in the FER. If the laboratory results indicate that the soil is in exceedance of the selected SSSCOs for the Site, the contaminated soil will be delineated and removed after consultation with the NYSDEC.

If underground tanks or other previously unidentified contaminant sources are found during on-Site remedial excavation or development related construction, sampling will be performed on product, sediment and surrounding soils, etc. Chemical analytical work will be for full scan parameters (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs). These analyses will not be limited to STARS parameters where tanks are identified without prior approval by NYSDEC. Analyses will not be otherwise limited without NYSDEC approval.

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone to NYSDEC's Project Manager. These findings will be also included in daily and periodic electronic media reports, if required by the NYSDEC.

7.2.12 Community Air Monitoring Plan

The CAMP for the Site was developed in accordance with the requirements of NYSDEC Technical Administrative Guidance Memorandum # 4031 and with the provisions of the New York State Department of Health (NYSDOH) Community Air Monitoring Plans in order to protect off-Site receptors including residences and businesses from potential airborne contaminant releases during intrusive field activities. Details of the CAMP are as follows:

VOC Monitoring, Response Levels, and Actions

VOCs must be monitored at the downwind perimeter of an active work zone on a continuous basis during remediation and construction activities until the ground is completely capped with clean soil or impervious barrier. Upwind concentrations should 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 the known VOC contaminants on the Site. This equipment should be calibrated daily and should be capable of calculating 15-minute running averages. All 15-minute readings will be recorded and be available for State personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded. The measured 15-minute averages will be compared to the levels below:

- If the ambient air concentration of total VOCs at the downwind perimeter of the work area exceeds 5 parts per million (ppm) above background for the 15 minute average, work activities must be halted until the levels readily decreases below 5 ppm (per instantaneous readings).
- If the total VOCs at the downwind perimeter of the work area persist at levels in excess of 5 ppm over background but less than 25 ppm, work must be halted. The source of vapors must be identified and corrective actions must be taken to abate the emissions. Work activities can only resume provided that the concentration is less than 5 ppm over a 15 minute average period.
- If the total VOC level is above 25 ppm at the perimeter of the work area, all activities must be shut down and work methods and controls will be re-evaluated.

Particulate Monitoring, Response Levels, and Actions

Dust or particulate concentrations must be monitored continuously at the upwind and downwind perimeters of the site perimeter and the active work zones. The particulate monitoring should 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 must 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. All readings will be recorded and be available for state personnel review. Corrective action is determined by the following levels:

- If the downwind PM-10 at a site perimeter location is 100 micrograms per cubic meter (µg/m3) greater than background for the 15 minute period of if airborne dust is observed at the site perimeter from excavation activity, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that the downwind PM-10 particulate level does not exceed 150 µg/m3 above the upwind level and provided that no visible dust is migrating from the excavation work area.

- If, after implementing dust suppression techniques, downwind PM-10 particulate levels are greater than 150 µg/m3 above the upwind level, work must be stopped and re-evaluation of work activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 µg/m3 of the upwind level and in preventing visible dust migration.

A map showing the location of fixed and mobile sampling stations is shown in Figure 10. The mobile monitoring locations may be modified depending on the location of future excavation activities.

Exceedances observed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

7.2.13 Odor, Dust and Nuisance Control Plan

7.2.13.1 Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors on- and off-site. 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. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Implementation of all odor controls, including the halt of work, will be the responsibility of the property owner or lessee or their designated representative, who is responsible for certifying the Annual Site Management Report.

All necessary means will be employed to prevent on- and off-site 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) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-Site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

Where odor nuisances have developed during remedial work and cannot be corrected, or where the release of nuisance odors cannot otherwise be avoided due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering excavation and handling areas under tented containment structures equipped with appropriate air venting/filtering systems.

7.2.13.2 Dust Control Plan

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved though the use of a dedicated on-site water truck for road wetting. The truck will be capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water truck sprinkling.

7.2.13.3 Other Nuisances

- A plan for rodent control will be developed and utilized by the contractor prior to and during Site clearing and Site grubbing, and during all remedial work.
- All work will be conducted in accordance with the NYCDEP requirements for noise. If required, a plan will be developed and utilized by the contractor for all remedial work and will conform, at a minimum, to NYCDEP noise control standards.

8.0 INSPECTIONS AND NOTIFICATIONS

8.1 Inspections

Inspections of all systems installed on-site will be conducted at the frequency specified in the SMP Monitoring Plan schedule. A comprehensive site-wide inspection will be conducted annually. The inspections will determine and document the following:

- Whether engineering controls (SSD systems, HVAC, sub-slab vapor barriers and the composite cover system [i.e., asphalt covered roads, concrete covered sidewalks, concrete building slabs, and/or one-foot of NYSDEC TAGM 4046 compliant material]) continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of the environmental easement;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If Site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system;

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section III). The reporting requirements are outlined in the Site Management Reporting Plan (Section V).

If an emergency such as the result of a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the Site will be conducted by either Langan Engineering or an alternate Remedial Engineer selected by the Owner or lessee and approved by NYSDEC to verify the effectiveness of the EC/ICs implemented at the Site.

8.2 Notifications

8.2.1 NYSDEC-acceptable Electronic Database

The Owner, lessee, or Owner-approved representative, will provide, in a computer database format acceptable to the NYSDEC, for any environmental easement or other IC approved by NYSDEC, the following data, including but not limited to the following:

- A Site summary;

- Name of current Site owner and/or the remedial party implementing the SMP for the Site;
- The location of the Site;
- The current status of Site remedial activity;
- A copy of the Environmental Easement; and
- A contact name and phone number of a person knowledgeable about the Environmental Easement's requirements, in order for NYSDEC to obtain additional information, as necessary.

This information should be: 1) modified as conditions change; (2) revised in Appendix D of this document; and, (3) submitted to NYSDEC in the Annual Site Monitoring Report. Should the Environmental Easement be modified or terminated, the copy of the revised Environmental Easement will also be updated in this manner.

8.2.2 Non-routine Notifications

Non-routine notifications to be submitted by the property owners to the NYSDEC on an as-needed basis include the following:

- 60-day advance notice of any proposed changes in the use of the Site consistent with the terms in the Brownfield Cleanup Agreement[2].
- 10-day advance notice of any proposed ground-intrusive activities (exceptions will be made for emergency work).
- Notice within 48-hours of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of the SSD systems and any action taken to mitigate the damage or defect.
- Notice within 48-hours of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of the engineering controls in place at the Site, including a summary of action taken and the impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45

[2] For this purpose, a change in use is as defined in NYCRR Part 375.

days and shall describe and document actions taken to restore the effectiveness of the ECs.

III. MONITORING PLAN

9.0 INTRODUCTION

9.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the implemented ECs and for monitoring groundwater per this SMP. ECs at the Site include SSD systems in several of the buildings as required by this SMP, a positive pressure HVAC system, sub-slab vapor barriers, and a composite cover system. This Monitoring Plan is not to be used as a stand-alone document, but as a component document of the SMP. This Monitoring Plan is subject to NYSDEC revision.

