New Housing New York Legacy Project

700-730 Brook Avenue
BRONX, NEW YORK

Site Management Plan

NYSDEC Site Number: C203043

Prepared for:

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Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	DEC Approval Date
1	May 23, 2013	Change to groundwater sampling program (Sections 3.0/ 4.0). Frequency change to semi-annually and parameter change to VOCs and TAL metals.	
2	June 28, 2017	Termination of groundwater monitoring (Sections 3.1.2, 3.3.1, 3.6, 4.2.2, & 4.3.2)	

DECEMBER 2011

CERTIFICATION

I, Stephen Osmundsen, certify that I am currently a registered professional engineer licensed by the State of New York and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

056136	12/7/11	
NYS Professional Engineer #	Date	Signature

Professional Engineer's Stamp

It is a violation of Article 145 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 145, New York State Education Law.

TABLE OF CONTENTS

CERTIFICATION……II

TABLE OF CONTENTS III

LIST OF ACRONYMS ……....IX

SITE MANAGEMENT PLAN 1

1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM 1

1.1 INTRODUCTION.....1

1.2 SITE BACKGROUND 4

1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS 8

1.4 SUMMARY OF REMEDIAL ACTIONS…….. 12

1.4.3 REMAINING CONTAMINATION 19

2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN ……..21

2.1 INTRODUCTION……21

2.1.1 General ……...21
2.1.2 Purpose……...21

2.2 ENGINEERING CONTROLS 22

2.3 INSTITUTIONAL CONTROLS.....25

2.4 INSPECTIONS AND NOTIFICATIONS 27

2.5 CONTINGENCY PLAN 30

3.0 SITE MONITORING PLAN.....36

3.1 INTRODUCTION.....36

3.2 COMPOSITE COVER SYSTEM MONITORING.....38

3.3 MEDIA MONITORING PROGRAM 39

3.4 SITE-WIDE INSPECTION 40

3.5 MONITORING QUALITY ASSURANCE/QUALITY CONTROL 41

3.6 MONITORING REPORTING REQUIREMENTS 42

4.0 OPERATION AND MAINTENANCE PLAN 44

4.1 INTRODUCTION.....44

4.2 ENG. CONTROL SYSTEM OPERATION AND MAINTENANCE……...44

4.3 ENGINEERING CONTROL SYSTEM PERFORMANCE MONITORING.....50

4.4 MAINTENANCE AND PERFORMANCE MONITORING REPORTING REQUIREMENTS……...51

5.0 INSPECTIONS, REPORTING AND CERTIFICATIONS.....53

5.1 SITE INSPECTIONS 53

5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS…. 54

5.3 PERIODIC REVIEW REPORT 56

5.4 CORRECTIVE MEASURES PLAN 57

6.0 REFERENCES ……. 58

FIGURES

1. Site Location And Boundaries
2. Pre-development Elevations
3. Geologic Cross Section
4. Water Table Contour Map
5. Pre-Remediation Soil Contamination
6. Pre-Remediation Groundwater Contamination
7. Pre-Remediation Soil Vapor Concentrations
8. Location of Underground Storage Tanks
9. Hot Spot Excavation Areas
10. Sub-Slab Depressurization System Layout
11. Sub-Slab Depressurization System Riser Detail (6")
11a.Sub-Slab Depressurization System Riser Detail (4")
11b.Sub-Slab Depressurization System Trench Detail
12. Post remedial Groundwater Monitoring Well Locations
13. Cut/Fill Thicknesses
14. In-Situ Chemical Oxidation Injection Locations
15. Elevation of Residuals Management Zone
16. Composite Cover System and Elevation of Vapor Barrier

TABLES

1. Track 4 Site-Specific Action Levels
2. Summary of Material Disposal
3. End-Point Sample Results (SVOCs)
4. End-Point Sample Results (Pesticides & PCBs)
5. End-Point Sample Results (Metals)
6. Emergency Contacts (Section 2.5.1, Pg.30)
7. Contact Numbers (Section 2.5.1, Pg. 31)
8. Monitoring/Inspection Schedule (Section 3.1.2, Pg. 37)
9. Schedule of Monitoring/Inspection Reports (Section 3.6, Pg. 45)
10-14. Pre - Remediation Groundwater Analytical Results
15-18. Post - Remediation Groundwater Analytical Results

APPENDICES-

A. Metes and Bounds
B. Vapor Barrier Specifications
C. Environmental Easement-
D. Excavation Work Plan-
E. Health and Safety Plan
F. Monitoring Well Boring Logs and Construction Details
G. Quality Assurance Project Plan
H. Inspection Forms
I. Mechanical Systems Manuals
J. Tank Closure Report

PLATE

1. Land Title Survey (Rear Pocket)

LIST OF ACRONYMS

Acronym	Definition
AST	Aboveground Storage Tank
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
CAMP	Community Air Monitoring Plan
CA RICH	CA RICH Consultants, Inc.
CLP	Contract Laboratory Protocol
COC	Certificate of Completion
DUSR	Data Usability Summary Report
EC	Engineering Controls
ELAP	Environmental Laboratory Accreditation Program
ESA	Environmental Site Assessment
EWP	Excavation Work Plan
HASP	Health and Safety Plan
IC	Institutional Controls
ISCO	In-Situ Chemical Oxidation
LEL	Lower Explosive Limit
NYCRR	New York Codes Rules and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYCDEP	New York City Department of Environmental Protection
NYSDOH	New York State Department of Health
PCBs	Polychlorinated Biphenyls
PCE	Tetrachloroethene or perchloroethene
PID	Photoionization Detector

PRR	Periodic Review Report
RAWP	Remedial Action Work Plan
RI	Remedial Investigation
Acronym	**Definition**
ROD	Record of Decision
SCOs	Soil Cleanup Objectives
SMP	Site Management Plan
SVOCs	Semi-volatile Organic Compounds
SSD	Sub Slab Depressurization
SSSALs	Site-Specific Soil Action Levels
SVI	Soil Vapor Intrusion
SWPPP	Storm-Water Pollution Prevention Plan
TAL	Target Analyte List
TOGS	Technical and Operational Guidance Series
VOCs	Volatile Organic Compounds
QAPP	Quality Assurance Project Plan
QEP	Qualified Environmental Professional

SITE MANAGEMENT PLAN

1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION

This document is required as an element of the remedial program at New Housing New York Legacy Project (hereinafter 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 Brownfield Cleanup Agreement (BCA) Index #W2-1129-08-11, Site #C203043, which was executed on February 23, 2009.

1.1.1 General

Via Verde Homes, LLC, Via Verde Rental Associates, L.P., and the City of New York Department of Housing Preservation and Development ("HPD") entered into a BCA with the NYSDEC to investigate and remediate a 1.41-acre property located in the Bronx, New York. This BCA required the Remedial Party, Via Verde Homes, LLC, Via Verde Rental Associates, L.P., and the City of New York Department of Housing Preservation and Development (HPD), to investigate and remediate contaminated media at the Site. A figure showing the location and boundaries of this 1.41-acre Site is provided in Figure 1. The boundaries of the Site are more fully described in the metes and bounds description in Appendix A; which is a part of the Environmental Easement. The boundaries are illustrated on Plate 1 (rear pocket). It is noted that the Deed was transferred on December 30, 2009 and HPD no longer has any ownership interest.

After completion of the remedial work described in the Remedial Action Work Plan, some contamination was left in the subsurface at this Site, which is hereafter referred to

as 'remaining contamination." This Site Management Plan (SMP) was prepared to manage remaining contamination at the Site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. 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 Stephen J. Osmundsen, P.E. on behalf of Via Verde Homes, LLC, Via Verde Rental Associates, L.P., in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010, and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the Institutional Controls (ICs) and Engineering Controls (ECs) that are required by the Environmental Easement for the Site.

1.1.2 Purpose

The Site contains contamination left after completion of the remedial action. Engineering Controls have been incorporated into the Site remedy to control exposure to remaining contamination during the use of the Site to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Office of the City Register, will require compliance with this SMP and all ECs and ICs placed on the site. The ICs place restrictions on site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement for contamination that remains at the site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the site after completion of the Remedial Action, including: (1) implementation and management of all Engineering and Institutional Controls; (2) media

monitoring; (3) operation and maintenance of all treatment, collection, containment, or recovery systems; (4) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports; and (5) defining criteria for termination of treatment system operations.

To address these needs, this SMP includes three 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 (including, where appropriate, preparation of an Operation and Maintenance Manual for complex systems).

This plan also includes a description of Periodic Review Reports for the periodic submittal of data, information, recommendations, and certifications to NYSDEC.

