REMEDIAL ACTION WORK PLAN

for

Enclave on 241st Street Development
714 East 241st Street
Block 5087, Lot 1
Bronx, New York

NYSDEC BCP Site Number: C203077

Prepared For:

Enclave on 241 Street LLC
2975 Westchester Avenue, Suite 100
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Prepared By:

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March 2016
Langan Project No. 140115301

LANGAN

CERTIFICATION

I, Joel Landes, P.E., certify that I am currently a NYS registered professional engineer and that this Remedial Action Work 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).

I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

NYS Professional Engineer 076438	3/29/16	
	Date	Signature

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.

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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
ASP	Analytical Services Protocol
AST	Aboveground Storage Tank
AWQS	Ambient Water Quality Standards
BCP	Brownfield Cleanup Program
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Program
C/D	Construction/Demolition
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
CQAP	Construction Quality Assurance Plan
COC	Certificate of Completion
cPAH	Carcinogenic Polycyclic Aromatic Hydrocarbon
CSUL	Comprehensive Subsurface Utility Location
CVOC	Chlorinated Volatile Organic Compound
DER	Division of Environmental Remediation
DMM	Division of Materials Management
DUSR	Data Usability Summary Report
ELAP	Environmental Laboratory Approval Program
EM	Electromagnetic
EPA	United States Environmental Protection Agency
ESA	Environmental Site Assessment
ESI	Environmental Site Investigation
FER	Final Engineering Report
FINDS	Facility Index System/Facility Registry System
GPR	Ground Penetrating Radar
HASP	Health and Safety Plan
IRMWP	Interim Remedial Measures Work Plan
LNAPL	Light, Nonaqueous-Phase Liquid
MTBE	Methyl Tert Butyl Ether
NYCRR	New York Codes, Rules and Regulations
NYCDEP	New York City Department of Environmental Protection
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	Department of Transportation
ORC	Oxygen Release Compound
OSHA	United States Occupational Safety and Health Administration
PAH	Polycyclic Aromatic Hydrocarbon

Acronym	Definition
PBS	Petroleum Bulk Storage
PCB	Polychlorinated Biphenyls
PCE	Tetrachloroethene
PID	Photoionization Detector
PPE	Personal Protective Equipment
ppm	Parts per million
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QEP	Qualified Environmental Professional
QHD	Queens Highway Datum
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCA	Recycled Concrete Aggregate
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
RI	Remedial Investigation
RIR	Remedial Investigation Report
SCO	Soil Cleanup Objective
SEQRA	State Environmental Quality Review Act
SMD	Submembrane Depressurization System
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SQG	Small Quantity Generator
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TCE	Trichloroethene
TCL	Target Compound List
TOGS	Technical and Operational Guidance Series
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

Enclave on 241 Street LLC (the owner) entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) on August 17, 2015 to investigate and remediate an approximate 24,060-square-foot property located at 714 East 241st Street in the Wakefield section of the Bronx, New York (the "Site") (BCP Site No. C231079). Enclave on 241 Street LLC is a Volunteer in the Brownfield Cleanup Program (BCP) and is pursuing a Restricted-Residential Use for the property. When completed, the Site will be developed with a 10-story structure containing 1-level of sub-grade parking, first floor retail/commercial, and nine stories of residential with affordable housing.

This Remedial Action Work Plan (RAWP) summarizes the nature and extent of contamination as determined from data gathered during previous investigations at the Site. The RAWP identifies and evaluates remedial action alternatives, including a Track 1 remediation, and recommends a Track 4 cleanup for addressing impacted soil, groundwater and soil vapor within the Site boundaries. The remedy described in this document is consistent with the procedures defined in DER-10 and complies with all applicable standards, criteria and guidance. The remedy described in this document also complies with all Federal, State and local laws, regulations and requirements. The Remedial Investigation (RI) for this Site did not identify the need for a fish and wildlife resources study.

Site Description/Physical Setting/Site History

The Site consists of an approximate 24,060-square-foot irregularly shaped lot and includes approximately 100 feet of frontage along White Plains Road, 185 feet of frontage along 241st Street, and 135 feet of frontage along Furman Avenue. The New York City Transit Authority (NYCTA) #2 rail corridor and elevated station platform are located above grade along the northwestern property line. A Site Location Map and Site Plan are provided as Figures 1 and 2, respectively. On June 9, 2015 the NYC Department of Finance Division of Land Records approved a merger of six previously separate lots, into one single lot. The Site, now designated Lot 1, is comprised of the following former site addresses and lots on tax block 5087:

- 714 East 241st Street (former Lot 1) – Developed with an approximate 1,086-square-foot one-story office building with a basement.
- 4643 Furman Avenue (former Lot 3) – Developed with an asphalt-paved parking lot.
- 4641 Furman Avenue (former Lot 6) – Undeveloped dirt and grass lot.
- 4644 White Plains Road (former Lot 59) – Developed with an approximate 3,375-square foot one-story former auto body shop building (since circa 1950)

- 700 East 241st Street (former Lot 62) – Developed with an approximate 1,500-square foot one-story former auto repair and fueling facility (since circa 1935)
- 704 East 241st Street (former p/o Lot 65) – Undeveloped dirt and grass lot.

The Site also contains asphalt- and concrete-paved exterior driving/parking areas and sparsely vegetated undeveloped areas. The Site is bordered to the northwest by White Plains Road and an overhead NYCTA rail line, to the northeast by East 241st Street, to the southeast by Furman Avenue, and to the southwest by residential and commercial properties (see Figure 2).

The Site is located in an area primarily characterized by mixed commercial and industrial with light residential use. Prior to becoming vacant in December 2014, portions of the Subject Property (specifically former lots 59, 62, and 65) were extensively used for auto repair and gasoline fueling purposes since at least 1935. The office building located on former lot 1, located on the eastern portion of the Site, was most recently used as an attorney's office while historically being used as an office building with a basement level boiler room since at least 1941. Former lots 3 and 6 located on the eastern portion of the Site were previously used for automobile parking for the adjacent residential homes and for employees and customers of both the former lot 1 attorney's office and the former lot 62 fueling facility.

The site is subject to NYSDEC review under the Spills Program (Spill No. 12-14956, opened on January 25, 2013). Additional detail regarding the spill is included in the body of this RAWP.

Summary of the Previous Investigations

The RI fieldwork was completed between September 28 and October 8, 2015. The objective was to characterize the nature and extent of contamination at the Site. The RI included soil, groundwater, and soil vapor sampling and analysis and was completed in accordance with the RIWP approved by NYSDEC on August 18, 2015, and in accordance with NYCRR Title 6 Part 375 (6 NYCRR Part 375), the NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (May 2010), the NYSDEC Draft Brownfield Cleanup Program Guide (May 2004), and the New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006). Findings of the field investigation are described below.

1. Stratigraphy: Overburden consists of a historical fill layer beneath the Site surface, extending to depths ranging from 1.5 to 9 feet below ground surface (bgs). The historical fill layer generally consists of varying amounts of sand and gravel with brick, coal fragments, wood, glass, asphalt, metal, ceramics, and concrete. A layer of native, brown, silty-sand and sand with varying amounts of fine gravel was encountered underlying the historical fill and extended to at least 20 feet bgs. Bedrock was not

encountered during this investigation; however, is estimated to be at depths of approximately 140 feet bgs according to the USGS Bedrock and Engineering Geologic Maps.

2. Hydrogeology: Groundwater underlying the Site ranged from about 9.47 to 13.43 feet bgs. The groundwater is highest in the northern portion of the Site and decreases radially toward the southern portion of the Site.

3. On-Site Petroleum Bulk Storage: The following evidence of historical petroleum bulk storage has been identified:

    a. One 4,000-gallon gasoline Underground Storage Tank (UST) (temporarily closed in-place), one 2,000-gallon gasoline UST (temporarily closed in-place), one 550-gallon gasoline UST (closed-removed), and one 250-gallon waste oil AST (closed-removed) on former lot 62.
    b. A large anomaly indicative of a UST (approximately 20 feet long, 8 feet wide, and 4 feet bgs) was observed on the northwestern edge of the Site along the sidewalk of White Plains Road (on former lot 59).
    c. A 275-gallon heating oil AST in the basement of former lot 1.

    Petroleum-impacted material was identified through field observations (staining, odor, and elevated PID readings) and analytical results in connection with the on-site USTs. In total, 2 known USTs, 2 suspected USTs and 1 AST remain on the site.

4. Historical Fill Impacts: The historical fill layer contains concentrations of SVOCs and metals at concentrations that exceed their respective Unrestricted and Restricted-Residential Use SCOs at depths ranging from 1.5 to 9 feet bgs. The metals found in the native soil are likely the result of naturally-occurring soil minerals. The SVOCs and metals found in soil are not a source of groundwater contamination.

5. Groundwater Impacts: VOCs were detected at concentrations exceeding TOGS Class GA AWQS in in four of eight groundwater samples collected during the RI. VOC concentrations in groundwater were greatest in the northern and western portions of the Site (in the vicinity of the former gasoline filling station and automobile repair shop), and decreased to the south and east. Based on analytical results, the source of onsite VOC contamination is likely petroleum releases from the on-Site USTs. Metals and SVOC contaminants in the groundwater at SB3 and SB4 likely arise from the quality of the fill material and are related to regional groundwater quality.

6. Light Non-Aqueous Phase Liquid (LNAPL) Impacts: An approximate 1 ¾ inch thick layer of LNAPL was measured during the RI in monitoring well MW29. A petroleum identification analysis performed on the LNAPL reported the petroleum pattern

resembled weathered fuel oil No. 2 or diesel fuel. The source of the LNAPL is likely a historic release from the on-Site USTs.

7. Soil Vapor Impacts: Soil vapor sampling results indicate the presence of several VOCs above the anticipated range of background concentrations. Elevated concentrations of methylene chloride, TCE, and PCE were detected in 6 of the 11 soil vapor samples collected. Several other VOCs (including cis 1,2-DCE that was detected at SV-9 at 4,500 ug/m^3 and at SV-10 at 4,500 ug/m^3) were detected above background concentrations in soil vapor samples across the Site; however, there are no regulatory standards established for the VOCs. Based on analytical results, the source of petroleum-related VOCs in soil vapor is primarily due to historic releases of petroleum due at the Site. Because chlorinated VOCs were not detected in Site soil and groundwater, the identified chlorinated soil vapor contamination is likely attributed to the up gradient and off-site drycleaner.

Sufficient analytical data was gathered during the RI to understand the extent and nature of onsite contamination and to develop a remedy for the Site. The selected remedy and appropriate alternatives are described and evaluated in accordance with NYS BCP guidelines in this RAWP. The selected remedy addresses historical fill impacted with SVOCs and metals, groundwater impacted with VOCs, the potential for soil vapor intrusion, and the removal and closure of remaining petroleum storage tanks.

Qualitative Human Health Exposure Assessment

Complete exposure pathways have the following five elements: 1) a contaminant source; 2) a contaminant release and transport mechanism; 3) a point of exposure; 4) a route of exposure; and 5) a receptor population. Based upon the conceptual site model and the review of environmental data, in the absence of institutional and engineering controls, complete on-site exposure pathways appear to be present in current, construction, and future conditions. The complete exposure pathways indicate there is a risk of exposure to humans from Site contaminants via exposure to soil, groundwater, and soil vapor if institutional and engineering controls are not implemented. A detailed evaluation is in Section 2.4

The following conclusions were developed from the human health exposure assessment:

1. Human exposure to Site contaminants is limited under current conditions due to the Site surface cover, and access to the Site being limited to only authorized guests via a Site wide perimeter fence with a locking entrance gate.
2. In the absence of institutional and engineering controls, there is a moderate risk of potential exposure during construction and remediation activities. This risk can be

avoided or minimized by following the appropriate health and safety, PPE, vapor and dust suppression, and Site security measures.

3. The existence of a complete exposure pathway for Site contaminants to human receptors during proposed future conditions is unlikely. The potential pathways for soil vapor intrusion into the building will be addressed through the construction of a concrete building slab and use of soil vapor mitigation measures (e.g., vapor barrier, cellar ventilation).

4. It is unlikely that a complete exposure pathway exists for the migration of site contaminants to off-site human receptors for current, construction phase, or future conditions. Monitoring and control measures would be used during construction to prevent completion of this pathway. Under future conditions, the site will be remediated and institutional and engineering controls will be implemented to prevent completion of this pathway.

Summary of the Remedy

Based on our analysis of alternatives, a Track 4 remedy has been selected. The RAWP will be executed by accomplishing the following tasks:

- Excavation, as described herein, and off-site disposal of:
    - Grossly-impacted soil, as defined in 6 NYCRR Part 375-1.2. In the area of MW29, excavation will extend to a depth necessary to assure complete LNAPL removal.
    - Within the proposed building footprint, excavation to a depth of approximately 15 feet bgs to accommodate future building foundation components. The excavation is intended to achieve protection of groundwater soil cleanup objectives (PG-SCOs) for those contaminants found in on-site soil above the groundwater table smear zone and that exceed groundwater standards on-site, such as 1,2,4 trimethylbenzene, 1,3,5- trimethylbenzene, xylene, toluene, ethylbenzene and any other contaminants that meet the conditions. Residual contamination below the water table smear zone will be addressed by the proposed groundwater treatment remedial element. NYSDEC will evaluate endpoint sampling results in comparison to the PG-SCOs prior to the excavation being backfilled.
    - Within the proposed landscaped area, excavation to a depth of 2 feet bgs to accommodate the installation of a 2 foot thick certified clean soil cover.

  The existing Site structures and concrete/asphalt surface cover will be demolished and disposed offsite to facilitate excavation.

- Prior to off-site soil disposal, a waste characterization program will be performed in areas of proposed excavation and off-site disposal. Waste characterization will be performed in-situ prior to remediation or from material stockpiles during remediation;
- Removal of remaining petroleum storage tanks and closure of NYSDEC Spill No. 12-14956;
- Dewatering fluids will be treated as necessary prior to discharge to the municipal sewer system;
- Collection and analysis of endpoint soil samples to document residual soil conditions;
- In-situ treatment of the groundwater with the application of an oxidant (e.g., Oxygen Release Compound, or ORC®) to reduce residual VOC concentrations and post-remediation groundwater monitoring to document the effectiveness of the remedy;
- Backfilling of excavated areas to development grade with clean material consisting of certified clean soils meeting the Allowable Constituent Levels for Imported Fill or Soil for Restricted-Residential Uses(appendix 5 of DER 10), recycled concrete aggregate (RCA), or virgin crushed stone;
- Installation of a vapor barrier under the Site building to protect against potential VOC vapor intrusion into the Site building;
- The proposed subgrade parking garage will include proper ventilation as required by the New York City Mechanical Code;
- Installation of a cellar level ventilation system to protect against vapor intrusion in areas of the cellar that will not be used as a ventilated parking garage. The cellar ventilation system will be consistent with New York City Mechanical Code for a ventilated parking garage;
- Development and execution of a Health and Safety Plan and a Community Air Monitoring Plan for the protection of on-site workers, the general public, and the environment during remediation and construction activities;
- Installation of a site cover system consisting of the concrete foundation slab of the future building, concrete or asphalt driveway and sidewalks, and a demarcation layer and at least two feet of clean soil and topsoil or virgin crushed stone in any landscaped areas; and,
- Implementation of long-term Institutional Controls in the form of an Environmental Easement and Site Management Plan.

1.0 INTRODUCTION

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1.1 Site Location and Description

The Site consists of an approximate 24,060-square-foot irregularly shaped lot and includes approximately 100 feet of frontage along White Plains Road, 185 feet of frontage along 241st Street, and 135 feet of frontage along Furman Avenue. The New York City Transit Authority (NYCTA) #2 rail corridor and elevated station platform are located above grade along the northwestern property line. A Site Location Map is included as Figure 1. On June 9, 2015 the NYC Department of Finance Division of Land Records approved a merger of six previously separate lots, into one single lot. The Site, now designated Lot1, is comprised of the following former site addresses and lots on tax block 5087:

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The Site also contains asphalt- and concrete-paved exterior driving/parking areas and sparsely vegetated undeveloped areas. The Site is bordered to the northwest by White Plains Road and an overhead NYCTA rail line, to the northeast by East 241st Street, to the southeast by Furman Avenue, and to the southwest by residential and commercial properties (see Figure 2).

1.2 Redevelopment Plan

The purpose of the project is to develop an underutilized, contaminated parcel into affordable residential and commercial use, while implementing remedial measures that are protective of human health and the environment. The proposed development will include an approximate 10-story affordable housing residential building (±140,000 gross square feet (gsf)) with commercial retail on the first floor (±19,000 gsf) and a one level below grade public parking garage with approximately 36 spaces (±14,500 gsf). The parking garage and cellar space will extend approximately 15 feet below grade over almost the entire footprint of the Site. Proposed development plans are provided in Appendix B. A development plan overview is provided as Figure 3.

1.3 Description of Surrounding Property

The Site is located in an area primarily characterized by mixed commercial and industrial with light residential use, which is summarized in the table below:

Direction	Adjoining Properties	Surrounding Properties
Northwest	White Plains Road and an overhead NYCTA rail line	Multiple-story residential, commercial, and industrial buildings occupy the remaining surrounding properties.
Northeast	Furman Avenue	
Southeast	Furman Avenue and Lots 9, 12, 13, 14, 16, 18, 20, 22, and 33 (residential and commercial properties).	
Southwest	Block 5087, Lots 40, 48, 53, 54, 55, and 58 (residential and commercial properties)	

Sensitive receptors within a half mile of the Site are listed in the following table, although they are not downgradient from the site:

NUMBER	NAME (Approximate distance from Site)	ADDRESS
1	Public School 016 Wakefield (1,200 feet west)	4550 Carpenter Avenue Bronx, New York 10470
2	All Seasons Day Care (1,800 feet south-southwest)	1701 Nereid Avenue Bronx, NY 10466

1.4 Site History

1.4.1 Past Uses and Ownership

The Site is located in an area primarily characterized by mixed commercial and industrial with light residential use. Prior to becoming vacant in December 2014, portions of the Subject Property (specifically former lots 59, 62, and 65) were extensively used for auto repair and gasoline fueling purposes since at least 1935. Evidence of former auto repair equipment (empty automobile gas tanks, miscellaneous car parts, unlabeled 55-gallon drums, etc.) are apparent throughout the interior and exterior of the Site. The office building located on former lot 1, located on the eastern portion of the Site, was most recently used as an attorney's office while historically being used as an office building with a basement level boiler room since at least 1941. Former lots 3 and 6 located on the eastern portion of the Site were previously used for automobile parking for the adjacent residential homes and for employees and customers of both the former lot 1 attorney's office and the former lot 62 fueling facility.

The Site is subject to NYSDEC review under the Spills Program (Spill No. 12-14956, opened on January 25, 2013). Additional detail regarding the spill is included in the previous environmental reports section below.

1.4.2 Previous Environmental Reports

Previous environmental reports were reviewed as part of the preparation of this RAWP. Copies of these reports are provided in Appendix C. Environmental reports prepared for the Site include the following:

- *Phase I Environmental Site Assessment (ESA) Report, 700 East 241st Street (former lot 62), Giorgio Engineering International, P.C. (GEI), February 12, 2008*
- *Phase II Subsurface Investigation Report, Environmental Business Consultants (EBC), January 31, 2013*

- *Temporary Tank Closure Activities, 700 East 241st Street (former lot 62) and 714 East 241st Street (former lot 1), Langan, January 6, 2015*
- *Phase I ESA Report, Langan, January 9, 2015*
- *Phase II Environmental Site Investigation (ESI), Langan, February 3, 2015*

These reports are summarized below and are included in Appendix C.

1.4.2.1 Phase I Environmental Site Assessment (ESA) Report, 700 East 241st Street (former lot 62), Giorgio Engineering International, P.C. (GEI), February 12, 2008

This Phase I ESA only pertains to the former lot 62 of the Site. The Phase I identified the following Recognized Environmental Conditions (RECs):

- Presence of a 55-Gallon Drum of Waste on the Site – During the site inspection conducted by GEI, a 55-gallon drum of waste was observed on the west side of the property. The disposition of this drum is unknown.
- Lack of Waste Oil Manifest – During the site inspection conducted by GEI, waste oil was observed onsite; however, disposal manifests were not provided onsite. The disposition of this waste oil is unknown.

1.4.2.2 Phase II Subsurface Investigation Report, Environmental Business Consultants (EBC), January 31, 2013

This report pertains to former lots 1, 3, 6, 62, and p/o 65. The investigation was implemented on January 15, 2013 and included completion of a geophysical survey, installation of nine soil borings (B1 through B9) and six temporary groundwater monitoring wells (GW1, GW3 through GW6, and GW9), and collection of ten grab soil samples and six groundwater samples (see Figures 3 and 4 of the EBC Phase II Report). The soil and groundwater samples were analyzed for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). Soil analytical data was compared with New York Codes, Rules and Regulations (NYCRR) Title 6 Part 375 (6 NYCRR Part 375) Unrestricted Use Soil Cleanup Objectives (SCO) and Restricted-Residential Use SCOs and groundwater analytical data was compared to NYSDEC Division of Water Technical and Operation Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (AWQS) for Class GA groundwater. The findings of this investigation are summarized below:

- The subsurface soil profile generally consists of a historic fill layer made up of brown silty-sand with brick between 4 to 8 feet below ground surface (bgs) underlain by a

native brown silty-sand or sand. Bedrock was not encountered at any boring location at a maximum depth of 20 feet bgs.

- Groundwater was encountered at depths of approximately 10 to 12 feet bgs.
- The geophysical survey identified the two functioning USTs in the northern portion of the Site as well as a potential UST (suspected to be closed-in-place) located in the northwest portion of the Site.
- With the exception of soil boring B4, a soil sample was collected from each boring from the groundwater interface. For soil boring B4, a soil samples was collected at 5 to feet bgs due to an odor noted that was not observed at the groundwater interface. A second sample was collected from soil boring B3 at 3 to 5 feet bgs due to a similar odor.
- Soil Impacts: The following constituents were detected in soil at concentrations that exceed their respective Unrestricted Use SCOs:
    - Nine VOCs, including acetone, benzene, ethylbenzene, methyl t-butyl ethere (MTBE), n-propylbenzene, o-xylene/total xylene, toluene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene.
    - One SVOC, naphthalene.
- Groundwater Impacts: The following constituents were detected in groundwater at concentrations exceeding TOGS AWQS.
    - Fifteen VOCs, including benzene, ethylbenzene, isopropylbenzene, m&p-xylenes, MTBE, naphthalene, n-butylbenzene, n-propylbenzene, o-xylene, p-isopropyltoluene, sec-butylbenzene, toluene, 1,2,4-trimethylbenzene, and 1,2-dibromoethane.
- Groundwater analytical results confirmed the presence of a petroleum release and Spill Case No. 12-14956 was opened by NYSDEC on January 25, 2013.

1.4.2.3 Temporary Tank Closure Activities, 700 East 241st Street (former lot 62) and 714 East 241st Street (former lot 1), Langan, January 6, 2015

Langan mobilized Brookside Environmental, Inc. to the Site to conduct temporary tank closure operations for four bulk storage tanks located at the Site. Activities included the cleaning and temporary closure of two gasoline USTs at lot 62; the cleaning and temporary closure of one 275-gallon heating oil aboveground storage tank (AST) at lot 1; and the cleaning, removal, and closure of one 250 gallon waste oil aboveground storage tank AST that was formerly located at lot 62. Temporary tank closure affidavits submitted to the Fire Department of New York, Bureau of Fire Prevention, detailing closure activities are provided in Appendix B of the Langan February 2015 Phase II Report.

1.4.2.4 Phase I ESA Report, Langan, January 9, 2015

The Phase I identified the following as RECs:

- Historical Site Use: Portions of the Site were extensively used for auto repair and gasoline fueling purposes since at least 1935. Evidence of former auto repair equipment (empty automobile gas tanks, miscellaneous car parts, unlabeled 55-gallon drums, etc.) was apparent throughout the interior and exterior of the Site. Inadvertent releases of solvents, petroleum products, metals, polychlorinated biphenyls (PCB) and/or other chemicals used during historical operations may have adversely impacted soil, groundwater, building components and/or soil vapor. Discoloration, staining, and stressed vegetation were also apparent throughout the interior and exteriors of the Site (primarily lots 6, 59, 62, and p/o 65), suggesting incidental releases of petroleum products during auto maintenance. The concrete slabs of the buildings were compromised in several areas.
- On-Site Petroleum Bulk Storage: The following evidence of historical petroleum bulk storage was identified:
    - One 4,000-gallon gasoline UST (temporarily closed in-place), one 2,000-gallon gasoline UST (temporarily closed in-place), one 550-gallon gasoline UST (closed in-place), and one 550-gallon gasoline UST (closed-removed) had been present on lot 62 since at least 1935.
    - According to historical Sanborn Fire Insurance Maps and New York State Department of Buildings (NYCDOB) records, a gasoline service station historically occupied lot 59. Additionally, a 1965 Certificate of Occupancy indicates that a fire department gasoline tank installation was approved on the lot. Releases from the suspect tanks may have impacted soil, groundwater, and soil vapor.
    - During the Phase I ESA site reconnaissance, a 275-gallon heating oil AST was observed in the basement of lot 1. The AST was observed to be in good condition with no staining or visual impacts to the floor below the AST; however, a brick-lined floor sump with a dirt base was observed below the AST. Because the floor sump provides a conduit for spilled heating oil to impact subsurface conditions, the heating oil AST and floor sump constitutes a REC.
- NYSDEC Spill No. 1214956: On January 25, 2013, during a Phase II subsurface investigation, the NYSDEC issued Spill Number 1214956 to lot 62 when elevated

concentrations of petroleum VOCs were identified in soil and groundwater in the vicinity of the gasoline USTs located in lot 62. This spill case is currently open.

- Current and Historical Use of Surrounding Properties: Current and historical uses of surrounding properties include:
    - Four drycleaners (4811 White Plains Road, 4701 White Plains Road, 4706 White Plains Road, and 4707 White Plains) with years of operation ranging from 1949 to present. Each of the four drycleaners are located upgradient of the Site.
    - Nine auto repair facilities (730 East 241st Street, 740 East 241st Street, 750 East 241st Street, 712 East 240th Street, 4580 White Plains Road, 4642 White Plains Road, 4609 Furman Avenue, 4619 Furman Avenue, and 4640 Furman Avenue) with years of operation ranging from 1935 to 2007. The auto repair facilities are located cross-gradient and downgradient of the Site.
    - Two gasoline filling stations (740 East 241st Street and 750 East 241st Street) with years of operation ranging from 1935 to 1993. The former filling stations are located crossgradient of the Site.
    - New York City Transit System Rail Yard (located approximately 150 feet southeast and crossgradient of the Site) with years of operation ranging from 1918 to 2007.

  Potential petroleum and solvent releases associated with the historical and current surrounding property uses may have adversely impacted groundwater and/or soil vapor at the Site and is considered a REC.

1.4.2.5 Phase II Environmental Site Investigation (ESI), Langan, February 3, 2015

This investigation included a geophysical survey and soil and groundwater sampling in the areas not previously investigated on the Site (see Figures 3 and 4 of the Langan Phase II ESI Report). Soil analytical data was compared with Unrestricted Use SCOs and Restricted-Residential Use SCOs and groundwater analytical data was compared to TOGS AWQS. Based on the observations and results of this investigation, Langan concluded the following:

- A layer of historic fill composed of varying amounts of sand and gravel, and fragments of brick, glass, wood, and coal ash was identified throughout the Site with thicknesses ranging from approximately 4 to 8 feet. This fill layer contained Restricted-Residential SCO exceedances of SVOCs and metals throughout the Site.
- The geophysical survey identified a large subsurface anomaly indicative of an UST on the northwestern edge of the Site along the sidewalk of White Plains Road (on lot 59).

The previously unidentified anomaly measured approximately 20 feet in length and 8 feet in width and was observed at approximately 4 feet bgs. The geophysical survey also confirmed the locations of site utilities as well as the three previously known USTs located on the northern portion of the Site (see Figure 3 included in Exhibit E of the Langan Phase II ESI Report).

- One of the seven soil borings (SB-3) was installed next to the suspected UST along White Plains Road that was discovered during the geophysical survey. Petroleum-like odors and photoionization detector (PID) readings (up to 1,095 part per million (ppm)) were observed in the soil boring at depths of approximately 10 to 16 feet bgs. Groundwater analytical sampling results from this location confirmed the presence of a petroleum contamination. Petroleum-like odors were also observed in borings SB-1 through SB-3 (with PID readings up to 17.8 ppm).
- The approximate depth to groundwater is estimated at 9 to 11 feet bgs. LNAPL was not identified during this Limited Phase II ESI; however, a petroleum-like odor was detected during groundwater purging and sampling activities at SB-3(MW) and groundwater analytical sampling results from this location, confirmed the presence of a petroleum contamination.

2.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

Langan conducted a remedial investigation (RI) to characterize the nature and extent of contamination at the Site. The RI included soil, groundwater, and soil vapor sampling and analysis, and was implemented between September 28 and October 8, 2015.

Langan conducted the RI in accordance with the RIWP approved by NYSDEC on August 18, 2015 and in accordance with NYCRR Title 6 Part 375 (6 NYCRR Part 375), the NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (May 2010), the NYSDEC Draft Brownfield Cleanup Program Guide (May 2004), and the New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006). Details of the field investigation are described below.

2.1.4 Summary of Remedial Investigation Findings

RI findings and conclusions include the following:

1. Groundwater Depth: Synoptic groundwater level measurements were collected on October 6, 2015. Based on the gauging event, groundwater underlying the Site ranged from about 9.5 to 13.4 feet bgs. The groundwater elevation is highest in the northern portion of the Site and decreases radially toward the southern portion of the Site.
2. On-Site Petroleum Bulk Storage: The following evidence of historical petroleum bulk storage has been identified:
    a. One 4,000-gallon gasoline UST (temporarily closed in-place), one 2,000-gallon gasoline UST (temporarily closed in-place), one 550-gallon gasoline UST (closed and removed), and one 250-gallon waste oil AST (closed and removed) on former lot 62.
    b. During the GPR investigation of the Site a large anomaly indicative of a UST (approximately 20 feet long, 8 feet wide, and 4 feet bgs) was observed on the northwestern edge of the Site along the sidewalk of White Plains Road (on former lot 59).
    c. A 275-gallon heating oil AST in the basement of former lot 1.

    Petroleum-impacted material was identified through field observations (staining, odor, and elevated PID readings) and analytical results in connection with the on-site USTs. Evidence of petroleum-impacted material was greatest in the northern and western portions of the Site (in the vicinity of the former gasoline filling station and automobile repair shop), and decreased to the south and east. The vertical extent of petroleum-impacted material is anticipated to extend to depths ranging from 1 to 20 feet bgs.

3. Historical Fill Impacts: The historical fill layer contains concentrations of SVOCs and metals at concentrations that exceed their respective Unrestricted or Restricted-Residential Use SCOs at depths ranging from 1.5 to 9 feet bgs. The metals found in the native soil are likely the result of naturally-occurring soil minerals.

4. Groundwater Impacts: VOCs were detected at concentrations exceeding TOGS Class GA AWQS in in four of eight groundwater samples collected during the RI. VOC concentrations in groundwater were greatest in the northern and western portions of the Site (in the vicinity of the former gasoline filling station and automobile repair shop), and decreased to the south and east. Based on analytical results, the source of onsite VOC contamination is likely petroleum releases from the on-Site USTs.

5. LNAPL Impacts: An approximate 1 ¾ inch-thick layer of LNAPL was measured during the RI in monitoring well MW29. PID readings from the headspace of MW29 were observed to be 0.0 ppm, indicating the LNAPL was most likely degraded. A petroleum identification analysis performed on the LNAPL reported the petroleum pattern resembled weathered fuel oil No. 2 or diesel fuel. The source of the LNAPL is likely a historic petroleum release from the on-Site USTs.

6. Soil Vapor Impacts: Soil vapor sampling results indicate the presence of several VOCs above the anticipated range of background concentrations. Elevated concentrations of methylene chloride, TCE, and PCE were detected in 6 of the 11 soil vapor samples collected. Several other VOCs (including cis 1,2-DCE that was detected at SV-9 at 4,500 ug/m^3 and at SV-10 at 4,500 ug/m^3) were detected above background concentrations in soil vapor samples across the Site; however, there are no regulatory standards established for the VOCs. Based on analytical results, the source of petroleum-related VOCs in soil vapor is attributed to historic releases of petroleum at the Site. Because chlorinated VOCs were not detected in Site soil or groundwater, the identified chlorinated soil vapor contamination is likely attributed to the up gradient and off-site drycleaner.

Sufficient analytical data was gathered during the RI to understand the extent and nature of onsite contamination and to develop a remedy for the Site. The selected remedy and appropriate alternatives are described and evaluated in accordance with NYS BCP guidelines in this RAWP. The selected remedy addresses historical fill impacted with SVOCs and metals, groundwater impacted with VOCs, the potential for soil vapor intrusion, and the removal and closure of USTs.

2.2 Geological Conditions

Provided below is a description of the stratigraphic layers and hydrogeology observed in the Site subsurface. Three site-specific geologic units were described the RI. These units are listed in depth order (shallow to deep):

- Historic fill
- Silty–Sand and Sand Layers
- Bedrock

2.2.1 Historic Fill

A layer of urban fill ranging from about 1 to 9 feet was encountered across the Site. This layer generally consisted of varying amounts of sand and gravel with brick, coal fragments, wood, glass, asphalt, metal, ceramics, and concrete.

2.2.2 Silty-Sand and Sand Layers

A layer of native, brown, silty-sand and sand with varying amounts of fine gravel was encountered underlying the historical fill and extended to at least 20 feet bgs.

2.2.3 Bedrock

Bedrock was not encountered during the RI; however, bedrock is estimated to be at depths of approximately 140 feet bgs according to the USGS Bedrock and Engineering Geologic Maps. According to the USGS Bedrock and Engineering Geologic Maps of Bronx County and Parts of New York and Queens Counties, New York, dated 1992, the Site is underlain by Middle Ordovician to Lower Cambrian-Ordovician Hartland Formation, which generally consists of muscovite-biotite-quartz schist with minor garnet.

2.2.4 Hydrogeology

Synoptic groundwater level measurements were collected during the RI on October 6, 2015. Based on the gauging event, groundwater underlying the Site ranged from about 9.5 to 13.4 feet bgs. The groundwater elevation is highest in the northern portion of the Site and decreases radially toward the southern portion of the Site. Regional groundwater is presumed to flow west-southwest towards the Bronx River. Groundwater elevations are presented in Table 1 of the RIR, and a groundwater isocontour map based on the October 6, 2015 groundwater gauging event is presented as Figure 3 of the RIR. The isocontour map indicates groundwater flow to the south.

2.3 Contaminant Conditions

2.3.1 Conceptual Site Model

A conceptual site model has been developed based on the findings of the RI. The purpose of the conceptual site model is to develop a simplified framework for understanding the distribution of impacted materials, potential migration pathways, and potentially complete exposure pathways, as discussed below.

Potential Sources of Contamination

Potential sources of contamination at the Site have been identified in Section 1.4 and are based on investigations completed for the Site. The potential sources of contamination were identified as historic use of the Site, USTs, urban fill, and an off-site chlorinated soil vapor source.

Exposure Media

The impacted media includes soil, groundwater, and soil vapor. Soil has been impacted by former filling station and auto repair operations and by the nature of the historical fill itself. Analytical data indicates that the historical fill and native material at the Site contains VOCs, SVOCs, and metals. In addition, groundwater and soil vapor were likely impacted by releases of petroleum from onsite USTs utilized during the former filling station operations. During Langan's January 2015 Phase I ESA, an off-site drycleaner was identified approximately 93 feet northwest and hydraulically up gradient of the Site. This drycleaner was identified as 4706 White Plains Road and has been operating since at least 1986. Because chlorinated VOCs were not detected in Site soil and groundwater, the identified chlorinated soil vapor contamination is likely attributed to the off-site drycleaner or another off-Site source.

Receptor Populations

The Site is currently surrounded by a locked perimeter fence and buildings are currently vacant and locked, preventing public access; therefore, human receptors are limited to occasional site visitors and workers involved in pre-development (e.g., investigation) activities. During site development, human receptors limited to construction and renovation workers, authorized guests visiting the Site and the public adjacent to the Site. Under future conditions, potential receptors will include residential tenants, retail space tenants, office space tenants, parking garage workers and tenants, and maintenance workers.

2.3.2 Description of Areas of Concern

2.3.2.1 AOC-1: Historical Site Use

AOC 1 represents the historical use of the Site for auto repair and gasoline fueling purposes since at least 1935. Petroleum-like impacts; including odors, staining, and/or PID readings above background levels, were apparent in borings SB07, SB08, SB09, SB10, SB11, SB12, SB13, SB16, SB17, SB19, SB20, SB22, SB23, SB27, and SB29. The borings defined range across the Site; however, they are primarily focused on the northern portion of the Site near the former gasoline filling station and automobile repair shop. PID readings ranged from 0 to 3,380 ppm in impacted material, with the highest reading recorded in SB19. Evidence of petroleum-impacted material was greatest in the northern and western portions of the Site (in the vicinity of the former gasoline filling station and automobile repair shop), and decreased to the south and east. The vertical extent of petroleum-impacted material is anticipated to extend to depths ranging from 1 to 20 feet bgs. VOCs, SVOCs, and metals were detected above Part 375 Unrestricted Use and Restricted-Residential Use SCOs across the Site.

PID readings taken from the monitoring well headspace prior to sampling ranged from 0 to 1,831 ppm during the RI. LNAPL was observed in monitoring well MW29 at approximately 1 ¾ inches thick. A fingerprint analysis, EPA method 8015D, completed on the LNAPL indicated that the pattern resembled a degraded fuel oil (finger print analysis reporting can be found in Appendix I of the RIR). VOCs, SVOCs, and metals were detected at concentrations exceeding their respective TOGS Class GA AWQS in groundwater samples collected from AOC-1 across the Site.

Petroleum- and solvent-related VOCs were detected in soil vapor across the Site. Methylene chloride, TCE, and PCE were detected at elevated concentrations in multiple soil vapor samples including SV01, SV04, SV07, SV08, and SV10. VOC concentrations are highest in the northern portion of the Site in the vicinity of the former USTs; however, VOCs were detected across the Site. Total VOCs in soil vapor sample SV02 were observed to be 3,900,750 µg/m^3 with a concentration of n-hexane estimated by the laboratory to be 3,000,000 µg/m^3. Due to the abnormally high concentration of n-hexane, the known volatility and breakdown of the compound in the environment, and the use of n-hexane in laboratories for decontamination purposes, Langan assumes the concentration of n-hexane to be a laboratory artifact and not indicative of Site conditions. Several other VOCs were detected in soil vapor samples above background concentrations; however, there are no regulatory standards established for these compounds.