9.2 Purpose

This Monitoring Plan details the steps necessary to achieve the aforementioned objectives, both short- and long-term, by addressing the following issues:

- Sampling and analysis of appropriate media (e.g., groundwater, soil vapor, soils);
- Evaluating Site information periodically to confirm that the remedy continues to be effective as per the design; and
- Preparing the necessary reports for the various monitoring activities.
- Assessing compliance with NYSDEC groundwater standards and soil standards for imported materials as applicable (backfill material);
- Assessing achievement of the remedial performance criteria.

To adequately address the above issues, this Monitoring Plan includes information on the following:

- Sampling locations, protocol, and frequency;
- Information on all designed systems (e.g., well logs);
- Analytical sampling program requirement;
- Reporting requirements;
- Quality assurance/quality control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring wells;

- Well decommissioning procedures; and
- Annual inspection and certification information.

Monitoring programs for each EC and groundwater sampling in accordance with the SMP are summarized in Table 2 (below) and outlined in detail in Sections 10.0 through 13.0 below.

Table 2: Monitoring/Inspection Schedule

Monitoring Program	Frequency*	Matrix	Analysis
Sub-slab Pressure Testing for SSD Systems	NA	NA	NA
Sub-slab Pressure Testing for HVAC System	Once every five years	Sub-slab air	micro-manometer
SSD System Inspections	Annual	**None**	**None**
Groundwater Monitoring	~~Quarterly sampling for the two years unless discontinued per agreement with NYSDEC; annually thereafter pending NYSDEC approval in writing~~NA	~~Groundwater~~NA	~~TAGM VOCs and SVOCs~~NA
Composite Cover System Inspections	Annual	**None**	**None**

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH. In February 2009, NYSDEC approved the termination of groundwater monitoring. In October 2009, December 2009, and January 2010, NYSDEC and NYSDOH determined that active SSDS were not required for Retail E1 and F, Retail C, and Retail E2, respectively. In October 2011, NYSDEC and NYSDOH approved a reduction in frequency of HVAC pressure testing for Retail A.

10.0 SUB-SLAB DEPRESSURIZATION SYSTEM MONITORING PROGRAM

The complete installation (installation of riser pipes and roof-mounted blowers or ventilators) of SSD system components in Retail C, E1, E2, and F will be determined by indoor air and sub-slab soil vapor sampling to be conducted post-remedial action. The sampling will be conducted after the ground floor building envelopes are complete and the HVAC systems have been installed. Sampling will be conducted according to a NYSDEC-approved work plan. The decision to complete SSD systems for these buildings will be based on the sample results and is subject to the approval of the NYSDEC and NYSDOH. System designs are described in the Engineering and Institutional Control Plan, and as-built drawings of the sub-slab components are located in Appendices E through H. If complete installation is required as described above, as-built drawings for the completed systems will be appended to this SMP.

10.1 Monitoring Schedule

Inspection of blowers and other equipment will be conducted on an annual basis to establish that it is operational and performing within the design specifications. 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. Monitoring deliverables for the SSD systems are specified below, in Section 16.0 of this Monitoring Plan.

10.2 General System Monitoring

10.2.1 General Equipment Monitoring

A visual inspection of the complete system will be conducted during the monitoring event. SSD system components to be inspected include, but are not limited to the following:

- Vacuum blower; and,
- General system piping

A complete list of components to be checked is provided in the SSD Inspection Checklist, presented in Appendix N. If any equipment readings are not within their typical range, any equipment is observed to be malfunctioning, or the system is not performing within specifications, maintenance and repairs will be conducted per the Operation and Maintenance Plan, and the SSD system restarted.

10.2.2 System Monitoring Devices and Alarms

The SSD systems each include a warning device that indicates when the system is not operating properly. The warning device will have an alarm in the site manager or maintenance

personnel office. In the event the warning device is activated, applicable maintenance and repairs will be conducted, as specified in the Operation and Maintenance Plan, and the SSD system restarted. Operational problems will be noted in the Annual Site Management Report. System monitoring devices and alarms will be tested as part of the annual monitoring event.

10.2.3 Discharge Permit Limit Requirements

SSD systems do not require air discharge permits. Based on pre-remediation soil vapor samples collected at the Site, concentrations of VOCs released to the outside air will be negligible.

10.3 Sampling Event Protocol

Based on the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006), air monitoring is not necessary once the SSD system has been properly installed and is maintaining a vacuum underneath the entire slab. As demonstrated during SSD system testing after installation (refer to Appendix O), all SSD systems meet both criteria. However, some repairs and adjustments will be made to the SSD systems over their lifetime. In case of redesign and start-up, SSD system testing, as outlined in Section 19.2 of the Operation and Maintenance Plan (Section IV of this SMP), will be conducted. If an extended shut-down of the SSD system is necessary or anticipated, the State will be notified and indoor air sampling may be required.

11.0 HVAC POSITIVE PRESSURE SYSTEM MONITORING PROGRAM

One positive pressure HVAC system was installed in Retail A to mitigate potential soil vapor intrusion to the building. The system design is described in the Engineering and Institutional Control Plan and as-built drawings are located in Appendix J.

11.1 Schedule

A baseline monitoring and sampling event was conducted after system start-up. Following start-up testing, the system will be put into continuous operation once the building is occupied. The system will be inspected annually and pressure monitored every five years (last conducted in 2011) by measuring the pressure differential as described below in Section 11.2.3. Based on the monitoring data, adjustments will be made as necessary as outlined in the Operation and Maintenance Plan. Unscheduled inspections and/or sampling may take place when a suspected failure of the HVAC system has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Monitoring deliverables for the HVAC system are specified below, in Section 16.0 of this Monitoring Plan.

11.2 System Monitoring

11.2.1 General Equipment Monitoring

A visual inspection of the complete system will be conducted annually. HVAC system components to be inspected include, but are not limited to the following:

- Flow through HVAC; and
- Fans and blowers are operating within parameters.

A complete list of components to be checked is provided in the HVAC Inspection Checklist, presented in Appendix P. If any equipment readings are not within their typical range, any equipment is observed to be malfunctioning, or the system is not performing within specifications, maintenance and repairs will be conducted per the Operation and Maintenance Plan, and the HVAC system restarted.

11.2.2 System Monitoring

The HVAC system will be monitored on a daily basis by maintenance personnel. In the event that operational problems are observed, applicable maintenance and repairs will be conducted, as specified in the Operation and Maintenance Plan, and the HVAC system restarted. Daily monitoring checklists noting any operational problems and applicable maintenance or repairs will be included in the Annual Site Management Report.

11.2.3 Discharge Permit Limit Requirements

HVAC systems do not require air discharge permits.

11.3 Sampling Event Protocol

The soil vapor post-mitigation testing protocol is based on the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006). The testing is used to evaluate the effectiveness and proper installation of the mitigation system. The plan consists of checking the building for positive pressure conditions and conducting indoor and outdoor air sampling.