It is important to note that:

- This SMP details the Site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the environmental easement, which is grounds for revocation of the Certificate of Completion (COC);
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the BCA, Index #W2-1129-08-11, Site #C203043 for the Site, and thereby subject to applicable penalties.

1.1.3 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. In accordance with the Environmental Easement for the Site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.2 SITE BACKGROUND

1.2.1 Site Location and Description

The Site is located in the County of the Bronx, New York and is identified as Section 9, Block: 2359; Lot 51 which includes Condominium Lots 1001, 1002, 1003, and 1004, and was formerly part of Lots 1 and 3 on the Bronx County Tax Map. The Site is an approximately 1.41-acre area bounded by East 156th Street to the north, an athletic field to the south, New York City Housing Authority Bronxchester Houses and South Bronx High School to the east, and Brook Avenue to the west (see Figure 1). The boundaries of the Site are more fully described in Appendix A – Metes and Bounds.

1.2.2 Site History

1.2.2.1 Past Uses and Ownership

Historical records indicate that the Site was originally developed circa 1908 with three small buildings and was part of the New York Central and Hudson River Railroad Company's freight yard. Circa 1927, the Site was also developed with a provisions facility. In addition, a gasoline station existed on the northern portion of the Site circa 1935 through the late 1970's. In the early 1980's, the provisions facility was closed and the rail spurs were removed. Although the Site was vacant upon its entrance into the BCP, remnants of the foundations of the former gas station and provisions facility still existed on the Site. A pre-development Site Plan is included as Figure 1.

1.2.2.2 Phase I and Phase II Reports

A Phase I Environmental Site Assessment ("Phase I ESA") was conducted by Earth Tech, Inc. (Ref. 1) in December 2004. The results of the Phase I ESA were documented in a report dated December 2004, which concluded and recommended the following:

- Based upon information provided in the historic maps and photographs, the northern, western, and eastern portions of the Site were occupied by a filling station, a store/warehouse operated by a provisions company, and railroad spurs as early as 1935, respectively, prior to being vacated. The maps (from 1944 through 1951) indicated that the Site had three gasoline tanks along the northern portion of the Site. No records could be obtained to confirm if the gasoline tanks and appurtenances were removed prior to the demolition of the former buildings on-Site. Based on this conclusion, it was recommended by a prior consultant (Earth Tech, Inc.) that a geophysical survey be performed. A site investigation consisting of the collection of soil samples was also recommended in the Phase I to evaluate the potential impact from the presence of former gasoline tanks and the former operations of the New York Central Railroad Company at the Site.

The findings of the Phase I ESA were further investigated and the results of the subsequent remedial investigation activities were documented as part of the Site Characterization and Data Summary ("SCDS") Report dated September 2006 conducted by URS Corporation (Ref. 2) and Supplemental Site Investigation ("SSI") Report dated April 2007 conducted by CA RICH (Ref 3).

The SCDS conducted by URS Corporation in 2006 included the following:

- Historical database review;
- Geophysical survey of the former gasoline station portion of the Site;
- Excavation of three test trenches;
- Drilling of eight soil borings;
- Installation of eight temporary wells; and

- Collection of seven soil samples from the borings, three soil samples from the test trenches, and eight groundwater samples from the temporary wells for analysis.

The geophysical survey revealed several anomalies that may be representative of buried USTs. Semi-volatile organic compounds ("SVOCs") and metals were detected in soil samples above NYSDEC Technical Administrative Guidance Memo ("TAGM") 4046 (Ref. 4) and/or Eastern USA background levels in one or more of the samples. Volatile organic compounds ("VOCs"), SVOCs, the polychlorinated biphenyl ("PCB") Aroclor 1260, and metals were detected above Technical and Operational Guidance Series ("TOGS") in one or more of the samples. It is noted that PCB analysis was not requested for the soil samples; therefore, the presence of the PCB Aroclor 1260 in the groundwater could not be correlated with its associated soil sample.

The SCDS also noted that strong to moderate petroleum odors were identified at three soil borings in the former gasoline station area at a depth of 17 – 21 feet. A petroleum sheen with strong to moderate petroleum odors were noted while collecting groundwater samples in the former gas station area.

The SSI conducted by CA RICH in 2007 included the collection and analysis of surface (0 to 2 inches) and shallow (0 to 2 feet) soil samples at six locations at the Site. The lithology encountered during advancement of the borings revealed that the Site contains fill material from the surface to the explored depth of two feet below grade. Based on the analytical results, VOCs, PCBs, and pesticides were detected below TAGM guidance values in soil samples. However, benzo(a)anthracene, benzo(a)pyrene, and chrysene were detected above TAGM values in all soil samples, and benzo(b)fluoranthene, dibenzo(a,h)anthracene, and benzo(k)fluoranthene were detected above TAGM values in several borings.

In addition, arsenic, chromium, copper, lead, magnesium, mercury, and nickel were detected above TAGM values or Eastern USA Background levels in one or more of the

soil borings. The SSI report noted that the occurrence of PCBs and pesticides at the Site may be attributable to former rail line operations and use. The SVOCs and metals detected are typical of fill material found in New York City, but their occurrence may also be attributable to the former use as a rail yard.

1.2.3 Geologic Conditions

According to pre-construction survey measurements obtained during the RI, prior to redevelopment, the Site elevation ranged from 8 to 24 feet above mean sea level based on the Borough of the Bronx Datum. Along the Brook Avenue (west) side of the Site, a steep slope of approximately 10 feet descended from the sidewalk eastward. Pre-development elevations are illustrated on Figure 2.

Based upon the Geology and Engineering Geology of the New York Metropolitan Area, Field Trip Guidebook T361, July 20 – 25, 1989, edited by Charles A. Baskerville for the 28th International Geologic Congress (Ref. 5), the Site is underlain by bedrock belonging to the Ordovician-Cambrian Inwood Marble Formation consisting of dolomite marble, calcschist, and grades to underlying patchy Lowerre Quartzite of early Cambrian age. Surficial geologic materials are characterized as ground moraine and/or urban fill consisting of sand, silt, clay and gravel. According to Site-specific geological data collected from borings and test pits during the SCDS, the SSI and the RI, the upper eight feet of the Site contains unconsolidated fill materials. A geologic section is shown in Figure 3.

Due to extreme differences in elevation, the uppermost groundwater surface was recorded during the RI at a depth of approximately 16 to 22 feet below sidewalk grade (or at an elevation of two to three feet above sea level) within the unconsolidated materials. Based upon Site-specific groundwater elevation data obtained during the RI, groundwater flows in a south-westerly direction, mirroring expected regional groundwater flow to the south/southwest with eventual discharge to the Harlem River and Bronx Kill. Underlying groundwater in this area of the South Bronx is not used for potable supply purposes. A

groundwater elevation contour map that includes a tabulation of the casing elevations and depth to water measurements obtained during the RI are included as Figure 4.

1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

A Remedial Investigation (RI) was performed to characterize the nature and extent of contamination at the site. The results of the RI are described in detail in the following reports:

1. URS Corporation. Site Characterization and Data Summary Report. September 2006.
2. CA RICH. Supplemental Site Investigation Report. April 2007.
3. CA RICH. Remedial Investigation Report. February 2009.

Generally, the RI determined that the source of the VOCs detected in soil and groundwater samples from the Site are generally related to the historic use of the property as a gasoline service station. Several SVOCs and metals were identified which are related to historic fill materials. Based on the degree of soil and groundwater contamination, the former gasoline service station has been identified as a primary source area for the VOCs and PCBs (based upon the location of the PCB detection beneath the former service station possibly associated with the former hydraulic lifts). Meanwhile, the former rail yard/ provision facility mostly likely contributed to the detection of SVOCs and metals. Below is a summary of Site conditions when the RI was performed in 2006, 2007 & 2009.

Soil

Overall, the subsurface soil/fill materials encountered at the higher Site elevations (along Brook Avenue) during the RI generally consisted of concrete and/or asphalt at the surface followed by loose fill materials containing asphalt and brick fragments, which was in turn underlain by coarse sands and gravels. The subsurface soils at the lower elevations on

the Site did not include loose fill materials, but mostly consisted of medium to coarse grain sand and gravel.