2.3.2.2 AOC-2: Gasoline USTs and Open Spill Case No. 1214956 on Former Lot 62

AOC 2 represents the location of up to two closed in-place gasoline USTs and the open NYSDEC Spill Case No. 1214956 in the eastern area of former lot 62. Petroleum-like impacts, including either odors, staining, PID readings above background levels, or a combination of the three, were apparent in borings SB09, SB11, SB12, SB17, and SB23. PID readings ranged from 0.0 to 2,400 ppm in impacted material, with the highest reading recorded in SB09. Petroleum-impacted soil appeared to extend into the groundwater table and ranged in depths ranging from about 1 to 20 feet bgs. Petroleum-related VOCs, SVOCs, and metals were detected above Part 375 Unrestricted Use and Restricted-Residential SCOs in the area of AOC-2.

PID headspace readings taken from the monitoring wells ranged from 11 to 104 ppm. VOCs were detected above laboratory reporting limits but below the TOGS Class GA AWQS within AOC-2 in groundwater samples collected as part of the RI.

Petroleum and solvent related VOCs were detected in soil vapor at AOC-2. Several petroleum and solvent related VOCs were detected in soil vapor sample SV03 above background concentrations; however, there are no regulatory standards are established for these compounds.

2.3.2.3 AOC-3: Suspect UST in Northern Corner of Former Lot 62

AOC 3 represents the location of a suspect UST approximately 550-gallons in size in the northwest corner of former lot 62. Petroleum-like impacts, including either odors, staining, PID readings above background levels, or a combination of the three, were apparent in borings SB08, SB09, SB11, SB19, and SB20. PID readings ranged from 0 to 3,380 ppm in impacted material, with the highest reading recorded in SB19. Petroleum-impacted soil appeared to extend into the groundwater table and ranged in depths ranging from about 1 to 20 feet bgs. VOCs and metals were detected above Part 375 Unrestricted Use and Restricted-Residential SCOs in the area of AOC-3.

PID headspace readings ranged from 0 to 1,594 ppm at monitoring wells MW08, MW11, and MW19. Petroleum-related VOCs were detected at concentrations exceeding their respective TOGS Class GA AWQS in groundwater samples collected from AOC-3 during the RI. The following VOCs exceeded TOGS Class GA AWQS in AOC-3 groundwater samples:

- 1,2,4-trimethylbenzene
- 1,3,5-trimethylbenzene
- benzene
- ethyl benzene
- isopropylbenzene
- n-propylbenzene
- o-xylene
- p- & m- xylene
- p-isopropyltoluene

- sec-butylbenzene
- toluene
- total xylenes

Petroleum-related VOCs were detected in soil vapor at SV02. Multiple petroleum-related VOCs were detected in soil vapor samples above background concentrations; however, there are no regulatory standards established for these compounds.

2.3.2.4 AOC-4: Suspect UST along Western Edge of Former Lot 65

AOC 4 represents the location of a suspect UST along the western edge of former Lot 65. Petroleum-like impacts, including odors, staining, and PID readings up to 2,500 ppm were observed in soil boring SB22 and petroleum-like odors were observed in soil boring SB07. Multiple VOCs were detected in soil boring SB22 exceeding the Unrestricted Use and Restricted-Residential SCOs at depths ranging from 8 feet to 11 feet bgs. The metals copper, lead, mercury, and zinc were detected exceeding the Unrestricted Use and Restricted-Residential SCOs in soil boring SB07 at depths ranging from two to three feet bgs.

PID headspace readings at MW07 were observed to be 45.7 ppm. Petroleum-related VOCs including o-xylenes, p- & m- xylenes, and total xylenes, and the metals manganese and sodium were detected above the TOGS Class GA AWQS at MW07.

During the RI, TCE was detected at a concentration of 170 µg/m^3 in soil vapor sample SV01. Multiple petroleum-related VOCs were detected above background concentrations at SV01; however, there are no regulatory standards established for these compounds.

2.3.2.5 AOC-5: Former Fuel Oil AST and Sump Located in the Basement of Former Lot 1

AOC-5 represents a brick-lined floor sump under a 275-gallon heating oil AST located in the basement of the onsite building located at former lot 1. PID readings up to 68.1 ppm were observed in soil boring SB13. The metals hexavalent chromium, trivalent chromium, copper, and lead were detected at concentrations exceeding the Unrestricted Use SCOs at depths ranging from 9 to 15 feet bgs at soil boring SB13.

During the RI, the metals magnesium and sodium were detected in monitoring well MW13 at concentrations exceeding the TOGS Class GA AWQS.

Multiple petroleum-related VOCs were detected above background concentrations at SV05; however, there are no regulatory standards established for these compounds.

2.3.3 Nature and Extent of Contamination

This section evaluates the nature and extent of soil, groundwater and soil vapor contamination at the Site.

2.3.3.1 Soil

VOCs were detected at concentrations exceeding Unrestricted Use SCOs and Restricted-Residential SCOs in 5 of 23 soil borings. Compounds that were detected above Restricted-Residential Use SCOs are in **bold**. The COCs include:

- **1,2,4-trimethylbenzene**
- **1,3,5-trimethylbenzene**
- acetone
- benzene
- **ethyl benzene**
- methylene chloride
- n-propylbenzene
- **toluene**
- **total xylenes**

VOC impacts were primarily found in soil borings SB08, SB09, SB19, and SB22, which are located near the former gasoline filling station and automobile repair shop. VOC impacts were found to exist in soil samples collected at depths ranging from 4.5 to 14 feet bgs; however, the majority of the VOCs detected were found at depths ranging from 8 to 11 feet bgs, which is in the vicinity of the groundwater interface.

SVOCs were detected at concentrations exceeding Unrestricted Use SCOs in 3 of 23 soil borings. Compounds that were detected above Restricted-Residential Use SCOs are in **bold**.

The COCs include:

- **benzo(a)anthracene**
- **benzo(a)pyrene**
- **benzo(b)fluoranthene**
- **dibenzo(a,h) anthracene**
- **indeno(1,2,3-cd)pyrene**
- dibenzo(a,h)anthracene
- **Chrysene**

The SCOs for these compounds range from 0.33 to 3.9 ppm; the maximum concentration detected was 3.73 ppm compared to a standard of 1.0 ppm for benzo(a)anthracene. SVOC exceedances were generally detected at concentrations typical of New York City urban fill throughout the Site.

Metals were detected at concentrations exceeding Unrestricted Use SCOs in 13 of 23 soil borings. Compounds that were detected above Restricted-Residential Use SCOs are in **bold**. The COCs include:

- **barium**
- hexavalent chromium
- trivalent chromium
- **copper**
- **lead**
- mercury

- nickel
- selenium
- zinc

Metals exceedances are ubiquitous and generally detected at concentrations typical of New York City urban fill throughout the Site.

PCB or pesticide exceedances were not identified in soil during the RI.

2.3.3.2 Groundwater Contamination

VOCs were detected at concentrations exceeding the TOGS AWQS criteria in 4 of 8 monitoring wells. The COCs include:

- 1,2,4-trimethylbenzene
- 1,3,5-trimethylbenzene
- benzene
- ethyl benzene
- isopropylbenzene
- MTBE
- n-propylbenzene
- o-xylene
- p- & m- xylenes
- p-isopropyltoluene
- sec-butylbenzene
- toluene
- total xylenes

The VOCs detected at concentrations above the TOGS AWQS criteria are generally located on the western and northwester portion of the Site in the vicinity of, and hydraulically down gradient of, the former USTs at monitoring wells MW07, MW08, and MW19. The VOC MTBE was detected in groundwater above the TOGS AWQS in monitoring well MW16, which is located on the southern portion of the Site, hydraulically down gradient of the former USTs.

Metals including magnesium, manganese, and sodium were detected in groundwater at concentrations above the TOGS AWQS criteria at monitoring wells MW07, MW11, MW13, MW15, MW16, and MW17, which are located throughout the Site. Concentrations of total metals detected in groundwater are similar to the concentrations of dissolved metals in groundwater. Metals in the groundwater likely arise from the quality of the fill material and are related to regional groundwater quality.

LNAPL was detected in monitoring well MW29, located in the central western portion of the Site. Due to the presence of LNAPL, groundwater in this well was not sampled. PID readings from the headspace of MW29 were observed to be 0.0 ppm. A fingerprint analysis was completed on the LNAPL; results indicated that the pattern resembles a degraded fuel oil.

SVOC, PCB, or pesticide exceedances were not identified in groundwater during the RI.

2.3.3.3 Soil Vapor Contamination

Total VOCs in the subsurface soil vapor samples ranged from 2,095 µg/m^3 at SV07 to 3,900,750 µg/m^3 at SV02. SV02 was found to have a concentration of 3,000,000 µg/m^3 of n-hexane. Due to the abnormally high concentration of n-hexane, the known volatility and breakdown of the compound in the environment, and the use of n-hexane in laboratories for decontamination purposes, Langan assumes the concentration of n-hexane to be a laboratory artifact and not indicative of Site conditions. VOC concentrations in soil vapor are greatest in the northern portion of the Site in the vicinity of the former USTs; however, VOCs were detected across the entire Site. The source of petroleum-related VOCs in soil vapor is primarily due to historic releases of petroleum at the Site. Because chlorinated VOCs were not detected in Site soil and groundwater, the identified chlorinated soil vapor contamination is likely attributed to the up gradient and off-site drycleaner.

2.4 Qualitative Human Exposure Assessment

To evaluate contaminant fate and transport and potential human exposure risk, this section discusses identified receptor populations and exposure pathways and provides a human health exposure assessment. A qualitative human health exposure assessment for the Site was initially presented in the January 2016 RIR.

2.4.1 Potential Exposure Pathways – On-site

2.4.1.1 Current Conditions

Contaminant sources include historic fill with varying concentrations of VOCs, SVOCs, and metals, several USTs, petroleum compounds in soil, petroleum compounds and metals in groundwater, and soil vapor impacted with varying concentrations of petroleum-related VOCs and chlorinated VOCs.

Contaminant release and transport mechanisms include contaminated soil transported as dust and volatilization of contaminants from the soil and groundwater matrices to the soil vapor phase. Under current conditions, the likelihood of exposure to humans is moderate. The potential exposure to dust from contaminated soil is limited by the site cover, which consists of a concrete building slab, and asphalt parking and driveways. Potential dust generation could exist in and around some sparsely vegetated areas (accounting for approximately 2,035 SF of the Site). The potential exposure risk is currently avoided or minimized by limiting Site access to only authorized guests via a Site wide perimeter fence with locking entrance gate, and by following appropriate health and safety and vapor and dust suppression measures during any intrusive activities that may occur prior to remedial action.

In accordance with a Construction Health and Safety Plan (CHASP) and Community Air Monitoring Plan (CAMP), measures such as conducting an air-monitoring program, donning PPE, and applying vapor and dust suppression measures to prevent off-site migration of contaminants during construction will be implemented. Such measures would prevent completion of these potential exposure pathways.

2.4.1.2 Construction/Remediation Condition

Construction and remediation may result in potential exposures to contaminant of concern (COCs) in the absence of a Construction Health and Safety Plan (CHASP) and a Community Air Monitoring Plan (CAMP). Soil contains VOCs, SVOCs, and metals at concentrations that exceed Unrestricted and/or Restricted-Residential Use SCOs. Construction and remediation will include construction of a concrete cap (i.e., building slab) or other impermeable barrier, a two foot thick clean soil cap at landscaped areas, and a system to address soil vapor contamination. This scenario presents the potential for exposure of soil COCs to construction workers via dermal absorption, ingestion, and inhalation of particulate matter. In the absence of a CAMP, activities may result in potential exposure to the public adjacent to the Site through potential generation and off-site migration of dust containing Site COCs.

Site groundwater contains VOCs, SVOCs, and metals at concentrations that exceed their respective Class GA AWQS. Groundwater is anticipated to be encountered during construction as proposed Site excavation activities are anticipated to reach below the Site groundwater elevation. In the absence of a CHASP, this scenario presents the potential for exposure of groundwater COCs to construction workers via dermal absorption and ingestion. This temporary potential exposure pathway can be mitigated by applying appropriate health and safety measures, such as monitoring the air for organic vapors, maintaining site security, and wearing the appropriate personal protective equipment.

Soil vapor results indicated the presence of petroleum- and chlorinated-related VOCs. In the absence of a CHASP, workers may be exposed to soil vapor COCs via inhalation during construction. In the absence of a CAMP, activities may also result in potential exposure to the public adjacent to the Site through volatilization of vapors into the air and potential off-site migration.

2.4.1.3 Proposed Future Conditions

The proposed renovation will include a parking garage and multi-story mixed use building and the entire Site will be capped with a concrete building slab and foundation and a 2 foot thick clean soil cap at landscaped areas. These barriers will prevent direct human exposure to impacted soil and groundwater that may be left in place.

In the absence of engineering controls (e.g., cap, vapor barrier), the presence of VOCs in the soil, groundwater, and soil vapor creates potential for VOCs to volatilize and accumulate in the building, completing a potential exposure pathway for future users. Routes of potential exposure may include inhalation of vapors that accumulate in the building. Since the cellar level of the building will be primarily used as a parking garage, NYC mechanical code ventilation requirements will mitigate any soil vapor intrusion, thereby eliminating an exposure pathway for soil vapor into the cellar level. In addition to the venting system, the entire basement foundation will be wrapped in a vapor/water proofing barrier.

Because the Site and surrounding areas obtain their drinking water supply from surface water reservoirs located upstate and not from groundwater, there is not a complete exposure pathway for users of the proposed building to groundwater; groundwater is not intended for consumption.

2.4.2 Potential Exposure Pathways – Off-Site

In the absence of a CAMP, soil has the potential to be transported off-site by wind in the form of dust or on the tires of vehicles or equipment leaving the Site during renovation and construction. Metal impacts to groundwater are considered a regional problem; however, VOC and SVOC impacts to the groundwater are attributed to the former filling station operations at the Site.

The potential off-site migration of COCs is not expected to result in a complete exposure pathway for current, construction and remediation, or future conditions for the following reasons:

- Air monitoring will be conducted for particulates (i.e., dust) and VOCs during intrusive activities as part of CAMP. Dust and/or vapor suppression techniques will be employed to limit potential for off-site migration of soil and vapors.
- Vehicle tires and undercarriages will be washed as necessary prior to leaving the Site to prevent tracking material off-site.
- The Site is located in a highly urbanized area with continuous impervious (i.e. concrete) surface covering.
- Groundwater in New York City is not used as a potable water source.

2.4.3 Evaluation of Human Health Exposure

Based upon the conceptual site model and the review of environmental data, complete on-site exposure pathways appear to be present, in the absence of institutional and engineering controls, in current, renovation and construction, and future conditions. The complete exposure

pathways indicate there is a risk of potential exposure to humans from Site COCs via exposure to soil, groundwater, and soil vapor if institutional and engineering controls are not implemented.

Complete exposure pathways have the following five elements: 1) a contaminant source; 2) a contaminant release and transport mechanism; 3) a point of exposure; 4) a route of exposure; and 5) a receptor population. A discussion of the five elements comprising a complete pathway as they pertain to the Site is provided below.

2.4.3.1 Current Conditions

Contaminant sources include historic fill with varying concentrations of VOCs, SVOCs, and metals, several USTs, petroleum compounds in soil, petroleum compounds and metals in groundwater, and soil vapor impacted with varying concentrations of petroleum-related VOCs and chlorinated VOCs.

Contaminant release and transport mechanisms include soil transportation as dust and volatilization of contaminants from the groundwater matrix to the soil vapor phase, exposure and release of groundwater from the subsurface and existing soil vapor contaminants. Under current conditions, the likelihood of exposure to humans is limited, as limited areas of the site allow for contact with soil, soil is not currently disturbed except during any future investigation that may occur prior to remedial action, and groundwater is not currently accessible. In addition, the Site perimeter fence is currently locked and maintained, the Site buildings are kept locked and activity is limited to only authorized guests. All five elements exist and the potential for completed exposure pathways is present; however, the potential exposure risk can be avoided or minimized by limiting access to only authorized guests, and applying appropriate health and safety measures during any future intrusive activities that may occur prior to remedial action, which include: monitoring the air for organic vapors and dust, using vapor and dust suppression measures, maintaining site security, and wearing the appropriate personal protective equipment (PPE).

In accordance with a CHASP and a CAMP, measures such as conducting an air-monitoring program, donning PPE, and applying vapor and dust suppression measures to prevent off-site migration of contaminants during renovation will be implemented. Such measures would prevent completion of these potential migration pathways.

2.4.3.2 Construction/Remediation Activities

During construction and remediation, points of potential exposure include disturbed and exposed soil, dust, and organic vapors generated during construction activities, disturbed and exposed groundwater, and soil vapor mitigation system installation. Routes of potential

exposure include ingestion and dermal absorption of exposed soil and groundwater, inhalation of organic vapors arising from soil and groundwater, and inhalation of dust arising from exposed soil. The receptor population includes the construction workers and, to a lesser extent, the public adjacent to the Site. All five elements exist and the potential for completed exposure pathways is present; however, the risk can be avoided or minimized by applying appropriate health and safety measures, which include monitoring the air for organic vapors and dust, using vapor and dust suppression measures, maintaining site security, and wearing the appropriate PPE.

In accordance with a CHASP and a CAMP, measures such as conducting an air-monitoring program, donning PPE, and applying vapor and dust suppression measures to prevent off-site migration of contaminants during renovation will be implemented. Such measures would prevent completion of these potential migration pathways.

2.4.3.3 Proposed Future Conditions

Contaminant release and transport mechanisms include soil transported as dust and volatilization of contaminants from the soil or groundwater matrices to the soil vapor phase. If institutional and/or engineering controls are not implemented, points of potential exposure include ingestion and dermal absorption of contaminated soil, inhalation of dust arising from contaminated soil, and inhalation of organic vapors arising from contaminated soil and groundwater entering the building. The receptor population includes residential tenants, retail space tenants, office space tenants, parking garage workers and tenants, and maintenance workers. The possible routes of potential exposure will be mitigated by proper installation of a concrete building slab and the 2 foot thick certified clean soil cover, and soil vapor mitigation measures (e.g., vapor barrier, cellar ventilation).

2.4.4 Human Health Exposure Assessment Conclusions

The following conclusions were developed from this human health exposure assessment:

1. Human exposure to Site contaminants is limited under current conditions due to the Site surface cover, and access to the Site being limited to only authorized guests via a Site wide perimeter fence with a locking entrance gate.
2. In the absence of institutional and engineering controls, there is a moderate risk of potential exposure during construction and remediation activities. This risk can be avoided or minimized by following the appropriate health and safety, PPE, vapor and dust suppression, and Site security measures.
3. The existence of a complete exposure pathway for Site contaminants to human receptors during proposed future conditions is unlikely. The potential pathways for

soil vapor intrusion into the building will be addressed through the construction of a concrete building slab and use of soil vapor mitigation measures (e.g., vapor barrier, cellar ventilation).

4. It is unlikely that a complete exposure pathway exists for the migration of site contaminants to off-site human receptors for current, construction phase, or future conditions. Monitoring and control measures would be used during construction to prevent completion of this pathway. Under future conditions, the site will be remediated and institutional and engineering controls will be implemented to prevent completion of this pathway.

2.5 Remedial Action Objectives

Based on the results of the Remedial Investigation, the following Remedial Action Objectives (RAOs) have been identified for this Site.

2.5.1 Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of, or exposure from, contaminants volatilizing from soil.

RAOs for Environmental Protection:

- Prevent migration of contaminants that would result in groundwater contamination.

2.5.2 Groundwater

RAOs for Public Health Protection:

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of, volatiles from contaminated groundwater..

RAOs for Environmental Protection:

- Restore ground water aquifer, to the extent practicable, to pre-disposal/pre-release conditions.

Remove the source of ground water contamination 2.5.3 Soil Vapor

RAOs for Public Health Protection:

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

3.0 DESCRIPTION OF REMEDIAL ACTION PLAN

The BCP requires the analysis of at least two remedial alternatives when the chosen option is not a Track 1 cleanup. This section presents an analysis of two remedial actions that can potentially achieve all remedial action goals and objectives under the BCP. The proposed SCOs will be the generic Track 1 Part 375 Unrestricted Use SCOs for Alternative I and Track 4 site-specific SCOs for Alternative II.

This section is organized as follows:

- Section 3.1 describes the remedial goals and objectives
- Sections 3.2 and 3.3 provide technical descriptions of:
    - Alternative I, a BCP Unrestricted Use Track 1 concept
    - Alternative II, a BCP Site Specific Track 4 concept
- Section 3.4 evaluates the remedial alternatives based on the BCP Remedy Selection Evaluation Criteria
- Section 3.5 discusses the recommended remedial alternative

3.1 Standards, Criteria, Guidance, and Remedial Action Objectives

In accordance with ECL § 27-1415 and DER-10, the objectives of the remedial action are to: (1) reduce the concentrations of COCs at the Site to meet those levels that will protect public health and the environment, and (2) isolate the Site from migration of contaminated groundwater and soil vapor from potential on and off-–site sources. In accordance with DER-10, the Volunteer will have no remedial responsibilities with respect to groundwater contamination migrating under the Site from an off-site source; however, remedial alternatives will be developed for such a case that eliminate or mitigate on-site environmental impacts or human exposures, to the extent feasible, resulting from the off-site contamination entering the Site. Where identifiable sources of contamination are found on the Site, the sources will be removed or treated to the greatest extent feasible.

Also in accordance with DER-10, the Remedial Action Objectives (RAO) for this Site are defined as medium-specific objectives for the protection of public health and the environment and are developed based on contaminant-specific standards, criteria, and guidance (SCGs). The SCGs for the Site include:

- NYSDEC – Brownfield Cleanup Program Guide (draft 2004);

- NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (2010);
- NYSDEC TAGM No. 4031– Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Waste Sites (1989);
- NYSDEC TOGS 1.1.1 – Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (1998);
- NYSDEC TOGS 5.1.8 – New York State Stormwater Management Design Manual (2008);
- NYSDEC TOGS 5.1.10 – New York Standards and Specifications for Erosion and Sediment Controls (2005);
- NYSDOH – Guidance for Evaluating Soil Vapor Intrusions in the State of New York (2006);
- New York State Codes, Rules and Regulations (NYCRR) Title 6 Part 364 – Waste Transporter Permits;
- 6 NYCRR Part 370 – Hazardous Waste Management System;
- 6 NYCRR Part 375 – Environmental Remediation Program (December 2006);
- 6 NYCRR Part 376 – Land Disposal Restrictions;
- 6 NYCRR Part 750 – State Pollutant Discharge Elimination System (SPDES) Regulations;
- Code of Federal Regulations (CFR) Title 29 Part 1910.120 - Hazardous Waste Operations and Emergency Response Standard;
- CFR Title 29 Part 1926 - Safety and Health Regulations for Construction; and
- NYSDEC CP-51 - Soil Cleanup Guidance (2010).

In addition to the SCGs listed above, the RAOs were developed from information derived from previous environmental investigations referenced in Section 1.4, including identified contaminated media and potential public health and environmental exposure pathways, which were summarized in Section 2.4. The RAOs for this RAWP are listed in section 2.5.

3.2 Technical Description of Alternative I

3.2.1 Summary of Alternative I – Track 1 Remedy

Alternative I, a Track 1 remedy, would include the following tasks:

- Excavation and off-site disposal of soils exceeding Unrestricted Use SCOs and grossly-impacted soil. The existing Site structures and concrete/asphalt surface cover will be demolished to facilitate excavation;
- Removal of remaining petroleum storage tanks and closure of NYSDEC Spill No. 12-14956;
- Dewatering fluids will be treated as necessary prior to discharge to the municipal sewer system;
- Collection and analysis of end point confirmation soil samples to confirm Unrestricted Use SCOs have been achieved. Over-excavation would be required as necessary to meet SCOs;
- Backfilling of excavated areas to development grade with certified-clean material (meeting Unrestricted Use SCOs), recycled concrete aggregate (RCA) from a permitted or registered source, or virgin, native crushed stone;
- Installation of a vapor barrier as a precaution to protect against potential VOC intrusion from off-site sources into the Site building;
- Any enclosed subgrade parking garages that are included for any future on-site building(s) are required by the New York City Mechanical Code to provide ventilation. The parking garage ventilation system will be consistent with New York City Mechanical Code for a ventilated parking garage.
- Installation of a cellar level ventilation system in areas of the building cellar that will not be used as a ventilated parking garage and are not in the water table, as a contingency measure to protect against VOC intrusion.. The cellar ventilation system will be consistent with New York City Mechanical Code for a ventilated parking garage. Note that the cellar level ventilation system could only operate for a maximum of 5 years to retain Track 1 status;
- Development and execution of plans for the protection of on-site workers, community, and environment during remediation and construction activities.
- Short-term (less than 5 years from date of issuance of Certificate of completion) Institutional Controls in the form of a Site Management Plan and Environmental Easement to ensure operation of the cellar-level ventilation system.

The site fronts on the existing NYCTA #2 rail corridor and station platform. As such, the project requires coordination and approval of the authorities operating these subway lines as per the NYC Building Code. The requirements for each of the above tasks are described below. The Alternative I remedial excavation extent is shown on Figure 5. The remedial excavation extent is based on data presented in the January 2016 RI Report.

3.2.2 Fill and Soil Removal

Exceedances of Part 375 Unrestricted Use SCOs were reported in historic fill and silty-sand layers throughout the Site to depths of up to 14 feet bgs. Additionally, petroleum-impacted material was identified through field observations (staining, odor, and elevated PID readings) and analytical results in connection with the on-site USTs. Evidence of petroleum-impacted material was greatest in the northern and western portions of the Site (in the vicinity of the former gasoline filling station and automobile repair shop), and decreased to the south and east. The vertical extent of petroleum-impacted material is anticipated to extend to depths ranging from 1 to 20 feet bgs.

To achieve Track 1, soil removal and disposal is estimated to extend to approximately 15 feet bgs within the proposed building footprint, to approximately 5 feet bgs in the area outside the proposed building footprint, and to approximately 20 feet bgs in petroleum-impacted areas (see Figure 5). Although the maximum excavation depth to achieve Track 1 SCOs is proposed to be upwards 20 feet bgs, Langan anticipates remedial excavations may extend deeper than 20 feet due to visual and olfactory observations, including elevated PID readings and petroleum odors, observed during the RI. The estimated volume of fill and soil requiring removal and off-site disposal for a Track 1 cleanup is approximately 15,600 cubic yards. This estimate is based on vertical extents of impacted soil as identified through field observations (staining, odor, and elevated PID readings) and laboratory analytical results from previous Site investigations as presented in the RIR. Additionally, construction demolition and debris associated with the building and concrete slab demolition will be removed and disposed offsite. The estimated Track 1 remedial extent is shown on Figure 5. The final excavation depth would extend below the water table and require extensive measures (e.g., underpinning, sheeting) to protect buildings and roadways immediately adjacent to the Site. The excavation support and controls for the Alternative I concept would include a combination of sheeting and soldier beam and lagging, and most likely dewatering with a well point system.

Prior to off-site disposal, a waste characterization will be performed. Waste characterization sampling will be performed in-situ prior to remediation or from material stockpiles during remediation. Material streams will be kept separate and the contractor will select disposal facilities permitted to accept the various waste streams. Excavated material will be removed from the Site and disposed at an appropriate waste disposal facility permitted to accept the

material. Excavation will not be conducted in areas where removal of soil is unsafe and will threaten the structural integrity of the buildings and retaining wall that border the Site.

3.2.3 Petroleum Tank Removal

Based on government records and previous investigations, four USTs exist at the Site, two known USTs and two suspect USTs. Two known closed in-place USTs exist in the eastern area of former lot 62, one suspect UST approximately 550-gallons in size exists in the northwest corner of former lot 62, and one suspect UST exists along the western edge of former Lot 65. During remedial action, the four USTs that exist at the Site, and any previously unknown USTs that may be encountered, will be decommissioned in accordance with 6NYCRR Part 613.9, NYSDEC Commissioner's Policy (CP) 51, and other applicable NYSDEC UST closure requirements. Petroleum-impacted soil will be excavated and disposed off-site. UST closure documentation, such as contractor affidavits, bills of lading for sludge disposal, and tank disposal receipts, will be provided as appendices in the FER (Section 10.0). Depending on the type, number, and capacity of discovered the tanks, the NYSDEC PBS registration requirements will be complied with as necessary.

3.2.4 Excavation Dewatering and Treatment

Construction dewatering of contaminated groundwater will be required to reach the proposed excavation depths. Prior to mobilization, the contractor will follow the New York City Department of Environmental Protection (NYCDEP) "Procedure for Obtaining Letter of Approval for Groundwater Discharge to Sanitary or Combined Sewer." Based on the NYCDEP's effluent limitations and Site groundwater data, the contractor will be required to pre-treat dewatering fluids to reduce contaminant concentrations below NYCDEP effluent limitations prior to discharge. Pretreatment may include a settling tank, bag filters, carbon filtration, etc.. If the contractor will discharge more than 10,000 gallons per day, they will also have to obtain an NYCDEP Temporary Discharge of Groundwater into the City Sewer System Permit. Collected groundwater or rainwater will be discharged, as defined by the NYCDEP permit, into the New York City sewer system, via an entry point acceptable to the NYCDEP. The dewatering and treatment system will be designed by the contractor's New York State-licensed Professional Engineer.

3.2.5 Confirmation Soil Sampling

Per NYSDEC Department of Environmental Remediation (DER) policy, end point confirmation soil sample collection would be completed from the excavation base at a frequency of one sample per 900 square feet of floor area. Sidewall samples would not be collected, since the excavation would extend site-wide and excavation support (e.g., sheeting, lagging) or adjoining

building foundations would provide a barrier to collection of the sidewall samples. Based on these criteria, approximately 29 base confirmation samples, plus required QA/QC samples, would be collected. Confirmation soil samples would be analyzed for Part 375 VOCs, SVOCs, pesticides, PCBs, and metals by an NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory. Additional confirmation samples would be required if the initial confirmation samples fail to meet the SCOs and over-excavation is required. Over-excavation, as is practical, may be required to remove soil that does not comply with the SCOs and represents a source of groundwater or soil vapor contamination. If over-excavation is completed, additional confirmation samples would be required. No off-site excavation would be required.

3.2.6 Excavation Backfill

After excavation, the Site would be backfilled to the development grade. The quantity of off-site fill material required to be imported is estimated at 2,500 cubic yards. Backfill material would consist of certified clean soils meeting the Allowable Constituent Levels for Imported Fill or Soil for Restricted-Residential Uses (appendix 5 of DER 10) or other acceptable fill material such as virgin, native crushed stone from a quarry or RCA. The clean fill would be segregated at a source/facility that is free of environmental issues. Qualified environmental personnel would collect representative samples at a frequency consistent with DER-10. The samples would be analyzed for Part 375 VOCs (EPA Method 8260), SVOCs (EPA Method 8270), pesticides/PCBs (EPA Method 8082/8081) and metals by an NYSDOH ELAP-certified laboratory. Acceptable backfill material would not exceed Site SCOs.

3.2.7 Vapor Barrier

The potential exists for future migration of VOC-impacted groundwater and soil vapor to the Site from an off-site drycleaner identified approximately 93 feet northwest and hydraulically up gradient of the Site. To mitigate potential exposure, a vapor barrier will be installed under the future Site building. The vapor barrier will be a minimum 20 mil thickness, and installed as a continuous subslab membrane under slabs. The Remediation Engineer (RE) will oversee implementation and document operations. The installation of the vapor barrier is a contingency measure and is not considered an engineering control to address on-site contamination. We anticipate that the offsite contamination will be remediated within 5 years of obtaining the Certificate of Completion (COC) for a Track 1 remediation.

3.2.8 Vapor Mitigation System (Cellar Ventilation)

In addition to the vapor barrier, a cellar ventilation system consistent with code for a ventilated parking garage be will installed in the future Site building. The installation of a cellar ventilation system is considered a contingency measure for protection from off-site contamination.

The cellar level mechanical spaces or storage rooms should be ventilated consistent with code for a ventilated parking garage. The cellar ventilation requirements would not be required if the lowest level building use was a ventilated parking garage or the lowest level of foundation slab is in the groundwater table. We anticipate that the dry cleaner will be remediated within 5 years of obtaining the Certificate of Completion (COC) for a Track 1 remediation. We anticipate that the offsite contamination will be remediated within 5 years of obtaining the Certificate of Completion (COC) for a Track 1 remediation.

3.2.9 On-Site Worker, Public Health and Environmental Protection

A site-specific CHASP has been developed and will be enforced to protect on-site workers from accidents and the potential for acute and chronic exposures from the identified contaminated media. The CHASP is included as Appendix F. Public health would be protected by implementing and enforcing dust, odor, and organic vapor control as specified in Section 5.4.13, and monitoring procedures included in the CAMP. The CAMP would include continuous perimeter monitoring of dust and organic vapor utilizing DustTrak aerosol monitors and PIDs capable of recording data and calculating 15-minute averages. A field engineer, scientist, or geologist would monitor Site perimeters for visible dust and odors. The environment would be protected by implementing and enforcing the appropriate soil erosion prevention measures.

3.2.10 Institutional Controls/Engineering Controls

An environmental easement would be recorded referencing institutional or engineering controls (IC/EC) that are part of the selected remedy, which would be binding upon all subsequent owners and occupants of the property. The ICs would restrict the Site's use to restricted-residential, commercial and industrial uses, require implementation of the SMP and include notice-of-use restrictions of the Site's soil. The ECs would include the cellar-level ventilation system. The SMP would identify monitoring and maintenance requirements. In order to retain Track 1 status, the cellar ventilation system could operate for no more than 5 years after the date of the Certificate of Completion; otherwise, the site would revert to Track 2 status.

3.3 Technical Description of Alternative II

3.3.1 Summary of Alternative II – Track 4 Remedy

Alternative II, a Track 4 remedy, would be executed by accomplishing the following tasks:

- Excavation, as described herein, and off-site disposal of:
    - Grossly-impacted soil, as defined in 6 NYCRR Part 375-1.2. In the area of MW29, excavation will extend to a depth necessary to assure complete LNAPL removal.
    - Within the proposed building footprint, excavation to a depth of approximately 15 feet bgs to accommodate future building foundation components. The excavation is intended to achieve protection of groundwater soil cleanup objectives (PG-SCOs) for those contaminants found in on-site soil above the groundwater table smear zone and that exceed groundwater standards on-site, such as 1,2,4 trimethylbenzene, 1,3,5- trimethylbenzene, xylene, toluene, ethylbenzene and any other contaminants that meet the conditions. Residual contamination below the water table smear zone will be addressed by the proposed groundwater treatment remedial element. NYSDEC will evaluate endpoint sampling results in comparison to the PG-SCOs prior to the excavation being backfilled.
    - Within the proposed landscaped area, excavation to a depth of 2 feet bgs to accommodate the installation of a 2 foot thick certified clean soil cover.

  The existing Site structures and concrete/asphalt surface cover will be demolished and disposed offsite to facilitate excavation.
- Prior to off-site soil disposal, a waste characterization program will be performed in areas of proposed excavation and off-site disposal. Waste characterization will be performed in-situ prior to remediation or from material stockpiles during remediation;
- Removal of remaining petroleum storage tanks and closure of NYSDEC Spill No. 12-14956;
- Dewatering fluids will be treated as necessary prior to discharge to the municipal sewer system;
- Collection and analysis of endpoint soil samples to document residual soil conditions;
- In-situ treatment of the groundwater with the application of an oxidant (e.g., Oxygen Release Compound, or ORC®) to reduce residual VOC concentrations and post-remediation groundwater monitoring to document the effectiveness of the remedy;;
- Backfilling of excavated areas to development grade with clean material consisting of certified clean soils meeting the Allowable Constituent Levels for Imported Fill or Soil

for Restricted-Residential Uses (appendix 5 of DER 10), recycled concrete aggregate (RCA), or virgin crushed stone;

- Installation of a vapor barrier under the Site building to protect against VOC vapor intrusion into the Site building;
- The proposed subgrade parking garage will include proper ventilation as required by the New York City Mechanical Code;
- Installation of a cellar level ventilation system to protect against vapor intrusion in areas of the cellar that will not be used as a ventilated parking garage. The cellar ventilation system will be consistent with New York City Mechanical Code for a ventilated parking garage;
- Development and execution of a Health and Safety Plan and a Community Monitoring Plan for the protection of on-site workers, the general public, and the environment during remediation and construction activities;
- Installation of a site cover system consisting of the concrete foundation slab of the future building, concrete or asphalt driveway and sidewalks, and a demarcation layer and at least two feet of clean soil and topsoil or virgin crushed stone in any landscaped areas; and
- Implementation of long-term Institutional Controls in the form of an Environmental Easement and Site Management Plan.

The requirements for each of the above tasks are described below. The Alternative II remedial excavation extent is shown on Figure 6. The remedial extent is based on previous data collected at the Site.

3.3.3 Fill and Soil Removal

The soil/fill layer is impacted with VOCs, SVOCs, and metals, with impacts extending to depths of up to 14 feet bgs in multiple locations across the Site. Additionally, petroleum-impacted material was identified through field observations (staining, odor, and elevated PID readings) and analytical results in connection with the on-site USTs. Evidence of petroleum-impacted material was greatest in the northern and western portions of the Site (in the vicinity of the former gasoline filling station and automobile repair shop), and decreased to the south and east. The Track 4 remedy would include the removal off grossly-impacted soil encountered at the Site, as defined in 6 NYCRR Part 375-1.2. However, excavation to remove all impacted soil across the Site is not practical given the shallow groundwater table and risk associated with potentially compromising adjacent structures, while dewatering and implementing various support of excavation techniques (e.g., underpinning, sheeting). To achieve Track 4, soil

removal and disposal is roughly estimated to extend to approximately 15 feet bgs within the proposed building footprint and to approximately 2 feet bgs in the area outside the proposed building footprint (see Figure 6). The excavation is intended to achieve PG-SCOs for those contaminants found in on-site soil above the groundwater table smear zone and that exceed groundwater standards on-site, such as 1,2,4 trimethylbenzene, 1,3,5- trimethylbenzene, xylene, toluene, ethylbenzene and any other contaminants that meet the conditions. Residual contamination below the water table smear zone will be addressed by the proposed groundwater treatment remedial element. NYSDEC will evaluate endpoint sampling results in comparison to the PG-SCOs prior to the excavation being backfilled. In the area of MW29, the excavation will extend to a depth necessary to assure complete LNAPL removal. Actual excavation depths across the Site will depend on potential identification of additional source material via site observations.