Positive Pressure Conditions

Proper post-mitigation positive pressure conditions consist of a higher pressure in the interior of the building compared to the sub-slab space underneath the building. Pressure conditions testing will be performed once every five years after the building envelope and structural walls are in place and the modified HVAC system is fully operational. Testing will consist of collecting pressure differential measurements with a manometer from a permanent pressure testing point (small holes [e.g., 3/8 inch] through the slab, and. Test holes will be relatively evenly spaced throughout the building slab at a frequency of one test hole per 25,000 square feet of floor area. Therefore, six holes will be completed for the Retail A building (slab area of approximately 145,000 square feet). Testing points were constructed with ¼ inch diameter polyethylene tubing extending from two inches below the top of the hole to approximately 2-3 inches below the bottom of the slab. To prevent vapor intrusion if the HVAC system shuts down, the tubing was sealed in place from the vapor barrier to the top of the slab with a polyurethane sealant. The top of the ¼-inch diameter tubing was connected to approximately 3 inches of flex tubing which connected to a Swagelok quick connect ball valve fitted with a ¼-inch hose barb. The quick connect is designed to be capped when not in use. This fitting and barb fit in a 2-inch diameter flush-mounted cast iron manhole cover.

Indoor and Outdoor Air Sampling

One round of post-mitigation indoor air sampling will be completed to document that indoor air volatile chemical concentrations are less than sub-slab vapor concentrations identified by the Remedial Investigation (RI) or, if greater, consistent with background indoor air concentrations contained in the NYSDOH guidance document. Air sampling will be performed after the building envelope and structural walls are in place and the modified HVAC is fully operational, but before potentially interfering factors from a future use of the space, as previously listed (e.g., paints, carpet, solvents, glues, etc.), are brought into the building (as feasible).

Seasonal constraints on sampling do not apply to this building considering that seasonal variation of the door and window operation is not expected and the HVAC will be in continuous year-round operation. Six indoor air samples will be collected (one per 25,000 square feet) in relatively evenly spaced locations throughout the building. One outdoor air sample will be collected concurrently with the indoor air samples. A pre-sampling inspection will be performed in general accordance with Section 2.11 of the NYSDOH guidance document to identify and minimize conditions that may interfere with the sampling.

In accordance with NYSDOH guidance, the target list of volatile chemicals for the samples will be based on previous environmental sampling (RI data) in the Retail A slab area. Remedial Investigation soil vapor sampling in the Retail A slab area (soil vapor points SG-11 through SG-15, SG-AA1) showed that the target list of volatile chemicals includes:

- acetone
- tetrachloroethene (PCE)
- freon 11
- cyclohexane
- 4-ethyltoluene
- methyl ethyl ketone (MEK)
- m,p-xylene
- freon 12
- 4-methyl-2-pentanone
- 1,3,5-trimethylbenzene
- toluene
- 1,2,4-trimethylbenzene
- carbon disulfide
- o-xylene

Indoor and outdoor air testing will be completed as follows:

1. Each sample will be documented on a sample log sheet that includes standard sampling information (sample identification, date and time of sample, sample height, etc.)
2. Sampling duration will be 8 hours, which will reflect the planned commercial use of the building.
3. Field personnel and workers at the Site will avoid lingering in the immediate area of the samples.
4. Sample flow rates will be set to conform to the specification of the sample collection method (EPA Method TO-15) and will be consistent with the flow rate of the concurrent outdoor air sample.
5. Samples will be collected using summa canisters that are batch-certified as clean by a laboratory and a laboratory-calibrated flow controller.
6. Indoor air samples will be collected on the lowest building level (first floor) at a height to represent the breathing zone (3 to 5 feet per the NYSDOH guidance document).

7. The outdoor air sample will be collected simultaneously with the indoor air samples in an area representative of the outdoor ambient air conditions. The height of the indoor air sample will be 3 to 5 feet above the ground surface.
8. Field documentation for the outdoor sample will include weather conditions, outdoor plot sketches (sample location, buildings, surface cover, etc.) and identification of potential interferences (e.g., excavators, fuel oil tank, etc.)

The results of the post-mitigation indoor air sampling are provided as Appendix Q.

12.0 GROUNDWATER MONITORING PROGRAM

After completion of the Site remedy, quarterly groundwater monitoring was conducted quarterly between February 2008 and December 2008 in accordance with this SMP. Based on the results of the groundwater sampling, Langan recommended termination of groundwater monitoring. In a letter dated February 2, 2009, NYSDEC approved the termination of groundwater monitoring with the condition that one additional round of groundwater samples be collected in mid-year 2009. The results of groundwater samples collected in June 2009 were consistent with previous results; therefore, no additional groundwater monitoring is required. ~~Quarterly groundwater sampling will be conducted to monitor for VOC and SVOC contaminants at monitoring wells MW-13b and MW-13c for eight quarters. The results from the sample analysis will assist in determining the subsurface water quality and assist in evaluating post-remedial performance.~~

~~The Remedial Action included the excavation and removal of the targeted grossly contaminated fill and soil in remedial area Excavation 6 (EX-6; see Figure 5) and the addition of a chemical oxidant (ORC as manufactured by Regenesis) to the base of the excavation area to improve groundwater quality in the area represented by monitoring well MW-13. In order to document the efficacy of source removal in EX-6 and the cessation of off-site migration of contaminants, quarterly groundwater monitoring was initiated.~~

~~As of the date of this SMP, two rounds of groundwater samples have been collected. These sampling rounds demonstrate that the application of the ORC was effective and contaminant rebound is unlikely due to the period of time since the ORC application. Moreover, the suspected source area on the Site that contributed to the groundwater impact was excavated during remedial activities and no VOC or SVOC compounds exceeded the guidance values during the second quarter 2008 sampling event. The results of the Second Quarter 2008 monitoring support our First Quarter 2008 conclusions; naphthalene was reduced below the AWQS and all other analytical parameters remained below the AWQS, confirming that there is no rebound.~~

~~Monitoring wells MW-13b and MW-13c will be used to document that the implemented remedy is effective.~~

~~12.1 Monitoring System Design~~

~~As per RWP Stipulation List Item No. 3, groundwater monitoring events consist of groundwater sampling from well MW-13 and at least one additional well installed west of the Retail C Building on the Exterior Street sidewalk.~~

~~During the course of intrusive excavation activities, MW-13 was destroyed. To replace the destroyed well and fulfill the commitments of the RWP and its Stipulation List, the Remediation Contractor installed a new monitoring well named MW-13b and installed one additional well named MW-13c. In October 2008, two new groundwater monitoring wells (MW-13d and MW-13e) were installed to replace MW-13b and MW-13c, which were destroyed during construction activities. Groundwater monitoring well MW-13b was installed in approximately the same location as original monitoring well MW-13. MW-13c was located approximately 25 feet laterally south of MW-13b. Groundwater monitoring well MW-13d was subsequently installed approximately five feet laterally south of former MW-13b and MW-13e was installed approximately five feet laterally north of former MW-13c.~~