- The contaminants of concern at the Site included VOCs, SVOCs, PCB Aroclor 1260, and select metals. Soil concentrations above 6NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives ("UUSCOs") are illustrated on Figure 5.
- No pesticides were detected above 6 NYCRR Part 375 UUSCOs (Ref. 6)
- VOCs of concern were detected in the soil samples collected at the Site at concentrations ranging from 0 to 1,400 ug/kg. These include both organic solvents and petroleum-related compounds along with their degradation products, including benzene, acetone, chloroform, ethylbenzene, isopropylbenzene, methyl tert-butyl benzene, n-propylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, toluene, tetrachlroethylene, and xylenes. It is noted that the only detections in excess of 6 NYCRR Part 375 UUSCOs were for acetone, a common laboratory interference compound.
- Several SVOCs commonly referred to as polynuclear aromatic hydrocarbons ("PAHs") were detected at varying depths in soil samples throughout the Site above 6 NYCRR Part 375 UUSCOs .
- PCB Aroclor 1260 was detected in the soil beneath the former gasoline station portion of the Site at concentrations below 6 NYCRR Part 375 UUSCOs.
- Several metals were detected in the soil above the 6 NYCRR Part 375 UUSCOs.

Site-Related Groundwater

Prior to site redevelopment, the shallow groundwater table was encountered from four to twenty feet below grade due to extreme elevation changes across the Site. The direction of shallow groundwater flow based upon static water levels collected from the network of five monitoring wells installed during the RI is toward the southwest.

The contaminants of concern at the Site include VOCs, SVOCs, PCB Aroclor 1260, and select metals. Groundwater concentrations above TOGS (Ref 7) are illustrated on Figure 6 and Tables 10-14.

VOCs – benzene, ethylbenzene, isopropylbenzene, n-Propylbenzene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, xylene, toluene, chloroform, acetone and MTBE were detected above their applicable TOGS standards.

SVOCs – benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, naphthalene, phenol and bis(2-Ethylexyl)phthalate, were detected at concentrations that exceeded the TOGS standards.

Metals – dissolved metals exceeding TOGS standards include antimony, iron, manganese, magnesium, and sodium.

Pesticides – There were no detections of pesticides exceeding TOGS standards.

PCBs – There was one detections of PCBs (Aroclor 1260) exceeding TOGS standards.

The VOCs and the PCB Aroclor 1260 were believed to be related to the Site's former usage as a gasoline station. The SVOCs and naturally occurring metals were believed to be a ramification of the historic fill conditions at the Site. Based upon the detection and distribution of groundwater contaminants, treatment including in-situ chemical oxidation ("ISCO") and monitored natural attenuation was performed in the area of the former service station (northwest corner of the Site). Post-remedial monitoring of the ISCO treatment includes installation of four monitoring wells and quarterly sampling and analysis to track the effectiveness of this treatment over time. The monitoring requirements are outlined in Section 3 of this SMP.

Site-Related Soil Vapor Intrusion

The potential for soil vapor intrusion at the Site was investigated as part of the RI, prior to redevelopment through the installation and sampling of ten temporary soil vapor points (SVP-1 through SVP-10). VOCs were detected in the soil vapor throughout the Site. The higher detections, 50 micrograms per meter cubed (ug/m3) or greater, include chloroform at 615 ug/m3 in SVP-6, dibromochloromethane at 57.9 ug/m3 in SVP-8, dibromochloromethane at 152 ug/m3 in SVP-9, and tetrachloroethylene at 121 ug/m3, acetone at 359 ug/m3, and toluene at 50.9 ug/m3 in SVP-10. Soil vapor sample locations and analytical results are summarized on Figure 7.

Soil Vapor sampling and analysis results indicated petroleum-related VOCs and chlorinated solvents exist in the subsurface soil vapor and are linked to the Site's former use as a gasoline station. The other compounds are believed to be related to the Site's former use as a provisions facility and rail yard or a ramification of the Site's historic fill condition. To prevent residual soil vapor from entering the new buildings' interior, installation of a vapor barrier as well as an active sub slab depressurization ("SSD") system were included in the construction of the new buildings' foundations. Post-remedial monitoring of this system includes periodic vacuum readings from the Magnehelic® gauges installed in the SSD risers to confirm that vacuum is being maintained beneath the slab. Each of the on-site buildings is equipped with two risers and fans attached to the sub-slab SSD piping. During system testing, one of the fans on each building will be shut off and vacuum readings will be taken from the riser with the inoperable fan to ensure communication of vacuum beneath the slab from the other (operating) fan. This monitoring is outlined in Section 3 of this SMP.

Underground Storage Tanks

On-Site redevelopment activities revealed the presence of six underground storage tanks. These include: one 550-gallon number two fuel oil UST, one 550-gallon gasoline UST, one 275-gallon number two fuel oil UST, one 275-gallon waste oil UST, one 3,000-

gallon number six fuel oil UST, and one 750-gallon number two fuel oil UST. All of the tanks were properly removed, registered and disposed of in accordance with NYSDEC regulations as per the provisions in the Remedial Action Work Plan ("RAWP"). Excavation for the two 275-gallon USTs encountered impacted soils and as such, a requisite telephone call to the NYSDEC's Spill Hotline was made, and Spill Number 0913723 was assigned to the Site. Soil excavation and disposel (approximately 550 tons) from the grave of the 275-gallon tanks along with end-point sampling and analysis from all of the tank excavations resulted in spill case closure. In addition, the required initial NYSDEC registration and substantial tank modification (Closed - Removed) was submitted to the NYSDEC for all of the tanks. The locations of the tanks are illustrated on Figure 8 and a copy of the closure report (including tank registration/closure documentation is included in Appendix J .

1.4 SUMMARY OF REMEDIAL ACTIONS

The Site was remediated in accordance with the NYSDEC-approved Remedial Action Work Plan, dated July 2009. The following is a summary of the Remedial Actions performed at the Site:

A Track 4 cleanup as per 6NYCRR Part 375-3.8(e)(4) was performed for the Site. The following is a summary of the selected remedy as set forth in the approved RAWP including all EC/ ICs:

1. Excavation of all soil/fill materials exceeding the Track 4 Site Specific Soil Action Levels ("SSSALs") established for the Site. The Track 4 SSSALs approved for this Site are listed in Table 1. The limits of the soil excavation are shown on Figure 9.

2. Collection of waste characterization samples as needed to profile the soil/fill excavated for disposal purposes.

3. Screening for indications of contamination (by visual means, odor, and monitoring with photoionization detector ("PID")) of all excavated soil/fill during intrusive Site work.

4. Collection and analysis of end-point samples in accordance with DER-10 Technical Guidance for Site Investigation and Remediation ("DER-10") dated May 2010 to evaluate the performance of the remedy with respect to attainment of the Track 4SSSALs.

5. Appropriate off-Site disposal of all material removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal.

6. Removal of all USTs and hydraulic lifts and associated petroleum contaminated soil in accordance with applicable regulations.

7. Injection of Regenox™ and ORC® Advanced (ISCO treatment) into the shallow groundwater (approximately 22 feet below sidewalk grade) and soil/fill in the smear zone (approximately 17-21 feet below sidewalk grade) in the northern portion of the Site (see Figure 14 for injection locations).

8. Construction and maintenance of an engineered composite cover consisting of: (1) a composite cover system in all landscaped and non-covered areas; and (2) concrete building foundations, sidewalks/pathways and asphalt roadways to prevent human exposure to residual contaminated soil/fill remaining under the Site.

9. A vapor barrier and an active SSD system incorporated into the building's foundation as illustrated on Figure 10, 11, 11a & 11b. The SSD system consists of horizontal trenches filled with perforated pipes. The horizontal pipes are connected to vertical risers that extend above the roof of the

building. All pipe penetrations through the vapor barrier were sealed in accordance with the manufacturer's recommendations. The vapor barrier specifications are enclosed as Appendix B.

10. Collection and analysis of post-remedial groundwater samples to evaluate the performance of the remedy. Post-remedial groundwater monitoring well locations are illustrated on Figure 12.

11. Recording of an Environmental Easement, including ICs, to prevent future exposure to any residual contamination remaining at the Site . A copy of the Environmental Easement is included as Appendix C.

12. Publication of an 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.

13. Import of all materials used for fill in compliance with (1) the soil cleanup objectives outlined in 6 NYCRR Part 375-6.7(d); and (2) all Federal, State and local rules and regulations for handling and transport of material.

14. The property owner will provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submittal would: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the Site; and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to

comply with the Site Management Plan unless otherwise approved by the Department.

Remedial activities were completed at the Site in October, 2011.

1.4.1 Removal of Contaminated Materials from the Site

The removal of materials from the Site included: 1) the demolition of existing structures and associated materials such as brick and concrete; 2) the excavation and removal of subsurface soils, and construction and demolition debris; and, 3) removal of six USTs and associated tank liquid and sludge.

1.4.1.1 Soil Cleanup Objectives

The remedy selected for this Site included a Track 4 cleanup with SSSALs and implementation of certain IC/ECs. The SSSALs were developed based upon 6 NYCRR Part 375 and data from the RI report. All excavation end-point soil samples met or exceeded the Track 4 SSSALs. A list of the Track 4 SSSALs and applicable land use for this Site is provided in Table 1.