The estimated volume of fill and soil requiring removal and off-site disposal for a Track 4 cleanup is approximately 13,300 cubic yards. Additionally, construction demolition and debris associated with the building and concrete slab demolition will be removed and disposed offsite. The final excavation depth of approximately 15 feet bgs would extend below the water table and require measures (e.g., underpinning, sheeting) to protect buildings and roadways immediately adjacent to the Site. The excavation support and controls for the Alternative II concept would include a combination of sheeting and soldier beam and lagging, and dewatering with a well point system.

Prior to off-site disposal, a waste characterization will be performed. Waste characterization sampling will be performed in-situ prior to remediation or from material stockpiles during remediation. Material streams will be kept separate and the contractor will select disposal facilities permitted to accept the various waste streams. Excavated material will be removed from the Site and disposed at an appropriate waste disposal facility permitted to accept the material. Excavation will not be conducted in areas where removal of soil is unsafe and will threaten the structural integrity of the buildings that border the Site.

3.3.4 Petroleum Tank Removal

Based on government records and previous investigations, four USTs exist at the Site, two known USTs and two suspect USTs. Two known closed in-place USTs associated with the open NYSDEC Spill Case No. 1214956 exist in the eastern area of former lot 62, one suspect UST approximately 550-gallons in size exists in the northwest corner of former lot 62, and one suspect UST exists along the western edge of former Lot 65. During remedial action the four USTs that exist at the Site, and any previously unknown USTs that may be encountered, will be decommissioned in accordance with 6NYCRR Part 613.9, NYSDEC Commissioner's Policy (CP) 51, and other applicable NYSDEC UST closure requirements. Petroleum-impacted soil will be

excavated and disposed off-site. UST closure documentation, such as contractor affidavits, bills of lading for sludge disposal, and tank disposal receipts, will be provided as appendices in the FER (Section 10.0). Depending on the type, number, and capacity of the tanks, the NYSDEC PBS registration requirements will be complied with as necessary.

3.3.5 Excavation Dewatering and Treatment

Construction dewatering of contaminated groundwater will be required to reach the proposed excavation depths. Prior to mobilization, the contractor will follow the New York City Department of Environmental Protection (NYCDEP) "Procedure for Obtaining Letter of Approval for Groundwater Discharge to Sanitary or Combined Sewer." Based on the NYCDEP's effluent limitations and Site groundwater data, the contractor will be required to pre-treat dewatering fluids to reduce contaminant concentrations below NYCDEP effluent limitations prior to discharge. Pretreatment may include a settling tank, bag filters, carbon filtration, etc.. If the contractor will discharge more than 10,000 gallons per day, they will also have to obtain an NYCDEP Temporary Discharge of Groundwater into the City Sewer System Permit. Collected groundwater or rainwater will be discharged, as defined by the NYCDEP permit, into the New York City sewer system, via an entry point acceptable to the NYCDEP. The dewatering and treatment system will be designed by the contractor's New York State-licensed Professional Engineer. As an alternate, the contractor may collect the water into a vessel for off-site disposal at a facility permitted to accept the dewatering fluids.

3.3.6 Documentation Soil Samples

Per NYSDEC DER policy, documentation soil sample collection would be completed from the excavation base at a frequency of one sample per 900 square feet of floor area and one sidewall sample for every 30 linear feet around the Site perimeter. Sidewall samples would not be collected to the north, east, and west of the proposed building, since the excavation would extend site-wide and excavation support (e.g., sheeting, lagging) or adjoining building foundations would provide a barrier to collection of the sidewall samples. Based on these criteria, approximately 29 base documentation samples, plus required QA/QC samples, would be collected. Documentation soil samples would be analyzed for the combined Part 375 and TCL/TAL listed VOCs, SVOCs, pesticides, PCBs, and metals. Excavation below 15 feet bgs is not required for the Track 4 remedy unless source material is present, given that engineering and institutional controls will be used to manage residual impacts. No off-site excavation will be required.

3.3.7 In-Situ Groundwater Treatment

A chemical oxidant (e.g., Oxygen Release Compound, or ORC®) would be applied to groundwater in the open excavation of the Site. The release of dissolved oxygen supports a number of biological oxidation pathways that would be expected to result in the breakdown of residual petroleum-related VOCs. The remedial action plan would include one application event, after which, the excavation would be backfilled with clean fill. The total amount of ORC® would be approximately 1,110 pounds based on a dosing rate of 0.1 pounds per square-foot.

3.3.8 Excavation Backfill

Following remedial excavation and in-situ groundwater treatment, the excavated area would be backfilled to development grade and to supplement grading around the building, as required. The quantity of off-site fill material required to be imported is estimated to be approximately 150 cubic yards. Backfill material would consist of certified clean soils meeting the Allowable Constituent Levels for Imported Fill or Soil for Restricted-Residential Uses (appendix 5 of DER 10) or other acceptable fill material such as virgin, crushed stone from a quarry or RCA from a NYSDEC-registered facility. Requirements for soil import sampling requirements will be in accordance with Section 5.4 (e) of DER-10. For material other than soil imported to the Site, requirements in DER-10 apply. Material may be imported without chemical testing for use as backfill beneath pavement, buildings or as part of the final cover, provided that it contains less than 10% by weight material passing through a No. 80 sieve and meets DER-10 requirements. The clean fill would be segregated at a source/facility that is free of environmental issues. Qualified environmental personnel would collect representative samples at a frequency consistent withCP-51/Soil Cleanup Guidance. The samples would be analyzed for Part 375 VOCs (EPA Method 8260), SVOCs (EPA Method 8270), pesticides/PCBs (EPA Method 8082/8081) and metals by an NYSDOH ELAP-certified laboratory. Only RCA from a NYSDEC registration facility will be imported and it will not be used in the upper 2 foot of any area that will have landscaping.

3.3.8 Post-Remediation Groundwater Monitoring

As part of the Site Management Plan (refer to Section 9.3), groundwater samples would be collected from the four wells to be installed following remediation. Three of the wells would be located offsite (within the sidewalk of the Site) and one well will be installed in the proposed landscaped area of the Site (see Figure 6). Following completion of RAWP implementation, quarterly groundwater monitoring would be implemented to document the effectiveness of the remedy. Groundwater would be sampled for one year (four monitoring events). The samples would be submitted to a NYSDOH ELAP-accredited laboratory for analysis of VOCs, SVOCs, and metals. The samples would be used to demonstrate a downward trend in groundwater

VOC concentrations. A Groundwater Monitoring Report would be provided to NYSDEC following each monitoring event.

3.3.9 Vapor Barrier

To mitigate potential exposure to VOCs identified in on-site soil vapor, a vapor barrier will be installed under the future Site building. The vapor barrier will be a minimum 20 mil thickness, and installed as a continuous subslab membrane under slabs.

3.3.10 Vapor Mitigation System (Cellar Ventilation System)

In addition to the vapor barrier, a cellar ventilation system consistent with code for a ventilated parking garage would be installed in areas of the cellar that will not be used as a ventilated parking garage. The cellar-level mechanical spaces or storage rooms will be ventilated consistent with code for a ventilated parking garage. The cellar level mechanical ventilation system would need to be listed as an Engineering Control and recorded in the Environmental Easement (Section 3.3.12).

3.3.11 On-Site Worker, Public Health and Environmental Protection

A Site-specific CHASP has been developed and will be enforced to protect on-site workers from accidents and the potential for acute and chronic exposures from the identified contaminated media. The CHASP is included as Appendix F. Public health will be protected by implementing and enforcing dust, odor, and organic vapor control as specified in Section 5.4.13, and monitoring procedures included in a site-specific CAMP. The CAMP will include continuous perimeter monitoring of dust and organic vapor utilizing DustTrak aerosol monitors and PIDs capable of recording data and calculating 15-minute averages. A field engineer, scientist, or geologist will monitor Site perimeters for visible dust and odors. The environment will be protected by implementing and enforcing the appropriate soil erosion prevention measures (see Sections 4.3.2 and 5.4.10).

3.3.12 Site Cover System

A Site cover system will be installed at the Site. The Site cover system will consist of the concrete foundation slab of the future building, concrete or asphalt driveway and sidewalks, and at least two feet of clean soil and topsoil (meets Unrestricted Use SCOs) or virgin crushed stone in any landscaped areas. The cover system also serves as an engineering control for the protection of human health by establishing an incomplete exposure pathway to residual Site soils. Where clean soil cover is used in landscaped areas, a demarcation layer (e.g., orange snow fencing) will be installed on top of the residual soil layer prior to placing the clean soil cap.

3.3.13 Institutional Controls/Engineering Controls

An environmental easement would be recorded that requires institutional and engineering controls (IC/EC) that are part of the selected remedy, which will be binding upon all subsequent owners of the property. The ICs will restrict the Site's use to restricted-residential, commercial and industrial uses; prohibit the use of groundwater without treatment rendering is safe; require implementation of the SMP and prohibit use of the Site's soil for farming or gardening. The ECs would include the appropriate surface cover (cap), a cellar-level mechanical ventilation system and vapor barrier. The SMP would identify long-term monitoring and maintenance requirements.

3.4 Selection of Preferred Remedy

The following is an evaluation of the proposed remedy based on the NYSDEC BCP remedy evaluation criteria listed below. The first two criteria are considered "threshold criteria" and the remaining criteria are "balancing criteria". A remedial alternative must meet the threshold criteria in order to be considered and evaluated further under the balancing criteria.

A. Protection of Human Health and Environment;
B. Standards, Criteria, and Guidance (SCG);
C. Short-Term Effectiveness and Permanence;
D. Long-Term Effectiveness and Permanence;
E. Reduction of Toxicity, Mobility, or Volume;
F. Implementability;
G. Cost Effectiveness;
H. Community Acceptance; and
I. Land Use

3.4.1 Overall Protection of Public Health and the Environment

Alternative I – The remedy would eliminate all pathways of exposure from on-site contaminated media. Remediating the Site to Track 1 standards would result in the elimination of all on-site soil that exceeds Track 1 SCOs. Any encountered petroleum storage tanks would be decommissioned, removed and disposed off-site, and petroleum-impacted material would be excavated and disposed off-site. The RAOs for public health and environmental protection would be met through the removal of all contaminated media at the Site, which would eliminate any possible ingestion, inhalation or dermal contact.

Alternative II – The Track 4 remedy would provide similar overall protection to public health and the environment to Alternative I. Under a Track 4 remedy, impacted historic fill material and silty-sand and sand material would be removed to a depth of approximately 15 feet bgs and

disposed of off-site as described herein. In-situ groundwater treatment would be completed to treat any residual impacted groundwater. A composite Site cap would make exposure pathways to residual contamination incomplete. Potential exposure pathways for off-site groundwater and soil vapor that may migrate onto the Site, and potential impacts from on-site residual petroleum contamination would be eliminated by installing a vapor barrier and cellar ventilation system. In addition, groundwater in the Bronx is not used as a source of drinking water.

Public health would be protected during remediation activities under both remedial alternatives by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures when needed. The environment would be protected by implementing and enforcing the selected soil erosion plans.

3.4.2 Standards, Criteria, and Guidance

Alternative I - Remediating the Site to Track 1 Unrestricted Use standards would ensure compliance with all applicable SCGs that were listed in Section 3.1 due to the removal of all impacted on-site materials.

Alternative II – This remedy was designed to meet the requirements of a Track 4 cleanup using site-specific SCOs and removal of source material. Remediation includes removal of Site material to achieve site-specific cleanup objectives, as set forth in DER-10, Technical Guidance for Site Investigation and Remediation, CP-51 and 6 NYCRR Part 375. Alternative II complies with the SCGs.

Remedial alternatives will also comply with standards, criteria and guidance (SCGs) that involve protection of the public health and environment during the remedial action by implementing and enforcing a Site-specific CHASP. Occupational Safety and Health Administration (OSHA) requirements for on-site construction safety will be followed by the Site contractors.

3.4.3 Short-Term Effectiveness and Permanence

Alternative I - The most significant short-term adverse impacts and risks to the community will be the potential complications and risk involved with designing support of excavation and underpinning for the buildings and structures adjoining the Site. Increased truck traffic and operational noise levels would be necessary to haul out the impacted fill excavated to achieve Track 1 standards and to haul in the additional backfill. The number of truck trips required to haul out the impacted fill and import backfill is estimated to be 623 25-cubic yard capacity truck trips. This volume of truck traffic equates to a significantly higher discharge of greenhouse gas emissions over Alternative II. Truck traffic will be routed on the most direct course using major

thoroughfares where possible and flaggers will be used to protect pedestrians at Site entrances and exits. Additionally, waiting times associated with analysis of confirmation sampling and resampling may delay construction, leaving soil exposed for a longer time resulting in a potential increase in dust, odors, and organic vapor from the excavation. The effects of these potential adverse impacts to the community, workers and the environment will be minimized by implementing their respective control plans.

Alternative II – Limiting the required excavation extent to depths ranging from 5 to 15 feet based on Track 4 standards will reduce implementation of risky support of excavation techniques, minimize dewatering and reduce the duration of the excavation and the associated risks of a large excavation with underpinning of adjacent buildings. The number of truck trips required to haul out the impacted fill and import backfill is estimated to be 531 25-cubic yard capacity truck trips; approximately 15% fewer trips than that required for Alternative I. The Track 4 remedy is the most sustainable approach, because fewer fossil fuel natural resources are required and carbon emissions to the atmosphere are reduced. Excavation activities will be significantly expedited compared to Alternative I, reducing potential exposure to dust, odors, and organic vapor from the excavation and construction-related noise.

Under both remedial alternatives, dust will be controlled by the application of water spray on the haul roads, and on Site, when and where needed. Engineering controls, such as slowing the pace of work, applying foam suppressant or covering portions of the excavation will be used to minimize vapors and suppress odors when required. Work will be modified or stopped according to the action levels set in the CAMP.

3.4.4 Long-Term Effectiveness and Permanence

Alternative I - The Track 1 remedy will remove all contaminated media from the Site exceeding Unrestricted Use SCOs for soil. The potential exists for residual VOC concentrations in groundwater and soil vapor due to off-site sources. Groundwater in this area of New York City is not used for drinking water. Therefore, the long-term effectiveness of this remedy will eliminate risks and satisfy the objectives of this criterion. The potential of soil vapor intrusion from an off-site source would be addressed by a vapor barrier and cellar ventilation system for the proposed building.

Alternative II – The magnitude of the remaining risks will be minimal because potential exposure pathways to the residually contaminated soil, groundwater, and soil vapor will be eliminated by the completion of the Track 4 remedy. The Track 4 remedy will remove contaminated media from the Site to depths of approximately 15 feet bgs. The exposure pathways to residual soil contaminants will be controlled through the use of a Site cap. Potential exposure from soil vapor VOC intrusion will be prevented by the installation of a vapor

barrier and ventilation per mechanical code for a parking garage. In addition, groundwater in this area of New York City is not used for drinking water. Therefore, the long-term effectiveness of this remedy will eliminate risks and satisfy the objectives of this criterion.

3.4.5 Reduction of Toxicity, Mobility, and Volume

Alternative I - The Track 1 remedy will permanently and significantly reduce the toxicity, mobility, and volume of contamination through removal of all on-site contaminated fill through excavation and off-site disposal, and dewatering, treatment, and discharge to the municipal sewer system.

Alternative II - The Track 4 remedy will reduce the toxicity through removal of historic fill and petroleum-impacted soil to depths of approximately 15 feet bgs and the completion of in-situ groundwater treatment. The mobility of residual contaminants does not represent an off-site migration concern. Installation of the cellar ventilation system in the proposed building will address concerns related to the toxicity and mobility of soil vapor impacted by residual on-site contamination or potential off-site sources.

3.4.6 Implementability

Alternative I - Implementing Alternative I would be technically challenging due to soil and fill exceeding Track 1 SCOs to anticipated depths of up to 20 feet bgs. Extensive excavation support, underpinning of adjacent buildings and dewatering will be required to remove material exceeding the Unrestricted Use SCOs. This remedy will consist mostly of excavation with standard bucket excavators of the targeted fill and soil. The feasibility is low for the excavation activities because of the risks, costs and time associated with the extensive support of excavation design and dewatering, which will rely on coordination with adjacent property owners. The risk of damage to adjacent property buildings and structures is highest for the Alternative I remedy.

Alternative II - The technical feasibility of implementing the Alternative II remedy is greater than Alternative I. Excavation support will still be required for implementation of Alternative II; however, these tasks will be much less for Alternative II in comparison to Alternative I. This alternative will consist mostly of excavation with standard bucket excavators of the targeted fill and soil. The remedy uses typical remediation methods to address Site impacts and contractors experienced in implementing the described remedy are readily available in the area of the Site. The risk of damage to adjacent property buildings is lowest for the Alternative II remedy.

3.4.7 Cost Effectiveness

Alternative I - Based on the assumptions detailed for Alternative I, including removal of all soil and fill exceeding Unrestricted Use SCOs, dewatering and groundwater treatment, and vapor barrier and cellar ventilation system installation, the estimated remediation cost of a Track 1 cleanup is about $6.5 million. As the Site would be remediated to an Unrestricted Use level, there would be no operations, maintenance, or monitoring costs associated with this remedy. Table 2 details the individual cost components used to arrive at this cost estimate. Alternative I is the least cost effective alternative, considering the alternative of managing lower level contaminants in place.

Alternative II - Based on the assumptions detailed for Alternative II, the estimated remediation cost to achieve a Track 4 cleanup is about $5.8 million. Table 3 details the individual cost-components used to arrive at this cost estimate. Alternative II presents the most cost effective alternative for achieving the remediation goals and objectives.

3.4.8 Community Acceptance

Both remedial alternatives should be acceptable to the community because the potential exposure pathways to on-site contamination will be eliminated upon completion of the respective alternatives and the Site. The selected remedy will be subject to a 45-day public comment period accordantly with the Citizen Participation Plan. Any substantive public comments received will be addressed before the remedy is approved.

3.4.9 Land Use

The current, intended, and reasonably anticipated future land use of the Site and its surroundings are compatible with the selected remedy of soil remediation. The future proposed development is a mixed-use commercial and affordable residential building. Review of previous environmental and public documents for the Site has led to the following conclusions:

1. The intended use of the Site and the current and reasonably anticipated future land use of its surroundings will be compatible with the selected remedy.
2. Prior to redevelopment of the Site, the project will be rezoned from M1-1 to R7-D with a C4-4 overlay to facilitate construction of the 10-story building.
3. The proposed use conforms to historical and/or recent development patterns in the area.
4. The Site does not fall within the boundaries of an existing Brownfield Opportunity Area (BOA).

5. The Site is located in an urban setting that is characterized by industrial, commercial office, commercial retail developments, and residential. There are no areas zoned for agricultural use in the proximity of the Site.
6. The Site is not in an environmental justice area.
7. There are no federal or state land designations.
8. The population growth patterns and projections support the proposed land use.
9. The Site is accessible to existing infrastructure.
10. The Site is not in close proximity to important cultural resources, including federal or state historic or heritage sites or Native American religious sites.
11. The Site is not located in close proximity to important federal, state or local natural resources, including waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species.
12. Municipal water supply wells are not present in this area of New York City; therefore, groundwater from the Site cannot affect municipal water supply wells or recharge areas.
13. According to the National Flood Insurance Rate Map for the City of New York, Bronx, Richmond, New York, Queens, and Kings Counties published by the Federal Emergency Management Agency (FEMA) (Map No. 3604970038F, Panel 38 of 457, dated September 5, 2007), the Site is located within Zone X. Zone X is designated for areas of 0.2 percent chance annual flood; areas of 1 percent chance annual flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1 percent annual chance flood.
14. Site geology is described in Section 2.2.

3.5 Summary of Selected Remedial Actions

Based on the evaluation of the remedial alternatives described above, both alternatives would be protective of human health and the environment and meet the remedy selection criteria. Implementation of Alternative I provides for removal of all impacted, on-site soil contamination exceeding Track 1 SCOs and treatment of groundwater through dewatering; however, the extended excavation depths required to remove all soil exceeding Track 1 SCOs is not considered cost-effective and presents constructability challenges and unnecessary added risk. The additional excavation required to achieve a Track 1 cleanup is expected to extend significantly below the water table and would substantially complicate support of excavation design for adjoining buildings, structures and roadways, increase truck traffic, and prolong

potential exposure to noise and contaminated dust and vapors associated with additional excavation.

Alternative II provides for the removal off grossly-impacted soil encountered at the Site, as defined in 6 NYCRR Part 375-1.2. Excavation to remove all impacted soil across the Site is not practical given the shallow groundwater table and risk associated with potentially compromising adjacent structures, while dewatering and implementing various support of excavation techniques (e.g., underpinning, sheeting). To achieve Track 4, soil removal and disposal is roughly estimated to extend to approximately 15 feet bgs within the proposed building footprint and to approximately 2 feet bgs in the area outside the proposed building footprint (see Figure 6). The excavation is intended to achieve PG-SCOs for those contaminants found in on-site soil above the groundwater table smear zone and that exceed groundwater standards on-site, such as 1,2,4 trimethylbenzene, 1,3,5- trimethylbenzene, xylene, toluene, ethylbenzene and any other contaminants that meet the conditions. Residual contamination below the water table smear zone will be addressed by the proposed groundwater treatment remedial element. NYSDEC will evaluate endpoint sampling results in comparison to the PG-SCOs prior to the excavation being backfilled. In the area of MW29, the excavation will extend to a depth necessary to assure complete LNAPL removal. Actual excavation depths across the Site will depend on potential identification of additional source material via site observations.

Groundwater treatment through a site-wide dewatering system and in-situ treatment program will address groundwater contamination. The exposure pathways to residual contaminants will be controlled through the use of a site cap and implementation of soil vapor mitigation measures (e.g., vapor barrier and cellar ventilation system). Additionally, groundwater will be treated and is not a source of drinking water in this area.

Unlike Alternative I, Alternative II can be implemented using standard construction methods and in a cost-effective manner while providing the same overall protection to human health and the environment. Therefore, Alternative II is the recommended remedial alternative for this Site. Figures depicting the Alternative II remedy are included as follows:

- Figure 6 – Alternative II – Track 4 Cleanup
- Figure 7 – Vapor Barrier Location Plan
- Figure 8 – Composite Cover System Plan

Remedial activities will be performed in accordance with this NYSDEC-approved RAWP. All deviations from the RAWP will be promptly reported to NYSDEC for approval and fully explained in the Final Engineering Report (FER).

4.0 REMEDIAL ACTION PROGRAM

4.1 Governing Documents

The primary documents governing the remedial action are summarized in this section. Where referenced, copies of the full plan are provided in the appendices.

4.1.1 Site Specific Health & Safety Plan

The Remedial Engineer prepared a Site-specific CHASP, which is included as Appendix F. The CHASP will apply to all remedial and construction-related work on-site. The CHASP provides a mechanism for establishing on-site safe working conditions, safety organization, procedures, and PPE requirements. The CHASP meets the requirements of 29 CFR 1910 and 29 CFR 1926 (which includes 29 CFR 1910.120 and 29 CFR 1926.65). The CHASP includes, but is not limited to, the following components listed below:

- Organization and Identification of key personnel;
- Training requirements;
- Medical surveillance requirements;
- List of site hazards;
- Excavation safety;
- Work zone descriptions;
- Personal safety equipment and protective clothing requirements;
- Decontamination requirements;
- Standard operating procedures;
- Protective measure Plan;
- CAMP; and
- Material Safety Data Sheets.

All remedial work performed under this plan will be in full compliance with governmental requirements, including Site and worker safety requirements mandated by Federal OSHA.

The Volunteer and associated parties preparing the remedial documents submitted to the State and those performing the construction work, are completely responsible for the preparation of an appropriate CHASP and for the appropriate performance of work according to that plan and applicable laws.

The CHASP and requirements defined in this RAWP pertain to all remedial and invasive work performed at the Site until the issuance of a Certificate of Completion.

The Site Safety Coordinator will be David Granucci. A resume will be provided to NYSDEC prior to the start of remedial construction.

Although not anticipated, confined space entry will comply with all OSHA requirements to address the potential risk posed by combustible and toxic gasses.

4.1.2 Quality Assurance Project Plan

The RE prepared a Quality Assurance Project Plan (QAPP) that describes the quality control components employed so that the proposed remedy accomplishes the remedial goals, remedial action objectives, and is completed in accordance with the design specifications. The QAPP is provided as Appendix H and includes:

- Responsibilities of key personnel and their organizations for the proposed remedy;
- Qualifications of the quality assurance officer;
- Sampling requirements including methodologies, quantity, volume, locations, frequency, acceptance and rejection criteria; and
- Description of the reporting requirements for quality assurance activities including weekly quality assurance review reports, periodic quality assurance and quality control audits, and other report and data submissions.

4.1.3 Construction Quality Assurance Plan

The RE prepared a Construction Quality Assurance Plan (CQAP) that describes the quality control components employed so that the proposed remedy accomplishes the remedial goals, remedial action objectives, and is completed in accordance with the design specifications. Because the remedy is being accomplished through building construction, the contractor and construction manager will have the primary responsibility to provide construction quality. A list of engineering personnel involved in implementation of the CQAP and procedures that will be carried out by the remedial engineering team are identified below.

The following project personnel are anticipated for oversight of the RAWP implementation. Project personnel resumes are provided in Appendix I.

Remedial Engineer (RE):	Joel Landes, P.E.
Project Director:	Jamie P. Barr, L.E.P.
Project Manager:	Ryan J. Wohlstrom
Langan Health & Safety Officer:	Tony Moffa, CHMM
Site Safety Coordinator	David Granucci
Qualified Environmental Professional (QEP)	Jamie P. Barr, L.E.P.
Field Team Leader	Justin Hall
Quality Assurance Officer	David Granucci

A QEP or the RE will directly supervise field engineers, scientists and geologists that will be on-site during remedial action to monitor particulates and organic vapor in accordance with the CAMP. Daily reports will be submitted to the NYSDEC and NYSDOH and will include reporting of any CAMP results that exceed the action levels specified in the CAMP.

A QEP or the RE will directly supervise field engineers, scientists and geologists that will meet with the Construction Superintendent on a daily basis to discuss the plans for that day and schedule upcoming activities. The field engineers/scientists and geologists will document all remedial activities in the daily report. This document will be forwarded to the Field Team Leader and NYSDEC and NYSDOH on a daily basis and to the Project Manager and the RE on a weekly basis.

A QEP or the RE will directly supervise field engineers, scientists and geologists that will screen the excavation with a PID during intrusive activities. All readings will be noted in the record. Elevated readings will be reported to the NYSDEC and NYSDOH in the daily reports. The field engineers, scientists and geologists will collect the excavation endpoint samples in accordance with this RAWP.

A photo log will be kept to document construction activities by still photos. The photo log may also be used to record activities recorded in the Daily Report.

The project field book will be used to document all sampling activities and how they correspond to the RAWP. All observations, field and/or laboratory tests will be recorded in the project field book or on separate logs. Recorded field observations may take the form of notes, charts, sketches, or photographs.

The Field Team Leader will maintain the current field book and all original field paperwork during the performance of work. The Project Manager will maintain the field paperwork after completion and will maintain all submittal document files.

4.1.4 Soil/Materials Management Plan

The RE prepared a Soil/Materials Management Plan, which includes detailed plans for managing all soils/materials that are disturbed at the Site, including excavation, handling, storage, transport and disposal. It also includes controls that will be applied to these efforts to facilitate effective, nuisance-free performance in compliance with all applicable Federal, State and local laws and regulations (see Section 5.4).

4.1.5 Stormwater Pollution Prevention Plan

Erosion and sediment controls will be in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control. Erosion and sediment controls that will be implemented are described in Section 4.3.2 (Erosion and Sedimentation Controls) and 5.4.10 (Stormwater Pollution Prevention). A Stormwater Pollution Prevention Plan (SWPPP) is not necessary because the project will disturb less than an acre, and stormwater discharge will be to a combined sewer, in accordance with the New York City generic stormwater pollution discharge elimination system permit.

4.1.6 Community Air Monitoring Program

A CAMP has been prepared by the RE and is included as Appendix G.

4.1.7 Contractors Site Operations Plan

The RE will review all plans and submittals for this remedial project (including those listed above and contractor and sub-contractor document submittals) and confirm that they are in compliance with this RAWP. The RE is responsible to document that all later document submittals for this remedial project, including contractor and sub-contractor document submittals, are in compliance with this RAWP. All remedial documents will be submitted to NYSDEC and NYSDOH in a timely manner and prior to the start of work.

4.1.8 Citizen Participation Plan

The approved Citizen Participation Plan for this project is attached in Appendix J.

A document repository has been established at the following location and contains all applicable project documents:

Wakefield Library
4100 Lowerre Place

Bronx, NY 10466
Phone: 718-652-4663
Hours (Call to verify):

Monday through Thursday:	10:00 a.m. to 7:00 p.m.
Friday and Saturday:	10:00 a.m. to 5:00 p.m.
Saturday:	Closed

4.2 General Remedial Construction Information

4.2.1 Project Organization

This Section presents the anticipated project organization and associated roles, including key personnel, descriptions of duties, and lines of authority in the management of the RAWP. Information regarding the organization/personnel and their associated responsibilities is provided below.

4.2.2 Remediation Engineer (RE)

The RE for this project will be Joel Landes, P.E., a registered professional engineer licensed by the State of New York. The RE will have primary direct responsibility for implementation of the remedial program for the 714 East 241st Street, Bronx, New York (NYSDEC BCP Site No. C203077). The RE will certify in the FER that the remedial activities were observed by qualified environmental professionals under his supervision and that the remediation requirements set forth in the RAWP and any other relevant provisions of ECL 27-1419 have been achieved in full conformance with that Plan. Other RE certification requirements are listed later in this RAWP.

The RE will document the work of other contractors and subcontractors involved in all aspects of remedial construction, including soil excavation, stockpiling, characterization, removal and disposal, in-situ groundwater treatment, air monitoring, emergency spill response services, import of back fill material, and management of waste transport and disposal. The RE and the Langan Project Manager will be responsible for all appropriate communication with NYSDEC and NYSDOH.

The RE will review all pre-remedial plans submitted by contractors for compliance with this RAWP and will certify compliance in the FER.

In the FER, the RE will provide the certifications listed in Section 10.1.

4.2.3 Remedial Action Construction Schedule

The remedial action construction schedule is provided in Appendix K. Proposed changes, delays or deviations will be promptly communicated to NYSDEC.

4.2.4 Work Hours

The hours for operation of remedial construction will conform to the New York City Department of Buildings construction code requirements or according to specific variances issued by that agency. NYSDEC will be notified by the Volunteer of any variances issued by the Department of Buildings. NYSDEC reserves the right to deny alternate remedial construction hours.

4.2.5 Site Security

The Site perimeter will be secured with gated, signed, plywood fencing with points of entry in accordance with NYCDOB and NYCDOT permits and requirements. The purpose of the fencing is to limit Site access to authorized personnel, protect pedestrians from Site activities, and maintain Site security.

4.2.6 Traffic Control

Site traffic will be controlled through designated points of access along East 241st Street. Access points will be continuously monitored and a flagging system will be used to protect workers, pedestrians and authorized guests. Traffic will also adhere to applicable local, state and federal law.

4.2.7 Contingency Plan

Contingency plans, as described below, have been developed to effectively deal with unexpected discoveries of additional contaminated media or USTs.

4.2.7.1 Discovery of Additional Targeted Contaminated Soil

During remedial and construction activities, the soil will be continuously monitored by the RE's field representatives using a PID and visual and olfactory field screening techniques to identify additional soil that may not be suitable for the current disposal facility. Soil identified will be confirmed by collecting and analyzing a sample in accordance with disposal facility requirements. If the facility is not permitted to receive the suspect materials, the material will be disposed off-site at a permitted facility able to receive the material based on the characterization data.

4.2.7.2 Discovery of Additional USTs

Based on governmental records and previous investigations, four USTs will be excavated and removed from the Site. As a contingency, if additional USTs are encountered during remedial activities, they will be decommissioned in accordance with 6 NYCRR 613.9, and DER-10 section 5.5. Once the tank and its contents are removed, post-excavation soil samples will be collected as per the NYSDEC DER-10 requirements. If encountered, petroleum-contaminated soils will be removed. UST closure documentation, such as contractor affidavits, bills of lading

for sludge disposal, and tank disposal receipts, will be provided as appendices in the FER (Section 10.0). Depending on the type, number, and capacity of discovered the tanks, the NYSDEC PBS registration requirements will be complied with as necessary.

4.2.8 Worker Training and Monitoring

Worker training and monitoring will be conducted in accordance with the CHASP, included as Appendix F.

4.2.9 Agency Approvals

The Volunteer will address identified SEQRA requirements for this Site. Permits or government approvals required for remedial construction have been, or will be, obtained prior to the start of remedial construction.

The project involves the rezoning of the Site from M1-1 to R7-D with a C4-4 overlay to facilitate the construction of a 10-story, mostly residential building with 36 parking spaces. As such, an New York City Environmental Quality Review (CEQR) Environmental Assessment Statement (EAS) will be prepared in accordance with the regulations mandated by CEQR and guidelines outlined in the latest version (March 2014 edition) of New York City's CEQR Technical Manual ("CEQR Technical Manual") to assess the potential environmental impacts of the proposed project. The EAS will be subject Department of City Planning (DCP) approval. A Certificate of Completion will not be issued for the project unless conformance with zoning designation is demonstrated.

4.2.10 NYSDEC BCP Signage

A project sign will be erected at the main entrance to the Site prior to the start of any remedial activities. The sign will indicate that the project is being performed under the New York State Brownfield Cleanup Program. The sign will meet the detailed specifications provided by the NYSDEC Project Manager and contained in Appendix L.

4.2.11 Pre-Construction Meeting with NYSDEC

A meeting will be conducted to discuss project roles and responsibilities with the RE, Volunteer, construction manager, remediation contractor and the NYSDEC. This meeting will take place prior to the start of major construction activities.

4.2.12 Emergency Contact Information

An emergency contact sheet with names and phone numbers is included in the CHASP. That document will define the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency.

4.2.13 Remedial Action Costs

The total estimated cost of the Track 4 Remedial Action is $5.8 million. An itemized and detailed summary of estimated costs for all remedial activity is provided as Table 3. This estimate will be revised based on actual costs and submitted as an appendix to the FER.

4.3 Site Preparation

4.3.1 Mobilization

Prior to commencing the remedial excavation, the remediation contractor will mobilize to the Site and prepare for remedial activities. Descriptions of mobilization and Site preparation activities may include the following.

- The Site fronts on the existing NYCTA #2 rail corridor and station platform. As such, the project requires coordination and approval of the authorities operating these subway lines as per the NYC Building Code.
- Identifying the location of all aboveground and underground utilities (e.g., power, gas, water, sewer, telephone), equipment, and structures (as necessary to implement the remediation);
- Mobilizing necessary remediation personnel, equipment, and materials to the Site;
- Constructing one or more stabilized construction entrances consisting of nonhazardous material capped with a gravel roadway at or near the Site exit, which takes into consideration the Site setting and Site perimeter;
- Constructing an equipment decontamination pad for trucks, equipment, and personnel that come into contact with impacted materials during remedial activities;
- Installing erosion and sedimentation control measures;
- Installing temporary fencing or other temporary barriers to limit unauthorized access to areas where remediation activities will be conducted.

4.3.2 Erosion and Sedimentation Controls

Based on the size of the Site and the planned excavation, select common erosion and sedimentation control practices will be necessary. Best Management Practices (BMP) for soil erosion will be selected to minimize erosion and sedimentation off-site from the start of the remediation to the completion of development.

4.3.3 Temporary Gravel Construction Entrance(s)

Temporary gravel construction entrances may be installed on-site at the existing curb cuts along East 241st Street and/or Furman Avenue. The entrance will be graded so that runoff water

will be directed on Site. The contractor will protect and maintain the existing sidewalks and roadway at Site access points.

4.3.4 Utility Marker and Easements Layout

The Volunteer and its contractors are solely responsible for the identification of utilities that might be affected by work under the RAWP and implementation of all required, appropriate, or necessary health and safety measures during performance of work under this RAWP. The Volunteer and its contractors are solely responsible for safe execution of all invasive and other work performed under this RAWP. The Volunteer and its contractors must obtain any local, State or Federal permits or approvals pertinent to such work that may be required to perform work under this RAWP. Approval of this RAWP by NYSDEC does not constitute satisfaction of these requirements.

4.3.5 Sheeting and Shoring

Appropriate management of structural stability of on-site or off-site structures during on-site activities, including excavation, is the sole responsibility of the Volunteer and its contractors. The Volunteer and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan. The Volunteer and its contractors must obtain any local, State or Federal permits or approvals that may be required to perform work under this Plan. Further, the Volunteer and its contractors are solely responsible for the implementation of all required, appropriate, or necessary health and safety measures during performance of work under the approved Plan.

4.3.6 Equipment and Material Staging

The contractor will notify the RE and the Volunteer, in writing with receipt confirmed, of pending Site work mobilization at least 30 calendar days in advance. During mobilization, construction equipment will be delivered to the Site, temporary facilities constructed, and temporary utilities installed. The contractor will place and maintain temporary toilet facilities within the work areas for usage by all Site personnel. The contractor will provide drinking water for all Site personnel.

4.3.7 Decontamination Area

The contractor will construct decontamination pads at each Site entrance/exit planned for construction vehicle usage. The location of decontamination pads may change periodically to accommodate the contractor's sequencing of work. The pads will be constructed by the contractor to collect wastewater for off-site disposal or treatment and discharge, if generated during decontamination activities. The design will consider adequate space to decontaminate Site equipment and vehicles, and sloping and liners to facilitate collection of wastewater.

Collected decontamination wastewater shall be either discharged in accordance with the contractor's NYCDEP permit or tested and transported to an off-site disposal facility that is permitted to accept this waste, in accordance with applicable city, state, and federal regulations.

If the contractor uses high pressure washing methods, the contractor shall provide splash protection around the vehicle decontamination facility. Splash protection shall minimize potential contamination from splatter and mist movement off-site during the vehicle decontamination process. Splash protection shall be temporary and stable and capable of being dismantled in the event of high winds.

Accumulated truck rinsate and decontamination materials will be collected and commingled with other waste streams for disposal, as appropriate. The contractor will maintain the decontamination pad(s) throughout the duration of Site work. Prior to demobilization, the contractor will deconstruct the pads and dispose of materials as required.

4.3.8 Site Fencing

The Site perimeter will be secured with gated, signed, plywood fencing. The purpose of the fencing is to limit Site access to authorized personnel, protect pedestrians from Site activities, and maintain Site security.