~~12.2 Groundwater Monitoring Well Construction~~

~~Groundwater monitoring wells MW-13b, MW-13c, MW-13d, and MW-13e were each constructed of a 2-inch inside diameter, flush-threaded, Schedule 40 polyvinyl chloride (PVC) casing. Each well was completed at a total depth of 10 feet bgs and was constructed with a 7-foot screened interval (3-10 feet bgs). The screened interval for each well consisted of machine-slotted PVC casing with 0.010-inch-wide slots. Blank PVC casing completed the well from the top of the screened interval to approximately 2 feet above surface grade. The annular space in the well was backfilled with 10/20 grade sand from the base of the boring to one foot above the screened interval. A bentonite well seal was placed in the remaining annular space from the top of the sand pack to just below ground surface. Groundwater monitoring wells MW-13d and MW-13e were secured with lockable well caps and surrounded by concrete Jersey barriers to protect them from on-site traffic.~~

~~Well construction logs are included in Appendix R.~~

~~12.3 Schedule~~

~~Quarterly monitoring events for these wells began in March 2008. Continued groundwater monitoring on a quarterly basis is planned during the first two years of implementation, unless discontinuation is approved by NYSDEC.~~

~~Thereafter, the sampling frequency will be determined by NYSDEC and NYSDOH. The SMP will be modified to reflect changes in sampling plans approved by NYSDEC and NYSDOH. Deliverables for the groundwater monitoring program are specified below, in Section 16.0 of this Monitoring Plan.~~

~~12.4 Sampling Event Protocol~~

~~All well sampling activities will be recorded in a field book and a groundwater sampling log presented in Appendix S, or similar form. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log; the well sampling log will serve as the "inspection form" for the groundwater monitoring well network.~~

~~12.4.1 Well Gauging~~

~~Prior to sampling, the static water level will be measured at each respective well to the nearest 0.01 foot from the surveyed well elevation mark on the top of the PVC casing with a decontaminated water level indicator. Water levels will be recorded and converted to elevations relative to the National Geodetic Vertical Datum (NGVD) for groundwater contouring purposes. The depth to the bottom of the well will also be recorded.~~

~~12.4.2 Purging~~

~~The well will be purged in general accordance with the low-flow method developed by the USEPA ("Low-Flow [Minimal Drawdown] Ground-Water Sampling Procedures," EPA/540/S-95/504, April 1996) and accepted by NYSDEC. Purging will be conducted using a decontaminated low-flow (generally less than one gallon per minute [gpm]) submersible or baldder pump, fitted with dedicated, disposable tubing. During purging, the turbidity, pH, temperature, conductivity, redox potential, and dissolved oxygen of the sample will be measured using a Horiba U-22 Water Quality Checker with flow-through cell, or equivalent pre-calibrated probe(s) and recorded. Purging will be considered complete after all parameter readings have stabilized for three successive readings.~~

~~12.4.3 Groundwater Sampling~~

~~Each well will be sampled using the low-flow method developed by the USEPA (April 1996) and accepted by NYSDEC. Sampling will be conducted using a decontaminated low-flow (generally less than one gpm) submersible or bladder pump, fitted with dedicated, disposable tubing. Groundwater samples will be collected directly from the pump discharge line after the pump is turned off and the flow can be reversed out of the tubing into sample vials. For wells that purge to dryness, samples may generally be collected after at least 50 percent recovery to the~~

~~original static water level. Samples will be collected in the appropriate number of hydrochloric acid-preserved volatile organic analysis (VOA) bottles. The sample containers will then be labeled, placed in a cooler, packed on ice (to maintain a temperature of 4°C), and shipped to the laboratory under proper chain of custody protocol for analysis. Chain of custody documentation is presented in Appendix T.~~

~~12.4.4 Laboratory Analysis~~

~~All laboratory analyses of groundwater samples will be conducted by a NYSDOH ELAP-approved laboratory certified for analyses using the most recent ASP. Groundwater samples will be analyzed for NYSDEC TAGM VOCs per EPA Method 8260 and SVOCs per EPA Method 8270.~~

12.5 Well Replacement/Repairs and Decommissioning

~~Repairs and/or replacement of wells in the monitoring well network should be performed based on assessments of structural integrity and overall performance. Well decommissioning, for the purpose of replacement, should be reported to NYSDEC prior to performance and in the annual report. Well decommissioning without replacement must receive prior approval by NYSDEC.~~Following approval by NYSDEC, on-site wells were ~~Well abandonment will be performed~~abandoned in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures." ~~Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC and NYSDOH.~~

13.0 COMPOSITE COVER SYSTEM AND SUB-SLAB VAPOR BARRIER

13.1 Composite Cover System

A composite cover system comprised of asphalt covered roads, concrete covered sidewalks, concrete building slabs, and/or one-foot of NYSDEC TAGM 4046 compliant material cover serves as a protective barrier reducing the risk of exposure to residual contamination left in place under the Site. Inspection of the composite cover system is required during annual inspections and is subject to annual certification to NYSDEC. Conditions of the on-site building foundations, sidewalks, and private roads will be noted for quality and integrity, during inspections.

13.2 Sub-Slab Vapor Barrier

A continuous 20-millimeter polyethylene sub-slab vapor membrane barrier was installed between the porous gravel layer and the building slab to prevent infiltration from soil vapor through potential cracks in the slab. Since it is beneath the slab, the vapor barrier cannot be inspected without compromising the system. The membrane will be repaired following any intrusive work in accordance with the manufacturers maintenance/installation manual included in Appendix I.

14.0 SITE-WIDE INSPECTION

Site-wide inspections will be performed on a regular schedule at a minimum of once a year. Site-wide inspections should also be performed after all severe weather conditions that may affect Engineering Controls or monitoring devices. During these inspections, a site-wide inspection form will be completed (Appendix U). The form will compile sufficient information to assess the following:

- Compliance with all ICs, including Site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General Site conditions at the time of the inspection;
- The Site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection;
- Compliance with permits and schedules included in the Operation and Maintenance Plan; and
- Confirmation that Site records are up to date.

15.0 QUALITY ASSURANCE/QUALITY CONTROL

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) prepared for the Site (Appendix V). Main Components of the QAPP include:

- QA/QC Objectives for Data Measurement;
- Sampling Program:
  - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
  - Sample holding times will be in accordance with the NYSDEC ASP requirements.
  - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.
- Sample Tracking and Custody;
- Calibration Procedures:
  - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
  - The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical Procedures;
- Data Reduction and Validation:
  - Data validation will be performed in accordance with the USEPA validation guidelines for organic and inorganic data review. Validation will include the following:
    - A Data Usability Summary Report (DUSR) which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a

summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.

- Internal QC and Checks;
- QA Performance and System Audits;
- Preventative Maintenance Procedures and Schedules;
- Corrective Action Measures.

16.0 REPORTING REQUIREMENTS

Forms and any other information generated during regular monitoring events and inspections will be kept on file on-site or with the party(ies) implementing the SMP. All forms, and other relevant information generated during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and NYSDOH and (2) submitted at the time of the Annual Site Management Report, as specified in the Reporting Plan of the SMP.

All monitoring results will be reported to NYSDEC and NYSDOH on an annual basis in the Site Management Report. A report or letter will be prepared for submission if required by NYSDOH and NYSDEC subsequent to each sampling event. The report (or letter) will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., groundwater, sub-slab air pressure);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (also to be submitted electronically in the NYSDEC-identified format);
- A copy of the laboratory certification;
- Any observations, conclusions, or recommendations; and
- Determination that plume conditions have not changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by NYSDEC and NYSDOH. A summary of the monitoring program deliverables are summarized in Table 3 below.