1.4.1.2 Removal Quantities

During the remedial action, a total of 1603.27 tons of soil/fill were removed from the Site. A total of 589.05 tons of soil/fill were disposed of at the Pure Soil Technologies – Walter Earle Corp. facility in Jackson, New Jersey and a total of 1014.22 tons of soil/fill were disposed of at the Bellmawr Waterfront Development Site disposal facility in New Jersey. The volume of construction and demolition debris removed from the Site during demolition/excavation was 1,040 cubic yards. The construction and demolition debris was disposed of at Cardella Waste of North Bergen, NJ. In addition, 1,217-gallons of petroleum product/water mixture, 1,860 of #6 fuel oil, and five 55-gallon drums of tank sludge was removed from the four identified USTs that contained liquid. All liquid (3,077 pounds total) and drums of sludge was disposed of at Clean Waters of Staten Island of Staten Island, New York. A summary of soil and C&D disposal (including disposal dates) is enclosed as Table 2. In addition, the manifests for the disposal of the petroleum product/water mixture and tank sludge are included in the Tank Closure Report (Appendix J).

1.4.1.3 Location of Materials Removed

A former filling station was present on the northwestern portion of the Site. Two 550-gallon, two 275-gallon, and one 750-gallon USTs were located within the former filling station. In addition, one 3,000-gallon UST was also present in the northwestern portion of the Site but was not in the former filling station location. The six USTs, associated

tank liquid and sludge, and associated fill ports and vent pipes were removed during excavation activities in April 2010. The locations of the former USTs are illustrated on Figure 8. The Tank Closure Report summarized the removal activities (Appendix J).

To comply with the Track 4 SSSALs, the excavation of soil/fill within three hot-spot areas was performed. Samples were obtained from the three hot spots (designated 1, 2, and 3) at the Site (see Figure 2 for locations). In order to satisfy the Track 4 SSSALs, three rounds of excavation and sampling were performed in hot spot 2. The final excavation depth in hot spot 1 ranged from 2.5 feet to 6 feet; 22 feet in hot spot 3; and 10 feet in hot spot 2. Areas where excavation was performed as well as the final excavation depths are shown in Figure 9. In addition, due to extreme elevation differences at the Site, the redevelopment included cut and fill, and the importation of clean fill, with minimal off-Site disposal of soil/fill materials. Soil/fill from the western portion of the Site was used to bring up the elevation on the eastern portion of the Site. In addition, importation of clean fill was performed to bring the Site up to grade. The cut/fill thicknesses are illustrated on Figure 13. The quantity of soil imported into the Site for backfill and cover soil is approximately 11,423 cubic yards. The quantity of soil/fill reused/relocated on Site is approximately 5,000 cubic yards. All of the materials reused on the Site were in compliance with Track 4 SSSALs as acceptable to NYSDEC/NYSDOH.

All imported soils were tested to ensure compliance with the lower of the protection of groundwater or the protection of public health SCOs for restricted residential use as outlined in 6 NYCRR Part 375-6.7(d) and table 375-6.8(b). The sources of the clean fill used at the Site is the Tilcon facility located in the Bronx, NY and the Thalle Industries Site located in Elmsford, NY. Documentation identifying the source(s) and location for imported soil, and certifying that the fill complies with 6 NYCRR Part 375-6.7(d) was submitted to NYSDEC for review and approval prior to delivery of the fill to the Site. Documentation included analytical results from a NY State ELAP-certified laboratory of soil samples collected by a Qualified Environmental Professional at the fill source. The samples were collected at a frequency of one per every 250 cubic yards of clean fill to be

delivered to the Site. Chemical analysis included VOCs via EPA Method 8260, SVOCs via EPA Method 8270, pesticides, PCBs, and TAL metals.

1.4.2 Site-Related Treatment Systems

1.4.2.1 In-Situ Chemical Oxidation

Based upon the detection and distribution of groundwater contaminants, treatment including in-situ chemical oxidation and natural attenuation was performed in the area of the former service station (northwest corner of the Site).On April 1st through 9th, 2010 Regenox™ and ORC® Advanced (ISCO treatment) was injected into the shallow groundwater and soil/fill in the smear zone . The locations of the injections are illustrated on Figure 14. On April 1st, 2nd, and 5th, ISCO injection was performed at injection points IP-1 through IP-15 from a depth of nine feet up to four feet below grade; at a dosage rate of 115-gallons of Regenox™/ORC® Advanced per point and a water/chemical ratio of one to one. On April 6th through 9th, ISCO injection was performed at injection points IP-16 through IP-28 from a depth of 25 feet up to 17 feet below grade; at a dosage rate of 184-gallons of Regenox™/ORC® Advanced per point and a water/chemical ratio of one to one.

1.4.2.2 Sub-Slab Depressurization (SSD) System

To prevent off-gassing of residual VOCs dissolved in underlying uppermost groundwater and/or in the soil/fill from entering the new building's interior, installation of an active SSD system was included in the construction of the new buildings' foundation as additional protection. The SSD system maintains a negative pressure underneath the slab while allowing the vapors below the concrete slab to vent outdoors without intruding into the building. The SSD system consists of horizontal trenches filled with perforated pipe. The horizontal pipes are connected to vertical risers that are connected to six-inch headers that extend above the roof of the building. SSD fans are mounted on the risers. All pipe penetrations through the vapor barrier were sealed in accordance with the manufacturer's recommendations. The SSD layout is illustrated on Figure 10. The vent

and roof detail is illustrated on Figures 11 & 11a and the SSD trench detail is shown on Figure 11b.

1.4.3 Remaining Contamination

After completion of soil excavation and cut/fill activities, the top of the residual contaminated zone was surveyed. The elevation of the residual contaminated zone is illustrated on Figure 15. The residual contamination zone beneath the buildings was covered with a physical demarcation barrier/layer consisting of a Stego™ 15-mil vapor barrier. The physical demarcation layer beneath the remaining portions of the site consists of orange snow fencing. 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 SMP. Included within this zone are the utilities for the new building as well as the piping for the SSD system. Exposure to residual contaminated soils will be prevented by the composite cover system, which includes the vapor barrier. This composite cover system is comprised of (1) a two-foot clean fill buffer in all landscaped/non-capped areas. The two-foot thick cover consists of clean soil/sand underlain by an indicator such as orange plastic snow fence to demarcate the cover soil from the residual soil. The top six to seven inches of the buffer consists of recycled concrete aggregate necessary to support the engineered non-impermeable surfaces (e.g. permeable pavement, grass-pave, tree planting areas, etc.) throughout the Site . Clean soil meets the soil cleanup objectives outlined in 6 NYCRR Part 375-6.7(d); and (2) Impermeable areas (concrete building foundations, sidewalks/pathways and asphalt roadways) covered by a paving system or concrete at least 4 inches thick to prevent human exposure to residual contaminated soil/fill remaining under the Site. The elevation of the vapor barrier and the composite cover system is shown on Figure 16.

To comply with the Track 4 SSSALs, the excavation of soil/fill within three hot-zone areas was performed. Samples were obtained from the northeastern, northwestern and southern hot zones at the Site. Three rounds of excavation and sampling were performed in the northwestern hot zone. The final excavation depth in the southern hot zone ranged

from 2.5 feet to 6 feet, 22 feet in the northeastern hot zone, and 10 feet in the northwestern hot zone (see Figure 9). The analytical results from the samples illustrated that the remaining contamination consists of the polyaromatic hydrocarbons benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene, and the metal lead in limited areas throughout the Site. Tables 3 to5 and Figure 9 summarize the results of all soil samples remaining at the Site after completion of Remedial Action that exceed the Track 1 UUSCOs.

2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 General

Since remaining contaminated soil and groundwater/soil vapor exists beneath the site, Engineering Controls and Institutional Controls (EC/ICs) are required to protect human health and the environment. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all EC/ICs at the site. The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC.

2.1.2 Purpose

This plan provides:

- A description of all EC/ICs on the Site;
- The basic implementation and intended role of each EC/IC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the features to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Excavation Work Plan for the proper handling of remaining contamination that may be disturbed 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.

2.2 ENGINEERING CONTROLS

2.2.1 Engineering Control Systems

2.2.1.1 Composite Cover System

Exposure to remaining contamination in soil/fill at the site is prevented by a composite cover system placed over the Site. This composite cover system is comprised of (1) a two-foot clean fill buffer in all landscaped/non-capped areas. The two-foot thick cover consists of clean soil underlain by an indicator such as orange plastic snow fence to demarcate the cover soil from the residual soil. The top six inches of soil are of sufficient quality to support vegetation. Clean soil meets the soil cleanup objectives outlined in 6 NYCRR Part 375-6.7(d); and (2) Non-vegetated areas (concrete building foundations, sidewalks/pathways and asphalt roadways) covered by a paving system or concrete at least 4 inches thick to prevent human exposure to residual contaminated soil/fill remaining under the Site. In addition, a vapor barrier was installed underneath the entire building foundation as additional protection. The Excavation Work Plan that appears in Appendix D outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this cover are provided in the Monitoring Plan included in Section 4 of this SMP.