4.3.9 Demobilization

The contractor will be responsible for demobilizing all labor, equipment, and materials not designated for off-site disposal from the Site. The RE will be required to document that the remediation contractor decontaminates all equipment and materials prior to removal from the Site. The RE will document performance by the excavation contractor of any follow-up coordination and maintenance for the following activities: removal of sediment and erosion control measures and disposal of materials in accordance with acceptable rules and regulations; removal of any residual contaminated material or wastes; equipment decontamination; and general refuse disposal.

4.4 Reporting

Periodic reports and an FER will be required to document the remedial action. The Project RE responsible for certifying reports will be an individual licensed to practice engineering in the State of New York; Joel Landes P.E. of Langan, will have this responsibility. Should Mr. Landes become unable to fulfill this responsibility; another suitably qualified New York State professional engineer will take his place. All daily and monthly Reports will be included in the FER. In addition to the periodic reports and the FER, copies of all relevant contractor documents will be submitted to the NYSDEC.

4.4.1 Daily Reports

Daily reports will be submitted to NYSDEC and NYSDOH Project Managers on a weekly basis and will include:

- An update of progress made during the reporting day;
- Locations of work and quantities of material imported and exported from the Site;
- References to alpha-numeric map for Site activities;
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of CAMP findings, including excursions;
- An explanation of notable Site conditions.

Daily reports are not intended to be the mode of communication for notification to the NYSDEC of emergencies (accident, spill), requests for changes to the RAWP or other sensitive or time critical information. However, such conditions must also be included in the daily reports. Emergency conditions and changes to the RAWP will be addressed directly to NYSDEC Project Manager via personal communication.

Daily Reports will include a description of daily activities keyed to an alpha-numeric map that identifies work areas. These reports will include a summary of air sampling results, odor and dust problems and corrective actions, and all complaints received from the public.

The NYSDEC-assigned project number will appear on all reports.

4.4.2 Monthly Reports

Monthly reports will be submitted to NYSDEC and NYSDOH Project Managers by the tenth of the following month of the reporting period and will include the following information, as well as the information required in the Brownfield Cleanup Agreement:

- Activities relative to the Site during the previous reporting period and those anticipated for the next reporting period, including a quantitative presentation of work performed (i.e. tons of material exported and imported, etc.);
- Description of approved activity modifications, including changes of work scope and/or schedule;
- Sampling results received following internal data review and validation, as applicable; and,

- An update of the remedial schedule including the percentage of project completion, unresolved delays encountered or anticipated that may affect the future schedule, and efforts made to mitigate such delays.

4.4.3 Other Reporting

Photographs will be taken of remedial activities and submitted to NYSDEC in digital (JPEG) format. Photos will illustrate the remedial program elements and will be of acceptable quality. Representative photos of the Site prior to any remedial actions will be provided. Representative photos will be provided of each contaminant source area and Site structures before, during and after remediation. Photos will be submitted to NYSDEC on CD or other acceptable electronic media and will be sent to NYSDEC's Project Manager (2 copies) and to NYSDOH's Project Manager (1 copy). CD's will have a label and a general file inventory structure that separates photos into directories and sub-directories according to logical Remedial Action components. A photo log keyed to photo file ID numbers will be prepared to provide explanation for all representative photos.

Job-site record keeping for all remedial work will be appropriately documented. These records will be maintained on-site at all times during the project and be available for inspection by NYSDEC and NYSDOH staff.

4.4.4 Complaint Management Plan

The management plan for documenting complaints is detailed below.

Item	Description
Approach	Complaints regarding remediation or construction activities/operations to be minimized and mitigation measures implemented to reduce the incidence of complaints.
Objective	To manage environmental complaints from the community regarding construction or remediation.
Implementation Strategy/Mitigation Measures	All complaints will be documented on a complaint register. The register will be maintained as an ongoing record. The entry will include following information: • Time, date and nature of complaint; • Type of communication (telephone, letter, personal, etc.); • Name, contact address and contact number; • Response and investigation undertaken as a result of the complaint; and action taken and signature of responsible person. Each complaint will be investigated as soon as practical in relation to requirements.

Item	Description
Monitoring	A representative from the Volunteer or the Remediation Engineer will follow up on the complaint within two weeks of receipt to ensure it is resolved.
Reporting	Upon receipt NYSDEC will be notified. Complaint and resolutions will be documented in daily reports.
Corrective Action	Should an incident of failure to comply occur in relation to the management of environmental complaints, one or more of the following corrective actions will be undertaken as appropriate: • Conduct additional training of staff to handle environmental complaints; • Investigate why the environmental complaint was not addressed within the specified time frame; and • Investigate complaint and action follow-up according to results of investigation.

4.4.5 Deviations from the RAWP

An addendum to this RAWP will be provided for any deviations and will include:

- Reasons for deviating from the approved RAWP;
- Approval process to be followed for changes/editions to the RAWP; and
- Effect of the deviations on overall remedy.

5.0 REMEDIAL ACTION: MATERIAL REMOVAL FROM SITE

5.1 Soil Cleanup Objectives

The Restricted-Residential Restricted Use SCOs are listed in Table 1. All soil used for the two foot clean soil cap in landscaped areas will meet Restricted-Residential Use SCOs.

Soil and materials management on-site and off-site will be conducted in accordance with the Soil/Materials Management Plan as described below. UST closures will, at a minimum, conform to criteria defined in DER-10.

5.2 Remedial Performance Evaluation (Post-Excavation Sampling)

Documentation soil samples will be collected and analyzed to evaluate soil/fill remaining in place. Documentation samples will be sampled for analysis of 6 NYCRR Part 375 list and TCL/TAL list VOCs, SVOCs, PCBs, pesticides, and metals. Documentation sampling will be collected in accordance with NYSDEC DER-10. Samples will be collected from the excavation bottom at a frequency of one sample per 900 square feet. Sidewall samples would not be collected, since the excavation would extend site-wide and excavation support (e.g., sheeting, lagging) or adjoining building foundations would provide a barrier to collection of the sidewall samples. Should additional documentation sampling be deemed necessary (e.g., additional tank closure), documentation sampling will occur in accordance with NYSDEC DER-10 and Soil Cleanup Guidance CP-51. No additional excavation will be required based on the documentation sample results.

Soil documentation samples will be transported under standard chain-of-custody protocol to an NYSDOH ELAP-approved laboratory for analysis of the Site soil contaminants of concern. Laboratory analyses will be conducted in accordance with EPA SW-846 methods and NYSDEC Analytical Services Protocol (ASP) Category B deliverable format. The quality assurance and quality control procedures required by the NYSDEC ASP and SW-846 methods will be followed. This will include instrument calibration, standard compound spikes, surrogate compound spikes, and analysis of quality control samples. The laboratory will provide sample bottles, which are pre-cleaned and preserved. Where there are differences in the SW-846 and NYSDEC ASP requirements, the NYSDEC ASP shall take precedence.

A data usability summary report (DUSR) will be included in the FER. Quality control procedures for the sampling are included in the QAPP, described in Appendix H. Analytical results will be provided in NYSDEC electronic data deliverable (EDD) format for EQuIS™. Guidance on sampling frequency is presented in Section 5.4 of DER-10.

The FER will provide a tabular and map summary of all documentation sample results and results that exceed Track 4 site-specific SCOs.

5.3 Estimated Material Removal Quantities

The quantity of soil/fill to be removed from the Site is about 13,300 cubic yards (including historic fill, petroleum-impacted soil in areas of the former USTs, and impacted native material). The quantity of soil/fill to be imported for backfill is about 150 cubic yards.

5.4 Soil/Materials Management Plan

This section presents the approach to managing, disposing and reuse of soil, fill, and debris excavated from the Site. This plan is based on the current knowledge of Site conditions, and will be augmented with the additional data collected during remediation. A field engineer, scientist or geologist, under the direction of the RE or a QEP, will monitor and document the handling and transport of contaminated material removed from the Site for disposal as a regulated solid waste. A field engineer, scientist or geologist, under the direction of the RE or a QEP, will assist the remedial contractor in identifying impacted materials during excavation, determining materials suitable for direct load out versus temporary on-site stockpiling, selection of samples for waste characterization, and determining the proper off-site disposal facility. Separate stockpile areas will be constructed as needed for the various materials to be excavated or generated, with the intent to most efficiently manage and characterize the materials and to avoid comingling impacted materials with non-impacted soil.

The following three material types are reasonably anticipated to be encountered during the remediation:

- Contaminated, Non-hazardous Material – This material refers to historic fill and silty-sand and sand material that contains contaminants that exceed 6 NYCRR Part 375 SCOs and will not be reused on-site. This material will be excavated throughout the Site to 2 to 15 feet as part of the Track 4 remedy. This material will be transported off-site, and disposed at a facility permitted to accept the material. Characterization sampling will be completed in conformance with the requirements of the disposal facility and post-excavation documentation samples will be collected to document residual soil conditions.
- Petroleum-Impacted, Non-hazardous Material – This material refers to petroleum-impacted historic fill or soil associated with the on-site USTs that may contain contaminants that exceed the Restricted-Residential SCOs and will not be reused on-site. Evidence of petroleum-impacted material was greatest in the northern and western portions of the Site (in the vicinity of the former gasoline filling station and automobile

repair shop), and decreased to the south and east. The vertical extent of petroleum-impacted material is anticipated to extend to depths ranging from 1 to 20 feet bgs. Grossly-impacted material with free product that may be a source to groundwater contamination will be excavated as part of the Track 4 remedy, transported off-site, and disposed at a facility permitted to accept the material. Characterization sampling will be completed to conform to the requirements of the disposal facility and post-excavation documentation samples will be collected to document residual soil conditions.

- Hazardous Material – Hazardous waste is not currently anticipated based on the RI data. If hazardous waste is determined during waste characterization sampling, this material will not be reused on-site, and must be transported off-site and disposed at a facility certified to accept the material. Should hazardous material be encountered it will be removed during the remediation excavation and post-excavation documentation samples will be collected to document residual soil conditions.

5.4.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed by an engineer, geologist or scientist under the direct supervision of a PE or qualified environmental professional during all remedial and development excavations into known or potentially contaminated material (Residual Contamination Zone). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during the remedy and during development phase, such as excavations for foundations and utility work, prior to issuance of the Certificate of Completion.

Areas of the Site containing remaining contamination will be surveyed by a surveyor licensed to practice in the State of New York. This information will be provided on maps in the FER.

Field screening for evidence of contamination will be performed by field engineers, scientists or geologists under the direct supervision of the RE or QEP. Resumes will be provided for all personnel responsible for field screening (i.e. those representing the RE) of invasive work for known or unknown contaminant sources during remediation and development work.

5.4.2 Stockpile Methods

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

- The excavated soil will be placed onto a minimum thickness of 10-mil low-permeability liner of sufficient strength and thickness to prevent puncture during use; separate

stockpiles will be created where material types are different (e.g., petroleum-impacted material stockpiled in a contaminated soil area). The use of multiple layers of thinner liners is permissible.

- Equipment and procedures will be used to place and remove the soil that will minimize the potential to jeopardize the integrity of the liner.
- Stockpiles will be covered at the designated times (see below) with minimum 6-mil plastic sheeting or tarps which will be securely anchored to the ground. Stockpiles will be routinely inspected and broken sheeting covers will be promptly replaced.
- Stockpiles will be covered upon reaching their capacity of approximately 1,000 cubic yards until ready for loading. Stockpiles that have not reached their capacity will be covered at the end of each workday.
- Active stockpiles will be covered at the end of each workday.
- Each stockpile area will be encircled with silt fences and hay bales, as needed to contain and filter particulates from any rainwater that has drained off the soils, and to mitigate the potential for surface water run-off.
- The stockpile areas will be inspected daily and noted deficiencies will be promptly addressed.

5.4.3 Materials Excavation and Load Out

Field engineers, scientists or geologists under the direct supervision of the RE or QEP will oversee all invasive work and the excavation and load-out of all excavated material. The Volunteer and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the Site has been investigated by the RE. It has been determined that no risk or impediment to the planned work under this RAWP is posed by known utilities or easements on the Site.

Loaded vehicles leaving the Site will be appropriately lined, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and New York State Department of Transportation (NYSDOT) requirements (and all other applicable transportation requirements). Trucks hauling historic fill will not be lined unless the material exhibits free liquids or is grossly impacted.

A truck wash/cleaning area will be operated on-site. The RE will be responsible for documenting that all outbound trucks will be washed/cleaned at the truck wash before leaving

the Site until the remedial construction is complete. Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-site sediment tracking.

The RE will be responsible for documenting that all egress points for truck and equipment transport from the Site will be clean of dirt and other materials derived from the Site during Site remediation and development. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

The Volunteer and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all invasive work, the structural integrity of excavations, and for structures that may be affected by excavations (such as building foundations and bridge footings).

The RE will ensure that Site development activities will not interfere with, or otherwise impair or compromise, remedial activities proposed in this RAWP.

Each hotspot and structure to be remediated (e.g., USTs, vaults and associated piping, etc.) will be removed and post-excavation documentary sampling completed before excavations related to Site development commence proximal to the hotspot or structure.

Development-related grading cuts and fills will not interfere with, or otherwise impair or compromise, the performance of remediation required by this plan.

Mechanical processing of historical fill and contaminated soil on-site is prohibited, without pre-approval by NYSDEC.

5.4.4 Materials Transport Off-Site

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded. Trucks will enter the Site using either East 241st Street and/or Furman Avenue or other routes approved by NYSDEC. All trucks loaded with Site materials will exit the vicinity of the Site using only approved truck routes.

Proposed in-bound and out-bound truck routes to the Site are shown in Figure 9. This is the most appropriate route and takes into account:

(a) limiting transport through residential areas and past sensitive sites;

(b) use of city mapped truck routes;

(c) prohibiting off- Site queuing of trucks entering the facility;

(d) limiting total distance to major highways;

(e) promoting safety in access to highways; and

(f) overall safety in transport;

(g) community input [where necessary]

Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site.

Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during Site remediation and development.

To the extent possible, queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-Site queuing will be minimized.

Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

All truck carriages and wheels will be free from dirt and debris when leaving the Site. As required, truck wash waters will be collected and disposed of off-site in an appropriate manner.

5.4.5 Materials Disposal Off-Site

All soil/fill/solid waste excavated and removed from the Site will be handled, transported and disposed in accordance with all local, State (including 6 NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC's Project Manager. Unregulated off-site management of materials from this Site is prohibited without formal NYSDEC approval.

Material that does not meet Track 1 Unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

The following documentation will be obtained and reported by the RE for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the Site conforms to all applicable laws:

(1) A letter from the RE or BCP Volunteer to the receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This letter will state that material to be disposed is contaminated material generated at an environmental remediation Site in New York State. The letter will provide the project

identity and the name and phone number of the RE. The letter will include as an attachment a summary of all chemical data for the material being transported (including Site Characterization data); and

(2) A letter from each receiving facility stating it is in receipt of the correspondence (above) and is approved to accept the material. These documents will be included in the FER.

Nonhazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2

Historical fill and contaminated soils from the Site are prohibited from being disposed at Part 360-16 Registration Facilities (also known as Soil Recycling Facilities).

Soils that are contaminated but nonhazardous and are being removed from the Site are considered by the Division of Materials Management (DMM) in NYSDEC to be Construction and Demolition (C/D) materials with contamination not typical of virgin soils. These soils may be sent to a permitted Part 360 landfill. They may be sent to a permitted C/D processing facility without permit modifications only upon prior notification of NYSDEC Region 2 DMM. This material is prohibited from being sent or redirected to a Part 360-16 Registration Facility. In this case, as dictated by DMM, special procedures will include, at a minimum, a letter to the C/D facility that provides a detailed explanation that the material is derived from a DER remediation Site, that the soil material is contaminated and that it must not be redirected to on-site or off-site Soil Recycling Facilities. The letter will provide the project identity and the name and phone number of the RE. The letter will include as an attachment a summary of all chemical data for the material being transported.

The FER will include an accounting of the destination of all material removed from the Site during this Remedial Action, including excavated soil, contaminated soil, historic fill, solid waste, and hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. This information will also be presented in a tabular form in the FER.

Bill of Lading system or equivalent will be used for off-site movement of nonhazardous wastes and contaminated soils. This information will be reported in the FER.

Hazardous wastes derived from on-site will be stored, transported, and disposed of in full compliance with applicable local, State, and Federal regulations.

Appropriately licensed haulers will be used for material removed from this Site and will be in full compliance with all applicable local, State and Federal regulations.

Waste characterization will be performed for off-site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the FER. All data available for soil/material to be disposed at a given facility must be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

5.4.6 Materials Reuse On-Site

Soil excavated during installation of foundation components may be reused if the requirements in this section are met. Grossly-impacted soil will not be reused. Reused soil must be nonhazardous and consist of certified clean soils meeting the Allowable Constituent Levels for Imported Fill or Soil for Restricted-Residential Uses (appendix 5 of DER 10). Requirements for re-use and sampling requirements will be in accordance with Section 5.4 (e) of DER-10. If any of the waste materials are used for an end use specified in Section 360-1.15(b), it will not be considered a solid waste. Soil removed during implementation of the remedy or removed for grading or other purposes will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. Reuse of soil will be coordinated in advance with the NYSDEC case manager. Material deemed unfit for reuse will be transported for off-site disposal.

5.4.7 Fluids Management

Collection and pretreatment of contaminated groundwater is anticipated for remedial excavations. All liquids to be removed from the Site (if required), including dewatering fluids, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Liquids discharged into the New York City sewer system will be addressed through approval by NYCDEP.

Construction dewatering of contaminated groundwater will be required for remedial excavations and construction excavations for building foundations. This dewatering is considered a remedial component inasmuch as it is necessary to facilitate excavation for the building foundations. Dewatering may be conducted via a sump pump or well point system. Dewatering fluids will either be containerized for off-site disposal or discharged to a NYC sewer in accordance with a NYSDEP permit but will not be recharged back to the land surface of the Site. Based on the NYCDEP's effluent limitations, the contractor may be required to install additional pretreatment utilities for dewatering fluids to reduce contaminant concentration below the NYCDEP effluent limitations prior to discharge. Additional pretreatment may include bag filters, carbon filtration, etc. If the contractor will discharge more than 10,000 gallons per day, they will also have to obtain a NYCDEP Temporary Discharge of Groundwater into the City Sewer System Permit. Collected groundwater or rainwater will be discharged, as defined by the NYCDEP permit, into the New York City sewer system, via an

entry point acceptable to the NYCDEP. The dewatering and treatment system will be designed by the contractor's New York State-licensed Professional Engineer.

5.4.8 Demarcation

After the completion of soil removal and any other invasive remedial activities and prior to backfilling, a land survey will be performed by a New York State licensed surveyor. The survey will define the top elevation of residual contaminated soil. Where the surface cover is to be landscaped with 2-feet of clean cover, a physical demarcation layer, consisting of orange snow fencing material or equivalent material will be placed to provide a visual reference. The demarcation layer will not be placed in areas capped with impervious surface cover (e.g., concrete slab). This demarcation layer will constitute the top of the 'Residuals Management Zone', the zone that requires adherence to special conditions for disturbance of contaminated residual soils defined in the SMP. The survey will measure the grade covered by the demarcation layer before the placement of cover soils, pavement and sub-soils, structures, or other materials. This survey and the demarcation layer placed on this grade surface will constitute the physical and written record of the upper surface of the 'Residuals Management Zone' in the SMP. A map showing the survey results will be included in the FER and the SMP.

5.4.9 Backfill from Off-Site Sources

All materials proposed for import onto the Site will be approved by the RE and will be in compliance with provisions in this RAWP prior to receipt at the Site. Material from industrial sites, spill sites, other environmental remediation sites or other potentially contaminated sites will not be imported to the Site. Solid waste will not be imported onto the Site.

The FER will include the following certification by the RE: "I certify that all import of soils from off-site, including source evaluation, approval and sampling, has been performed in a manner that is consistent with the methodology defined in the RAWP".

Backfill material will consist of clean fill (as described in the following paragraph) or other acceptable fill material such as virgin crushed stone from a quarry or RCA. If RCA is imported to the Site, it will be from NYSDEC-permitted or registered facilities in compliance 6 NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require chemical testing, unless required by NYSDEC under its terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete. RCA material is not acceptable for, and will not be used as cover, or drainage layer material.

All imported soils will consist of certified clean soils meeting the Allowable Constituent Levels for Imported Fill or Soil for Restricted-Residential Uses (appendix 5 of DER 10). Non-compliant

soils will not be imported without prior approval by NYSDEC. Nothing in the approved RAWP or its approval by NYSDEC should be construed as an approval for this purpose.

The clean fill would be segregated at a source/facility that is free of environmental contaminants. Qualified environmental personnel would collect representative samples at a frequency consistent with CP-51 / Soil Cleanup Guidance. The samples would be analyzed for Part 375 VOCs (EPA Method 8260), SVOCs (EPA Method 8270), pesticides/PCBs (EPA Method 8082/8081) and metals by an NYSDOH ELAP-certified laboratory. Upon meeting these criteria, the certified-clean fill would be transported to the site and segregated from impacted material, as necessary, on plastic sheeting until it is used as backfill.

Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Nothing in this RAWP should be construed as an approval for this purpose. Trucks entering the Site with imported soils will be securely covered with tight fitting covers.

5.4.10 Stormwater Pollution Prevention

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

5.4.11 Contingency Plan

If underground tanks or other previously unidentified contaminant sources are found during on-site remedial excavation or development related construction, sampling will be performed on product, sediment and surrounding soils, etc. Chemical analytical work will be for full scan parameters Part 375 and TCL/TAL listed VOCs, SVOCs, metals, pesticides, and PCBs. These analyses will not be limited to STARS parameters where tanks are identified without prior approval by NYSDEC. Analyses will not be otherwise limited without NYSDEC approval.

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

5.4.12 Community Air Monitoring Plan (CAMP)

Community air monitoring will be conducted in compliance with the NYSDOH Generic CAMP outlined below and included in Appendix G).

The CAMP includes real-time monitoring for VOCs and particulates at the downwind perimeter of each designated work area when certain activities are in progress. Continuous monitoring is required for all ground intrusive activities and during demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting and trenching, and the installation of soil borings or monitoring wells. Periodic monitoring for VOCs is required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location.

CAMP monitoring for VOCs levels will be conducted with PIDs, and monitoring for dust/particulates will be conducted with particulate sensors equipped with filters to detect particulates less than 10 microns in diameter (PM10). The CAMP would include continuous perimeter monitoring of dust and organic vapor utilizing DustTrak aerosol monitors and PIDs capable of recording data and calculating 15-minute averages. Monitoring for particulates and odors will be conducted during all ground intrusive activities by the RE's field inspector. The work zone is defined as the general area in which machinery is operating in support of remediation activities. A portable PID will be used to monitor the work zone and for periodic monitoring for VOCs during activities such as soil and groundwater sampling. The Site perimeter will be visually monitored for fugitive dust emissions.

The following actions will be taken based on VOC levels measured:

- If total VOC levels exceed 5 ppm above background for the 15-minute average at the perimeter, work activities will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 5 ppm above background, work activities will resume with continued monitoring.
- If total VOC levels at the downwind perimeter of the hot zone persist at levels in excess of 5 ppm above background but less than 25 ppm, work activities will be halted, the

source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps work activities will resume provided that the total organic vapor level 200 feet downwind of the hot zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less – but in no case less than 20 feet, is below 5 ppm above background for the 15-minute average.

- If the total VOC level is above 25 ppm at the perimeter of the hot zone, activities will be shut down.

The following actions will be taken based on visual dust observations:

- If the downwind particulate level is 100 micrograms per cubic meter (µg/m³) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression must be employed. Work may continue with dust suppression techniques provided that downwind PM10 levels do not exceed 150 µg/m³ above the background level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM10 levels are greater than 150 µg/m³ above the background level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM10 concentration to within 150 µg/m³ of the upwind level and in preventing visible dust migration.

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

5.4.13 Odor, Dust and Nuisance Control Plan

Dust, odor and nuisance control will be accomplished by the remediation contractor as described in this section. The FER will include the following certification by the RE: "I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology defined in the RAWP."

5.4.13.1 Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors off-site. Specific odor control methods to be used on a routine basis will include application of foam suppressants or tarps over the odor or VOC source areas. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor

events and of all other complaints about the project. Implementation of all odor controls, including the halt of work, will be the responsibility of the Volunteer's RE, who is responsible for certifying the FER. Application of odor controls is the responsibility of the remedial contractor.

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

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

5.4.13.2 Dust Control Plan

Dust suppression will include, at a minimum, the controls listed below:

- Dust suppression will be achieved through the use of a dedicated water distribution system or on-site water truck for road wetting. The truck will be equipped with a water application device capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water truck sprinkling.

5.4.13.3 Other Nuisances

A plan for rodent control will be developed and utilized by the contractor prior to and during Site clearing and Site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work and will conform, at a minimum, to NYCDEP noise control standards.

6.0 RESIDUAL CONTAMINATION TO REMAIN ON-SITE

Because residual contaminated soil and groundwater will exist beneath the Site after the remedy is complete, Engineering and Institutional Controls (ECs and ICs) are required to protect human health and the environment. These ECs and ICs are described hereafter. Long-term management of EC/ICs and of residual contamination will be executed under a Site-specific SMP that will be developed and included in the FER.

ECs will be implemented to protect public health and the environment by appropriately managing residual contamination. The Controlled Property (the Site) will have three primary EC systems: 1) vapor barrier, 2) a cellar ventilation system; and 3) a Site cover system consisting of a concrete building slab and a two foot thick certified clean soil cover at landscaped areas.

The FER will report residual contamination in tabular and map form. This will include presentation of contaminant concentrations that exceed both Track 1 and Track 4 SCOs.

7.0 ENGINEERING CONTROLS

7.1 Vapor Barrier

Potential exposure to residual contaminated soil vapor will be prevented by an engineered, continuous vapor barrier installed on subsurface slabs and walls of the section of the proposed development. The barrier will consist of Grace Preprufe 300R (or its approved equivalent) underneath the slab and Grace Preprufe 160R or Bituthene (or its approved equivalent) on the subsurface walls. The vapor barrier extents are shown on Figure 7, and the vapor barrier manufacturer's documentation and specifications are included as Appendix D.

7.2 Soil Vapor Mitigation

In addition to the vapor barrier, a cellar ventilation system consistent with code for a ventilated parking garage will be installed in the sub-grade areas of the future Site building. The cellar level mechanical spaces and storage spaces will be ventilated consistent with code for a ventilated parking garage. The cellar level mechanical ventilation system will be listed as an Engineering Control and recorded in the Environmental Easement (Section 3.3.11).

7.3 Site Cover System

Residual contaminated soil and groundwater will exist beneath the Site after the remedy is complete; therefore engineering and institutional controls are required to protect human health and the environment. The Installation of an engineered cap and cover system throughout the Site meeting requirements of Appendix 5 (Allowable Constituent Levels for Imported Fill or Soil) in the NYSDEC's guidance document DER-10 will be necessary to deem impacted materials left on-site inaccessible for potential human exposure.

Three engineered caps and covers will be used on-site to make remaining impacted material inaccessible for potential human exposure. Proposed development plans are provided in Appendix B, and a Site cover system plan is included as Figure 8.

Landscaped Areas

After the completion of soil removal and prior to backfilling within the proposed landscaped areas, a land survey will be performed by a New York State licensed surveyor. The survey will define the top elevation of residual contaminated soils. A physical demarcation layer, consisting of orange snow fencing material or equivalent material will be placed on this surface to provide a visual reference in landscaped areas. The demarcation layer will not be placed in areas capped with impervious surface cover (e.g., concrete slab). This demarcation layer will constitute the top of the 'Residuals Management Zone', the zone that requires adherence to special

conditions for disturbance of contaminated residual soils defined in the Site Management Plan. The survey will measure the grade covered by the demarcation layer before the placement of cover soils. This survey and the demarcation layer placed on this grade surface will constitute the physical and written record of the upper surface of the 'Residuals Management Zone' in the Site Management Plan. A map showing the survey results will be included in the Final Engineering Report and the Site Management Plan.

At least two feet of clean certified fill which meets the Allowable Constituent Levels for Imported Fill or Soil for Restricted-Residential Uses (Appendix 5 of DER-10) will be placed over all landscaped areas of the Site rendering underlying impacted soils inaccessible.

Building Pad

The Site building pad cap will be comprised of a reinforced concrete building slab. Concrete is considered an impermeable surface and will deem any soils below it inaccessible for potential human exposure when in place.

Driveway/Sidewalk Areas

The driveway and sidewalk area cap will be comprised of concrete, asphalt, or pavers set in concrete. Concrete and asphalt are considered an impermeable surface and will deem any soils below it inaccessible for potential human exposure when in place.

A Soil Management Plan will be included in the SMP and will outline the procedures to be followed in the event that the Site cover system and underlying residual contamination are disturbed after the Remedial Action is complete. Maintenance of this Site cover system will be described in the SMP in the FER.

8.0 CRITERIA FOR COMPLETION OF REMEDIATION/TERMINATION OF ENGINEERING CONTROL SYSTEMS

The below sections describe the criteria for completion of remediation and termination of remedial systems.

8.2 Vapor Mitigation Systems

8.2.1 Cellar Ventilation System

The cellar ventilation system will not be discontinued without written approval by NYSDEC and NYSDOH. A proposal to discontinue the cellar ventilation system may 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. Refer to Appendix E for cellar ventilation design details.

8.2.2 Subgrade Parking Garage Ventilation System

Per New York State Mechanical Code, the subgrade parking garage ventilation system will not be discontinued while the subgrade structure continues to operate as a parking garage. In the future should the subgrade structure be redeveloped to a use other than a parking garage, the subgrade parking garage ventilation system will not be discontinued without written approval by NYSDEC and NYSDOH. A proposal to discontinue the subgrade parking garage ventilation system may 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. Refer to Appendix E for subgrade parking garage ventilation system details.

9.0 INSTITUTIONAL CONTROLS

After the remedy is complete, the Site will have residual contamination remaining in place. Engineering Controls for the residual contamination have been incorporated into the remedy to render the overall Site remedy protective of public health and the environment. Two elements have been designed to ensure continual and proper management of residual contamination in perpetuity: an Environmental Easement and an SMP. These elements are described in this Section.

A Site-specific Environmental Easement will be recorded with the New York City Register's Office for Bronx County to provide an enforceable means of ensuring the continual and proper management of residual contamination and protection of public health and the environment in perpetuity or until released in writing by NYSDEC. It requires that the grantor of the Environmental Easement and the grantor's successors and assigns adhere to all Engineering and Institutional Controls (ECs/ICs) placed on this Site by this NYSDEC-approved remedy. ICs provide restrictions on Site usage and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. The SMP describes appropriate methods and procedures to ensure compliance with all ECs and ICs that are required by the Environmental Easement. Once the SMP has been approved by the NYSDEC, compliance with the SMP is required by the grantor of the Environmental Easement and grantor's successors and assigns.

9.1 Environmental Easement

An Environmental Easement, as defined in Article 71 Title 36 of the Environmental Conservation Law, is required when residual contamination is left on-site after the Remedial Action is complete. As part of this remedy, an Environmental Easement approved by NYSDEC will be filed and recorded with the New York City Register's Office for Bronx County. A copy of the Environmental Easement and proof of filing will be submitted as part of the FER.

The Environmental Easement renders the Site a Controlled Property. The Environmental Easement must be recorded with the New York City Register's Office for Bronx County before the Certificate of Completion can be issued by NYSDEC. A series of Institutional Controls are required under this remedy to implement, maintain and monitor these Engineering Control systems, prevent future potential exposure to residual contamination by controlling disturbances of the subsurface soil and restricting the use of the Site to Restricted-Residential, Commercial or Industrial restricted use(s) only. These Institutional Controls are requirements or restrictions placed on the Site that are listed in, and required by, the Environmental Easement. Institutional Controls can, generally, be subdivided between controls that support ECs, and those that place general restrictions on Site usage or other requirements. Institutional Controls

in both of these groups are closely integrated with the SMP, which provides all of the methods and procedures to be followed to comply with this remedy.

The Institutional Controls that support ECs are:

- Compliance with the Environmental Easement by the Grantee and the Grantee's successors and adherence to all elements of the SMP is required;
- All ECs must be operated and maintained as specified in the SMP;
- A Site cap and cover system consisting of the concrete building slab and a two foot thick certified clean soil cover at landscaped areas must be inspected, certified and maintained as required in the SMP;
- A soil vapor mitigation system consisting of a vapor barrier and a cellar ventilation system must be inspected, certified, operated and maintained as required by the SMP;
- All ECs on the Controlled Property must be inspected and certified at a frequency and in a manner defined in the SMP;
- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in the SMP;
- Groundwater and other environmental or public health monitoring must be performed as defined in the SMP. On-Site environmental monitoring devices, including but not limited to groundwater monitoring wells and soil vapor probes, must be installed to ensure proper functioning of the remedy; however, due the future development plans, the majority of the monitoring devices cannot be installed onsite and so must be installed offsite at the Site boundary;
- ECs may not be discontinued without an amendment or extinguishment of the Environmental Easement. The Environmental Easement may be extinguished only by release by the Commissioner of NYSDEC, or the Commissioner's designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

Adherence to these Institutional Controls for the Site will be mandated by the Environmental Easement and will be implemented under the SMP (discussed in the next section). The Controlled Property (Site) will also have a series of Institutional Controls in the form of Site restrictions and requirements. The Site restrictions that apply to the Controlled Property are:

- Vegetable gardens and farming on the Controlled Property are prohibited;
- Use of groundwater underlying the Controlled Property is prohibited without necessary water quality treatment as determined by the NYSDOH or NYCDOH;

- All future activities on the Controlled Property that will disturb residual contaminated material are prohibited unless they are conducted in accordance with the soil management provisions in the SMP;
- The Controlled Property may be used for Restricted-Residential Restricted Use (which also allows commercial or industrial use) , provided the long-term Engineering and Institutional Controls included in the SMP are employed;
- The subgrade levels of the Controlled Property may not be used for a higher level of use, such as residential use without an amendment or extinguishment of this Environmental Easement;
- Grantor agrees to submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This statement must be certified by an expert that the NYSDEC finds acceptable.

9.2 Site Management Plan

Site Management is the last phase of remediation and begins with the approval of the FER and issuance of the Certificate of Completion for the Remedial Action. The SMP is submitted as part of the FER but will be written in a manner that allows its use as a complete and independent document. Site Management continues in perpetuity or until released in writing by NYSDEC. The property owner is responsible to ensure that all Site Management responsibilities defined in the Environmental Easement and the SMP are performed.

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

To address these needs, this SMP will include four plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site monitoring; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems; and (4) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC. The SMP will be prepared in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation and the guidelines provided by NYSDEC.

Site management activities, reporting, and EC/IC certification will be scheduled on a certification period basis. The certification period will be annual and will be due for submission to NYSDEC within 45 days of the end of the reporting period.

No exclusions for handling of residual contaminated soils will be provided in the SMP. All handling of residual contaminated material will be subject to provisions contained in the SMP.

10.0 FINAL ENGINEERING REPORT

A FER and SMP will be submitted to NYSDEC following implementation of the Remedial Action defined in this RAWP. The FER provides the documentation that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The FER will provide a comprehensive account of the locations and characteristics of all material removed from the Site including the surveyed map(s) of all sources. The FER will include as-built drawings for all constructed elements, certifications, manifests, bills of lading as well as the complete SMP (formerly the Operation and Maintenance Plan). The FER will provide a description of the changes in the Remedial Action from the elements provided in the RAWP and associated design documents. The FER will provide a tabular summary of all performance evaluation sampling results and all material characterization results and other sampling and chemical analysis performed as part of the Remedial Action. The FER will provide test results demonstrating that all mitigation and remedial systems are functioning properly. The FER will be prepared in conformance with DER-10.

The FER will include written and photographic documentation of all remedial work performed under this remedy.

The FER will include an itemized tabular description of actual costs incurred during all aspects of the Remedial Action.

The FER will provide a thorough summary of all residual contamination left on the Site after the remedy is complete. Residual contamination includes all contamination that exceeds the Track 1 Unrestricted Use SCO in 6NYCRR Part 375-6. A table that shows exceedances from Track 1 Unrestricted SCOs for all soil/fill remaining at the Site after the Remedial Action and a map that shows the location and summarizes exceedances from Track 1 Unrestricted SCOs for all soil/fill remaining at the Site after the Remedial Action will be included in the FER.

The FER will provide a summary of residual contamination that exceeds the SCOs defined for the Site in the RAWP and an explanation for why the material was not removed as part of the Remedial Action. A table that shows residual contamination in excess of Site SCOs and a map that shows residual contamination in excess of Site SCOs will be included in the FER.

The FER will include an accounting of the destination of all material removed from the Site, including excavated contaminated soil, historic fill, solid waste, hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. It will provide an accounting of the origin and chemical quality of all material imported onto the Site, which will have been previously

approved by the RE and the NYSDEC to be in compliance with provisions set forth in this RAWP prior to importation to the Site.

The FER will include the following certification by the RE: "I certify that all import of soils from off-site, including source evaluation, approval and sampling, has been performed in a manner that is consistent with the methodology defined in the RAWP".

Before approval of a FER and issuance of a Certificate of Completion, all Electronic Data Deliverables (EDD) (including endpoint sampling) must be submitted through the NYSDEC Environmental Information Management System (EIMS) EQuIS software application and project reports must be submitted in digital form on electronic media (PDF) and NYSDEC EQuIS.

10.1 Certifications

The following certification will appear in front of the Executive Summary of the FER. The certification will be signed by the RE, Joel Landes P.E., who is a Professional Engineer registered in New York State. This certification will be appropriately signed and stamped. The certification will include the following statements:

I _____certify that I am currently a NYS registered professional engineer, I had primary direct responsibility for the implementation of the subject construction program, and I certify that the Remedial Work Plan (or Remedial Design or Plans and Specifications) was implemented and that all construction activities were completed in substantial conformance with the DER-approved Remedial Work Plan (or Remedial Design or Plans and Specifications).

I certify that The data submitted to DER demonstrates that the remediation requirements set forth in the Remedial Work Plan (or Remedial Design or Plans and Specifications) and all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established in the work plan (or Remedial Design or Plans and Specifications).

I certify that All use restrictions, institutional controls, ECs and/or any operation and maintenance requirements applicable to the Site are contained in an environmental easement created and recorded pursuant to ECL 71-3605 and that any affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded.

I certify that A SMP has been submitted for the continual and proper operation, maintenance, and monitoring of any ECs employed at the Site including the proper maintenance of any remaining monitoring wells, and that such plan has been approved by DER.