Table 3: Monitoring/Inspection Deliverables

Task	Frequency*	Quarterly Reporting Requirement	Annual Reporting Requirement
SSD System Inspections	Annual	**No** quarterly report	Information generated included in annual report
Sub-slab Pressure Testing for SSD Systems	NA	NA	NA
Sub-slab Pressure Testing for HVAC System	Once every five years	**No** quarterly report	Information generated included in annual report
Groundwater Monitoring	~~Quarterly sampling for the two years unless discontinued per agreement with NYSDEC; annually thereafter pending NYSDEC approval in writing~~NA	~~Information generated submitted in quarterly report~~NA	~~Information generated included in annual report~~NA
Composite Cover System Inspections	Annual	**No** quarterly report	Information generated included in annual report

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH. In February 2009, NYSDEC approved the termination of groundwater monitoring. In October 2009, December 2009, and January 2010, NYSDEC and NYSDOH determined that active SSDS were not required for Retail E1 and F, Retail C, and Retail E2, respectively. In October 2011, NYSDEC and NYSDOH approved a reduction in frequency of HVAC pressure testing for Retail A.

17.0 CERTIFICATIONS

Site inspections and sampling activities will take place as outlined above for the first year. The frequency thereafter will be determined by NYSDEC and NYSDOH. Certification of inspection of all ICs and ECs will be submitted to NYSDEC on a calendar year basis and must be submitted by March 1 of the following year. Certification will be performed by a Professional Engineer or qualified environmental professional. The inspection report will address several aspects of the ECs, including confirmation that the monitoring equipment are in place and functional and an evaluation of their performance and effectiveness. Further information on the certification requirements are outlined in the Reporting Plan of the SMP.

IV. OPERATION AND MAINTENANCE PLAN

18.0 INTRODUCTION

The Operation and Maintenance Plan describes the measures necessary to operate and maintain any mechanical components of the remedy (i.e., the SSD systems and the HVAC system) selected for the Site. This Operation and Maintenance Plan:

- Includes the steps necessary to allow individuals unfamiliar with the Site to operate and maintain the SSD and HVAC systems;
- Includes an operation and maintenance contingency plan; and,
- Will be updated periodically during use, as necessary, to reflect changes in Site conditions or the manner in which the SSD and HVAC systems are operated and maintained.

Other remediation controls used at the Site (e.g., the composite cover system, vapor barrier, monitored natural attenuation) require no additional instructions for maintenance (information on the composite cover system and sub-slab vapor barrier can be found in the Engineering and Institutional Control Plan) but will be monitored during periodic reviews and following invasive work, as described in the Monitoring Plan. Monitored natural attenuation will be monitored via monitoring wells MW-13d and MW-13e. Groundwater monitoring well maintenance will be addressed in Section 21.0 of this plan.

Copies of this Operation and Maintenance Plan, along with the complete SMP will be maintained at the Site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP. The Operation and Management Plan is subject to NYSDEC revision.

19.0 SUB-SLAB DEPRESSURIZATION SYSTEMS

19.1 Scope

This section provides operation and maintenance requirements for any SSD systems installed in buildings Retail C, E1, E2, and F per the requirements of this SMP. The Operation and Maintenance Plan has been prepared based on the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York – October 2006 and Environmental Protection Agency (EPA) Guidance Document EPA/625/R-92/016 concerning sub-slab depressurization of large buildings and schools (June 1994).

Details of the system design and layout are provided in the Engineering and Institutional Control Plan section of the Site Management Report. As-built drawings are shown in Appendices E through H.

19.2 System Start-Up and Testing

Prior to initial start-up of a SSD system, an inspection will be performed to confirm that all system components are in place. All equipment will then be started in accordance with the manufacturer's recommendations (system component documentation and manuals are presented in Appendix I). System testing will be performed, as follows:

- While the system is operating, smoke tubes will be used to check for leaks through concrete cracks, floor joints, and at the suction points. Any leaks identified will be properly sealed.
- In buildings where natural draft combustion appliances exist, the building will be tested for backdrafting of the appliances. If necessary, the backdrafting condition will be corrected before the SSD system is placed in operation.
- A manometer test will be performed to ensure that at least 0.001 inches WC of vacuum is being created between the sub-slab space and the indoor air space of the building throughout the building footprint. When conditions of inadequate depressurization were observed, the source or cause (e.g., improper fan operation) will be identified and corrected.
- The warning device indicating blower malfunction will be tested to confirm proper operation.
- Shortly after installation of the system and completion of building construction, indoor and outdoor air sampling will be performed. Samples will be analyzed for the constituents of concern (i.e., VOCs and methane) to confirm that concentrations are

below the air guidance values derived by the NYSDOH. If the sampling results indicated a concentration above the air guidance values, the source or cause (e.g., indoor or outdoor sources, improper operation of the SSD system, etc.) will be identified and corrected as necessary.

The system testing described above will be conducted if, in the course of the SSD system lifetime, significant changes are made to the system and the system restarted.

19.3 System Operation

19.3.1 Routine Operating Procedures

The vacuum blowers will operate continuously after initial startup. All equipment will be operated in accordance with manufacturer's recommendations (see Appendix I).

19.3.2 Trouble Shooting

During the course of operation for the active SSD systems, and immediately after start-up, some technical difficulties may be encountered and/or the SSD systems may not operate within design specifications. Any required maintenance, adjustments, or repairs to the system will be conducted as per manufacturer's recommendations and Section 19.4 of this Operation and Maintenance Plan.

19.4 System Maintenance

19.4.1 Routine Equipment Maintenance

Routine equipment maintenance (e.g., replacing vent fans), repairs, and/or adjustments will be determined based on the life expectancy and warranty for the specific part as well as visual observations over time. The need for repairs and/or adjustments will depend upon the results of a specific activity compared to the results obtained when system operations were initiated. Routine maintenance activities and minimum schedules are provided in Appendix N.

19.4.2 Non-routine Maintenance

Non-routine maintenance may also be required during the operation of the SSD systems, including the following situations:

- The building's Owners or occupants report that the warning device, displayed in the site manager or maintenance personnel office, indicates the SSD system is not operating properly;
- The SSD system becomes damaged; and/or,

- The building has undergone renovations that may reduce the effectiveness of the SSD system.

Activities conducted during non-routine maintenance visits will vary depending upon the reason for the visit. Repairs or adjustments will be made to the system as appropriate and as per manufacturer guidelines. If necessary, the system will be redesigned and restarted.

20.0 HVAC POSITIVE PRESSURE SYSTEM

20.1 Scope

This section provides operation and maintenance requirements for the HVAC system installed in building Retail A. The Operation and Maintenance Program has been prepared based on the manufacturer's information provided in Appendix K.

Details of the system design and layout are provided in the Engineering and Institutional Control Plan section of the Site Management Report. As-built drawings are shown in Appendix J.