2.2.1.2 In-Situ Chemical Oxidation/Monitored Natural Attenuation

Based upon the detection and distribution of groundwater contaminants, groundwater treatment including in-situ chemical oxidation and natural attenuation was performed in the area of the former service station (northwest corner of the Site). Regenox™ and ORC® Advanced (ISCO treatment) was injected into the shallow groundwater (approximately 22 feet below sidewalk grade) and soil/fill in the smear zone (approximately 17-21 feet below sidewalk grade). The objective of this injection was to

enhance the natural attenuation of the residual organic chemicals within the shallow groundwater underlying the Site. The location of the injections is illustrated on Figure 14.

This treatment constitutes a one-time injection via temporary injection points utilizing direct-push drilling. As such, no system operation or maintenance is required. However, should concentrations of targeted compounds/constituents increase by an order of magnitude over the baseline data (see Figure 6 and Tables 10-14 for baseline results) or should the concentrations fail to decrease sufficiently during the post remedial monitoring period, a second round of injections will be performed. System monitoring will include quarterly groundwater monitoring utilizing four newly-installed monitoring wells (installed in July 2011). The first round of post remedial monitoring was performed in August 2011 and results are summarized on Tables 15-18. Procedures for the maintenance of the monitoring well network and the quarterly monitoring are outlined in the Monitoring Plan (Section 3 of this SMP).

2.2.1.3 Sub-slab Depressurization (SSD) System

An active SSD system was installed at the Site for additional protection in preventing the off-gassing of any residual VOCs in the soil and groundwater. The SSD system maintains a negative pressure underneath the slab while allowing the vapors below the concrete slab to vent outdoors without intruding into the building. The SSD system consists of horizontal trenches with perforated pipe, a filter sock, and gravel. The horizontal pipes are connected to vertical risers that connect to one six-inch header, which extends above the roof of the building. Any pipe penetrations through the vapor barrier were sealed in accordance with the manufacturer's recommendations. SSD fans were mounted to the riser. The SSD layout is illustrated on Figure 10. The Vent and Roof Detail is illustrated on Figure 11 and the SSD trench detail is shown on Figure 11A.

Procedures for operating and maintaining the SSD system are documented in the Operation and Maintenance Plan (Section 4 of this SMP). Procedures for monitoring the

system are included in the Monitoring Plan (Section 3 of this SMP). The Monitoring Plan also addresses severe condition inspections in the event that a severe condition, which may affect controls at the Site, occurs.

2.2.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.6 of DER-10.

2.2.2.1 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 in perpetuity.

2.2.2.2 Sub-slab Depressurization (SSD) System

The active SSD system will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicate that the SSD system is no longer required, a proposal to discontinue the SSD system will be submitted by the property owner to the NYSDEC and NYSDOH.

2.2.2.3 In-Situ Chemical Oxidation/Monitored Natural Attenuation

Groundwater monitoring activities to assess the effectiveness of the ISCO injections will continue, as determined by the NYSDEC, until residual groundwater concentrations are found to be consistently below NYSDEC standards or have become asymptotic at an acceptable level over an extended period. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC. If conditions warrant, additional injections will be completed. If groundwater contaminant levels become asymptotic at a

level that is not acceptable to the NYSDEC, additional source removal, treatment and/or control measures will be evaluated. It is noted that as of December 2016, termination criteria have been met and groundwater monitoring has been suspended. All on-site wells have been properly abandoned.

2.3 INSTITUTIONAL CONTROLS

A series of Institutional Controls is required by the RAWP to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site to restricted residential and commercial uses only. Adherence to these Institutional Controls on the Site is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement and this SMP by the Grantor and the Grantor's successors and assigns;
- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls on the Controlled Property must be inspected at a frequency and in a manner defined in the 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 of the Controlled Property must be reported at the frequency and in a manner defined in this SMP;

Institutional Controls identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The Site 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:

- The property may only be used for restricted residential and commercial use provided that the long-term Engineering and Institutional Controls included in this SMP are employed.
- The property may not be used for a higher level of use, such as unrestricted residential use without additional remediation and amendment of the Environmental Easement, as approved by the NYSDEC;
- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- The use of the groundwater underlying the property is prohibited without treatment rendering it safe for intended use;
- Vegetable gardens and farming on the property are prohibited (this does not include raised bed gardens or green roofs);
- The Site owner or remedial party will 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 and will be made by an expert that the NYSDEC finds acceptable.

2.3.1 Excavation Work Plan

The Site has been remediated for restricted residential and commercial use. Any future intrusive work that will penetrate the soil cover or cap, or encounter or disturb the remaining contamination, including any modifications or repairs to the existing cover system will be performed in compliance with the Excavation Work Plan (EWP) that is attached as Appendix D to this SMP. Any work conducted pursuant to the EWP must

also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the Site. A sample HASP is attached as Appendix E to this SMP that is in current compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations. Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted with the notification provided in Section A-1 of the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

The Site owner 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 intrusive work, the structural integrity of excavations, proper disposal of excavation de-water, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations and bridge footings). The Site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise, the engineering controls described in this SMP.

2.4 INSPECTIONS AND NOTIFICATIONS

2.4.1 Inspections

Inspections of all remedial components installed at the Site will be conducted at the frequency specified in the SMP Monitoring Plan schedule. A comprehensive Site-wide inspection will be conducted annually, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether Engineering Controls continue to perform as designed;
- If these controls continue to be protective of human health and the environment;

- Compliance with requirements of this SMP and 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 3). The reporting requirements are outlined in the Periodic Review Reporting section of this plan (Section 5).

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the site by a qualified environmental professional as determined by NYSDEC.

2.4.2 Notifications

Notifications will be submitted by the property owner to the NYSDEC as needed for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the BCA 6NYCRR Part 375, and/or Environmental Conservation Law.
- 15-day advance notice of any proposed ground-intrusive activities pursuant to the Excavation Work Plan (Appendix D).
- Notice within 48-hours of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of other Engineering Controls and likewise any action to be taken to mitigate the damage or defect.
- Verbal notice by noon of the following day of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the site, with written confirmation within 7 days

that includes a summary of actions taken, or to be taken, and the potential 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 days and shall describe and document actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the Site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of the BCA and all approved work plans and reports, including this SMP
- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing.

2.5 CONTINGENCY PLAN

Emergencies may include injury to personnel, fire or explosion, environmental release, breach to composite cover system, or serious weather conditions.

2.5.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to CA RICH. These emergency contact lists must be maintained in an easily accessible location at the site.

Table 6: 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
NYSDEC Spills Hotline	(800) 457-7362

Table 7: Contact Numbers

CA RICH CONSULTANTS, INC.	(516) 576-8844
Via Verde Homes, LLC	(917) 542-3656
Via Verde Rental Associates, L.P.	(212) 243-9090
Remedial Engineer (Stephen J. Osmundsen, P.E.)	(516)-669-1123