I certify that all documents generated in support of this report have been submitted in accordance with the DER's electronic submission protocols and have been accepted by the Department.

I certify that all data generated in support of this report have been submitted in accordance with the Department's electronic data deliverable and have been accepted by the Department.

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's Designated Site Representative (and if the site consists of multiple properties): [and I have been authorized and designated by all site owners to sign this certification] for the site.

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.

11.0 SCHEDULE

Mobilization will commence prior to remedial activities at the Site and is expected to take approximately 2 weeks. Once mobilization is complete, the remedial activities can begin, and are anticipated to take approximately 4 to 5 months. The NYSDEC will be notified prior to any changes to the remedial schedule. Within 90 days of completion of all remedial activities at the Site, a FER will be submitted to NYSDEC as detailed in Section 10.0. A chart showing a detailed project schedule is included in Appendix K.

Tables

Table 1
Restricted-Residential Restricted Use SCOs
714 East 241st Street
Bronx, New York
Langan Project No. 140115301

VOCS (mg/kg)	
1,1,1-Trichloroethane	100
1,1-Dichloroethane	26
1,1-Dichloroethylene	100
1,2,4-Trimethylbenzene	52
1,2-Dichlorobenzene	100
1,2-Dichloroethane	3.1
1,3,5-Trimethylbenzene	52
1,3-Dichlorobenzene	49
1,4-Dichlorobenzene	13
1,4-Dioxane	13
2-Butanone	100
Acetone	100
Benzene	4.8
Carbon tetrachloride	2.4
Chlorobenzene	100
Chloroform	49
cis-1,2-Dichloroethylene	100
Ethyl Benzene	41
Methyl tert-butyl ether (MTBE)	100
Methylene chloride	100
n-Butylbenzene	100
n-Propylbenzene	100
sec-Butylbenzene	100
tert-Butylbenzene	100
Tetrachloroethylene	19
Toluene	100
trans-1,2-Dichloroethylene	100
Trichloroethylene	21
Vinyl Chloride	0.9
Xylenes, Total	100
Metals (mg/kg)	
Arsenic	16
Barium	400
Beryllium	72
Cadmium	4.3
Chromium, hexavalent	110
Chromium, trivalent	180
Copper	270
Lead	400
Manganese	2000
Mercury	0.81
Nickel	310
Selenium	180
Silver	180
Zinc	10000

SVOCS (mg/kg)	
2-Methylphenol	100
Acenaphthene	100
Acenaphthylene	100
Anthracene	100
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(g,h,i)perylene	100
Benzo(k)fluoranthene	3.9
Chrysene	3.9
Dibenzo(a,h)anthracene	0.33
Dibenzofuran	59
Fluoranthene	100
Fluorene	100
Hexachlorobenzene	1.2
Indeno(1,2,3-cd)pyrene	0.5
Naphthalene	100
Pentachlorophenol	6.7
Phenanthrene	100
Phenol	100
Pyrene	100
PCBs/Pesticides (mg/kg)	
2,4,5-TP Acid (Silvex)	100
4,4'-DDE	8.9
4,4'-DDT	7.9
4,4'-DDD	13
Aldrin	0.097
alpha-BHC	0.48
beta-BHC	0.36
Chlordane (alpha)	4.2
delta-BHC	100
Dibenzofuran	59
Dieldrin	0.2
Endosulfan I	24
Endosulfan II	24
Endosulfan sulfate	24
Endrin	11
Heptachlor	2.1
Lindane	1.3
Polychlorinated biphenyls	1

Notes:
SCO: Soil Cleanup Objective
SVOC: semivolatile organic compound
VOC: volatile organic compound
PCB: polychlorinated biphenyl
mg/kg: milligram per kilogram

Table 2
Alternative I Remedial Cost Estimate - Track 1 - Unrestricted Use SCOs
714 East 241st Street
Block No. 5087, Lot No. 1
Bronx, New York

Item No.	Description of Environmental Premium Item	Quantity		Premium Unit Price		Estimated Premium
A. Contractors Fees						
A-1	HAZMAT Inspection and Building Abatement/Demolition - Includes abatement and demolition and removal of existing site structures.			**Allowance**		**$125,000**
A-2	Remediation Facilities, Equipment, Mobilization, Demobilization, Permits, and Site Maintenance - Remediation and decontamination facilities include trailer, truck cleaning facilities, etc.			**Allowance**		**$25,000**
A-3	Underground Storage Tanks (USTs) Removal - Removal and disposal of four decommissioned USTs.	**4**	**USTs**	**$6,000**	**per UST**	**$24,000**
A-4	Support of Excavation (SOE) - Accounts for design and construction of NYCDOB- and NYCT-approved SOE (includes underpinning). The excavation support requirements will not be completely defined until after the completion of the geotechnical engineering report.			**Allowance**		**$450,000**
A-5	Dewatering - Accounts for the design, installation, and for cost to operate and maintain the dewatering and treatment system for 5 months.			**Allowance**		**$1,500,000**
A-6	Site Excavation - Accounts for excavation and handling of soil to 15 feet below grade to account for construction of the proposed building. In addition, it assumes that excavation within areas with known petroleum impacts. Estimated at approximately 11,100 square feet and will extend to about 20 feet below existing grade.	**15,564**	**CY**	**$25**	**per CY**	**$389,000**
A-7	Transport and Disposal of Petroleum Contaminated Material - Includes transport vehicles and disposal of petroleum contaminated material at a permitted facility.	**13,422**	**Tons**	**$80**	**per Ton**	**$1,074,000**
A-8	Transport and Disposal of Historic Fill Material - Includes transport vehicles and disposal of historic fill material exceeding Unrestricted Use Soil Cleanup Objectives at a permitted facility.	**7,758**	**Tons**	**$50**	**per Ton**	**$388,000**
A-9	Transport and Disposal of Low-Level Contaminated Material / Native Soils - Includes transport vehicles and disposal of low-level contaminated material / native soils at a permitted facility.	**10,570**	**Tons**	**$40**	**per Ton**	**$423,000**
A-10	Dust, Odor and Vapor Control - Includes odor, dust, and organic vapor control during the excavation of petroleum-impacted material, removal of USTs, and remediation of the Site. Assumes control measures will include, but not be limited to application of odor suppressant, foam or water.	**4**	**Months**	**$10,000**	**per Month**	**$40,000**
A-11	Backfill - Import and placement of clean fill material to bring site to development grade. An additional 30% of material is included to account for compaction.	**3,163**	**CY**	**$40**	**per CY**	**$127,000**
A-12	Vapor Barrier - The vapor barrier will be a minimum 20 mil thickness and installed as a continuous subslab membrane under slabs and subsurface walls.	**33,378**	**SF**	**$8**	**per SF**	**$268,000**
A-13	Cellar Ventilation System (Allowance)- To be installed under portions of the Site building that will not be used as a ventilated parking garage.			**Allowance**		**$100,000**
				SUBTOTAL (without contingency)		**$4,933,000**
				Remediation Contingency (25% of Contractor Costs)		**$1,234,000**
				SUBTOTAL (with contingency)		**$6,167,000**
B. ENGINEERING AMD REMEDIATION OVERSIGHT FEES						
B-1	Waste Characterization Sampling - Includes in-situ characterization of soil for off-site disposal in accordance with the criteria of most disposal facilities. Pre-characterization of the material to be removed as part of development/remedial excavation will assist in obtaining pre-approval from disposal facilities and understanding disposal cost. Includes driller fees and laboratory analysis.			**Lump Sum**		**$49,500**
B-2	Engineering Oversight during RAWP Implementation, Monthly and Daily Reporting - Full time oversight and office support	**110**	**days**	**$1,800**	**per day**	**$198,000**
B-3	Community air monitoring program (CAMP) - Includes fulltime equipment rental and operation of perimeter dust and volatile organic compounds monitors and daily reporting.	**5**	**Months**	**$2,500**	**per Month**	**$12,500**
B-4	Confirmation Sampling - To confirm source material removal (assumes analysis for VOCs, SVOCs, PCBs, pesticides, and Metals for each sample).	**29**	**samples**	**$525**	**per sample**	**$15,000**
B-5	Final Engineering Report (FER) and NYSBCP Closeout			**Lump Sum**		**$30,000**
				SUBTOTAL		**$305,000**
				REMEDIAL ALTERNATIVE 1 - TRACK 1 BCP ESTIMATE - SITE PREPARATION (without contingency)		**$5,238,000**
				REMEDIAL ALTERNATIVE 1 - TRACK 1 BCP ESTIMATE - SITE PREPARATION (with contingency)		**$6,472,000**

General Assumptions and Conditions:

1. The density used for conversion from cubic yards to tons was 1.7 tons per cubic yard, plus contingency factor of 20%.
2. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. Langan is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.
3. The excavation footprint is estimated at 25,670 ft^2.
4. Excavation depths were calculated using Phase II and Remedial Investigation soil sample results, field observations, and observed fill depths.
5. Cost estimate is based on Langan past experience and generalized vendor estimates using 2016 dollars.
6. A five month period assumed for remediation and soil handling.

Contractor Cost Assumptions:

Contractor Item No. 3 - Assumes four gasoline USTs to be removed.

Contractor Item No. 5 - Even after obtaining site specific values for hydraulic conductivity, porosity, etc., the calculation to determine dewatering pumping requirements is highly variable and inaccurate. Therefore (considering the liability concerns) the estimated dewatering generation rates should only be used for discussion purposes only.

Contractor Item No. 7 - Assumes a total excavation footprint for petroleum contaminated material of 2,067 square feet to a depth of 20 feet below grade (this is subject to confirmation sampling).

Contractor Item No. 9 - Vapor/odor control cost estimate includes equipment, and materials necessary to monitor vapor/odor emission during intrusive site activities. Cost estimate includes application of vapor/odor suppressing foam to open excavations and soil loaded into trucks. Labor provided by excavation, handling, and disposal contractor provided above; this line item estimate reflects material, freight, and equipment costs.

Contractor Item No. 11 - Assumes future building footprint of 23,500 square-feet with a perimeter of 650 feet.

Contractor costs are absolute and do not take into account developmental costs associated with the project.

Engineering Cost Assumptions:

1. Sampling frequency based on 15,500 cy of material at a conservative rate of 800 cy/sample. A representative suite (not disposal facility specific) of analyses was assumed.
2. Confirmation samples scope based on 29 samples analyzed for volatile organic compounds, semivolatile organic compounds, and metals. Cost includes labor and materials to collect samples and subcontracted laboratory analysis by a New York State Department of Health (NYSDOH) environmental laboratory approval program (ELAP)-accredited laboratory.

Table 3
Alternative II Remedial Cost Estimate - Track 4 - Site-Specific SCOs
714 East 241st Street
Block No. 5087, Lot No. 1
Bronx, New York

Item No.	Description of Environmental Premium Item	Quantity		Premium Unit Price		Estimated Premium
A. Contractors Fees						
A-1	HAZMAT Inspection and Building Abatement/Demolition - Includes abatement and demolition and removal of existing site structures.			**Allowance**		**$125,000**
A-2	Remediation Facilities, Equipment, Mobilization, Demobilization, Permits, and Site Maintenance - Remediation and decontamination facilities include trailer, truck cleaning facilities, etc.			**Allowance**		**$25,000**
A-3	Underground Storage Tanks (USTs) Removal - Removal and disposal of four decommissioned USTs	**4**	**USTs**	**$6,000**	**per UST**	**$24,000**
A-4	Support of Excavation (SOE) - Accounts for design and construction of NYCDOB- and NYCT-approved SOE (includes minimal underpinning). The excavation support requirements will not be completely defined until after the completion of the geotechnical engineering report.			**Allowance**		**$300,000**
A-5	Dewatering - Accounts for the design, installation, and for cost to operate and maintain the dewatering and treatment system for 4 months.			**Allowance**		**$1,200,000**
A-6	Site Excavation - Accounts for excavation and handling of soil to 15 feet below grade to account for construction of the proposed building.	**13,281**	**CY**	**$25**	**per CY**	**$332,000**
A-7	Transport and Disposal of Petroleum Contaminated Material - Includes transport vehicles and disposal of petroleum contaminated material at a permitted facility.	**9,227**	**Tons**	**$80**	**per Ton**	**$738,000**
A-8	Transport and Disposal of Historic Fill Material - Includes transport vehicles and disposal of historic fill material exceeding Unrestricted Use Soil Cleanup Objectives at a permitted facility.	**7,450**	**Tons**	**$50**	**per Ton**	**$373,000**
A-9	Transport and Disposal of Low-Level Contaminated Material / Native Soils - Includes transport vehicles and disposal of low-level contaminated material / native soils at a permitted facility.	**10,415**	**Tons**	**$40**	**per Ton**	**$417,000**
A-10	Dust, Odor and Vapor Control - Includes odor, dust, and organic vapor control during the excavation of petroleum-impacted material, removal of USTs, and remediation of the Site. Assumes control measures will include, but not be limited to application of odor suppressant, foam or water.	**3**	**Months**	**$10,000**	**per Month**	**$30,000**
A-11	ORC Treatment - In-situ treatment of residual contamination within petroleum contaminated areas.	**1,110**	**lbs**	**$10**	**per lb**	**$11,100**
A-12	ORC Labor and Equipment - pumps, equipment operator, backhoe, laborers (2) for two days			**Lump Sum**		**$20,000**
A-13	Backfill - Import and placement of clean fill material to bring site to development grade. An additional 30% of material is included to account for compaction.	**195**	**CY**	**$40**	**per CY**	**$8,000**
A-14	Vapor Barrier - The vapor barrier will be a minimum 20 mil thickness and installed as a continuous subslab membrane under slabs and outside subsurface walls.	**33,378**	**SF**	**$8**	**per SF**	**$268,000**
A-15	Cellar Ventilation System (Allowance)- To be installed under portions of the Site building that will not be used as a ventilated parking garage.			**Allowance**		**$100,000**
A-16	Composite Cap - Concrete reinforced structural slab to be poured over the vapor barrier.	**23,635**	**SF**	**$18**	**per SF**	**$426,000**
					SUBTOTAL (without contingency)	**$4,397,100**
					Remediation Contingency (25% of Contractor Costs)	**$1,100,000**
					SUBTOTAL (with contingency)	**$5,497,100**
B. ENGINEERING AMD REMEDIATION OVERSIGHT FEES						
B-1	Waste Characterization Sampling - Includes in-situ characterization of soil for off-site disposal in accordance with the criteria of most disposal facilities. Pre-characterization of the material to be removed as part of development/remedial excavation will assist in obtaining pre-approval from disposal facilities and understanding disposal cost. Includes driller fees and laboratory analysis.			**Lump Sum**		**$43,800**
B-2	Engineering Oversight during RAWP Implementation, Monthly and Daily Reporting - Full time oversight and office support	**88**	**days**	**$1,800**	**per day**	**$158,000**
B-3	Community air monitoring program (CAMP) - Includes fulltime equipment rental and operation of perimeter dust and volatile organic compounds monitors and daily reporting.	**4**	**Months**	**$ 2,500**	**per Month**	**$10,000**
B-4	Documentation Sampling - To confirm source material removal (assumes analysis for VOCs, SVOCs, PCBs, pesticides, and Metals for each sample).	**29**	**samples**	**$525**	**per sample**	**$15,000**
B-5	Final Engineering Report (FER), Site Management Plan (SMP) and NYSBCP Closeout			**Lump Sum**		**$35,000**
					SUBTOTAL	**$261,800**
					REMEDIAL ALTERNATIVE 2 - TRACK 4 BCP ESTIMATE - SITE PREPARATION (without contingency)	**$4,658,900**
					REMEDIAL ALTERNATIVE 2 - TRACK 4 BCP ESTIMATE - SITE PREPARATION (with contingency)	**$5,758,900**

General Assumptions and Conditions:

1. The density used for conversion from cubic yards to tons was 1.7 tons per cubic yard, plus contingency factor of 20%.
2. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. Langan is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.
3. The excavation footprint is estimated at 25,670 ft^2.
4. Excavation depths were calculated using Phase II and Remedial Investigation soil sample results, field observations, and observed fill depths.
5. Cost estimate is based on Langan past experience and generalized vendor estimates using 2016 dollars.
6. A four month period assumed for remediation and soil handling.

Contractor Cost Assumptions:

Contractor Item No. 3 - Assumes four gasoline USTs to be removed.

Contractor Item No. 5 - Even after obtaining site specific values for hydraulic conductivity, porosity, etc., the calculation to determine dewatering pumping requirements is highly variable and inaccurate. Therefore (considering the liability concerns) the estimated dewatering generation rates should only be used for discussion purposes only.

Contractor Item No. 7 - Assumes a total excavation footprint for petroleum contaminated material of 2,067 square feet to a depth of 15 feet below grade.

Contractor Item No. 9 - Vapor/odor control cost estimate includes equipment, and materials necessary to monitor vapor/odor emission during intrusive site activities. Cost estimate includes application of vapor/odor suppressing foam to open excavations and soil loaded into trucks. Labor provided by excavation, handling, and disposal contractor provided above; this line item estimate reflects material, freight, and equipment costs.

Contractor Item No. 10 - Assumes one equipment operator, one backhoe, and 2 laborers working two 10-hr days to apply ORC slurry. Cost assumes one-time application event.

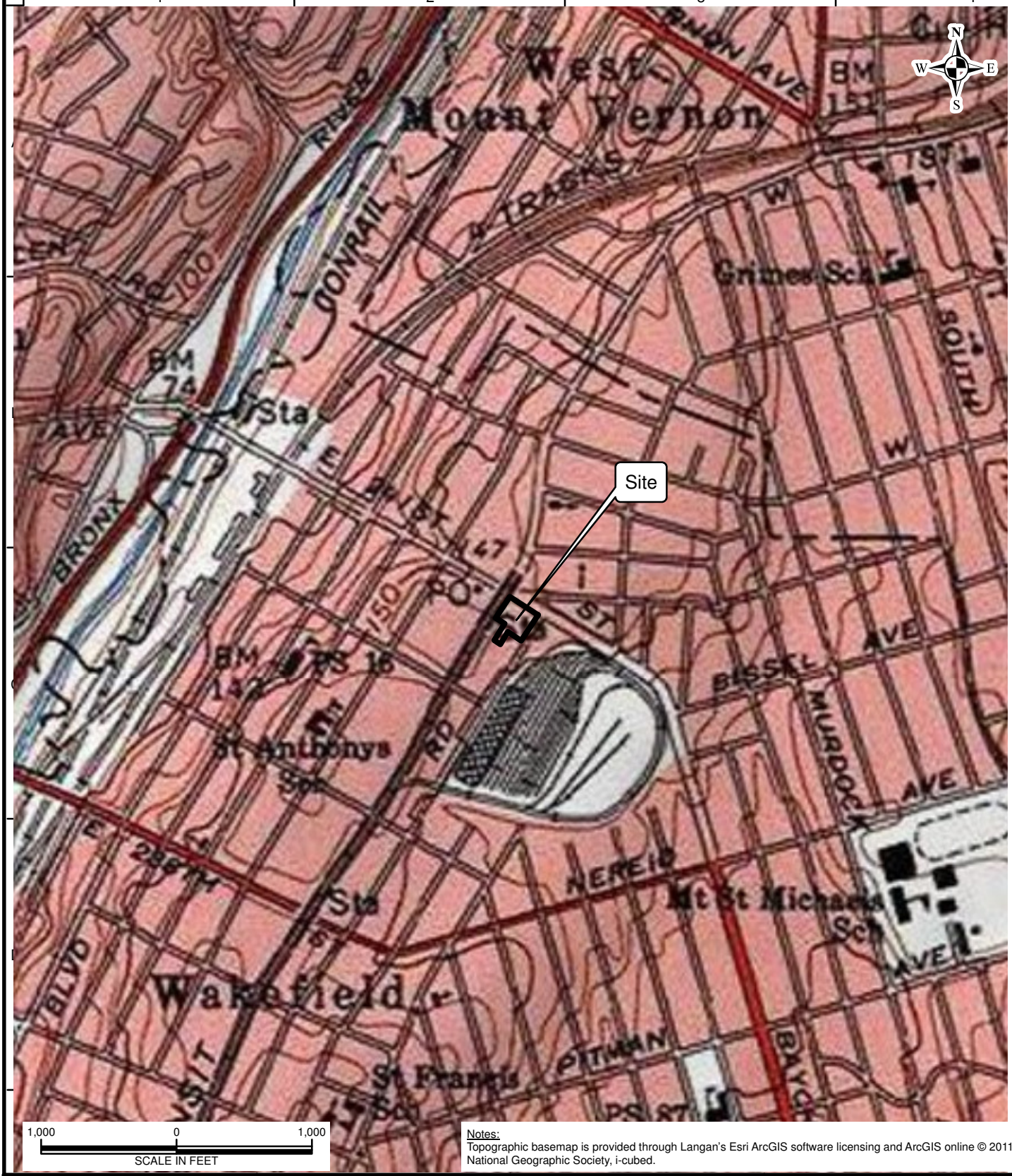
Contractor Item No. 11 - Assumes future building footprint of 23,500 square-feet with a perimeter of 650 feet.

Contractor costs are absolute and do not take into account developmental costs associated with the project.

Engineering Cost Assumptions:

1. Sampling frequency based on 13,300 cy of material at a conservative rate of 800 cy/sample. A representative suite (not disposal facility specific) of analyses was assumed.
2. Confirmation samples scope based on 29 samples analyzed for volatile organic compounds, semivolatile organic compounds, and metals. Cost includes labor and materials to collect samples and subcontracted laboratory analysis by a New York State Department of Health (NYSDOH) environmental laboratory approval program (ELAP)-accredited laboratory.

Figures



Notes:
Topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online © 2011 National Geographic Society, i-cubed.

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PENNSYLVANIA CONNECTICUT FLORIDA

ABU DHABI ATHENS DOHA
DUBAI ISTANBUL

Project
ENCLAVE ON 241ST STREET
BLOCK No. 5087, LOT No. 1
Bronx New York

Drawing Title
SITE LOCATION MAP

Project No.	140115301
Date	MARCH 2016
Scale	1"=1,000'
Drawn By	JPH
Submission Date	MARCH 2016
Figure	1

Path: \\langan.com\data\NHV\data3\140115301\ArcGIS\ArcMap_Documents\Old\Old 11-17\Figure 1 USGS Site Location Map.mxd Date: 1/14/2016 User: jhall Time: 9:34:48 AM

LEGEND:

- APPROXIMATE SITE BOUNDARY
- FORMER INTERNAL LOT BOUNDARIES
- PROPOSED BUILDING FOOTPRINT (APPROXIMATE) WITH CONCRETE CAP AND VAPOR BARRIER
- PROPOSED LANDSCAPED AREA (APPROXIMATE) WITH 2 FOOT THICK CERTIFIED CLEAN TOPSOIL COVER

NOTES:

1. BACKGROUND PLAN TAKEN FROM SURVEY CONDUCTED BY PERFECT POINT LAND SURVEYING RT ON AUGUST 6, 2015.
2. THIS PLAN SHOULD BE VIEWED AS A COLOR COPY AS THE BOUNDARIES ARE COLOR COORDINATED.

30 0 15 30
SCALE IN FEET

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

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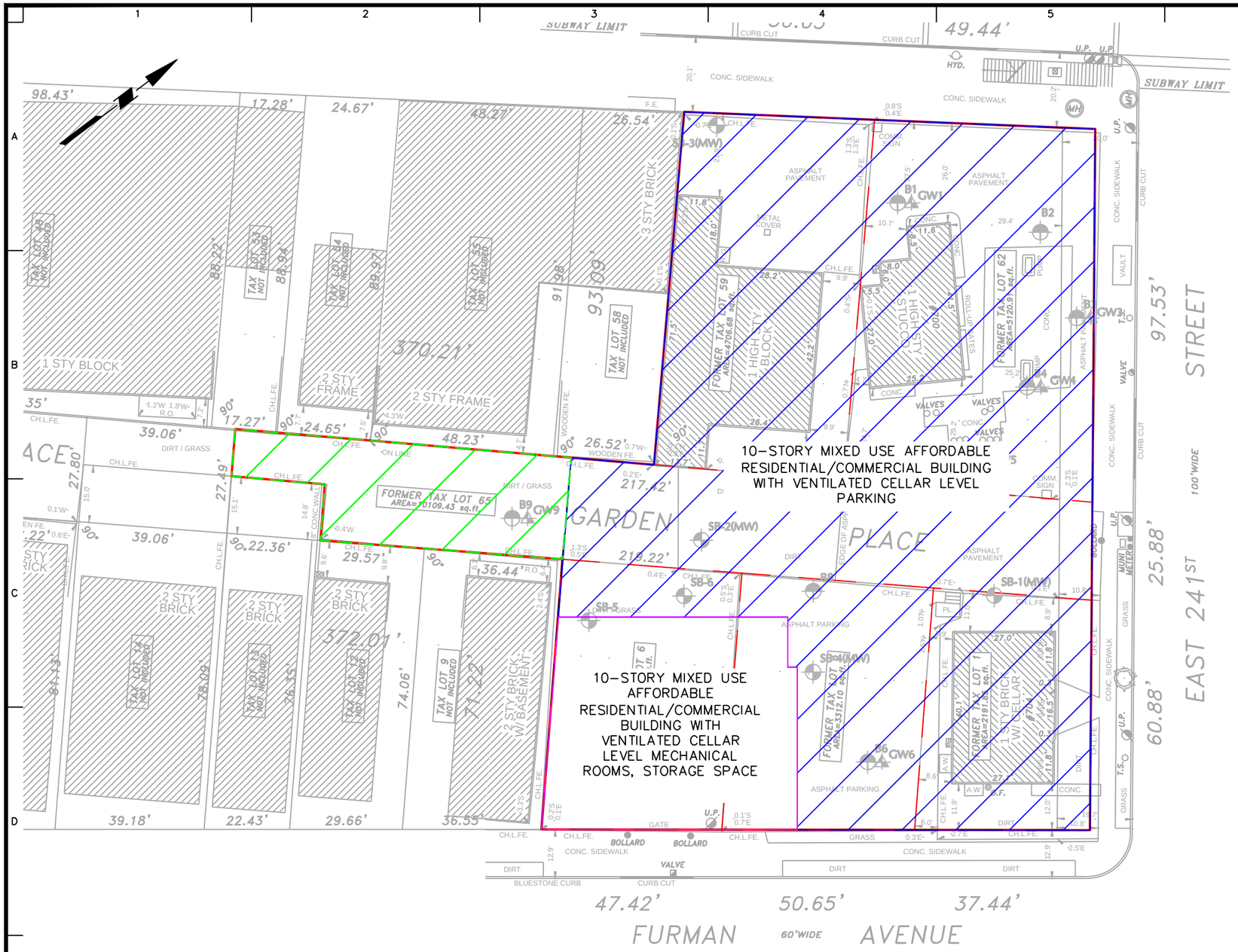
Langan Engineering and Environmental Services, Inc.
Langan CT, Inc.
Langan International LLC
Collectively known as Langan

Project
ENCLAVE ON 241ST STREET DEVELOPMENT
BLOCK No. 5087 LOT No. 1
BRONX **NEW YORK**

Drawing Title
SITE PLAN

Project No. 140115301	Drawing No. 2
Date MARCH 2016	
Scale 1"=30'	
Drawn By JPH / Checked By RJW	
Submission Date MARCH 2016	

Filename: \\langan.com\data\NHV\data3\140115301\Cadd Data - 140115301\2D-DesignFiles\RAWP\FIGURE 2 - SITE PLAN.dwg Date: 1/14/2016 Time: 09:45 User: jhall Style Table: Langan.stb Layout: ANSIB-BL



NOTES:

1. BACKGROUND PLAN TAKEN FROM SURVEY CONDUCTED BY PERFECT POINT LAND SURVEYING RT ON AUGUST 6, 2015.
2. THIS PLAN SHOULD BE VIEWED AS A COLOR COPY AS THE BOUNDARIES ARE COLOR COORDINATED.

30 0 15 30

SCALE IN FEET

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Collectively known as Langan

Project
ENCLAVE ON 241ST STREET DEVELOPMENT
BLOCK No. 5087 LOT No. 1
BRONX **NEW YORK**

Drawing Title
SITE DEVELOPMENT PLAN

Project No. 140115301	Drawing No. 3
Date MARCH 2016	
Scale 1"=30'	
Drawn By JPH / Checked By RJW	
Submission Date MARCH 2016	

Filename: \\langan.com\data\NHV\data3\140115301\Cadd Data - 140115301\2D-DesignFiles\RAWP\FIGURE 3 - SITE DEVELOPMENT PLAN.dwg Date: 1/14/2016 Time: 10:18 User: jhall Style Table: Langan.stb Layout: ANSIB-BL

SB18		
Sample ID	**SB18_6-7**	**SB11_11-12**
Sampling Date	**9/29/2015**	**9/30/2015**
Sample Depth (feet)	**6'-7'**	**11'-12'**
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)	ND	ND
Pesticides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Metals (mg/kg)	NE	NE

SB22		
Sample ID	**SB22_8-9**	**SB22_10-11**
Sampling Date	**9/30/2015**	**9/30/2015**
Sample Depth (feet)	**8'-9'**	**10'-11'**
VOCs (mg/kg)		
1,2,4-Trimethylbenzene	**3.90 D**	**280 D**
1,3,5-Trimethylbenzene	1.30 D	**89 D**
Benzene	***ND<0.22***	**0.39 JD**
Ethyl Benzene	0.52 D	**110 D**
Methylene chloride	**0.51 JD**	**ND<0.45**
Naphthalene	2.90 D	**29 JD**
n-Propylbenzene	0.50 D	**48 D**
Toluene	0.33 JD	**250 D**
Xylenes, Total	**2.80 D**	**600 D**

SB07		
Sample ID	**SB07_2-3**	**SB07_12-13**
Sampling Date	**9/30/2015**	**9/30/2015**
Sample Depth (feet)	**2'-3'**	**12'-13'**
Metals (mg/kg)		
Copper	**146**	15.80
Lead	**800**	7.08
Mercury	0.59	ND<0.033
Zinc	431	30.20

SB20		
Sample ID	**SB20_2-3**	**SB20_11-12**
Sampling Date	**9/30/2015**	**9/30/2015**
Sample Depth (feet)	**2'-3'**	**11'-12'**
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)	ND	ND
Pesticides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Metals (mg/kg)	NE	NE

SB10		
Sample ID	**SB10_8-9**	**SB10_11-12**
Sampling Date	**9/30/2015**	**9/30/2015**
Sample Depth (feet)	**8'-9'**	**11'-12'**
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)	NE	NE
Pesticides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Metals (mg/kg)	NE	NE

SB21		
Sample ID	**SB21_0.5-1.5**	**SB21_10-11**
Sampling Date	**9/30/2015**	**9/30/2015**
Sample Depth (feet)	**0.5'-1.5'**	**10'-11'**
Metals (mg/kg)		
Lead	**465**	5.90
Zinc	**155**	34

SB08		
Sample ID	**SB08_2-3**	**SB08_9-10**
Sampling Date	**9/30/2015**	**9/30/2015**
Sample Depth (feet)	**2'-3'**	**9'-10'**
VOCs (mg/kg)		
1,2,4-Trimethylbenzene	ND<0.0019	**80 D**
1,3,5-Trimethylbenzene	ND<0.0019	**14 D**
Ethyl Benzene	ND<0.0019	**9.40 D**
n-Propylbenzene	ND<0.0019	**8.0 D**
Xylenes, Total	ND<0.0057	**37 DE**

SB29		
Sample ID	**SB29_9-10**	**SB29_11.5-12.5**
Sampling Date	**9/28/2015**	**9/28/2015**
Sample Depth (feet)	**9'-10'**	**11.5'-12.5'**
SVOCs (mg/kg)		
Acetone	**0.80 D**	***ND<0.35***

SB19		
Sample ID	**SB19_4.5-5.5**	**SB19_9-10**
Sampling Date	**9/30/2015**	**9/30/2015**
Sample Depth (feet)	**4.5'-5.5'**	**9'-10'**
VOCs (mg/kg)		
1,2,4-Trimethylbenzene	0.56 E	**230 D**
1,3,5-Trimethylbenzene	0.21 E	**64 D**
Ethyl Benzene	0.25 E	**82 D**
Naphthalene	0.088	**28 D**
n-Propylbenzene	0.11	**36 D**
Toluene	0.36 E	**140 D**
Xylenes, Total	**1.0 E**	**390 D**

SB25	
Sample ID	**SB25_1-2**
Sampling Date	**9/29/2015**
Sample Depth (feet)	**1'-2'**
Metals (mg/kg)	
Chromium, Trivalent	**36.0**
Copper	**154**
Lead	**702**
Mercury	**0.31**
Nickel	**39.10**
Selenium	**7.12**
Zinc	**392**

SB27	
Sample ID	**SB27_1-2**
Sampling Date	**9/29/2015**
Sample Depth (feet)	**1'-2'**
SVOCs (mg/kg)	
Indeno(1,2,3-cd)pyrene	**0.79 D**
Metals (mg/kg)	
Lead	**471**
Mercury	**0.29**
Zinc	**206**

SB09		
Sample ID	**SB09_9-10**	**SB07_13-14**
Sampling Date	**9/30/2015**	**9/30/2015**
Sample Depth (feet)	**9'-10'**	**13'-14'**
VOCs (mg/kg)		
1,2,4-Trimethylbenzene	**13 D**	**68 D**
1,3,5-Trimethylbenzene	7.8 D	**25 D**
Benzene	**0.37 JD**	**0.29 JD**
Ethyl Benzene	**11 D**	**21 D**
n-Propylbenzene	**5.50 D**	**10 D**
Toluene	**1.30 D**	**4.90 D**
Xylenes, Total	**32 D**	**110 D**

SB28	
Sample ID	**SB28_1-2**
Sampling Date	**9/30/2015**
Sample Depth (feet)	**1'-2'**
Metals (mg/kg)	
Copper	**62**
Lead	**892**
Mercury	**0.45**
Zinc	**449**

SB11		
Sample ID	**SB11_8.5-9.5**	**SB11_12-13**
Sampling Date	**9/29/2015**	**9/29/2015**
Sample Depth (feet)	**8.5'-9.5'**	**12'-13'**
VOCs (mg/kg)	ND	ND
SVOCs (mg/kg)	ND	ND
Pesticides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Metals (mg/kg)	NE	NE

SB24		
Sample ID	**SB24_3.5-4.5**	**SB22_11-12**
Sampling Date	**9/29/2015**	**9/29/2015**
Sample Depth (feet)	**3.5'-4.5'**	**11'-12'**
Metals (mg/kg)		
Lead	**75**	7.90

SB23		
Sample ID	**SB23_8.5-9.5**	**SB23_11.5-12.5**
Sampling Date	**9/30/2015**	**9/30/2015**
Sample Depth (feet)	**8.5'-9.5'**	**11.5'-12.5'**
SVOCs (mg/kg)		
Benzo(a)anthracene	**3.73 D**	ND<0.071
Benzo(a)pyrene	**1.96 D**	ND<0.071
Benzo(b)fluoranthene	**1.36 D**	ND<0.071
Benzo(k)fluoranthene	**1.81 D**	ND<0.071
Chrysene	**2.99 D**	ND<0.071
Dibenzo(a,h)anthracene	**0.57 D**	ND<0.071
Indeno(1,2,3-cd)pyrene	**0.74 D**	ND<0.071

SB16		
Sample ID	**SB16_3-4**	**SB16_11.5-12.5**
Sampling Date	**9/29/2015**	**9/29/2015**
Sample Depth (feet)	**3'-4'**	**11.5'-12.5'**
SVOCs (mg/kg)		
Indeno(1,2,3-cd)pyrene	**1.36 D**	ND<0.072
Metals (mg/kg)		
Copper	**185**	16.10
Lead	**240**	3.96
Mercury	**0.25**	ND<0.034
Zinc	**110**	39.30

SB26	
Sample ID	**SB26_1-2**
Sampling Date	**9/29/2015**
Sample Depth (feet)	**1'-2'**
Metals (mg/kg)	
Copper	**82.8**
Lead	**502**
Zinc	**331**

SB17			
Sample ID	**SB17_3.5-4.5**	**SODUP03_9.29.15**	**SB17_11.5-12.5**
Sampling Date	**9/29/2015**	**9/29/2015**	**9/29/2015**
Sample Depth (feet)	**3.5'-4.5'**	**3.5'-4.5'**	**11.5'-12.5'**
Metals (mg/kg)			
Lead	**93.40**	**91.30**	5.39
Mercury	**0.49**	**0.59**	ND<0.033
Zinc	**254**	**271**	31.70

SB15			
Sample ID	**SB15_2.5-3.5**	**SODUP02_9.29.15**	**SB15_11.5-12.5**
Sampling Date	**9/29/2015**	**9/29/2015**	**9/29/2015**
Sample Depth (feet)	**2.5'-3.5'**	**2.5'-3.5'**	**11.5'-12.5'**
Metals (mg/kg)			
Barium	**444**	**1,010**	43.50
Copper	**472**	**216**	20.70
Lead	**1,980**	**1,440**	12.70
Mercury	**0.59**	**0.68**	ND<0.033
Nickel	**34.50**	**31.90**	15.30
Zinc	**674**	**749**	31.40

SB14		
Sample ID	**SB14_2-3**	**SB12_11.5-12.5**
Sampling Date	**9/28/2015**	**9/28/2015**
Sample Depth (feet)	**2'-3'**	**11.5'-12.5'**
Metals (mg/kg)		
Chromium, Trivalent	22.1	**41.4**

SB13			
Sample ID	**SB13_9-10**	**SB13_14-15**	**SODUP01_9.28.15**
Sampling Date	**9/28/2015**	**9/28/2015**	**9/28/2015**
Sample Depth (feet)	**9'-10'**	**14'-15'**	**14'-15'**
Metals (mg/kg)			
Chromium, Hexavalent	**3.36**	ND<0.55	ND<0.55
Chromium, Trivalent	27.70	20.30	**33.6**
Copper	14	**62.10**	19.2
Lead	6.3	**120**	6.35

SB12		
Sample ID	**SB12_1-2**	**SB12_11.5-12.5**
Sampling Date	**9/28/2015**	**9/28/2015**
Sample Depth (feet)	**1'-2'**	**11.5'-12.5'**
Metals (mg/kg)		
Barium	**380**	35.9
Lead	**679**	7.27
Mercury	**0.59**	ND<0.033
Zinc	**530**	29.7

AOC-1
HISTORICAL SITE USE

AOC-2

AOC-3

AOC-4

AOC-5

LEGEND:

- APPROXIMATE SITE BOUNDARY
- FORMER INTERNAL LOT BOUNDARIES
- PROPOSED BUILDING FOOTPRINT (APPROXIMATE)
- SB07/MW07 — SOIL BORING LOCATION. "MWXX" DENOTES A MONITORING WELL LOCATION.
- SB25 — SURFICIAL SOIL SAMPLE LOCATION
- SB-4(MW) — 2015 SOIL BORING LOCATION. (MW) DENOTES A TEMPORARY MONITORING WELL LOCATION [LANGAN LIMITED PHASE II ENVIRONMENTAL SITE INVESTIGATION, DATED 3 FEBRUARY 2015]
- B9 — 2013 SOIL BORING LOCATION [EBC PHASE II SUBSURFACE INVESTIGATION, DATED 31 JANUARY 2015]
- GW9 — 2013 TEMPORARY MONITORING WELL LOCATION [EBC PHASE II SUBSURFACE INVESTIGATION, DATED 31 JANUARY 2015]
- GPR ANOMALY INDICATIVE OF UST

NOTES:

1. BACKGROUND PLAN TAKEN FROM SURVEY CONDUCTED BY PERFECT POINT LAND SURVEYING RT ON MARCH 27, 2014.
2. LOCATIONS OF SOIL BORINGS AND SOIL VAPOR POINTS ARE SHOWN AS APPROXIMATE.
3. THIS PLAN SHOULD BE VIEWED AS A COLOR COPY AS THE BORING LOCATIONS AND BOUNDARIES ARE COLOR COORDINATED.
4. DRILLING WAS PERFORMED WITH A DIRECT-PUSH SAMPLER
5. A 2-INCH MACRO-CORE SAMPLER WAS USED TO OBTAIN SOIL SAMPLES FOR CLASSIFICATION AND LABORATORY TESTING. THE SAMPLES WERE OBTAINED CONTINUOUSLY AT 5-FOOT INTERVALS.
6. AOC – AREA OF CONCERN
7. SOIL SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NYSDEC NYCRR PART 375-6.8(A) UNRESTRICTED AND RESTRICTED RESIDENTIAL USE SOIL CLEANUP OBJECTIVES (SCO).
8. ONLY ANALYTES WITH EXCEEDANCES ARE SHOWN.
9. VOC – VOLATILE ORGANIC COMPOUND
10. SVOC – SEMI-VOLATILE ORGANIC COMPOUND
11. MG/KG – MILLIGRAMS PER KILOGRAM
12. ND – NOT DETECTED
13. NE – NO EXCEEDANCE

Analyte	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Residential Use SCOs
VOCs (mg/kg)		
1,2,4-Trimethylbenzene	3.6	52
1,3,5-Trimethylbenzene	8.4	52
Acetone	0.05	100
Benzene	0.06	4.8
Ethyl Benzene	1	41
Methylene chloride	0.05	100
Naphthalene	12	100
n-Propylbenzene	3.9	100
Toluene	0.7	100
Xylenes, Total	0.26	100
SVOCs (mg/kg)		
Benzo(a)anthracene	1	1
Benzo(a)pyrene	1	1
Benzo(b)fluoranthene	1	1
Benzo(k)fluoranthene	0.8	3.9
Chrysene	1	3.9
Dibenzo(a,h)anthracene	0.33	0.33
Indeno(1,2,3-cd)pyrene	0.5	0.5
Metals (mg/kg)		
Arsenic	13	16
Barium	350	400
Chromium, Hexavalent	1	110
Chromium, Trivalent	30	180
Copper	50	270
Lead	63	400
Mercury	0.18	0.81
Nickel	30	310
Selenium	3.9	180
Zinc	109	10000

Indicates exceedance of the Unrestricted Use Objectives

Indicates exceedance of the Restricted Residential Soil Cleanup Objectives

Indicates laboratory reporting limits were above the applicable criteria

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

15 0 5 10 15
SCALE IN FEET

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NEW JERSEY NEW YORK CONNECTICUT PENNSYLVANIA
OHIO WASHINGTON, DC FLORIDA TEXAS CALIFORNIA
ABU DHABI ATHENS DOHA DUBAI ISTANBUL PANAMA LONDON
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. S.A.
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan Engineering and Environmental Services, Inc.
Langan CT, Inc.
Langan International LLC
Collectively known as Langan

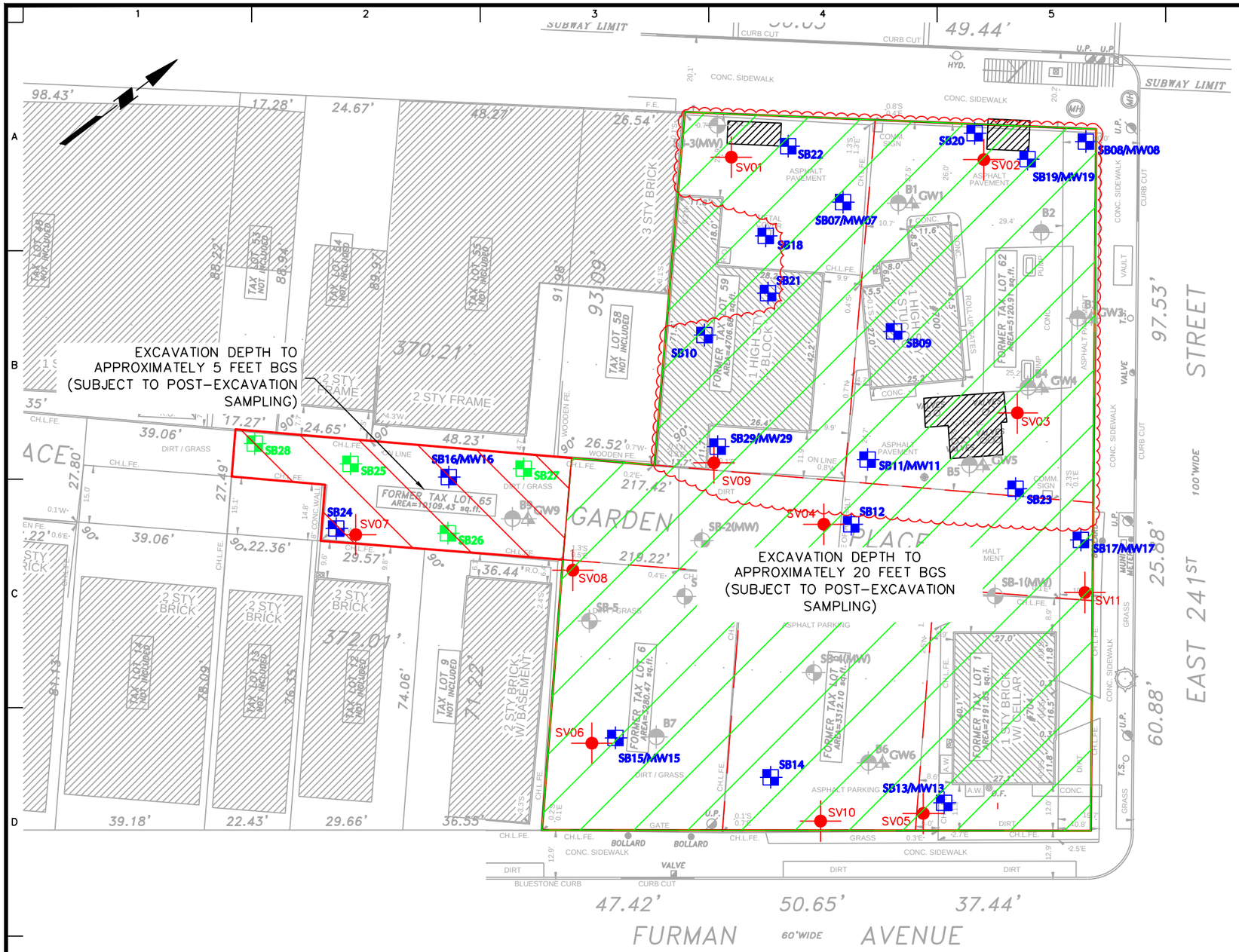
Project
ENCLAVE ON 241ST STREET DEVELOPMENT
BLOCK No. 5087, LOT No. 1
BRONX NEW YORK

Drawing Title
SOIL ANALYTICAL RESULTS MAP

Project No. 140115301	Drawing No. 4
Date MARCH 2016	
Scale 1"=15'	
Drawn By JPH / Checked By RJW	
Submission Date MARCH 2016	Sheet 4 of 9

Filename: \\langan.com\data\NHV\data3\140115301\Cadd Data - 140115301\2D-DesignFiles\RAWP\FIGURE 4 - SOIL ANALYTICAL RESULTS.dwg Date: 1/8/2016 Time: 12:22 User: jhall Style Table: Langan.stb Layout: ARCHD-BL

LANGAN
SUBMISSION DATE: NOVEMBER 2015
PROJECT NO. 140115301



LEGEND:

- APPROXIMATE SITE BOUNDARY
- FORMER INTERNAL LOT BOUNDARIES
- PROPOSED BUILDING FOOTPRINT (APPROXIMATE)
- EXCAVATION EXTENT TO APPROXIMATELY 15 FEET BGS
- EXCAVATION EXTENT TO APPROXIMATELY 5 FEET BGS
- SB07/MW07 — SOIL BORING LOCATION. "MWXX" DENOTES A MONITORING WELL LOCATION.
- SV12 — SOIL VAPOR POINT LOCATION
- SB25 — SURFICIAL SOIL SAMPLE LOCATION
- SB-4(MW) — 2015 SOIL BORING LOCATION. (MW) DENOTES A TEMPORARY MONITORING WELL LOCATION [LANGAN LIMITED PHASE II ENVIRONMENTAL SITE INVESTIGATION, DATED 3 FEBRUARY 2015]
- B9 — 2013 SOIL BORING LOCATION [EBC PHASE II SUBSURFACE INVESTIGATION, DATED 31 JANUARY 2015]
- GW9 — 2013 TEMPORARY MONITORING WELL LOCATION [EBC PHASE II SUBSURFACE INVESTIGATION, DATED 31 JANUARY 2015]
- GPR ANOMALY INDICATIVE OF UST
- ANTICIPATED PETROLEUM-IMPACTED SOIL REMOVAL AREA (APPROXIMATE) EXCAVATION EXTENT TO APPROXIMATELY 20 FEET BGS

NOTES:

1. BACKGROUND PLAN TAKEN FROM SURVEY CONDUCTED BY PERFECT POINT LAND SURVEYING RT ON AUGUST 6, 2015.
2. THIS PLAN SHOULD BE VIEWED AS A COLOR COPY AS THE BORING LOCATIONS AND BOUNDARIES ARE COLOR COORDINATED.
3. THE HORIZONTAL EXTENT OF THE ANTICIPATED PETROLEUM IMPACTED SOIL REMOVAL AREA WAS DEFINED THROUGH LABORATORY ANALYSIS AND/OR VISUAL AND OLFACTORY EVIDENCE OR INSTRUMENT SCREENING USING A PHOTOIONIZATION DETECTOR (PID).
4. THE VERTICAL EXTENT OF PETROLEUM IMPACTED MATERIAL IS ANTICIPATED TO EXTEND TO DEPTHS RANGING FROM 1 TO 20 FEET BGS.
5. AOC – AREA OF CONCERN
6. BGS – BELOW GROUND SURFACE

30 0 15 30
SCALE IN FEET

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

LANGAN
555 Long Wharf Drive
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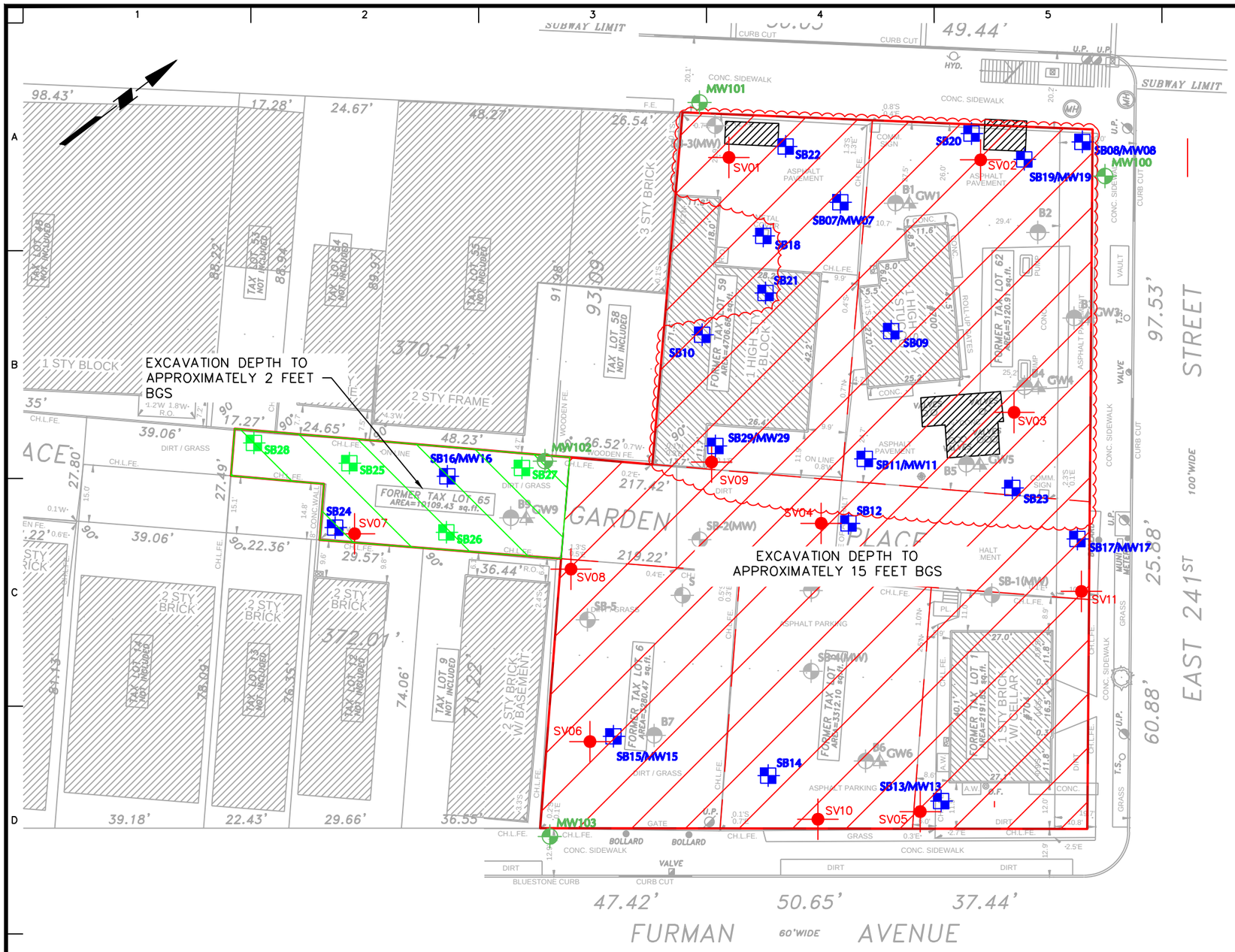
Project
ENCLAVE ON 241ST STREET DEVELOPMENT
BLOCK No. 5087 LOT No. 1
BRONX NEW YORK

Drawing Title
ALTERNATIVE I: TRACK 1 CLEANUP

Project No. 140115301	Drawing No. 5
Date MARCH 2016	
Scale 1"=30'	
Drawn By JPH / Checked By RJW	
Submission Date MARCH 2016	

Filename: \\langan.com\data\NHV\data3\140115301\Cadd Data - 140115301\2D-DesignFiles\RAWP\FIGURE 5 - ALT 1 - TRACK 1.dwg Date: 1/20/2016 Time: 13:57 User: jhall Style Table: Langan.stb Layout: ANSIB-BL



LEGEND:

- APPROXIMATE SITE BOUNDARY
- FORMER INTERNAL LOT BOUNDARIES
- PROPOSED BUILDING FOOTPRINT (APPROXIMATE)
- EXCAVATION EXTENT TO APPROXIMATELY 15 FEET BGS
- EXCAVATION EXTENT TO APPROXIMATELY 2 FEET BGS
- SB07/MW07 — SOIL BORING LOCATION. "MWXX" DENOTES A MONITORING WELL LOCATION.
- SV12 — SOIL VAPOR POINT LOCATION
- SB25 — SURFICIAL SOIL SAMPLE LOCATION
- SB-4(MW) — 2015 SOIL BORING LOCATION. (MW) DENOTES A TEMPORARY MONITORING WELL LOCATION [LANGAN LIMITED PHASE II ENVIRONMENTAL SITE INVESTIGATION, DATED 3 FEBRUARY 2015]
- B9 — 2013 SOIL BORING LOCATION [EBC PHASE II SUBSURFACE INVESTIGATION, DATED 31 JANUARY 2015]
- GW9 — 2013 TEMPORARY MONITORING WELL LOCATION [EBC PHASE II SUBSURFACE INVESTIGATION, DATED 31 JANUARY 2015]
- MW100 — POST REMEDIATION GROUNDWATER MONITORING WELL
- GPR ANOMALY INDICATIVE OF UST
- ANTICIPATED PETROLEUM-IMPACTED SOIL REMOVAL AREA AND IN-SITU ORC APPLICATION AREA

NOTES:

1. BACKGROUND PLAN TAKEN FROM SURVEY CONDUCTED BY PERFECT POINT LAND SURVEYING RT ON AUGUST 6, 2015.
2. THIS PLAN SHOULD BE VIEWED AS A COLOR COPY AS THE BORING LOCATIONS AND BOUNDARIES ARE COLOR COORDINATED.
3. THE HORIZONTAL EXTENT OF THE ANTICIPATED PETROLEUM IMPACTED SOIL REMOVAL AREA WAS DEFINED THROUGH LABORATORY ANALYSIS AND/OR VISUAL AND OLFACTORY EVIDENCE OR INSTRUMENT SCREENING USING A PHOTOIONIZATION DETECTOR (PID).
4. THE VERTICAL EXTENT OF PETROLEUM IMPACTED MATERIAL IS ANTICIPATED TO EXTEND TO DEPTHS RANGING FROM 1 TO 20 FEET BGS.
5. AOC – AREA OF CONCERN
6. BGS – BELOW GROUND SURFACE

30 0 15 30
SCALE IN FEET

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

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Project
ENCLAVE ON 241ST STREET DEVELOPMENT
BLOCK No. 5087 LOT No. 1
BRONX NEW YORK

Drawing Title
ALTERNATIVE II: TRACK 4 CLEANUP

Project No. 140115301	Drawing No. 6
Date MARCH 2016	
Scale 1"=30'	
Drawn By JPH / Checked By RJW	
Submission Date MARCH 2016	

Filename: \\langan.com\data\NHV\data3\140115301\Cadd Data - 140115301\2D-DesignFiles\RAWP\FIGURE 6 - ALT 2 - TRACK 4.dwg Date: 3/17/2016 Time: 14:41 User: jhall Style Table: Langan.stb Layout: ANSIB-BL

LEGEND:

- APPROXIMATE SITE BOUNDARY
- FORMER INTERNAL LOT BOUNDARIES
- PROPOSED BUILDING FOOTPRINT (APPROXIMATE)
- APPROXIMATE VAPOR BARRIER EXTENT

NOTES:

1. BACKGROUND PLAN TAKEN FROM SURVEY CONDUCTED BY PERFECT POINT LAND SURVEYING RT ON AUGUST 6, 2015.
2. THIS PLAN SHOULD BE VIEWED AS A COLOR COPY AS THE BOUNDARIES ARE COLOR COORDINATED.
3. VAPOR BARRIER WATERPROOFING MEMBRANE TO BE INSTALLED BETWEEN THE NEW CONCRETE SLAB AND UNDERLYING SUB-GRADE LAYER. IN BASEMENT INSTALLATION, THE VAPOR BARRIER/WATERPROOFING MEMBRANE WILL EXTEND ALONG THE FOUR WALLS OF THE BASEMENT STRUCTURE FROM THE BASE OF THE EXCAVATION TO SURFACE GRADE LEVEL.
4. VAPOR BARRIER SYSTEM WILL HAVE A MINIMUM THICKNESS OF 20 MILS.

30 0 15 30
SCALE IN FEET

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

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Project
ENCLAVE ON 241ST STREET DEVELOPMENT
BLOCK No. 5087 LOT No. 1
BRONX **NEW YORK**

Drawing Title
VAPOR BARRIER LOCATION PLAN

Project No.	Drawing No.
140115301	7
Date: MARCH 2016	
Scale: 1"=30'	
Drawn By: JPH / Checked By: RJW	
Submission Date: MARCH 2016	

Filename: \\langan.com\data\NHV\data3\140115301\Cadd Data - 140115301\2D-DesignFiles\RAWP\FIGURE 7 - VAPOR BARRIER LOCATION.dwg Date: 1/14/2016 Time: 11:09 User: jhall Style Table: Langan.stb Layout: ANSIB-BL

LEGEND:

- APPROXIMATE SITE BOUNDARY
- FORMER INTERNAL LOT BOUNDARIES
- PROPOSED BUILDING FOOTPRINT (APPROXIMATE)
- 10-STORY MIXED USE AFFORDABLE RESIDENTIAL/COMMERCIAL BUILDING WITH VENTILATED CELLAR LEVEL PARKING (CONCRETE SLAB CAP)
- UNDEVELOPED LANDSCAPED AREA (MINIMUM 2 FOOT THICK CERTIFIED CLEAN COVER)

NOTES:

1. BACKGROUND PLAN TAKEN FROM SURVEY CONDUCTED BY PERFECT POINT LAND SURVEYING RT ON AUGUST 6, 2015.
2. THIS PLAN SHOULD BE VIEWED AS A COLOR COPY AS THE BORING LOCATIONS AND BOUNDARIES ARE COLOR COORDINATED.

30 0 15 30

SCALE IN FEET

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

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Project

ENCLAVE ON 241ST STREET DEVELOPMENT

BLOCK No. 5087 LOT No. 1

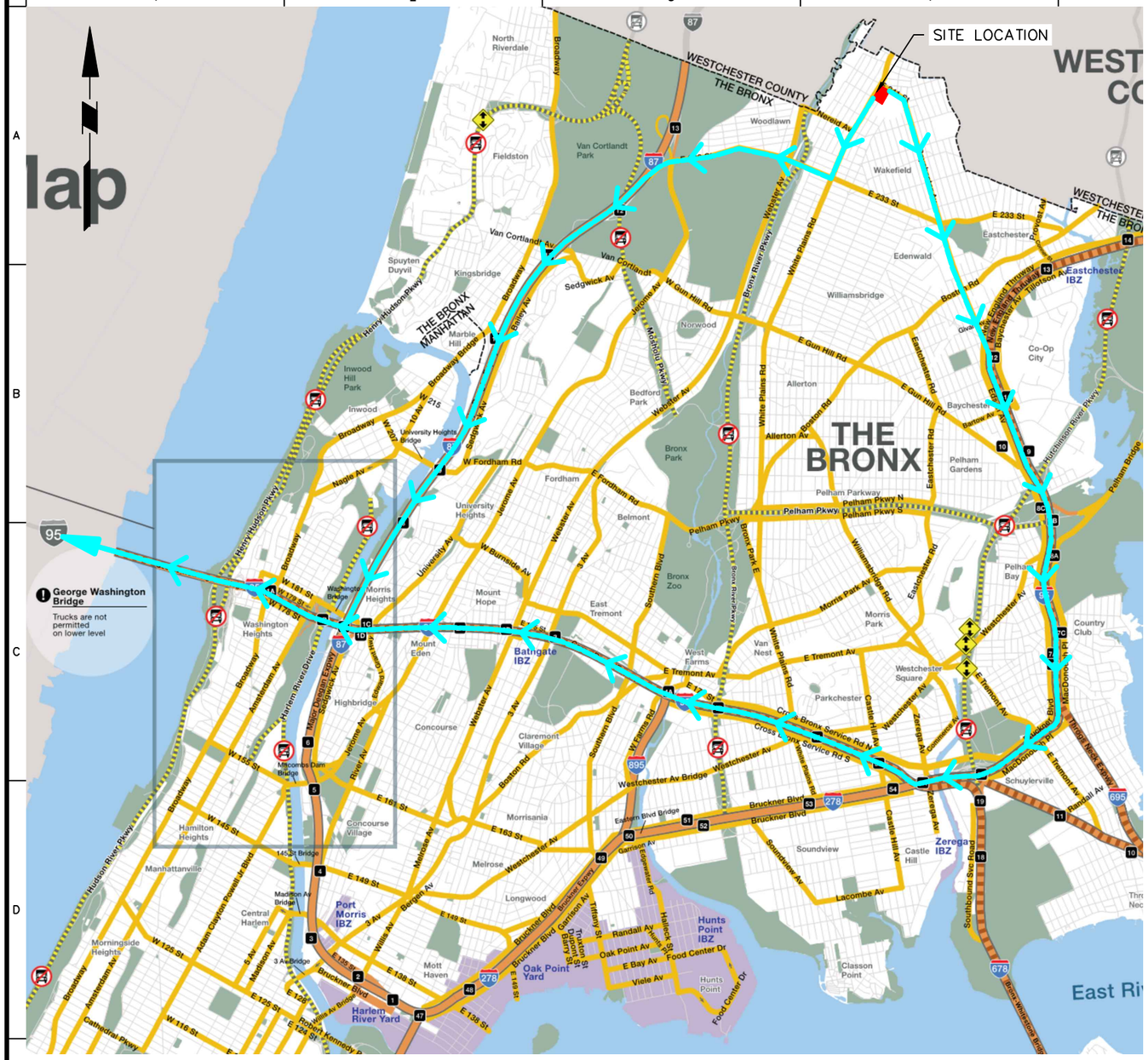
BRONX **NEW YORK**

Drawing Title

SITE COVER SYSTEM

Project No. 140115301	Drawing No. 8
Date MARCH 2016	
Scale 1"=30'	
Drawn By JPH / Checked By RJW	
Submission Date MARCH 2016	

Filename: \\langan.com\data\NHV\data3\140115301\Cadd Data - 140115301\2D-DesignFiles\RAWP\FIGURE 8 - SITE COVER.dwg Date: 1/14/2016 Time: 11:25 User: jhall Style Table: Langan.stb Layout: ANSIB-BL



LEGEND

SITE LOCATION

PREFERRED TRUCK ROUTE

NYC TRUCK ROUTE MAP LEGEND

Legend

Local Truck Route
Trucks with an origin or destination for the purpose of delivery, loading or servicing within the respective Borough, shall only operate on designated local routes, except that an operator may operate on a non-designated street for the purpose of arriving at his/her destination. This shall be accomplished by leaving a designated truck route at the intersection that is nearest to their destination, proceeding by the most direct route, and then returning to the nearest designated truck route by the most direct route. If the operator has additional destinations in the same general area, he/she may proceed by the most direct route to his/her next destination without returning to a designated truck route, provided that the operator's next destination does not require that he/she cross a designated truck route.

Through Truck Route
Trucks having neither an origin nor a destination within the respective Borough shall restrict the operation of such vehicles to those street segments designated as Through Truck Routes.

Through Truck Route on Expressway

Through Truck Route on Tunnel

Exception 53' Trailers Allowed
For definition see information on reverse side.

Industrial Business Zones (IBZ)

Parks and Open Spaces

29A Highway Exit

Commercial Vehicles Prohibited

Low Vertical Clearance Area

NOTES

1. BASE MAP WAS TAKEN ON JANUARY 13, 2016 FROM THE NEW YORK CITY DEPARTMENT OF TRANSPORTATION (NYCDOT) NEW YORK CITY TRUCK ROUTE MAP UPDATED ON MAY, 2015.
2. TWO PREFERRED ROUTES ARE SHOWN TO ALLOW FOR ROUTE OPTIONS DURING PEAK TRAFFIC HOURS.
3. NO COMMERCIAL VEHICLES, TRUCKS, OR TRACTOR TRAILERS ARE PERMITTED ON NEW YORK STATE PARKWAYS DUE TO LOW BRIDGES AND NARROW TRAVEL LANES.
4. SITE ENTRANCE MAY CHANGE DURING SITE REDEVELOPMENT; HOWEVER, PREFERRED TRUCK ROUTES SHOULD NOT BE AFFECTED.
5. THIS PLAN SHOULD BE VIEWED AS A COLOR COPY AS THE BOUNDARIES AND ROUTES ARE COLOR COORDINATED.

5000 0 2500 5000
SCALE IN FEET

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Project
ENCLAVE ON 241ST STREET DEVELOPMENT
BLOCK No. 5087 LOT No. 1
CITY
BRONX NEW YORK

Drawing Title
TRUCK ROUTE MAP

Project No. 140115301	Drawing No. 9
Date MARCH 2016	
Scale 1"=5,000'	
Drawn By JPH / Checked By RJW	
Submission Date MARCH 2016	

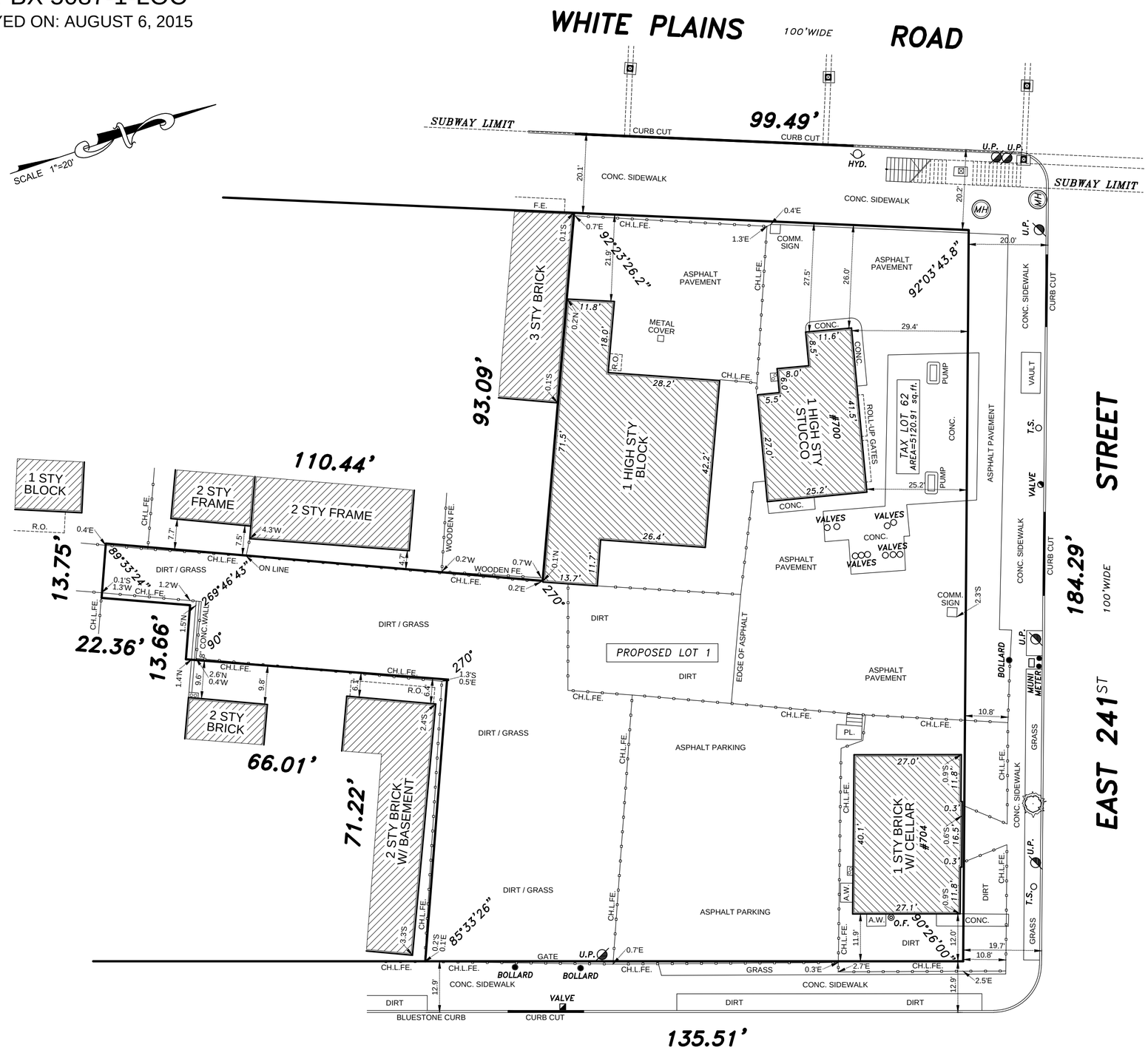
Filename: \\langan.com\data\NHV\data3\140115301\Cadd Data - 140115301\2D-DesignFiles\RAWP\FIGURE 9 - TRUCK ROUTE.dwg Date: 1/14/2016 Time: 11:37 User: jhall Style Table: Langan.stb Layout: ANSIB-BL

Appendix A

Site Survey

JOB NO. BX 5087-1-LOC

SURVEYED ON: AUGUST 6, 2015



LOT AREA = 24123.55 sq.ft. = 0.5538 acre

GRAPHIC SCALE

ALL WRITTEN MEASUREMENTS AND OFFSETS NOTED ON THIS SURVEY SUPERSEDE MEASUREMENTS SCALED OF THIS PLOT.

SCALE 1:20

0 5 10 15 20 25 30 35 40 45 50 100

SYMBOLS AND ABBREVIATIONS

FENCE	CH.L.FE. — WOOD FE.
UTILITY POLE	U.P.
PARKING METER	P.M.
OIL FILL	O.F.
MONITORING WELL	M.W.
TRAFFIC LIGHT	T.L.
LIGHT	
STREET LIGHT	L.P. — L.P.
FIRE HYDRANT	HYD.
SIAMESE CONNECTION	SIAM.
SHUT OFF VALVE	G.V. — G.V. — W.V. — W.V.
HANDICAPPED PARKING	
EXISTING TREE	#12"
DRAINS	DR. — DR.
ROOF OVER	R.O.
EXISTING ELEVATIONS	×43.15 TOP OF CURB ×42.93 BOTTOM OF CURB — ×43.78
CITY ESTABLISHED GRADES	L.G.7.52
CURB AND CURB CUT	CURB CUT
OVERHEAD SERVICE	OH.S.W.
CABLE TV MANHOLE	CTV
MANHOLES	MH — E — T — W — S RIM EL. INV.EL.
CATCH BASIN	C.B. — C.B.
FIRE ESCAPE	F.E.
PLATFORM	PL. or PLTF.
BASEMENT ENTRANCE	B.E.
CELLAR ENTRANCE	C.E.
AIR WAY	A.W.
BAY WINDOW	B.W.
CONCRETE	CONC.
OVERHANG	O.H
AIR CONDITION	AC
METAL	MET.
NORTH OF PROPERTY LINE	N
SOUTH OF PROPERTY LINE	S
EAST OF PROPERTY LINE	E
WEST OF PROPERTY LINE	W

GENERAL NOTES

SUBSURFACE UTILITIES ARE NOT GUARANTEED BY SURVEYOR. HIGH CAUTION RECOMMENDED AND VERIFICATION WITH PROPER CITY AGENCIES, IS MANDATORY BEFORE COMMENCING ALL NEW WORK.

ALL SUBSURFACE AND OVERHEAD UTILITIES (AS TO SIZE , TYPE AND DEPTH) SHOWN ON THIS SURVEY ARE TAKEN FROM RECORDS OF GOVERNMENTAL AGENCIES AND UTILITY COMPANIES, UNLESS OTHERWISE NOTED AND SHOWN.

COVER OR DEPTH OF UTILITIES WHICH DERIVED FROM FIELD MEASUREMENTS SHOWN ON THIS SURVEY SHOULD BE VERIFIED WITH PROPER AGENCY PRIOR TO CONSTRUCTION OF PROJECT. INVERT ELEVATIONS ARE DERIVED FROM CITY AGENCY RECORDS WHEN NOT AVAILABLE BY FIELD SURVEY AND NOTED AS "PER RECORD" ON THE SURVEY.

ALL SUBSURFACE UTILITY AS TO LOCATION AND DEPTH, SHOULD BE RECHECKED AND LEGAL GRADES SHOULD BE VERIFIED WITH THE TOPOGRAPHICAL BUREAU, PREFERABLY IN WRITING BEFORE COMMENCING CONSTRUCTION.

THIS IS TO CERTIFY THAT THERE ARE NO STREAMS OR NATURAL WATER COURSES ON THE SURVEYED PROPERTY EXCEPT AS SHOWN AND/OR DESCRIBED ON THIS SURVEY.

ALL OPERATIONS OF UNDERGROUND FACILITIES AND ALL EXCAVATORS ARE OBLIGATED TO COMPLY WITH ARTICLE 36 OF THE GENERAL BUSINESS LAW AND WITH PROVISIONS OF INDUSTRIAL CODE PART (RULE NO.35) BEFORE ANY EXCAVATION OR DEMOLITION IS COMMENCED. EVERY EXCAVATOR IS REQUIRED BY THESE LAWS TO GIVE ADVANCE NOTICE TO EVERY OPERATOR OF UNDERGROUND FACILITIES OF HIS INTENT TO PERFORM EXCAVATION OR DEMOLITION WORK IN THE SPECIFIED AREA

ALL ELEVATIONS SHOWN REFER TO THE **NAVD 1988** DATUM. TO OBTAIN:
- NGVD 1929 DATUM - ADD 1.098 FEET
- BRONX BOROUGH DATUM - SUBTRACT 1.508 FEET

EASEMENTS IF ANY ARE NOT SHOWN ON THIS SURVEY. NO INFORMATION PROVIDED TO SURVEYOR AT THIS TIME.

UNDERGROUND UTILITIES NOTES

UNDERGROUND, OVERHEAD AND GROUND LEVEL UTILITIES ARE NOT GUARANTEED AS TO ACCURACY, EXACT LOCATION, TYPE OR USE, ACTIVE OR INACTIVE. VERIFICATION IS MANDATORY WITH MUNICIPAL AGENCIES, PUBLIC AND PRIVATE UTILITY COMPANIES PRIOR TO TAKING TITLE AND OR DESIGN WORK. BOUNDARIES ARE NOT GUARANTEED UNLESS SO NOTED.