20.2 System Start-Up and Testing

Prior to initial start-up of the HVAC system, an inspection was performed to confirm that all system components were in-place. All equipment was then started in accordance with the manufacturer's recommendations (system component manuals are presented in Appendix K). System performance was documented by completing pressure differential testing and indoor air testing.

Initial Pressure Testing

To test the efficacy of the HVAC system in preventing soil vapor intrusion, six pressure monitoring locations were installed at select locations throughout the building footprint to monitor the pressure differential between the interior space and the sub-slab. Pressure monitoring locations were installed on October 8 through 10, 2008, by Laurel Environmental of Huntington, New York, under the supervision of a Langan engineer.

Pressure monitoring points were constructed by coring through the slab with a ¾-inch diameter drill bit and inserting ¼-inch diameter polyethylene tubing that extended from the surface of the slab to approximately two to three inches below the bottom of the slab. The tubing was sealed in place with polyurethane sealant. The top of the tubing was connected to a Swagelok quick connect ball valve fitted with a ¼-inch hose barb. The entire assemblage is housed within a 2-inch diameter flush-mounted cast iron monument.

On October 10, 2008, a Langan engineer conducted differential pressure testing on the six pressure monitoring point locations using a TSI micromanometer, model number 8720-XX1. The micromanometer measured the pressure differential between the first floor indoor air space of Retail A and the sub-slab space. Test results demonstrated that all pressure measurements within the first floor space were greater than the sub-slab pressure measurements, which demonstrated that positive pressure was being maintained in Retail A. The quantitative results of the HVAC positive pressure testing and a figure showing the

monitoring locations was submitted to the NYSDEC and NYSDOH in a report dated January 27, 2009.

Initial Indoor Air Testing

Indoor air sampling was conducted on October 24, 2008. Six indoor air samples, one duplicate sample, and one ambient air sample were collected in total. The indoor air samples were located approximately 3 to 5 feet above the floor slab adjacent to each of the six pressure monitoring points in Retail A. The samples were collected in one-liter Summa canisters using a flow controller calibrated for an 8-hour sampling period. An ambient air sample was collected to represent ambient air conditions in the vicinity of the building.

After sample collection, the Summa canisters were labeled and shipped under chain-of-custody protocol to Centek Laboratories, LLC in Syracuse, New York for analysis of compounds of concern, which include compounds detected beneath and immediately adjacent to Retail A during the RI conducted at the Site. Centek is an NYSDOH ELAP-certified laboratory. The chain of custody documentation, laboratory analytical report, and NYSDOH laboratory certificate are provided as Attachments A and B.

New York State currently does not have standards, criteria, or guidance values for concentrations of acetone, m& p-xylene or o-xylene in air samples. The NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York states that the 90th percentile values from the EPA BASE data for indoor air can be used as an initial benchmark in office and commercial buildings. Six of the seven indoor air samples (including a duplicate) detected m&p-xylene and o-xylene at concentrations above the EPA 2001 BASE Database's 90th percentile concentrations. O-xylene concentrations ranged from 9.27 ug/m^3 to 10.6 ug/m^3, which were slightly above the 90th Percentile concentration of 7.9 ug/m^3. M&p-xylene concentrations ranged from 57.8 ug/m^3 to 77.2 ug/m^3., which were slightly above the 90th percentile concentration of 22.2 ug/m^3. One sample (NW-10/24/08) had an acetone concentration slightly above the 90th percentile concentration (98.9 ug/m^3) at 170 ug/m^3. A summary of detections are provided in Table 2.

The concentrations of acetone, o-xylene, and m&p-xylene that were detected slightly above the 90th percentile concentrations are attributed to the products associated with building construction (listed above) and site activities preceding the sampling event. Xylenes are a common constituent in polyurethane products and many paint removers contain acetone. Both

polyurethane sealant and paint strippers were used in the week proceeding air sampling. Additionally xylenes and acetone are common fuel additives and there was fuel-powered equipment operating in the building during the week prior to sampling. No additional indoor air sampling is required. The results of the indoor air sampling, including sampling locations and laboratory data, were submitted to the NYSDEC and NYSDOH in a report dated January 27, 2009.

HVAC system test results will be maintained on-Site and are included as Appendix Q. The system testing described above will be conducted if, in the course of the HVAC system lifetime, significant changes are made to the system and the system restarted.

20.3 System Operation

20.3.1 Routine Operating Procedures

The HVAC will operate continuously after start-up. All equipment will be operated in accordance with manufacturer's recommendations (see Appendix K).

20.3.2 Trouble Shooting

During the course of operation, especially immediately after start-up, some technical difficulties may be encountered and/or the HVAC may not operate within design specifications. Any required maintenance or repairs to the system will be conducted as per manufacturer's recommendations and Section 20.4 of this Plan, and the system restarted.

20.4 System Maintenance

20.4.1 Routine Equipment Maintenance

Routine maintenance activities and minimum schedules are provided in Appendix P.

23.4.2 Non-routine Maintenance

Non-routine maintenance may also be required during the operation of the HVAC system, including the following situations:

- HVAC component failure.

Activities conducted during non-routine maintenance visits will vary depending upon the reason for the visit. Repairs or adjustments will be made to the system as appropriate and as per manufacturer guidelines. If necessary, the system will be redesigned and restarted.

21.0 GROUNDWATER MONITORING WELL MAINTENANCE

After completion of the Site remedy, quarterly groundwater monitoring was conducted between February 2008 and December 2008 in accordance with this SMP. Based on the results of the groundwater sampling, Langan recommended termination of groundwater monitoring. In a letter dated February 2, 2009, NYSDEC approved the termination of groundwater monitoring with the condition that one additional round of groundwater samples be collected in mid-year 2009. The results of groundwater samples collected in June 2009 were consistent with previous results; therefore, no additional groundwater monitoring is required. Following approval by NYSDEC, on-site wells were abandoned in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures."~~If biofouling or silt accumulation has occurred in the monitoring wells, the wells will be physically agitated/surged and redeveloped. Other treatments, such as chemical or thermal, will be evaluated if physical agitation and redevelopment are found to be ineffective. Additionally, monitoring wells will be properly decommissioned (as per the Monitoring Plan) and replaced, as needed, if some event renders the wells unusable such as physical damage or if there is reason to suspect that the well has been tampered with.~~

22.0 REPORTING REQUIREMENTS

Maintenance reports and any other information generated during regular operations at the Site will be kept on-file on-site or with the party(ies) implementing the SMP. All reports, forms, and other relevant information generated will be (1) available upon request to the NYSDEC and NYSDOH and (2) submitted at the time of the annual Site Management Report, as specified in the Reporting Plan of the SMP.