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

2.5.2 Map and Directions to Nearest Health Facility

Site Location: Via Verde

Nearest Hospital Name: Lincoln Hospital

Hospital Location: 234 E. 149th Street

Hospital Telephone: (718) 993-3860

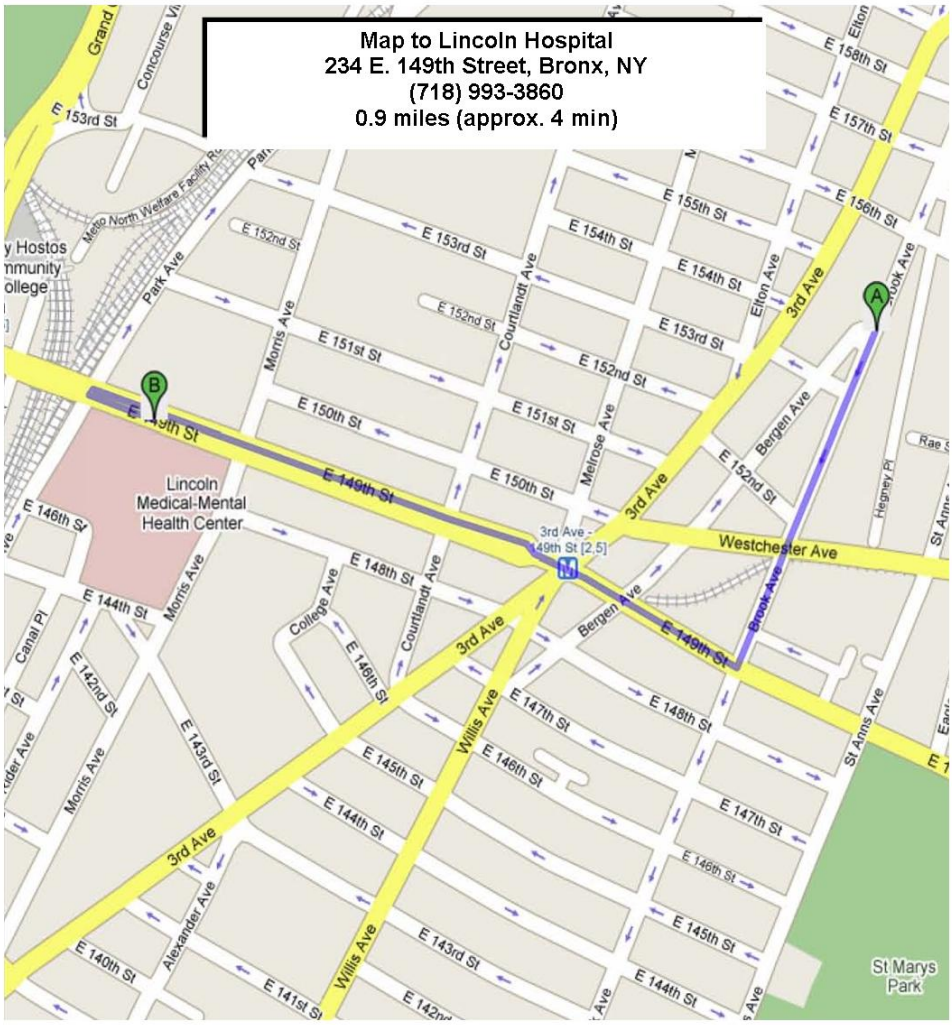
Directions to the Hospital:

1. Head Southwest on Brook Ave (0.3 mi.)
2. Turn Right at E 149th Street (0.6 mi.)
3. U-turn at Park Ave.

Total Distance: 0.9 mi.

Total Estimated Time: 4 min.

Map Showing Route from the Site to the Hospital:



2.5.3 Response Procedures

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan (Table 6). The list will also be posted prominently at the Site and made readily available to all personnel at all times.

2.5.3.1 Procedures for spills

If visual inspection and/or soil screening identify evidence of a petroleum release, either from equipment inside the new building or petroleum encountered during future excavation/construction activities, the owner and Remedial Engineer will be contacted, and all work activities will be halted until further instructions are received from the Remedial Engineer. If the petroleum spill is more than five gallons, as required by law, the fuel spill will be reported to the NYSDEC Spill Hotline (1-800-457-7362).

2.5.3.2 Evacuation plans

- In case of a fire, employees/contractors/residents should activate the nearest fire alarm box and/or make a telephone call to the local Fire Department via 911. The locations of the fire alarm boxes are noted on the evacuation floor plans in the new building.
- It may be necessary to activate additional fire alarm boxes, or shout the alarm, if people are still in the building and the alarm has stopped sounding, or if the alarm does not sound. This can be done while exiting.
- Persons discovering a fire, smoky condition, or explosion should pull the fire alarm box. Any pertinent fire or rescue information should be conveyed to the Fire Department. All emergency telephone numbers are listed in Section 2.5.1.
- When the fire alarm sounds, all personnel should ensure that nearby personnel are aware of the emergency, quickly shutdown operating equipment, close doors and exit the building using stairwells.

- All occupants should exit the building.
- All occupants and workers should know where primary and alternate exits are located, and be familiar with the various evacuation routes available. Floor plans with escape routes, alternate escape routes, and exit locations should be posted in the building.
- Building occupants must NOT use elevators as an escape route in the event of a fire.
- To report all other emergencies and injuries, a call should be placed to 911. State you name, your location, and the nature of the call. Speak slowly and clearly. Wait for the dispatcher to hang up first. On occasion the dispatcher may need additional information or may provide you with additional instructions.
- Small fires can be extinguished only if you are trained to use a fire extinguisher. However, an immediate readiness to evacuate is essential.
- All fires, even those that have been extinguished, must be reported to the property owner immediately.
- Do not enter a room that is smoke filled.
- Do not enter a room if the door is warm to touch.

2.5.3.3 Procedures for Breach of Composite Cover System

The following procedures will be required if breaching of the composite cover system is needed or occurs or is discovered during a monitoring/inspection event in accordance with Sections 3.2 and 4.3.1: It is noted that precautions must be taken to ensure that the SSD piping is not damaged during a planned breach beneath any on-site building. The map of the SSD piping layout (Figure 10) must be consulted prior to disturbance of the slab to ensure the piping remains intact.

- The NYSDEC and NYSDOH will be notified of the request, and approval will need to be granted prior to the planned breach. If an unplanned breach occurs, the above agencies will be notified within 24 hours of the discovery of the occurrence.

- A written plan detailing the proposed repair or replacement activities will be submitted for review. A Site Plan indicating the area of the breach will be included in the plan.
- Once approval is received, the NYSDEC and NYSDOH will be notified at least 5 days prior to plan implementation to afford the ability to be on-Site during the repair/replacement activities.
- If a breach should occur, grout injection will be performed, where applicable, to eliminate water infiltration, fill voids, and repair any cracks of the vapor barrier. The basic steps for this type of crack repair are:

  1. Clean the area to be injected; remove any delaminated concrete, dust, dirt, etc. in and around the crack;
  2. Drill holes for injection packers at an angle to intersect the crack; the spacing for the holes is determined by a NYS-licensed P.E. based on the size and severity of the crack(s);
  3. Install and tighten packers;
  4. Flush crack with water; in the event that there is water seeping through the crack, this step shall not be necessary;
  5. Inject the chemical grout beginning at the bottom; continue along the crack from one end to the other; and,
  6. Remove the injection packers, patch the holes, remove any excess surface grout and clean the equipment.

- If a breach of an area greater than 12 inches in diameter is requested, the concrete foundation in the area will be saw cut, removed, and disposed of properly as construction and demolition debris. The concrete area to be saw cut will be greater than the area of vapor barrier to be breached. Upon completion of the subsurface activities, the vapor barrier will be installed according to the manufacturer's product specifications with the vapor barrier overlapping the original barrier appropriately. The ends of the barrier will be sealed as per the manufacturer's product specifications to ensure a vapor proof seal.. It is noted that special care must be employed to protect the sub-slab SSD piping during planned breaches. The map of the piping layout (Figure 10) must be consulted to avoid digging in pipe locations.

- As all soil was removed above the level of the vapor barrier, there will not be any soil to be removed or managed due to a breach. All soil remaining below the vapor barrier was within acceptable guidelines and limits.
- All repairs to Composite Cover System breaches must be inspected and certified by a Professional Engineer licensed in NY State.

3.0 SITE MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the Site, the soil cover system, and all affected Site media identified below. Monitoring of other Engineering Controls is described in Chapter 4, Operation, Monitoring and Maintenance Plan. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor, soils);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance, particularly ambient groundwater standards and Part 375 SCOs for soil;
- Assessing achievement of the remedial performance criteria.
- Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this Monitoring Plan provides information on:

- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems (e.g., well logs);
- Analytical sampling program requirements;

- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

As of January 2017, the termination criteria have been met and, as such, groundwater monitoring at the Site has been discontinued. Monitoring programs are summarized in Table 12 and outlined in detail in Sections 3.2 and 3.3 below.

Table 8: Monitoring/Inspection Schedule

Monitoring Program	Frequency*	Event	Matrix	Analysis	Termination Criteria
Groundwater Monitoring and Sampling	Terminated January 2017	Monitoring and Sampling	Groundwater	VOCs(8260) & dissolved TAL metals	See Section 2.2.2.4
Composite Cover System	Annual. First inspection no more than 18 months after COC	Inspection	Visual	None	See Section 2.2.2.1
SSDS Operations, Maintenance & Monitoring	Inspections: Monthly (1st qtr.) quarterly (1st year), and then annually Monitoring: once upon startup and once upon each subsequent re-start	Operations and Maintenance	Sub-slab vacuum & PID	None	See Section 2.2.2.2

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH

3.2 COMPOSITE COVER SYSTEM MONITORING

Exposure to residual contaminated soils is being prevented by an engineered, composite cover system that was built on the Site. The composite cover system is shown on Figure 16. The vapor barrier specifications are enclosed as Appendix B.