ALL OPERATIONS OF UNDERGROUND FACILITIES AND ALL EXCAVATORS ARE OBLIGATED TO COMPLY WITH ARTICLE 36 OF THE GENERAL BUSINESS LAW AND WITH PROVISIONS OF INDUSTRIAL CODE PART (RULE NO. 35) BEFORE ANY EXCAVATION OR DEMOLITION IS COMMENCED. EVERY EXCAVATOR IS REQUIRED BY THESE LAWS TO GIVE ADVANCE NOTICE TO EVERY OPERATOR OF UNDERGROUND FACILITIES OF HIS INTENT TO PERFORM EXCAVATION OR DEMOLITION WORK IN THE SPECIFIED AREA

GUARANTEED TO:	ER Holdings, LLC
COUNTY: BRONX	CITY: BRONX
SECTION:	BLOCK: 5087 LOT(S): 1
PROPERTY ADDRESS:	700-714 EAST 241st STREET

LOCATION SURVEY

PREPARED BY

PERFECT POINT
LAND SURVEYING RT
brooklyn - queens - manhattan - bronx
staten island - nassau
phone: (718) 474-7700
fax: (718) 872-9699
info@ppsurveying.com
www.ppsurveying.com

N.Y.S. L.L.S. 049844

Appendix B

Proposed Development Plans

PROPOSED NEW DEVELOPMENT FOR:

EAST 241 STREET

BRONX, NY

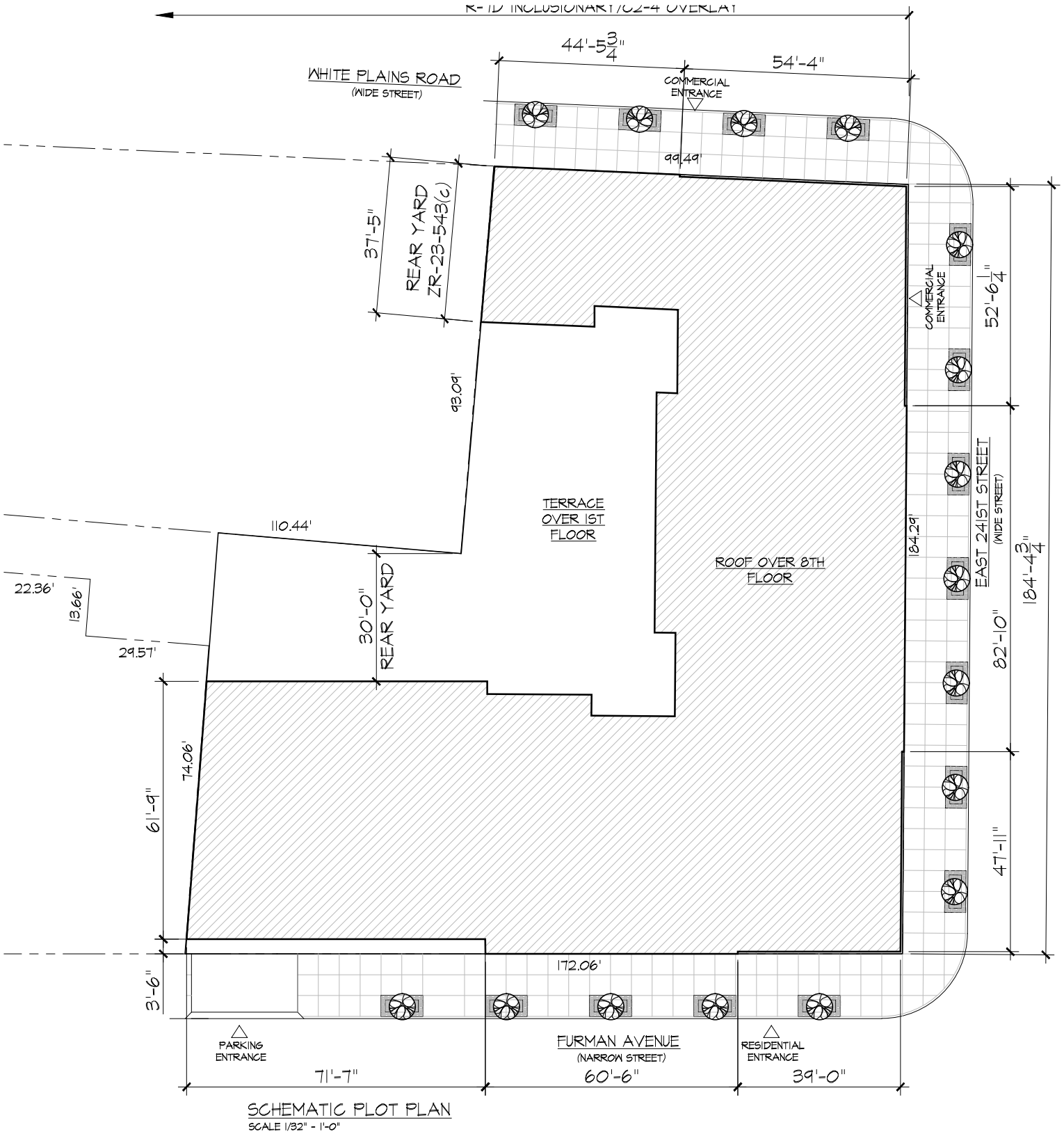
AUFGANG ARCHITECTS
49 North Airmont Road, Suffern, NY 10901 tel: 845.368.0004 www.aufgang.com

PROPOSED NEW DEVELOPMENT FOR:
EAST 241 STREET
BRONX, NY

ZONING & MASSING STUDY

BLOCK NO.:	5087
LOT NO.:	1, 3, 6, 59, 62 & 65
DATE:	02.10.15
DRAWING NO:	Z-100

NORTH ARROW:



SCHEMATIC PLOT PLAN

SCALE 1/32" = 1'-0"

PROPOSE ZONE R:7-D W/ C2-4 OVERLAY

ALL FIGURES ARE PRELIMINARY AND APPROXIMATE. LOT AREAS AND EXISTING FLOOR AREAS ARE SUBJECT TO SURVEY CONFIRMATION. FINAL AREAS AND LOT ANGLES TO BE VERIFIED BY COMPLETE SURVEY.

AUFGANG ARCHITECTS
49 North Airmont Road, Suffern, NY 10901 tel: 845.368.0004 www.aufgang.com

PROPOSED NEW DEVELOPMENT FOR:

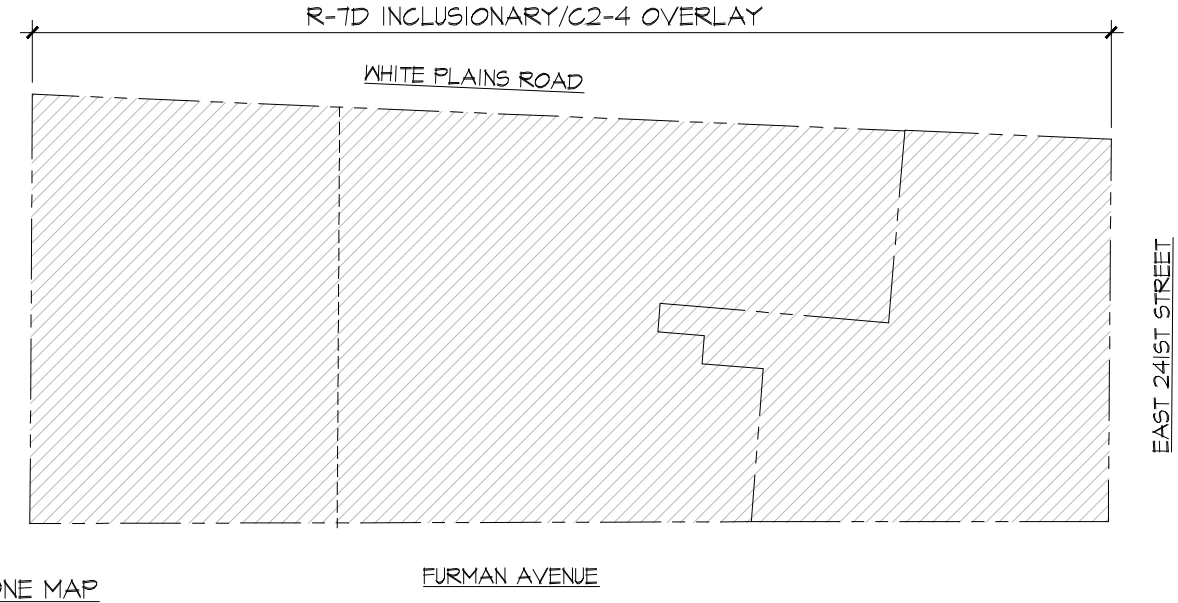
EAST 241 STREET

BRONX, NY

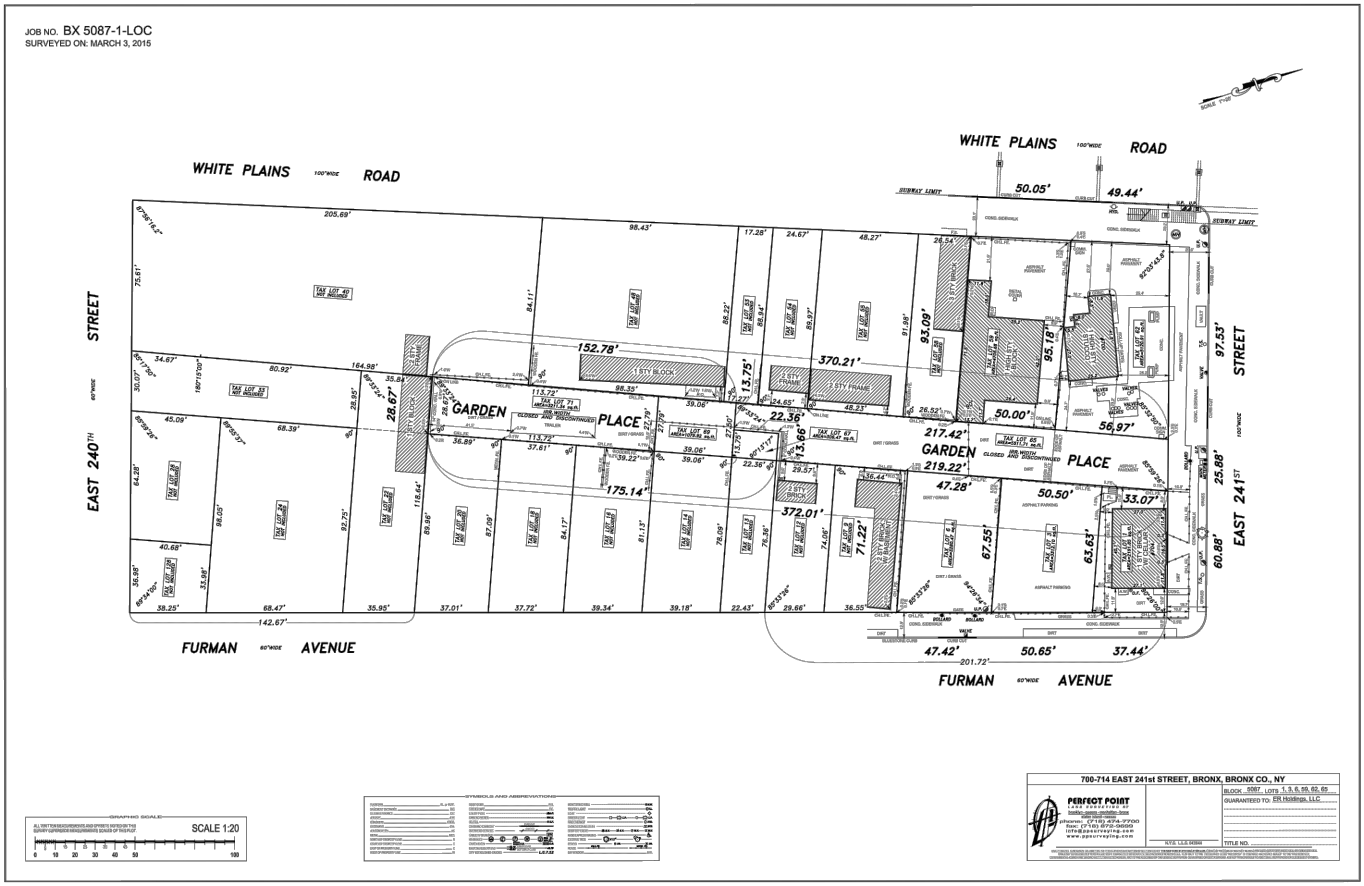
ZONING & MASSING STUDY

BLOCK NO.:	5087
LOT NO.:	1, 3, 6, 59, 62, 65 & 9
DATE:	11.16.15
DRAWING NO:	Z-101

NORTH ARROW:



RE-ZONE MAP
NOT TO SCALE



SURVEY
NOT TO SCALE

PROPOSE ZONE C4-4L (R7A EQUIVALENT)

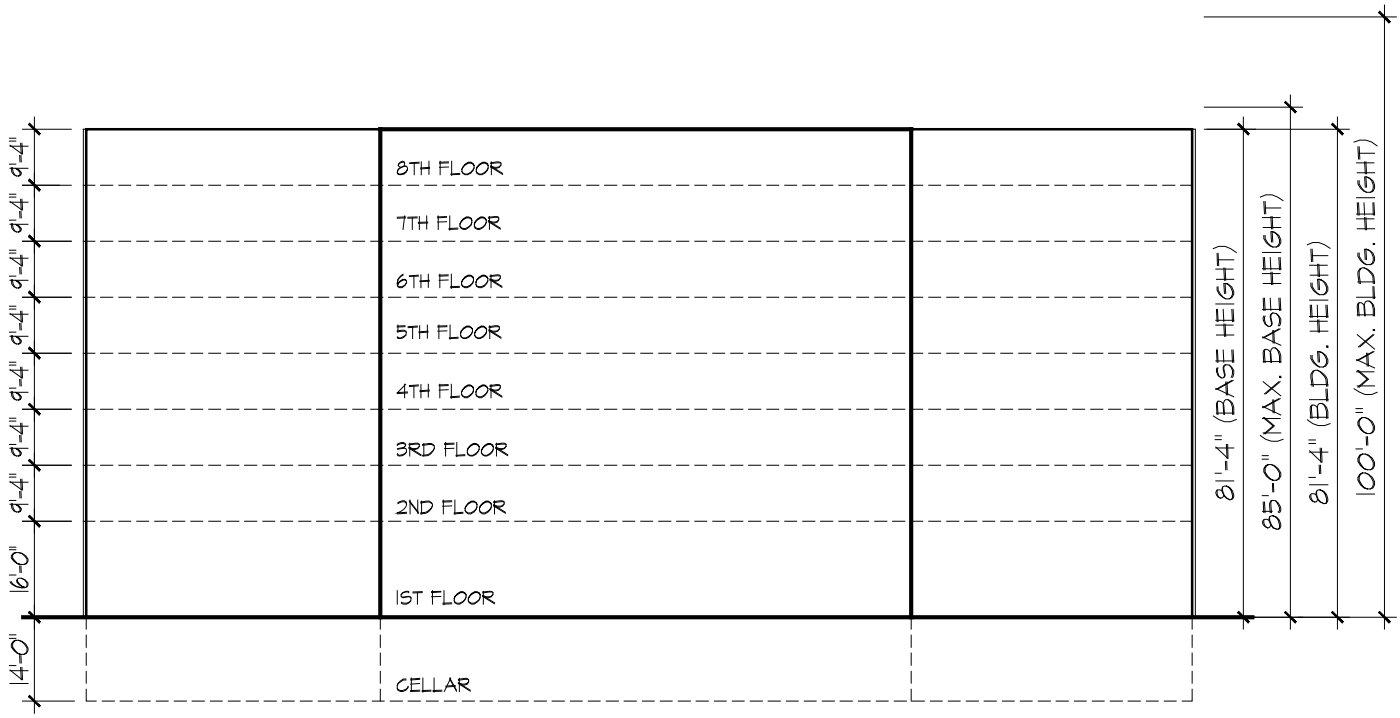
AUFGANG ARCHITECTS
49 North Airmont Road, Suffern, NY 10901 tel: 845.368.0004 www.aufgang.com

PROPOSED NEW DEVELOPMENT FOR:
EAST 241 STREET
BRONX, NY

ZONING & MASSING STUDY

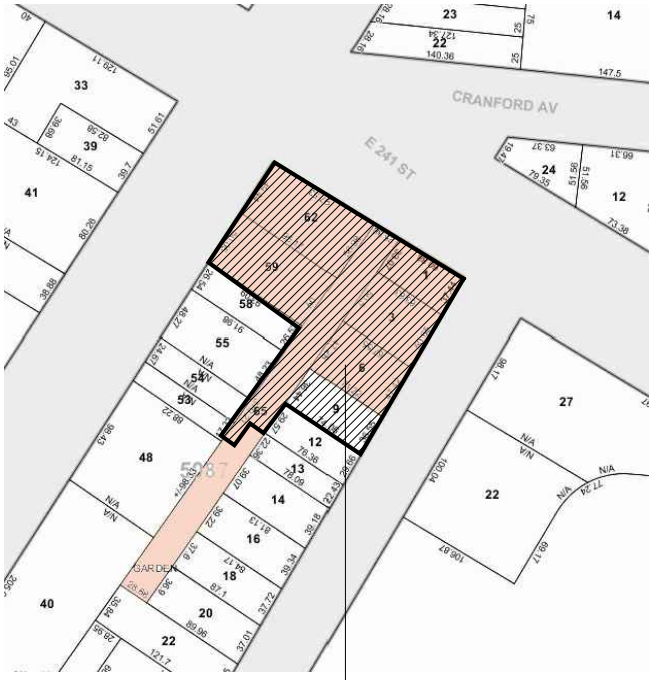
BLOCK NO.:	5087
LOT NO.:	1, 3, 6, 59, 62, 65 & 9
DATE:	11.16.15
DRAWING NO:	Z-102

NORTH ARROW:



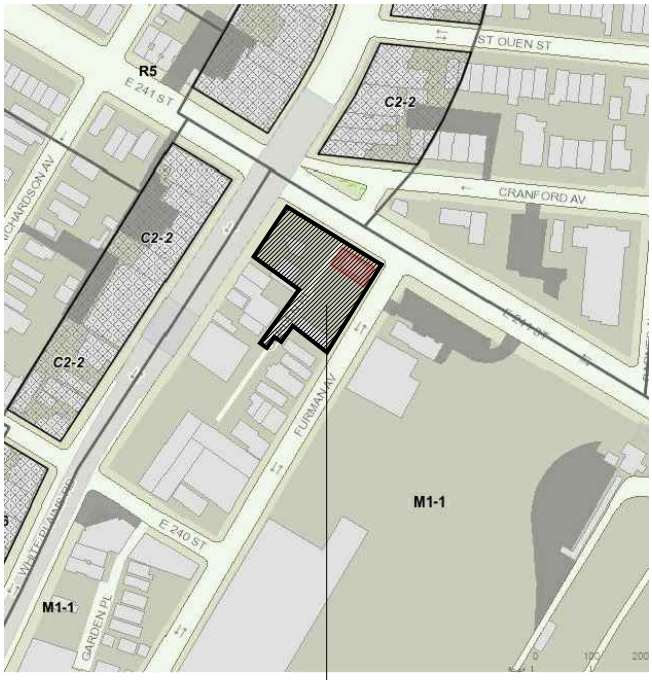
SCHEMATIC HEIGHT DIAGRAM

SCALE 1/32" = 1'-0"



TAX PLAN

PROJECT LOCATION



ZONING MAP

PROPOSED TAX LOT

PROPOSE ZONE R:7-D W/ C2-4 OVERLAY

AUFGANG ARCHITECTS
49 North Airmont Road, Suffern, NY 10901 tel: 845.368.0004 www.aufgang.com

PROPOSED NEW DEVELOPMENT FOR:

EAST 241 STREET

BRONX, NY

ZONING & MASSING STUDY

BLOCK NO.:	5087
LOT NO.:	1, 3, 6, 59, 62, 65 & 9
DATE:	11.16.15
DRAWING NO:	Z-103

NORTH ARROW:

FLOOR	COMMERCIAL SQ. FT.	RESIDENTIAL SQ. FT.	PARKING SQ. FT.	REF. / CORR. SQ. FT.	LAUNDRY REC. ROOM	TOTAL ZONING
CELLAR		5179	18651			
1	22851	1350	1060			1200
2		18979		700	2090	16189
3		18979		700		18279
4		18979		700		18279
5		18979		700		18279
6		18979		700		18279
7		18979		700		18279
8		18979		700		18279
TOTAL	22851	139382	19711	4900	2090	127063

SQUARE FOOTAGE BREAKDOWN

Block: 5087	CONST. CLASS 1-B 2HR RATED
Lot: 1, 3, 6, 59, 62, 65 & 9	BUILDING CODE OCCUPANCY GROUP R-2
Existing Zoning: M1-1	BUILDING TO BE FULLY SPRINKLERED
Proposed Zoning: R-7D With C2-4 Overlay	BUILDING TO BE DESIGNED PER 2014 NYC BUILDING CODE
Map: 2a	BUILDING TO BE DESIGNED PER NYC ENERGY CODE

INCLUSIONARY HOUSING	PERMITTED/REQUIRED		PROPOSED		REMARKS	RES.
RESIDENTIAL (QUALITY HOUSING PROGRAM)						
Lot area						23-32
Corner			18,650.91	Sq. Ft.		
Interior			8,119.64	Sq. Ft.		
TOTAL	1,700.00	Sq.Ft.	26,770.55	Sq.Ft.	OK	
F.A.R. Floor Area Ratio						23-952
Base	4.2					
Bonus	5.6		4.75		OK	
Gross Floor Area						23-952
Base	112,436.31					
Bonus	149,915.08	Sq.Ft. Max.	127,063.00	Sq.Ft.	OK	
Lot Coverage						23-145
Corner 80%	14,920.73	Max.	14,661.00	Sq.Ft.	OK	
Interior 65%	5,277.77	Max.	4,318.00	Sq.Ft.	OK	
No. of Apartments						23-22
R-7D (680)	187	Units Max.	127	Units Approx.	OK	
Heights (feet)						23-633
Min. Base Height	60'-0"		81'-4"		OK	
Max. Base Height	85'-0"		81'-4"		OK	
Max Building Height	100'-0"		81'-4"		OK	
Yard Regulations						
Front	Not req'd		None		OK	23-45
Side	Not req'd		None		OK	23-46
Rear	30'-0"		30'-0"		OK	23-47
Front Setback						23-633
Narrow Street	15'-0"		N/A		OK	
Wide Street	10'-0"		N/A		OK	
COMMERCIAL						
F.A.R. Floor Area Ratio						33-121
	2.00	Max.	0.85		OK	
Gross Floor Area						33-121
	53,541.10	Sq.Ft. Max.	22,851.00	Sq.Ft.	OK	
MIXED USE						
F.A.R. Floor Area Ratio						23-952
	5.60	Max.	5.60		OK	
Gross Floor Area						23-952
RESIDENTIAL			127,063.00			
COMMERCIAL			22,851.00			
TOTAL	149,915.08	Sq.Ft. Max.	149,914.00	Sq.Ft.	OK	
PARKING						
RESIDENTIAL	32	Spaces	46	Spaces	OK	25-25
COMMERCIAL	Waived		Waived		OK	36-21 / 36-232

ZONING CALCULATION

PROPOSE ZONE R:7-D W/ C2-4 OVERLAY

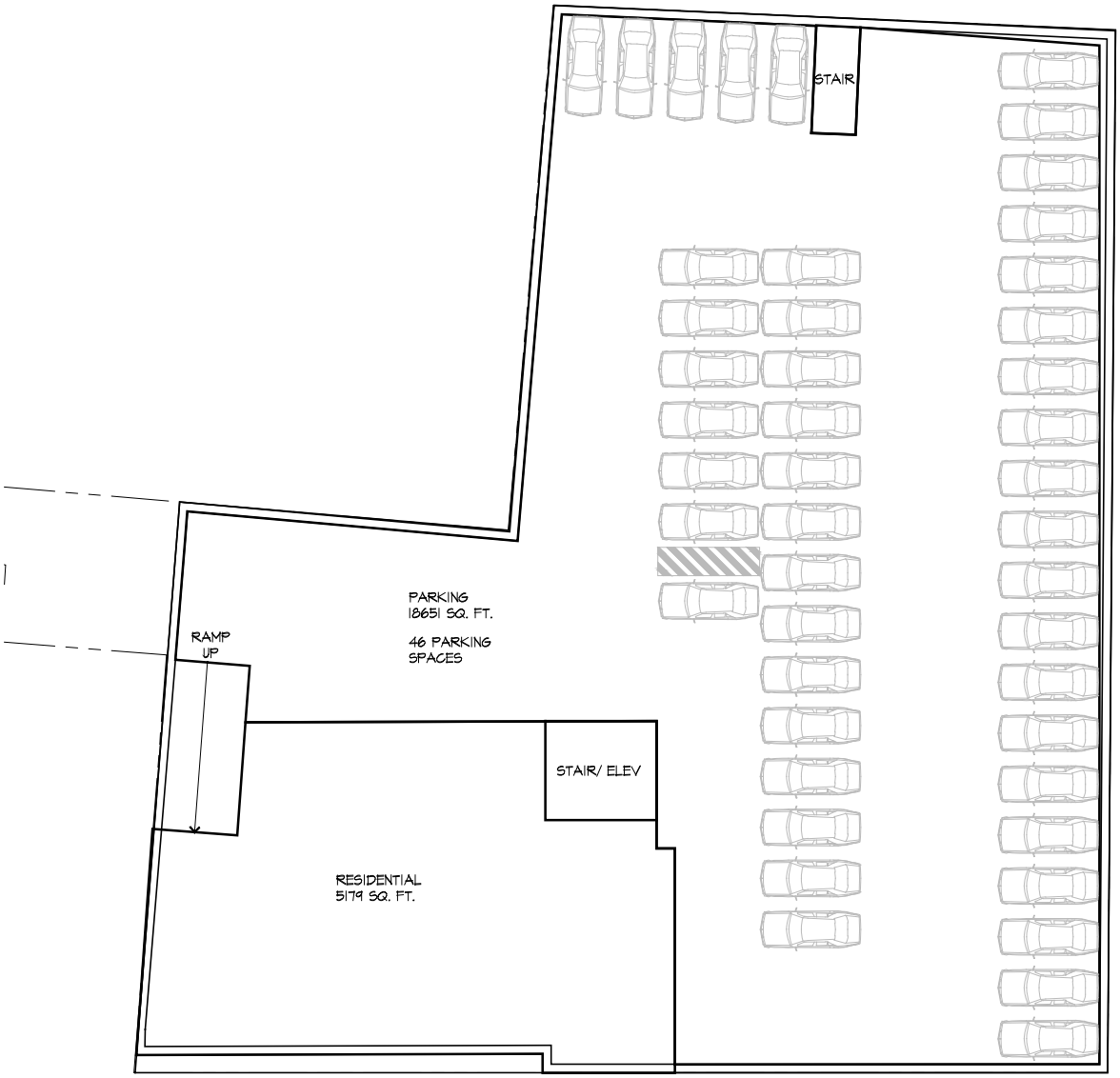
AUFGANG ARCHITECTS
49 North Airmont Road, Suffern, NY 10901 tel: 845.368.0004 www.aufgang.com

PROPOSED NEW DEVELOPMENT FOR:
EAST 241 STREET
BRONX, NY

ZONING & MASSING STUDY

BLOCK NO.:	5087
LOT NO.:	1, 3, 6, 59, 62, 65 & 9
DATE:	11.16.15
DRAWING NO:	Z-104

NORTH ARROW:



SCHEMATIC CELLAR
FLOOR PLAN

AUFGANG ARCHITECTS
49 North Airmont Road, Suffern, NY 10901 tel: 845.368.0004 www.aufgang.com

PROPOSED NEW DEVELOPMENT FOR:
EAST 241 STREET
BRONX, NY

ZONING & MASSING STUDY

BLOCK NO.:	5087
LOT NO.:	1, 3, 6, 59, 62, 65 & 9
DATE:	11.16.15
DRAWING NO:	Z-105

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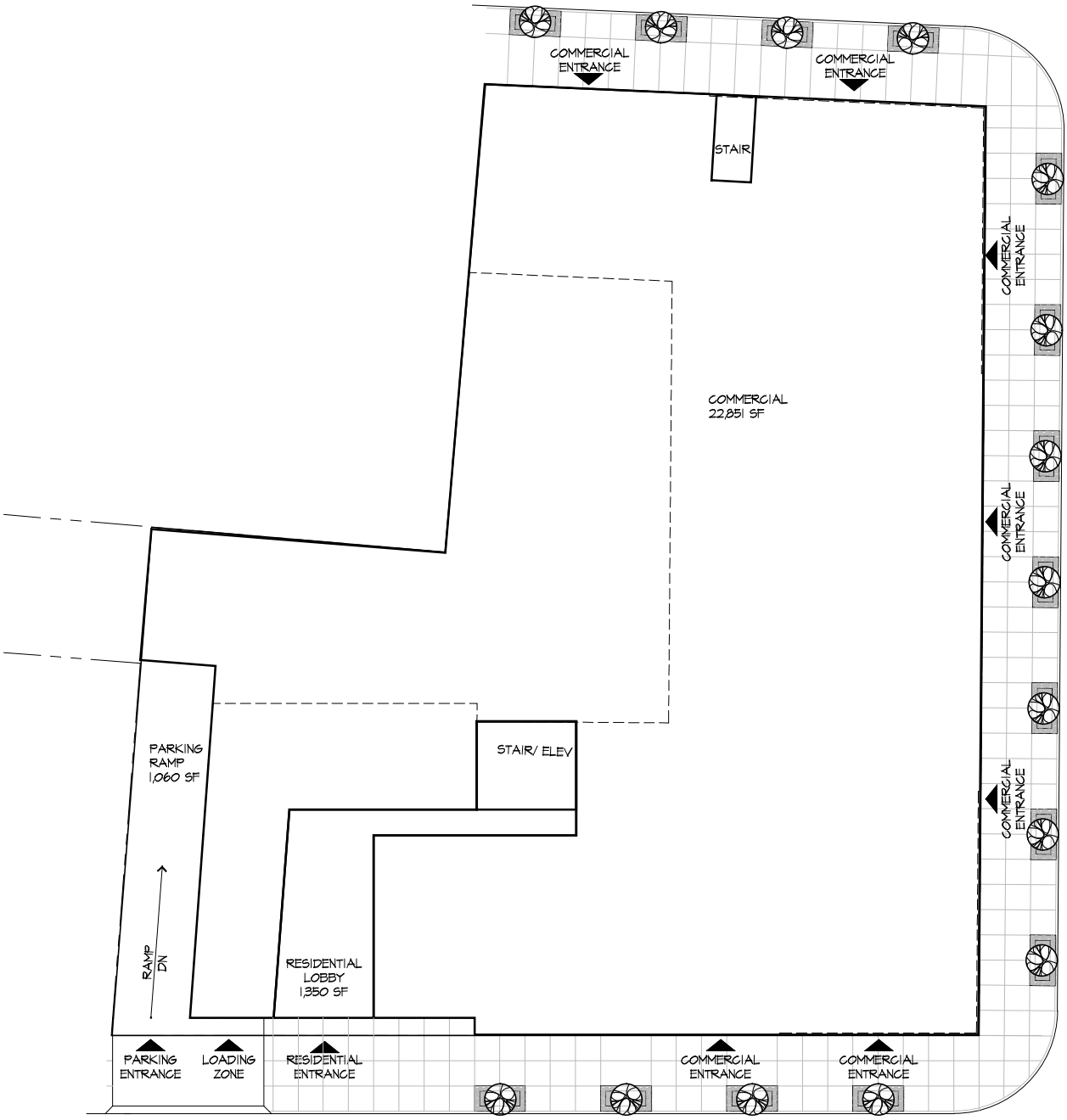


SCHEMATIC FIRST FLOOR PLAN

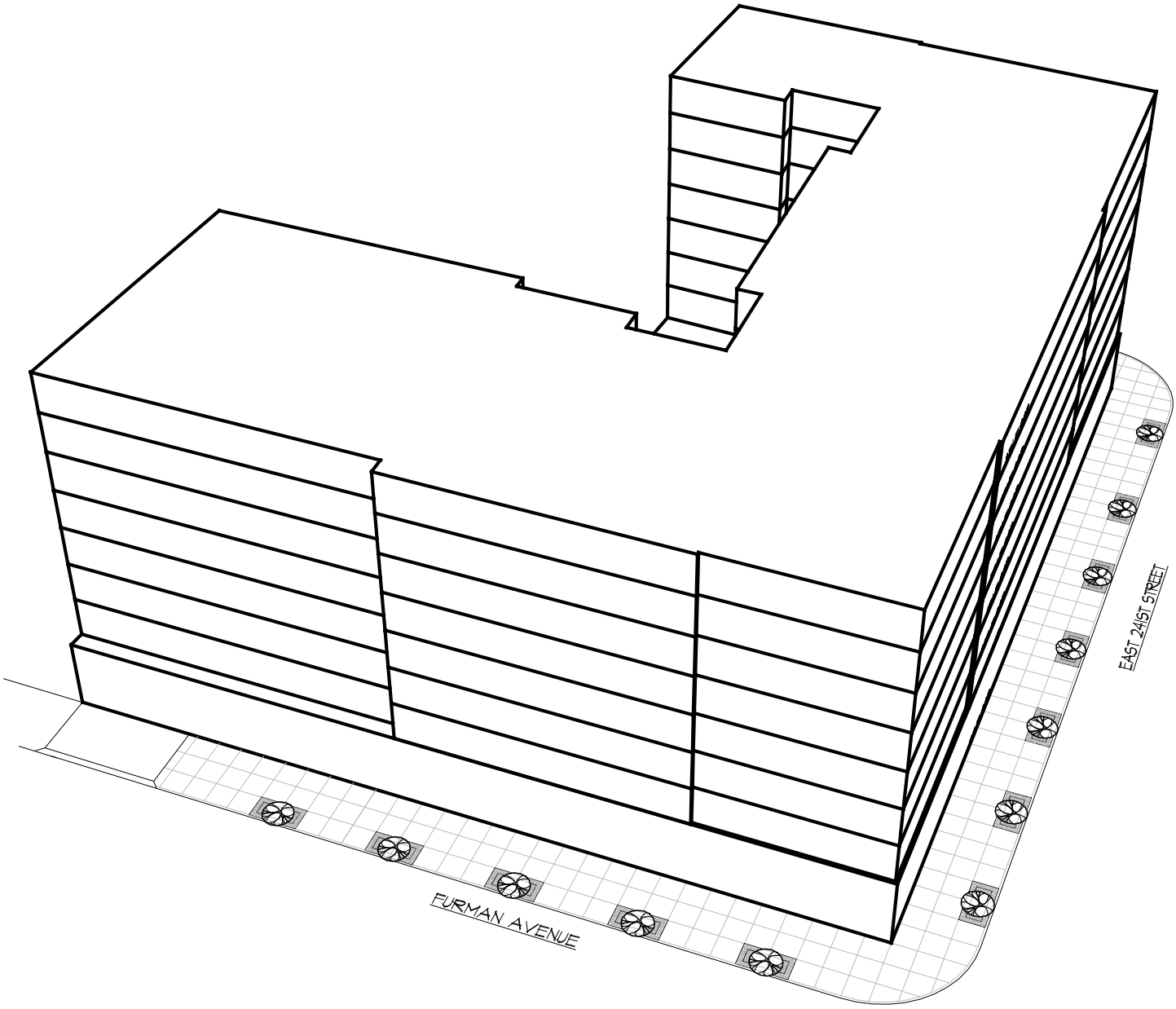
AUFGANG ARCHITECTS
49 North Airmont Road, Suffern, NY 10901 tel: 845.368.0004 www.aufgang.com

PROPOSED NEW DEVELOPMENT FOR:
EAST 241 STREET
BRONX, NY

ZONING & MASSING STUDY

BLOCK NO.:	5087
LOT NO.:	1, 3, 6, 59, 62, 65 & 9
DATE:	11.16.15
DRAWING NO:	Z-106

NORTH ARROW:



AUFGANG ARCHITECTS
49 North Airmont Road, Suffern, NY 10901 tel: 845.368.0004 www.aufgang.com

PROPOSED NEW DEVELOPMENT FOR:

EAST 241 STREET

BRONX, NY

ZONING & MASSING STUDY

BLOCK NO.:	5087
LOT NO.:	1, 3, 6, 59, 62, 65 & 9
DATE:	11.16.15
DRAWING NO:	Z-107

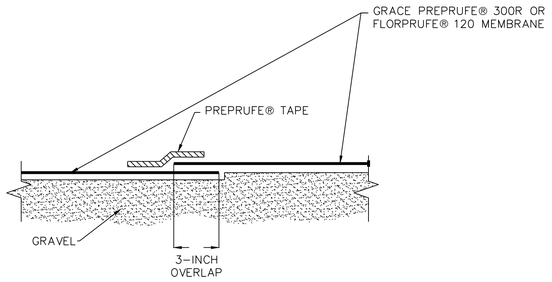
NORTH ARROW:

Appendix C

Previous Environmental Reports (Provided on CD)

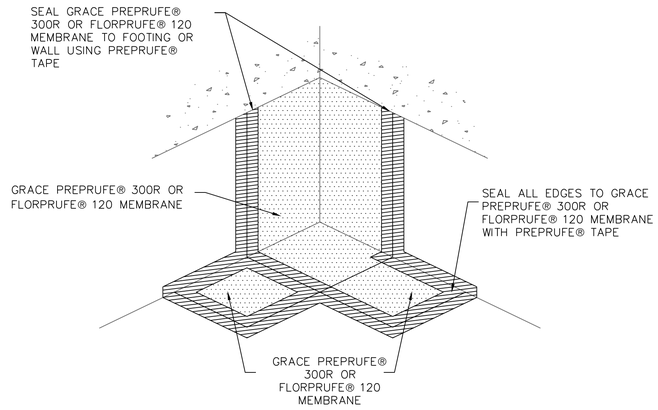
Appendix D

Vapor Barrier Details



DETAIL 1: TYPICAL VAPOR BARRIER ASSEMBLY AT SEAMS (TAPE LAP METHOD)

NOT TO SCALE



DETAIL 2: TYPICAL VAPOR BARRIER ASSEMBLY AT INSIDE CORNER

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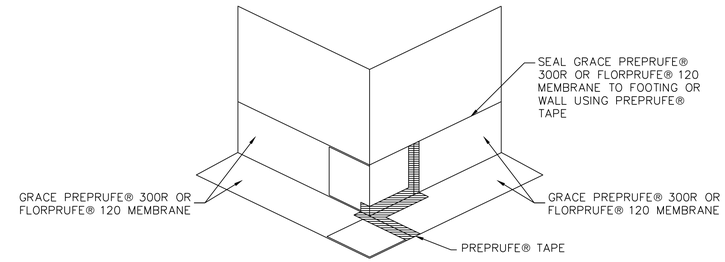
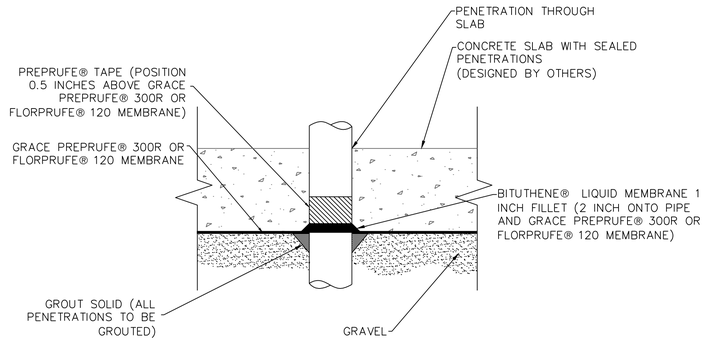


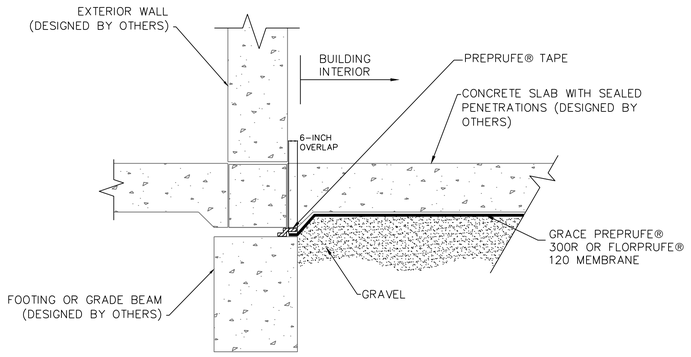
DETAIL 3: TYPICAL VAPOR BARRIER ASSEMBLY AT OUTSIDE CORNER

NOT TO SCALE



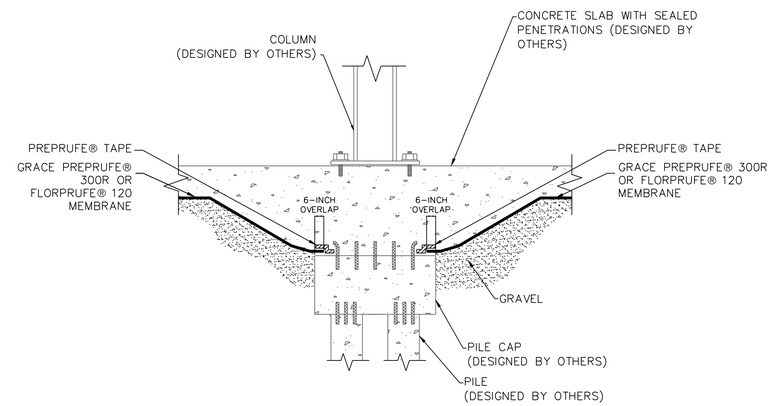
DETAIL 4: TYPICAL VAPOR BARRIER ASSEMBLY AT PENETRATION

NOT TO SCALE



DETAIL 5: TYPICAL VAPOR BARRIER ASSEMBLY AT EXTERIOR FOUNDATION WALL

NOT TO SCALE



DETAIL 6: TYPICAL VAPOR BARRIER ASSEMBLY AT PILE CAP

NOT TO SCALE

WATERPROOFING/VAPOR BARRIER NOTES:

1. THE WATERPROOFING/VAPOR BARRIER SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE MANUFACTURER GUIDELINES AND DETAILS.
2. THE WATERPROOFING/VAPOR BARRIER SHALL BE INSTALLED BY A MANUFACTURER-CERTIFIED INSTALLER.
3. VAPOR BARRIER SHALL BE INSPECTED IMMEDIATELY BEFORE CONCRETE IS PLACED. ALL PENETRATIONS, HOLES, OR TEARS SHALL BE SEALED BEFORE CONCRETE IS PLACED.
4. PRODUCT WILL BE GRACE PREPUFE OR APPROVED EQUIVALENT.