22.1 Routine Maintenance Reports

Checklists or forms (see Appendix N for the SSD system checklist and Appendix P for the HVAC system checklist) will be completed during each routine maintenance event. Checklists/forms will include, but not be limited to the following:

- The date;
- The name, company, and position of person(s) conducting maintenance activities;
- Any maintenance activities conducted;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and,
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

22.2 Non-Routine Maintenance Reports

During each non-routine maintenance event, a form will be completed which will include, but not be limited to, the following information:

- The date;
- The name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- The presence of leaks, if any;
- The date the leak, if any, was fixed;
- Any other repairs or adjustments made to the system;

- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and,
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

23.0 CONTINGENCY PLAN

Emergencies can be characterized as injury to personnel; fire or explosion; environmental release; or serious weather conditions. Fire or explosion and environmental release are not likely to occur in relation to the EC/ICs implemented at the Site, but are included in this contingency plan. A more thorough emergency/contingency plan can be found in the HASP for the Site (Appendix L).

23.1 Emergency Telephone Numbers

In the event of any situation or unplanned occurrence requiring assistance with environmental matters, the appropriate contact(s) should be made by the Owner or Owner's representative(s) from the lists below. For emergencies, contact should be made with the Program Manager or Project Manager or the Field Safety Officer (FSO) and NYSDEC as soon as possible, after notifying the appropriate emergency personnel who will then contact the appropriate response teams. These emergency contact lists must be in an easily accessible location at the Site.

Table 5: Emergency Contact Numbers

Medical, Fire, and Police:	911
One Call Center:	(800) 272-4480 (3 day notice required for utility markout)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
Lincoln Hospital:	(718) 993-3860
NYSDEC Spills Hotline:	(800) 457-7362

Table 6: Langan Contact Numbers*

Program Manager:	Joel Landes, P.E. (212) 479-5404
Project Manager:	Jason Hayes (212) 479-5428
Health & Safety Officer (HSO):	Bob Koto, PG (201) 398-4566
Field Safety Officer (FSO):	Doane Cafferty (cell) (917) 882-7164
Health & Safety Coordinator (HSC):	Tarek Khouri (cell) (201) 913-4325
NYSDEC Project Manager:	Dana Kaplan (718) 482-6405
On-site Maintenance Person:	
Owner Representative:	

* Note: Contact numbers subject to change and will be updated as necessary.

23.2 Map and Directions to Nearest Health Facility

Site Location: 49 Bronx Terminal Market, Bronx, New York

Hospital Name: Lincoln Hospital

Hospital Location: 234 East 149th Street, Bronx, New York 10451

Hospital Telephone: (718) 993-3860

Directions to the Hospital:

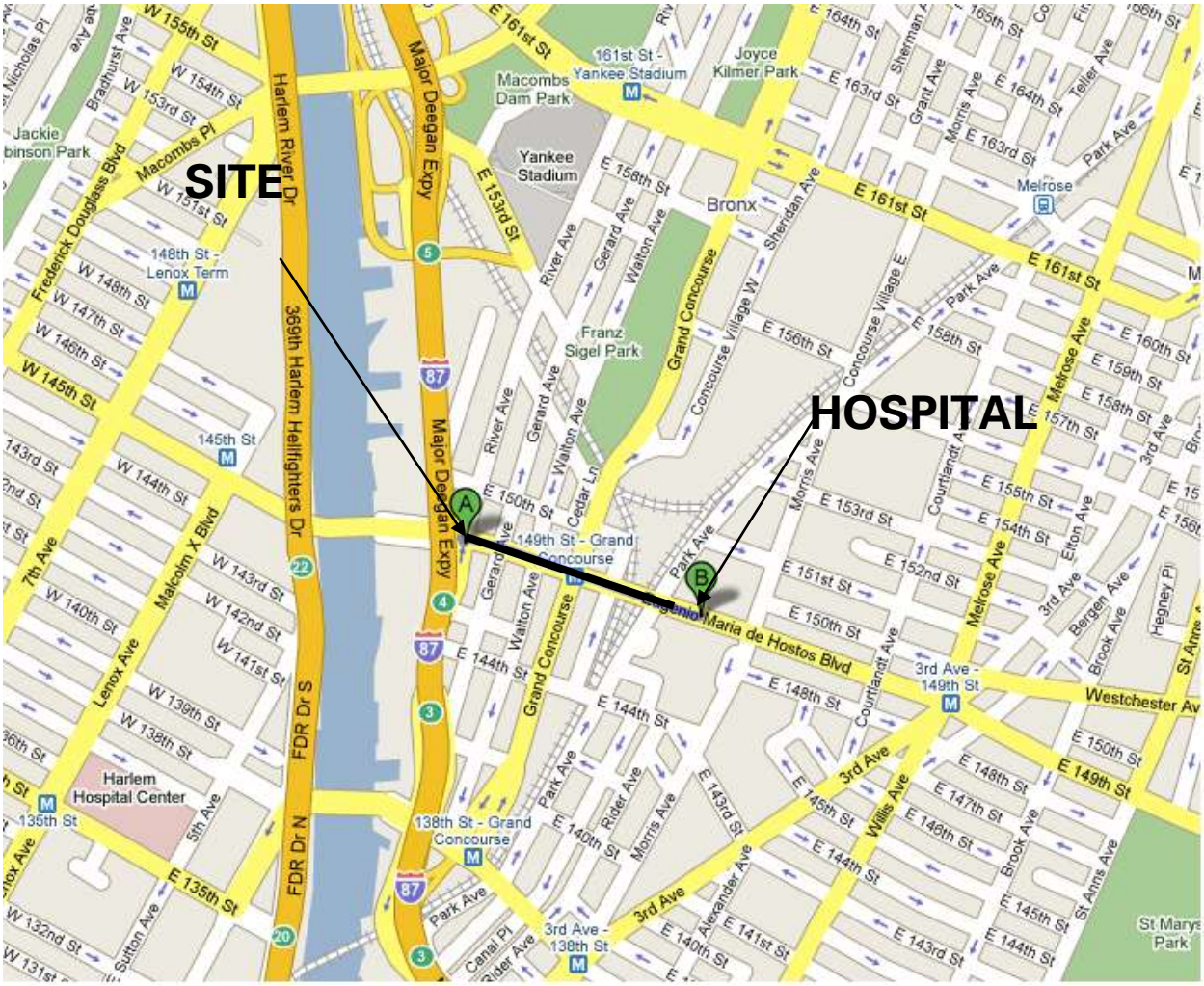
Directions from the Site, located at 49 Bronx Terminal Market, Bronx, New York, to Lincoln Hospital, located at 234 East 149th Street, Bronx, New York:

1. Head east on East 149th Street towards Gerard Avenue approximately 0.30 miles

2. Hospital is on the south side of East 149th Street.

Total Distance: 0.30 miles Total Estimated Time: approximately 1 minute

Map Showing Route from the Site to the Hospital:



23.3 Response Procedures

23.3.1 Emergency Contacts/Notification System

The fire department and other emergency response group will be notified by telephone of the emergency as soon as possible. The emergency telephone numbers list is found at the beginning of this contingency plan (Section 23.1). The list is also posted prominently at the Site, or made readily available to all personnel at all times.

23.3.2 In Case of Personal Injury

In case of personal injury at the Site, the following procedures should be employed:

- For less severe cases, the individual can be treated with contents of the first-aid kit.
- If necessary, the victim should then be transported to the nearest hospital or medical center (refer to Section 26.2 above). If necessary, an ambulance should be called to transport the victim.