The composite cover system will remain intact 24-hours a day, seven days a week, for 365 days a year. Breaching of the concrete sidewalks, foundation walls and slabs or vapor barrier is prohibited by the Environmental Easement. In the unlikely event of an unanticipated accidental or requested breach, the procedure for response to breach of the composite cover system is outlined in Section 2.5.3.3.

Monitoring of the composite cover system will occur on an annual basis as long as the Environmental Easement is in effect to ensure the system's integrity. Monitoring will consist of inspection and certification by a NYS-licensed P.E. which shall evaluate the structural integrity of the concrete floor, support columns into the floor and the wall joints. If any cracks or openings are identified, they shall be screened for organic vapors with a field PID and any readings shall be noted. In addition, any cracks or openings in the floor shall then be sealed. The results of the inspection will be included in the Periodic Review Report. In addition, the composite cover system must be inspected and certified any time a breach in the system occurs. The inspection frequency is subject to change with the approval of the NYSDEC. Unscheduled inspections and/or sampling may take place when a suspected failure of the composite cover system has been reported or an emergency occurs that is deemed likely to affect the operation of the system.

3.3 MEDIA MONITORING PROGRAM

3.3.1 Groundwater Monitoring

CA RICH Consultants, Inc. conducted quarterly monitoring of the four on-site wells (MW-6 through MW-9) in the post remedial groundwater monitoring well network in accordance with the provisions in the approved SMP since the wells were installed in August 2011. The quarterly monitoring program extended through June 2013 and results of the monitoring have been submitted to NYSDEC and NYSDOH in the form of Monitoring Reports (QMRs). A petition to reduce sampling frequency and parameters was submitted to NYSDEC on April 2, 2013 and approved via NYSDEC's letter dated May 9, 2013. The revised sampling frequency was then semi-annually and the approved parameter list included volatile organic compounds and dissolved TAL metals. The modified sampling program began in December 2013 and the most recent semi-annual sampling is summarized in CA RICH's report entitled "Semi-Annual Monitoring Report; Second Half 2016", dated March 2017.

Following submittal of the most recent Monitoring Report, a formal request was made to NYSDEC on April 24, 2017 to terminate the on-site groundwater monitoring program and approved via NYSDEC's letter dated April 25, 2017. The four on-site wells were properly abandoned in accordance with NYSDEC CP-43 on June 9, 2017. The procedures followed are summarized below.

The four onsite wells were decommissioned by tremie-grouting and partial casing removal. Standard grout mixture (as per section 6.1 of CP-43) was mixed and tremie piped into each well from the bottom, up. The grout mixture was piped to a depth of approximately 5 feet below land surface. Following grouting, approximately five feet of PVC casing was removed from each well along with the protective steel stand pipes (in the landscaped area wells) and the protective curb box (in the well along the sidewalk). The remaining borehole void was backfilled with sand to a depth of approximately 1 foot

below land surface and then backfilled with topsoil in the upper foot for the well locations in landscaped areas, and cement in the well location along the sidewalk.

3.3.2 SSD System Monitoring

The SSD System will be monitored at the frequency set forth in Table 8. Monitoring will include recording of vacuum readings from the Magnahelic® gauges mounted at each riser pipe location to confirm that sub-slab vacuum is being maintained. Each of the on-site buildings is equipped with two risers and fans attached to the sub-slab SSD piping. During system testing, one of the fans on each building will be shut off and vacuum readings will be taken from the riser with the inoperable fan to ensure communication of vacuum beneath the slab from the other (operating) fan. In addition, PID readings will be taken from each riser sampling port.

3.4 SITE-WIDE INSPECTION

Site-wide inspections will be performed on a regular schedule at a minimum of once a year. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed (Appendix H). 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,
- Confirm that Site records are up to date.

3.5 MONITORING 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 G). 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;
- Preparation of 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.

3.6 MONITORING REPORTING REQUIREMENTS

Forms and any other information generated during regular monitoring events and inspections will be kept on file on-Site. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Periodic Review Report, as specified in the Reporting Plan of this SMP.

All monitoring results will be reported to NYSDEC on a periodic basis in the Periodic Review Report in accordance with Section 5.3 of this SMP. A letter report will also be prepared, 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., sub-slab vapor, indoor air, outdoor air, etc);
- 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 (o be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether groundwater conditions have changed since the last reporting event.

  Data will be reported in hard copy or digital format as determined by NYSDEC.

A summary of the monitoring program deliverables are summarized in Table 9 below.

Table 9: Schedule of Monitoring/Inspection Reports

Task	**Reporting Frequency***
Groundwater Monitoring Report	Discontinued as of January 2017
Periodic Review Report	Annually beginning 18 months after receipt of COC until termination of Environmental Easement or termination of requirement by NYSDEC

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC

4.0 OPERATION AND MAINTENANCE PLAN

4.1 INTRODUCTION

This Operation and Maintenance Plan describes the measures necessary to operate, monitor and maintain the mechanical components of the remedy 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 system;
- Includes an operation and maintenance contingency plan; and,
- Will be updated periodically to reflect changes in Site conditions or the manner in which the SSD system is operated and maintained.

Information on non-mechanical Engineering Controls (i.e. soil cover system) is provided in Section 3 - Engineering and Institutional Control Plan. A copy of this Operation and Maintenance Plan, along with the complete SMP, will be kept at the Site and will be located in the on-Site maintenance room and/or the building management's office. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP.

4.2 ENGINEERING CONTROL SYSTEM OPERATION AND MAINTENANCE

4.2.1 Sub-Slab Depressurization System

4.2.1.1 Scope

As an additional measure to prevent vapor-phase VOCs remaining in groundwater and/or soil/fill from entering the new building's interior, installation of an active SSD system was included in the construction of the new buildings' foundation. The sub-slab piping for the SSD system was installed in August and September 2010.

The SSD system maintains a negative pressure underneath the slab while allowing the vapors below the concrete slab to vent without intruding into the building. The SSD system consists of horizontal trenches with four-inch perforated PVC pipe, a filter sock, and gravel. The horizontal pipes are connected to vertical risers that extend above the roof of the building. A Magnehelic® gauge was retrofitted to each of the riser pipes above the slab to facilitate collection of vacuum readings. These gauges also serve as warning devices or indicators to ensure that this active system is working properly. Sample ports were also installed in each of the riser pipes to allow for the collection of sub-slab vapor samples, if needed. In addition, labels were affixed to each riser immediately below the sample ports indicating the following:

SUB-SLAB DEPRESSURIZATION SYSTEM
This is a component of a Sub-Slab Depressurization System
DO NOT ALTER OR DISCONNECT
For Service call: CA RICH Consultants, Inc. 516-576-8844

The SSD fans are Fantech Model number HP-220 fans. As-built drawings for the SSD system are illustrated on Figure 10. The Typical Vent and Roof Detail is illustrated on Figures 11, 11a & 11b.

The SSD system will be operated 24 hours per day except during maintenance until the termination criteria have been satisfied. The termination criteria are outlined in Section 2.2.2.2.

4.2.1.2 System Start-Up and Testing

Once the new building construction is completed, the SSD system will be turned on and a start-up test will be conducted to confirm that the SSD system is working. Once the system is balanced, a vacuum range of 0.5 to 1.5 inches is anticipated. First, real time instrumentation readings of total VOCs in incoming sub-slab soil vapor (influent gas)

will be obtained using a MiniRae PID and a Lower Explosive Limit (LEL) meter from each of the risers. In addition, real time instrumentation readings of total VOCs in the exhaust (effluent gas) will be obtained. Next, vacuum readings will be obtained from the magnehelic gauges attached to the risers. Each of the on-site buildings is equipped with two risers and fans attached to the sub-slab SSD piping. During system testing, one of the fans on each building will be shut off and vacuum readings will be taken from the riser with the inoperable fan to ensure communication of vacuum beneath the slab from the other (operating) fan. These readings will be reported in the first PRR.

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 must be restarted.

4.2.1.3 System Operation: Routine Operation Procedures

The SSD system will be monitored on an annual basis by a QEP or Professional Engineer. Monitoring of the SSD system will consist of a visual inspection of the complete system including checking to confirm that the SSD fan is operating properly, observing all Magnehelic® gauges to confirm there is vacuum, identification and repair of leaks (if any), and obtaining a PID reading of the fan discharge effluent. In addition, the building floor will be inspected for wear-related cracks or pitting and repaired as needed. The SSD system will not be discontinued without written approval by NYSDEC and NYSDOH. A proposal to discontinue the active SSD system will be submitted by the property owner based on confirmatory data that justifies such request. Systems will remain in place and operational until permission to discontinue use is granted in writing by NYSDEC and NYSDOH.