Follow-up action should be taken to correct the situation that caused the accident. Any incident (e.g., near miss, property damage, first aid, medical treatment, etc.) must be reported and evaluated. A first-aid kit will be kept on-site. Emergency first aid procedures to be followed are:

- Skin Contact: Use copious amounts of soap and water. Wash/rinse affected areas thoroughly, and then provide appropriate medical attention. Rinse eyes with water for at least 15 minutes.
- Inhalation: Move to fresh air and/or, if necessary, decontaminate and transport to hospital.
- Ingestion: Decontaminate and transport to emergency medical facility.
- Puncture/Laceration: Decontaminate, if possible, and transport to emergency medical facility.

23.3.3 In Case of Fire or Explosion

Appropriate fire extinguishers will be made available at the Site for trained personnel to use on insipient stage fires without endangering the safety and health of those nearby. If the use of fire extinguishers will not extinguish the fire, immediately notify the fire department.

23.3.4 In Case of Spills or Leaks

Control or stop the spread of minor chemical spills contamination utilizing the appropriate materials (i.e., absorbents, etc.) if possible. If the release is significant, or highly hazardous, immediately notify the appropriate response groups including the NYSDEC Spill Response hotline.

23.3.5 In Case of Adverse Weather Conditions

In the event of heavy precipitation (e.g., rain, snow, sleet, etc.), conditions will be assessed on-site to determine if the work can proceed safely. If it is determined that the weather poses a significant hazard, Site operations will be stopped and rescheduled. Some of the items to be considered prior to determining if work should continue include:

- Potential for heat stress and heat-related injuries
- Potential for cold stress and cold-related injuries
- Treacherous weather-related working conditions
- Limited visibility

23.3.6 Evacuation Plans

In the event evacuation of the Site is necessary (e.g., fire, explosion, etc.), personnel will evacuate using evacuation routes posted in all on-site buildings.

23.4 Contingency Plan Amendments

As changes in Site conditions and operations may take place over time, some information in this contingency plan may need to be updated to reflect these changes. The contingency plan will be updated on an as-needed basis. Any updates to the contingency plan will be kept with this Monitoring Plan and will be maintained at the Site.

V. SITE MANAGEMENT REPORTING PLAN

24.0 INTRODUCTION

An annual Site Management Report will be submitted to NYSDEC and NYSDOH annually, following the calendar year reporting period, by March 1. The Site Management Report will be prepared in accordance with the requirements in the NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation, dated December 2002 (or most recent update). This Site Management Reporting Plan and its requirements are subject to revision by NYSDEC.

This report will include the following:

- Identification of all required EC/ICs required by the Final Engineering Report (FER) for the Site:
- An evaluation of Engineering and Institutional Control Plan;
- Assessment of the continued effectiveness of all institutional and/or engineering controls for the Site;
- Certification of the EC/ICs;
- A summary of the required periodic Site Inspections; and
- All deliverables generated during the calendar reporting period, as specified in Table 3 in Section 16.0 of the Monitoring Plan.

This Reporting Plan is not to be used as a stand-alone document, but as a component document of the SMP. The Reporting Plan is subject to NYSDEC revision.

25.0 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

ECs implemented at the Site include several SSD systems, an HVAC system, sub-slab vapor barriers, and a composite cover system. ICs will be enforced through the Environmental Easement (see Appendix D) and a Soil Management Plan (see Section 7.2). Further information regarding EC/ICs can be found in the Engineering and Institutional Control Plan portion of the SMP (Section II).

Inspection of the EC/ICs will occur as outlined in the schedules provided in the Monitoring Plan of the SMP. After the last inspection of the calendar year reporting period, a Professional Engineer licensed to practice in New York State will sign and certify the document. The document will certify that the EC/ICs employed at the Site are:

- Unchanged from the previous certification;
- In-place and effective;
- Performing as designed;
- Nothing has occurred that would impair the ability of the controls to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any operation and maintenance plan for such controls;
- Access is available to the Site by NYSDEC and NYSDOH to evaluate continued maintenance of such controls; and
- Site usage is compliant with the environmental easement.

The signed certification will be included in the annual Site Management Report (see Section 27.0).

26.0 SITE INSPECTIONS

26.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in the Monitoring Plan of the SMP. At a minimum, a Site-wide inspection will be conducted:

- Annually;
- When a breakdown of the ECs has occurred;
- When any of the ECs may have been compromised by invasive construction work; and
- Whenever a severe condition has taken place, such as an erosion event or flooding that may affect the ECs.

26.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the appropriate forms for their respective system (refer to Appendices N [SSD systems] and P [HVAC system]). Additionally, a general Site-wide inspection form will be completed during the Site-wide inspection (see Appendix U). These forms are subject to NYSDEC revision.

All applicable inspection forms and other records (including all sampling data of any media at the Site and system maintenance reports) generated for the Site during the calendar year will be included in the annual Site Management Report.

26.3 Evaluation of Records and Reporting

The results of the inspection and Site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly; and, based on the above items,
- The remedy continues to be protective of public health and the environment and is performing as designed in the Final Remedial Action Work Plan (RAWP) and FER for the Site.

27.0 SITE MANAGEMENT REPORT

A Site Management Report will be prepared for the Site certification period that summarizes the results of the Monitoring Plan, inspections, and the project evaluation discussed in Section 26.3 above. The Site Management Report will be submitted annually following the calendar year reporting period, by March 1. The report will include:

- The EC/IC certification;
- All applicable inspection forms and other records generated for the Site during the calendar year;
- A summary of any discharge monitoring data and/or information generated during the calendar year with relevant comments and conclusions;
- As necessary, cumulative data summary tables and/or graphical representations of contaminants of concern which include a listing of all compounds analyzed along with the applicable standards, with any exceedance highlighted;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables required for all points sampled during the calendar year (also to be submitted electronically in the NYSDEC-identified format);
- A summary of performance for all ECs at the Site during the calendar year, including information such as (when and where applicable):
    - The number of days the system was run for the reporting period;
    - A description of breakdowns and/or repairs along with an explanation for any significant downtime;
    - A summary of the performance and/or effectiveness monitoring; and
    - Comments, conclusions, and recommendations based on an evaluation and resolution of performance problems.
- A Site evaluation, which will address the following:
    - The continued compliance of the remedy with the requirements of the RWP and FER for the Site;
    - The performance and effectiveness of the remedy;
    - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;

- Any new conclusions or observations regarding the Site contamination based on the inspections or data generated by the Monitoring Plan for the media being monitored; and
- Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan.

- A figure showing sampling and well locations, and significant analytical values at sampling locations; and
- Comments, conclusions, and recommendations, based on an evaluation of the information included in the report, regarding EC/ICs at the Site (to be prepared by a professional engineer licensed in the State of New York).

The Site Management Report will be submitted, in hard-copy format, to the document repositories for the Site (the Melrose Public Library, located at 910 Morris Avenue, Bronx, New York, and Region 2 NYSDEC offices, located at 41-40 21st Street, Long Island City, New York). Electronic format will be submitted to NYSDEC and NYSDOH, along with a hard copy.