4.2.1.4 System Operation: Routine Equipment Maintenance

Operations and maintenance procedures that apply to the Fantech® Model Number HP220 fan includes a physical inspection of the fan to confirm that air is being discharged and that the fan is operating. No other maintenance is recommended by the manufacturer. Operations and maintenance procedures that apply to the Dwyer Magnehelic® Differential Pressure Gauges include keeping the case exterior and cover clean and occasionally disconnecting the pressure lines to vent both sides of the gauge to atmosphere and re-zero. The Fantech® Model Number HP220 fan and Dwyer Magnehelic® Differential Pressure Gauges owner's manuals are enclosed as Appendix I along with a trouble-shooting guide. Maintenance will be performed during each inspection/monitoring event as shown in the schedule on Table 8.

4.2.1.5 System Operation: Non-Routine Equipment Maintenance

Any non-routine equipment maintenance should be performed in accordance with the equipment's owner's manual. The fans and gauges should be replaced if they are

observed to be inoperable during routine inspections. Routine inspection of the Magnehelic® gauges will serve as a warning indicator to ensure that the system is functioning properly. It is noted that the design of the system provides for two roof-mounted fans per building piping network and, as such, includes redundancy should one of the two fans become inoperative. A trouble-shooting guide for the SSD system is included in Appendix I.

4.2.2 In-situ Chemical Oxidation

4.2.2.1 Scope

Based upon the detection and distribution of groundwater contaminants, groundwater treatment including ISCO and natural attenuation was performed in the area of the former service station (northwest corner of the Site). Regenox™ and ORC® Advanced (ISCO treatment) was injected into the shallow groundwater (approximately 22 feet below sidewalk grade) and soil/fill in the smear zone (approximately 17-21 feet below sidewalk grade). The objective of this injection was to enhance the natural attenuation of the residual organic chemicals within the shallow groundwater underlying the Site. The location of the injections is illustrated on Figure 14.

This treatment constituted a one-time injection via temporary injection points utilizing direct-push drilling. As such, no system operation or maintenance is required. Groundwater monitoring was performed for seven years and termination criteria were met in December 2016. As of January 2017, no further monitoring is required.

4.2.2.2 System Start-Up and Testing

As the in-situ-chemical oxidation is not a mechanical system, no start-up testing was required.

4.2.2.3 System Operation: Routine Operation Procedures

As the in-situ-chemical oxidation is not a mechanical system, there are no routine operating procedure requirements**.**

4.2.2.4 System Operation: Routine Equipment Maintenance

As there are no mechanical components of the in-situ-chemical oxidation – periodic maintenance is not warranted.

4.2.2.5 System Operation: Non-Routine Equipment Maintenance

As the in-situ-chemical oxidation is not a mechanical system, there are no equipment maintenance requirements. However, should concentrations of targeted compounds/constituents increase by an order of magnitude over the baseline data or should the concentrations fail to decrease sufficiently during the post remedial monitoring period, a second round of injections will be performed. No additional injections are currently planned. However, it is anticipated that if a second round of injections was necessary, the injections would be performed along the northern boundary of the former service station area (northeastern corner of Site along 156th Street). The exact locations, concentrations and number of injections (if necessary) will be determined based upon manufacturers recommendations in response to the contaminant concentrations measured.

4.3 ENGINEERING CONTROL SYSTEM PERFORMANCE MONITORING

4.3.1 SSD System Monitoring

A sub-slab depressurization system has been installed to mitigate possible soil vapor intrusion into occupied buildings.

4.3.1.1 Monitoring Schedule

The operations and maintenance schedule for the SSD system has been established and is included in Table 8. The inspection frequency is subject to change with the approval of the NYSDEC. 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 system are specified in Sections 4.4, 5.1 and 5.3 of this Plan.

4.3.1.2 General Equipment Monitoring

A visual inspection of the complete system will be conducted during the monitoring event. SSD system components to be monitored include, but are not limited to, the following: Fantech® fan, Magnehelic® gauges, and general system piping. A complete list of components to be checked is provided in the Inspection Checklist, presented in Appendix H. 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 repair as per the Operation and Maintenance Plan are required immediately, and the SSD system restarted. Operational problems will be noted in the subsequent PRR.

4.3.2 In-Situ Chemical Oxidation Monitoring

Based upon the detection and distribution of groundwater contaminants, groundwater treatment including in-situ chemical oxidation and natural attenuation was performed in the area of the former service station (northwest corner of the Site). In-Situ Chemical Oxidation activities were completed from April 1 to 9, 2010. Regenox™ and ORC® Advanced (ISCO treatment) was injected into the shallow groundwater (approximately 22 feet below sidewalk grade) and soil/fill in the smear zone (approximately 17-21 feet below sidewalk grade). The objective of this injection was to enhance the natural attenuation of the residual organic chemicals within the shallow groundwater underlying the Site.

Groundwater monitoring was performed for seven years and termination criteria were met in December 2016. As of January 2017, no further monitoring is required.

4.4 MAINTENANCE AND PERFORMANCE MONITORING REPORTING REQUIREMENTS

Maintenance reports and any other information generated during regular operations at the Site will be kept on-file on-Site. All reports, forms, and other relevant information generated will be available upon request to the NYSDEC and submitted as part of the Periodic Review Report, as specified in the Section 5 of this SMP.

4.4.1 Routine Maintenance Reports

Checklists or forms (see Appendix H) will be completed during each routine maintenance event. Checklists/forms will include, but not be limited to the following information:

- Date;
- Name, company, and position of person(s) conducting maintenance activities;
- Maintenance activities conducted;
- Any modifications to the system;
- 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).

4.4.2 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:

- Date;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Presence of leaks;
- Date of leak repair;
- 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).

5.0 INSPECTIONS, REPORTING AND CERTIFICATIONS

5.1 SITE INSPECTIONS

5.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Section 3 Monitoring Plan and Section 4 Operation and Maintenance Plan of this SMP. At a minimum, a Site-wide inspection will be conducted annually. Inspections of remedial components will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe condition has taken place, such as an erosion or flooding event that may affect the ECs.

5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the appropriate forms for their respective system which are contained in Appendix H. Additionally, a general Site-wide inspection form will be completed during the Site-wide inspection (see Appendix H). These forms are subject to NYSDEC revision. All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the Site during the reporting period will be provided in electronic format in the Periodic Review Report.

5.1.3 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 Site remedy continues to be protective of public health and the environment and is performing as designed in the RAWP and FER.

5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

After the last inspection of the reporting period, a Professional Engineer licensed to practice in New York State will prepare the following certification:

For each institutional or engineering control identified for the Site, I certify that all of the following statements are true:

- The inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;
- The institutional control and/or engineering control employed at this Site is unchanged from the date the control was put in place, or last approved by the Department;
- Nothing has occurred that would impair the ability of the control to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any Site management plan for this control;
- Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;
- If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document;
- Use of the Site is compliant with the environmental easement;
- The engineering control systems are performing as designed and are effective;
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the Site remedial program and generally accepted engineering practices; and

- The information presented in this report is accurate and complete.
- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner's Designated Site Representative] [I have been authorized and designated by all Site owners to sign this certification] for the Site.

- No new information has come to my attention, including groundwater monitoring data from wells located at the site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of off-site contamination are no longer valid; and

Every five years the following certification will be added:

- The assumptions made in the qualitative exposure assessment remain valid.

The signed certification will be included in the Periodic Review Report described below.

5.3 PERIODIC REVIEW REPORT

A Periodic Review Report will be submitted to the Department every year, beginning eighteen months after the Certificate of Completion is issued. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in Appendix A (Metes and Bounds). The report will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each certification period. Media sampling results will also incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the Site;
- Results of the required annual Site inspections and severe condition inspections, if applicable;
- All applicable inspection forms and other records generated for the Site during the reporting period in electronic format;
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;
- A Site evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the Site-specific RAWP, ROD or Decision Document;
    - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;

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

The Periodic Review Report will be submitted, in hard-copy format, to the NYSDEC Central Office and Regional Office in which the Site is located, and in electronic format to NYSDEC Central Office, Regional Office and the NYSDOH Bureau of Environmental Exposure Investigation.

5.4 CORRECTIVE MEASURES PLAN

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a corrective measures plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the NYSDEC.

6.0 REFERENCES

1. Earth Tech, Inc. Phase I Environmental Site Assessment. New York: December 2004.
2. URS Corporation. Site Characterization and Data Summary Report. New York: September 2006.
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4. NYSDEC. Technical And Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels. New York, January 24, 1994.
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6. NYSDEC. 6 NYCRR Part 375 Environmental Remediation Programs, Environmental Remediation Programs, Subparts 375-1 to 375- 4 & 375-6. New York: December 2006.
7. NYSDEC TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations, June 1998.