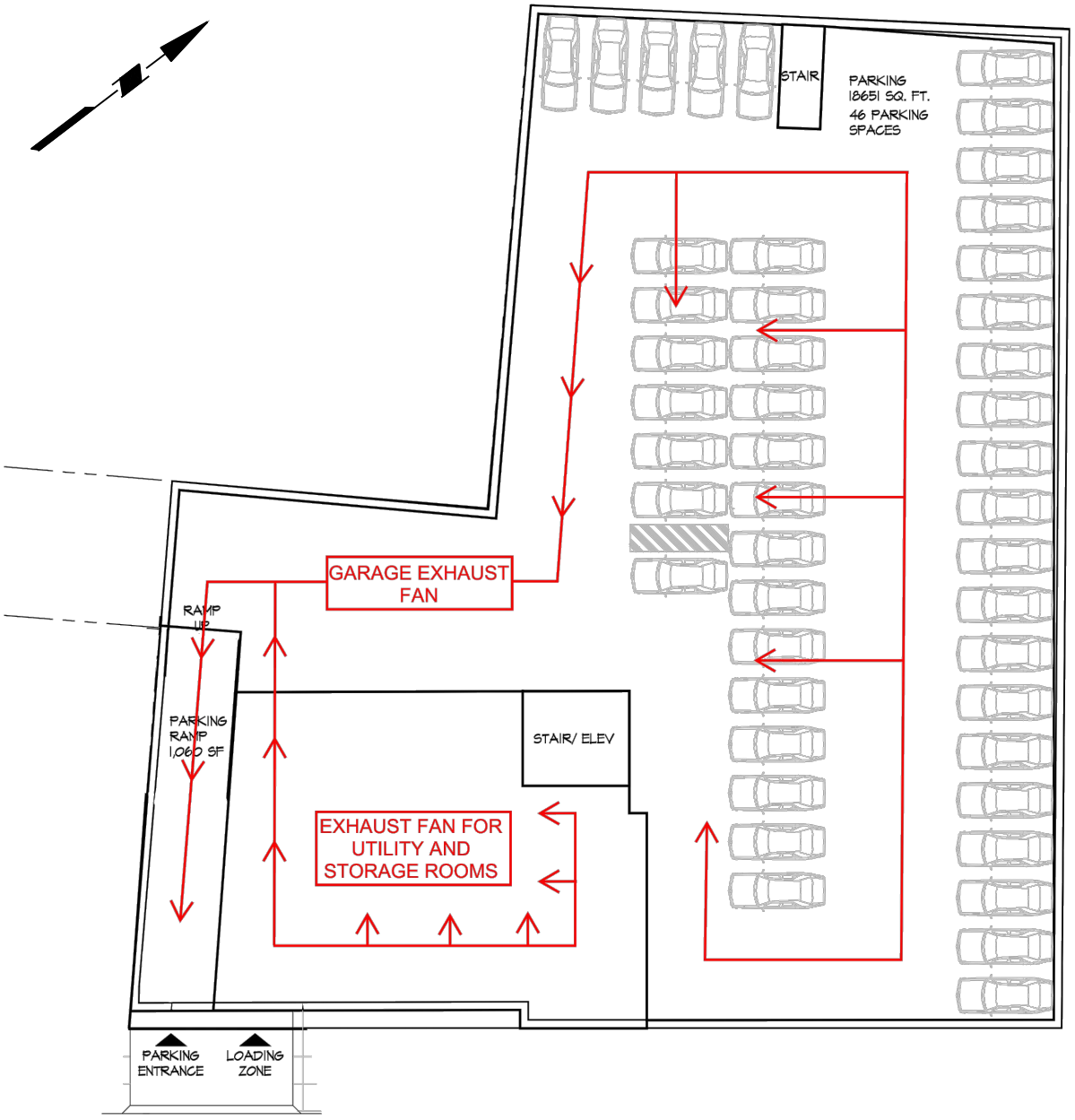
LANGAN
555 Long Wharf Drive, New Haven, CT 06511
T: 203.562.5771 F: 203.789.6142 www.langan.com
NEW JERSEY NEW YORK CONNECTICUT PENNSYLVANIA
OHIO WASHINGTON, DC FLORIDA TEXAS CALIFORNIA
ABU DHABI ATHENS DOHA DUBAI ISTANBUL PANAMA LONDON
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. S.A.
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan Engineering and Environmental Services, Inc.
Langan UK Ltd.
Langan International LLC
Collectively known as Langan.

Project	ENCLAVE ON 241ST STREET BLOCK No. 5087, LOT No. 1 BRONX NEW YORK
Drawing Title	VAPOR BARRIER DETAILS
Project No.	140115301
Drawing No.	D-1
Date	JANUARY 2016
Scale	AS SHOWN
Drawn By / Checked By	JPH / RJW
Submission Date	JANUARY 2016

Filename: \\langan.com\data\NH\data3\140115301\Cadd Data - 140115301\2D-DesignFiles\RAWP\APPENDIX D - VAPOR BARRIER DETAILS.dwg Date: 1/14/2016 Time: 13:46 User: jhall Style Table: Langan.stb Layout: ARCHD-BL

Appendix E

Cellar Ventilation System Details



SCHEMATIC CELLAR FLOOR PLAN

NOTES:

1. BASE PLAN TAKE FROM AUFGANG ARCHITECTS LLC. ZONING AND MASSING STUDY, DRAWING NUMBERS Z-105 AND Z-106.
2. THIS PLAN SHOULD BE VIEWED AS A COLOR COPY AS THE VENTILATION FLOW PATTERNS ARE COLOR COORDINATED.

LANGAN
555 Long Wharf Drive
New Haven, CT 06511
T: 203.562.5771 F: 203.789.6142 www.langan.com
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. S.A.
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan Engineering and Environmental Services, Inc.
Langan CT, Inc.
Langan International LLC
Collectively known as Langan

Project
ENCLAVE ON 241ST STREET DEVELOPMENT
BLOCK No. 5087, LOT No. 1
BRONX NEW YORK

Drawing Title
CELLAR VENTILATION DESIGN DETAILS

Project No. 140115301	Drawing No. E-1
Date JANUARY 2016	
Scale NTS	
Drawn By JPH / Checked By RJW	
Submission Date JANUARY 2016	

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Appendix F

Construction Health and Safety Plan (Provided on CD)

Appendix G

Community Air Monitoring Plan (CAMP)

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix H

Quality Assurance Project Plan (QAAP)

Quality Assurance Project Plan

For

Enclave on 241st Street Development
714 East 241st Street
Block 5087, Lot 1
Bronx, New York
NYSDEC BCP Sire Number. C203077

Prepared For:

Enclave on 241 Street LLC
2975 Westchester Avenue, Suite 100
Purchase, New York 10577

Prepared By:

Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
555 Long Wharf Drive
New Haven, Connecticut 06511

January 2016
140115301

TABLE OF CONTENTS

FIGURES

TABLES

ATTACHMENTS

1.0 PROJECT DESCRIPTION

1.1 INTRODUCTION

This Quality Assurance Project Plan (QAPP) is for the 24,060 square feet property at 714 East 241st Street in the Wakefield section of the Bronk, New York (the Site). The Site entered into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) by Enclave on 241 Street LLC (the owner), as a Volunteer in August, 2015. BCP Site No. C203077 was assigned to the Site by NYSDEC. Additional Site information and data collected previously by Langan and others is provided in the Remedial Action Work Plan (RAWP).

This QAPP specifies analytical methods to be used to ensure that data from the proposed Remedial Action (RA) at the Site are precise, accurate, representative, comparable, and complete.

1.2 PROJECT OBJECTIVES

The environmental objectives of this RAWP are to achieve a Track 4 cleanup under the New York State Brownfield Cleanup Program which includes the following:

- Prior to off-site soil disposal, a waste characterization will be performed. Waste characterization sampling will be performed in-situ prior to remediation or from material stockpiles during remediation.
- Excavation and off-site disposal of soils exceeding Track 4 site-specific SCOs (Restricted-Residential Restricted Use SCOs) and grossly-impacted soil to the extent practical. The existing Site structures and concrete/asphalt surface cover will be demolished to facilitate excavation;
- Removal of USTs and closure of NYSDEC Spill No. 12-14956;
- Dewatering fluids will be treated as necessary prior to discharge to the municipal sewer system;
- Collection and analysis of documentation soil samples to document residual soil conditions;
- In-situ treatment of the groundwater with the application of an oxidant (e.g., Oxygen Release Compound, or ORC®) to reduce VOC concentrations;
- Backfilling of excavated areas to development grade with clean material consisting of certified clean soils meeting the Allowable Constituent Levels for Imported Fill or Soil for Commercial Uses (appendix 5 of DER 10), recycled concrete aggregate (RCA), or virgin crushed stone;

- Installation of a vapor barrier under the Site building to protect against VOC vapor intrusion into the Site building;
- The proposed subgrade parking garage will include proper ventilation as required by the New York City Mechanical Code;
- Installation of a cellar level ventilation system in areas of the Site building that will not be used as a ventilated parking garage to protect against vapor intrusion. The cellar ventilation system will be consistent with New York City Mechanical Code for a ventilated parking garage;
- Development and execution of a Health and Safety Plan and a Community Monitoring Plan for the protection of on-site workers, the general public, and the environment during remediation and construction activities;
- Installation of a Site cover system consisting of either of the structures such as buildings, pavement, sidewalks comprising the site development or a minimum 2 foot thick clean soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs); and
- Implementation of long-term Institutional Controls in the form of an Environmental Easement and Site Management Plan.

These objectives have been established in order to protect public health and the environment for the anticipated mixed-use development at the Site.

1.3 SCOPE OF WORK

Implementation of the Remedial Action will include excavation of targeted fill and soil; documentation sampling; backfilling; installation of vapor barrier and SMD system as required; and installation of site cover system. Disturbed soil will be sampled for laboratory analysis per disposal facility requirements, and visually examined, screened, and characterized for disposal at an approved facility. Clean material will be imported to the site for use as backfill. A dust, odor, and organic vapor control and monitoring plan will be implemented during ground intrusive activities, and Institutional Controls, in the form of a Site Management Plan (SMP) and an Environmental Easement, will be implemented in the long term to restrict the site to restricted residential and commercial future use.

1.4 DATA QUALITY OBJECTIVES AND PROCESS

The quality assurance and quality control objectives for all measurement data include:

- **Precision** – an expression of the reproducibility of measurements of the same parameter under a given set of conditions. Field sampling precision will be

determined by analyzing coded duplicate samples and analytical precision will be determined by analyzing internal QC duplicates and matrix spike duplicates.

- **Accuracy** – a measure of the degree of agreement of a measured value with the true or expected value of the quantity of concern. Sampling accuracy will be determined through the assessment of the analytical results of field blanks and trip blanks for each sample set. Analytical accuracy will be assessed by examining the percent recoveries of surrogate compounds that are added to each sample (organic analyses only), and the percent recoveries of matrix spike compounds added to selected samples and laboratory blanks.
- **Representativeness** – expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness will be determined by assessing a number of investigation procedures, including chain of custody, decontamination, and analysis of field blanks and trip blanks.
- **Completeness** – the percentage of measurements made which are judged to be valid. Completeness will be assessed through data validation. The QC objective for completeness is generation of valid data for at least 90 percent of the analyses requested.
- **Comparability** – expresses the degree of confidence with which one data set can be compared to another. The comparability of all data collected for this project will be ensured using several procedures, including standard methods for sampling and analysis, instrument calibrations, using standard reporting units and reporting formats, and data validation.

  Each of the above objectives are discussed in detail in Section 3.

2.0 PROJECT ORGANIZATION

The execution of the RAWP will be overseen by Langan on behalf of Enclave on 241 Street LLC. Langan will oversee the excavation and off-site disposal of contaminated soil, excavation and proper removal of existing USTs, vapor barrier installation, and site cover system installation. Langan will provide on-site field representatives to perform the documentation soil sample collection. If required, Langan will also oversee the remediation of previously unknown hot spots and/or USTs, and perform the data analysis, evaluation and reporting tasks.

The analytical services will be performed by York Analytical Laboratories, Inc. of Stratford, CT, NYSDOH ELAP certification number 10854. Data validation services will be performed by Emily Strake; resume attached (Attachment A).

Key contacts for this project are as follows:

Enclave on 241 Street LLC:	Jonathan Seplowitz Telephone: (914) 285-1430
Langan Project Manager:	Jamie P. Barr Telephone: (203) 562-5771 x3034
Langan Quality Assurance Officer (QAO):	Ryan J. Wohlstrom Telephone: (293) 562-5771 x3069
Program Quality Assurance Monitor:	Justin Hall Telephone: (203) 562-5771 x3049
Data Validator:	Ms. Emily Strake Telephone: (215) 491-6526
Laboratory Representatives:	York Analytical Laboratories, Inc. Rich August Telephone: (800) 306-9675

3.0 QUALITY ASSURANCE/QUALITY CONTROL OBJECTIVES FOR MEASUREMENT OF DATA

3.1 INTRODUCTION

The quality assurance and quality control objectives for all measurement data include precision, accuracy, representativeness, completeness, and comparability. These objectives are defined in following subsections. They are formulated to meet the requirements of the United States Environmental Protection Agency (USEPA) SW-846. The analytical methods and their Contract Required Quantification Limits (CRQLs) are given in Section 7.

3.2 PRECISION

Precision is an expression of the reproducibility of measurements of the same parameter under a given set of conditions. Specifically, it is a quantitative measurement of the variability of a group of measurements compared to their average value (USEPA, 1987). Precision is usually stated in terms of standard deviation, but other estimates such as the coefficient of variation (relative standard deviation), range (maximum value minus minimum value), relative range, and relative percent difference (RPD) are common.

For this project, field sampling precision will be determined by analyzing coded duplicate samples (labeled so that the laboratory does not recognize them as duplicates) for the same parameters, and then, during data validation (Section 8), calculating the RPD for duplicate sample results.

Analytical precision will be determined by the laboratory by calculating the RPD for the results of the analysis of internal QC duplicates and matrix spike duplicates. The formula for calculating RPD is as follows:

$$RPD = \frac{|V1 - V2|}{(V1 + V2)/2} \times 100$$

where:

RPD	=	Relative Percent Difference.
V1, V2	=	The two values to be compared.
$\|V1 - V2\|$	=	The absolute value of the difference between the two values.
$(V1 + V2)/2$	=	The average of the two values.

The data quality objectives for analytical precision, calculated as the RPD between duplicate analyses, are presented in Tables 3.1 and 3.2.

TABLE 3.1
QUALITY CONTROL LIMITS FOR WATER SAMPLES

			Laboratory Accuracy and Precision				
Analytical Parameters	**Analytical Method (a)**	**Matrix Spike (MS) Compounds**	**MS/MSD (b) % Recovery**	**MS/MSD RPD l**	**LCS (d) % Recovery**	**Surrogate Compounds**	**Surrogate % Recovery**
VOCs (e)	8260	1,1-Dichloroethane	61-145	-	NA	Toluene-d8	88-110
		Trichloroethene	71-120	-	NA	Bromofluorobenzene	86-115
		Benzene	76-127	-	NA	1,2-Dichloroethane-d4	76-114
		Toluene	76-125	-	NA		
		Chlorobenzene	75-130	-	NA		
SVOCs (f)	8270	Phenol	12-110	-	NA	Nitrobenzene-d5	35-114
		2-Chlorophenol	27-123	-	NA	2-Fluorobiphenyl	43-116
		1,4-Dichlorobenzene	36-97	-	NA	Terphenyl-d14	33-141
		N-Nitroso-di-n-propylamine	41-116	-	NA	Phenol-d5	10-110
		1,2,4-Trichlorobenzene	39-98	-	NA	2-Fluorophenol	21-110
		4-Chloro-3-methylphenol	23-97	-	NA	2,4,6-Tribromophenol	10-123
		Acenaphthene	46-118	-	NA	2-Chlorophenol-d4	33-110 (g)
		4-Nitrophenol	10-80	-	NA	1,2-Dichlorobenzene-d4	16-110 (g)
		2,4-Dinitrotoluene	24-96	-	NA		
		Pentachlorophenol	9-103	-	NA		
		Pyrene	26-127	-	NA		
Inorganics (i)	6010,7470/7471 ,7841,9010, OIA-1677	Inorganic Analyte	75-125 (j)	- (k)	80-120	NA	NA

(a) Analytical Methods: USEPA SW-846, 3rd edition, Revision 1, November 1990; any subsequent revisions shall supersede this information
(b) Matrix Spike/Matrix Spike Duplicate
(c) Relative Percent Difference
(d) Laboratory Control Sample
(e) Target Compound List Volatile Organic Compounds plus library search
(f) Target Compound List Semivolatile Organic Compounds plus library search
(g) Limits are advisory only
(h) Polychlorinated Biphenyls
(i) Target Analyte List Inorganics (metals)
(j) Matrix spike only
(k) Laboratory duplicate RPD
NA - Not Applicable

TABLE 3.2
QUALITY CONTROL LIMITS FOR SOIL SAMPLES

Laboratory Accuracy and Precision

Analytical Parameter	Analytical Method (a)	Matrix Spike (MS) Compounds	MS/MSD (b) % Recovery	MS/MSD RPD (c)	LCS (d) % Recovery	Surrogate Compounds	Surrogate % Recovery
VOCs (e)	8260	1,1-Dichloroethane	59-172	22	NA	Toluene-d8	84-138
		Trichloroethene	62-137	24	NA	Bromofluorobenzene	59-113
		Benzene	66-142	21	NA	1,2-Dichloroethane-d4	70-121
		Toluene	59-139	21	NA		
		Chlorobenzene	60-133	21	NA		
SVOCs (f)	8270	Phenol	26-90	35	NA	Nitrobenzene-d5	23-120
		2-Chlorophenol	25-102	50	NA	2-Fluorobiphenyl	30-115
		1,4-Dichlorobenzene	28-104	27	NA	Terphenyl-d14	18-137
		N-Nitroso-di-n-propylamine	41-126	38	NA	Phenol-d5	24-113
		1,2,4-Trichlorobenzene	38-107	23	NA	2-Fluorophenol	25-121
		4-Chloro-3-methylphenol	26-103	33	NA	2,4,6-Tribromophenol	19-122
		Acenaphthene	31-137	19	NA	2-Chlorophenol-d4	20-130 (g)
		4-Nitrophenol	11-114	50	NA	1,2-Dichlorobenzene-d4	20-130 (g)
		2,4-Dinitrotoluene	28-89	47	NA		
		Pentachlorophenol	17-109	47	NA		
		Pyrene	35-142	36	NA		
Inorganics (i)	6010, 7470/7471, 7841, 9010	Inorganic Analyte	75-125 (j)	20 (k)	80-120	NA	NA
PCBs	8082	PCB (Aroclor 1260)	50-128	50	NA	Tetrachlorometaxylene Decachlorobiphenyl	24-154 25-159

(a) Analytical Methods: USEPA SW-846, 3rd edition, Revision 1, November 1990, any subsequent revisions shall supersede this information
(b) Matrix Spike/Matrix Spike Duplicate
(c) Relative Percent Difference
(d) Laboratory Control Sample
(e) Target Compound List Volatile Organic Compounds
(f) Target Compound List Semivolatile Organic Compounds
(g) Limits are advisory only
(h) Polychlorinated Biphenyls
(i) Target Analyte List Inorganics (metals and cyanide)
(j) Matrix spike only
(k) Laboratory duplicate RPD
NA - Not Applicable

3.3 ACCURACY

Accuracy is a measure of the degree of agreement of a measured value with the true or expected value of the quantity of concern (Taylor, 1987), or the difference between a measured value and the true or accepted reference value. The accuracy of an analytical procedure is best determined by the analysis of a sample containing a known quantity of material, and is expressed as the percent of the known quantity, which is recovered or measured. The recovery of a given analyte is dependent upon the sample matrix, method of analysis, and the specific compound or element being determined. The concentration of the analyte relative to the detection limit of the analytical method is also a major factor in determining the accuracy of the measurement. Concentrations of analytes which are close to the detection limits are less accurate because they are more affected by such factors as instrument "noise". Higher concentrations will not be as affected by instrument noise or other variables and thus will be more accurate.

Sampling accuracy may be determined through the assessment of the analytical results of field blanks and trip blanks for each sample set. Analytical accuracy is typically assessed by examining the percent recoveries of surrogate compounds that are added to each sample (organic analyses only), and the percent recoveries of matrix spike compounds added to selected samples and laboratory blanks. Additionally, initial and continuing calibrations must be performed and accomplished within the established method control limits to define the instrument accuracy before analytical accuracy can be determined for any sample set.

Accuracy is normally measured as the percent recovery (%R) of a known amount of analyte, called a spike, added to a sample (matrix spike) or to a blank (blank spike). The %R is calculated as follows:

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where:

%R = Percent recovery.

SSR = Spike sample result: concentration of analyte obtained by analyzing the sample with the spike added.

SR = Sample result: the background value, i.e., the concentration of the analyte obtained by analyzing the sample.

SA = Spiked analyte: concentration of the analyte spike added to the sample.

The acceptance limits for accuracy for each parameter are presented in Tables 3.1 and 3.2.

3.4 REPRESENTATIVENESS

Representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is a qualitative parameter, which is most concerned with the proper design of the sampling program (USEPA, 1987). Samples must be representative of the environmental media being sampled. Selection of sample locations and sampling procedures will incorporate consideration of obtaining the most representative sample possible.

Field and laboratory procedures will be performed in such a manner as to ensure, to the degree that is technically possible, that the data derived represents the in-place quality of the material sampled. Every effort will be made to ensure chemical compounds will not be introduced into the sample via sample containers, handling, and analysis. Decontamination of sampling devices and digging equipment will be performed between samples as outlined in the Field Sampling Plan. Analysis of field blanks, trip blanks, and method blanks will also be performed to monitor for potential sample contamination from field and laboratory procedures.

The assessment of representativeness also must consider the degree of heterogeneity in the material from which the samples are collected. Sampling heterogeneity will be evaluated during data validation through the analysis of coded field duplicate samples. The analytical laboratory will also follow acceptable procedures to assure the samples are adequately homogenized prior to taking aliquots for analysis, so the reported results are representative of the sample received.

Chain-of-custody procedures will be followed to document that contamination of samples has not occurred during container preparation, shipment, and sampling. Details of blank, duplicate and Chain-of-custody procedures are presented in Sections 4 and 5.

3.5 COMPLETENESS

Completeness is defined as the percentage of measurements made which are judged to be valid (USEPA, 1987). The QC objective for completeness is generation of valid data for at least 90 percent of the analyses requested. Completeness is defined as follows for all sample measurements:

$$\%C = \frac{V}{T} \times 100$$

where:

%C = Percent completeness.

V = Number of measurements judged valid.

T = Total number of measurements.

3.6 COMPARABILITY

Comparability expresses the degree of confidence with which one data set can be compared to another (USEPA, 1987). The comparability of all data collected for this project will be ensured by:

- Using identified standard methods for both sampling and analysis phases of this project;
- Requiring traceability of all analytical standards and/or source materials to the USEPA or National Institute of Standards and Technology (NIST);
- Requiring that all calibrations be verified with an independently prepared standard from a source other than that used for calibration (if applicable);
- Using standard reporting units and reporting formats including the reporting of QC data;
- Performing a complete data validation on a representative fraction of the analytical results, including the use of data qualifiers in all cases where appropriate; and
- Requiring that all validation qualifiers be used any time an analytical result is used for any purpose.

These steps will ensure all future users of either the data or the conclusions drawn from them will be able to judge the comparability of these data and conclusions.

4.0 SAMPLING PROGRAM

4.1 INTRODUCTION

The sampling program for the RAWP will provide data relative to:

- Characterization of soils/waste that must be removed and disposed off-site;
- Documentation of quality of soils that will be left on site; and
- Characterization of backfill to be brought on-site.

This section presents sample nomenclature, sample container preparation procedures, sample preservation procedures, and sample holding times requirements. Sample locations, and the number of environmental and QC samples will be determined per disposal facility requirements. The sampling will be conducted in accordance with the RAWP.

4.2 SAMPLE NOMENCLATURE

The sample nomenclature system has been devised such that the following objectives can be attained:

- Sorting of data by matrix;
- Sorting of data by depth;
- Maintenance of consistency (filed, laboratory, and database sample numbers);
- Accommodation of all project-specific requirements; and
- Accommodation of laboratory sample number length constraints (maximum 20 characters).

4.3 SAMPLE CONTAINER PREPARATION AND SAMPLE PRESERVATION

Sample containers will be properly washed and decontaminated prior to their use by either the analytical laboratory or the container vendor to the specifications required by the USEPA. Copies of the sample container QC analyses will be provided by the laboratory for each container lot used to obtain samples. The containers will be labeled and the appropriate preservatives will be added. The types of containers are shown in Tables 4.1, 4.2.

Samples shall be preserved according to the preservation techniques given in Tables 4.1 and 4.2. Preservatives will be added to the sample bottles by the laboratory prior to

their shipment in sufficient quantities to ensure that proper sample pH is met. Following sample collection, the sample bottles should be placed on ice in the shipping cooler, cooled to 4°C with ice or "blue ice", and delivered to the laboratory within 48 hours of collection. Chain-of-custody procedures are described in Section 7.

4.4 SAMPLE HOLDING TIMES

The sample holding times for organic and inorganic parameters are given in Tables 4.1 and 4.2 and must be in accordance with the NYSDEC ASP requirements. The NYSDEC ASP holding times must be strictly adhered to by the laboratory. Any holding time exceedances must be reported to Langan.

4.5 FIELD QC SAMPLES

To assess field sampling and decontamination performance, two types of "blanks" will be collected and submitted to the laboratory for analyses. In addition, the precision of field sampling procedures will be assessed by collecting coded field duplicates and matrix spike/matrix spike duplicates (MS/MSDs). The blanks will include:

a. Trip Blanks - A trip blank will be prepared before the sample containers are sent by the laboratory. The trip blank will consist of a 40-ml VOA vial containing distilled, deionized water, which accompanies the other water sample bottles into the field and back to the laboratory. A trip blank will be included with each shipment of water samples for Part 375 volatiles analysis. The Trip Blank will be analyzed for volatile organic compounds to assess any contamination from sampling and transport, and internal laboratory procedures.

b. Field Blanks - Field blanks will be taken at a minimum frequency of one per 20 field samples per sample matrix. Field blanks are used to determine the effectiveness of the decontamination procedures for sampling equipment. The field blank will consist of a sample of deionized, distilled water provided by the laboratory that has passed through a decontaminated bailer, tubing or other sampling apparatus. It is usually collected as a last step in the decontamination procedure, prior to taking an environmental sample. The field blank may be analyzed for all or some of the parameters of interest.

The duplicates will include:

a. Coded Field Duplicate - To determine the representativeness of the sampling methods, coded field duplicates will be collected at a minimum frequency of one per 20 field samples. The samples are termed "coded" because they will be labeled in such a manner that the laboratory will not be able to determine

that they are a duplicate sample. This will eliminate any possible bias that could arise.

b. Matrix Spike/Matrix Spike Duplicate (MS/MSD) - MS/MSD samples (MS/MSD for organics; MS and laboratory duplicate for inorganics) will be taken at a frequency of one pair per 20 field samples. These samples are used to assess the effect of the sample matrix on the recovery of target compounds or target analytes. The percent recoveries and RPDs are given in Tables 3.1 and 3.2.

TABLE 4.1
WATER SAMPLE CONTAINERIZATION, PRESERVATION, AND HOLDING TIMES

Analysis	Bottle Type	Preservation (a)	Holding Time (b)
Volatile Organic Compounds (VOCs)	2-40 mL glass vial w/ Teflon septum	Cool to 4^{O}C, HCL pH<2	7 days
Semi-volatile Organics Compounds (SVOCs)	1000 mL glass w/ Teflon lined cap	Cool to 4^{O}C	7 days*
Metals	1000 mL plastic bottle	Nitric Acid to pH < 2 Cool to 4^{O}C	6 months, except mercury (28 days)

(a) All samples to be preserved in ice during collection and transport.

(b) Days from validated time of sample receipt (VTSR).

* Continuous liquid-liquid extraction is the required extraction for water samples for SVOCs. Continuous liquid-liquid extraction and concentration of water samples for SVOCs analysis completed within 7 days of VTSR. Extracts of water samples must be analyzed within 40 days of extraction.

TABLE 4.2
SOIL SAMPLE
CONTAINERIZATION, PRESERVATION AND HOLDING TIMES

Analysis	Bottle Type	Preservation [a]	Holding Time [b]
Volatile Organic Compounds (VOCs)	Wide-mouth glass w/ Teflon lined cap	Cool to 4°C	14 days
Other Organic Compounds [c]	Wide-mouth glass w/ Teflon lined cap	Cool to 4°C	14 days*
Metals	Wide-mouth plastic or glass	Cool to 4°C	6 months, except mercury (28 days)
PCBs	Wide-mouth glass w/ Teflon-lined cap	Cool to 4°C	14 days**

(a) All samples to be preserved in ice during collection and transport.
(b) Days from date of sample collection.
(c) Semi-volatile organic compounds or PCBs.

* Soxhlet or sonication procedures for extraction and concentration of soil/waste samples for SVOCs must be completed within 10 days of VTSR. Extracts of soil samples must be analyzed within 40 days of extraction.

** Procedures for extraction and concentration of soil/waste samples for PCBs must be completed within 14 days of VTSR. Extracts of soil samples must be analyzed within 40 days of extraction.

TABLE 4.3
SOIL VAPOR, INDOOR AIR, AND AMBIENT AIR SAMPLES
CONTAINERIZATION PRESENTATION AND HOLDING TIMES

Analysis	Bottle Type	Preservation	Holding Time [a]
Volatile Organic Compounds (VOCs)	6- Liter Summa Canister	None	30 days

(a) Days from date of sample collection.

* Summa canisters will be batch certified by the laboratory.

5.0 SAMPLE TRACKING AND CUSTODY

5.1 INTRODUCTION

This section presents sample custody procedures for both the field and laboratory. Implementation of proper custody procedures for samples generated in the field is the responsibility of field personnel. Both laboratory and field personnel involved in the Chain-of-custody (COC) and transfer of samples will be trained as to the purpose and procedures prior to implementation.

Evidence of sample traceability and integrity is provided by COC procedures. These procedures document the sample traceability from the selection and preparation of the sample containers by the laboratory, to sample collection, to sample shipment, to laboratory receipt and analysis. The sample custody flowchart is shown in Figure 5.1. A sample is considered to be in a person's custody if the sample is:

- In a person's possession;
- Maintained in view after possession is accepted and documented;
- Locked and tagged with Custody Seals so that no one can tamper with it after having been in physical custody; or
- In a secured area which is restricted to authorized personnel.

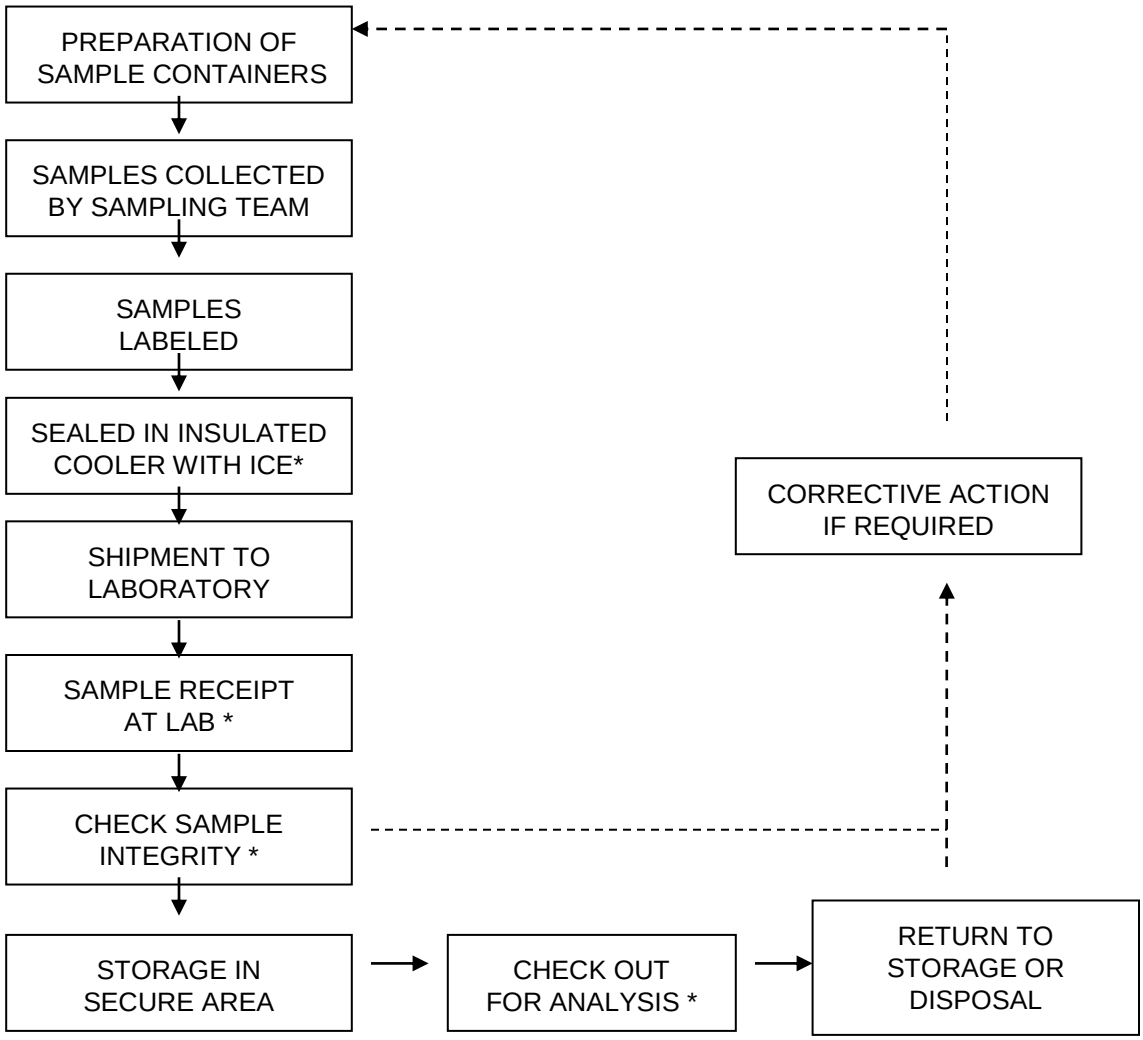
5.2 FIELD SAMPLE CUSTODY

A COC record (Figure 5.2 or similar) accompanies the sample containers from selection and preparation at the laboratory, during shipment to the field for sample containment and preservation, and during return to the laboratory. Triplicate copies of the COC must be completed for each sample set collected.

The COC lists the field personnel responsible for taking samples, the project name and number, the name of the analytical laboratory to which the samples are sent, and the method of sample shipment. The COC also lists a unique description of every sample bottle in the set. If samples are split and sent to different laboratories, a copy of the COC record will be sent with each sample.

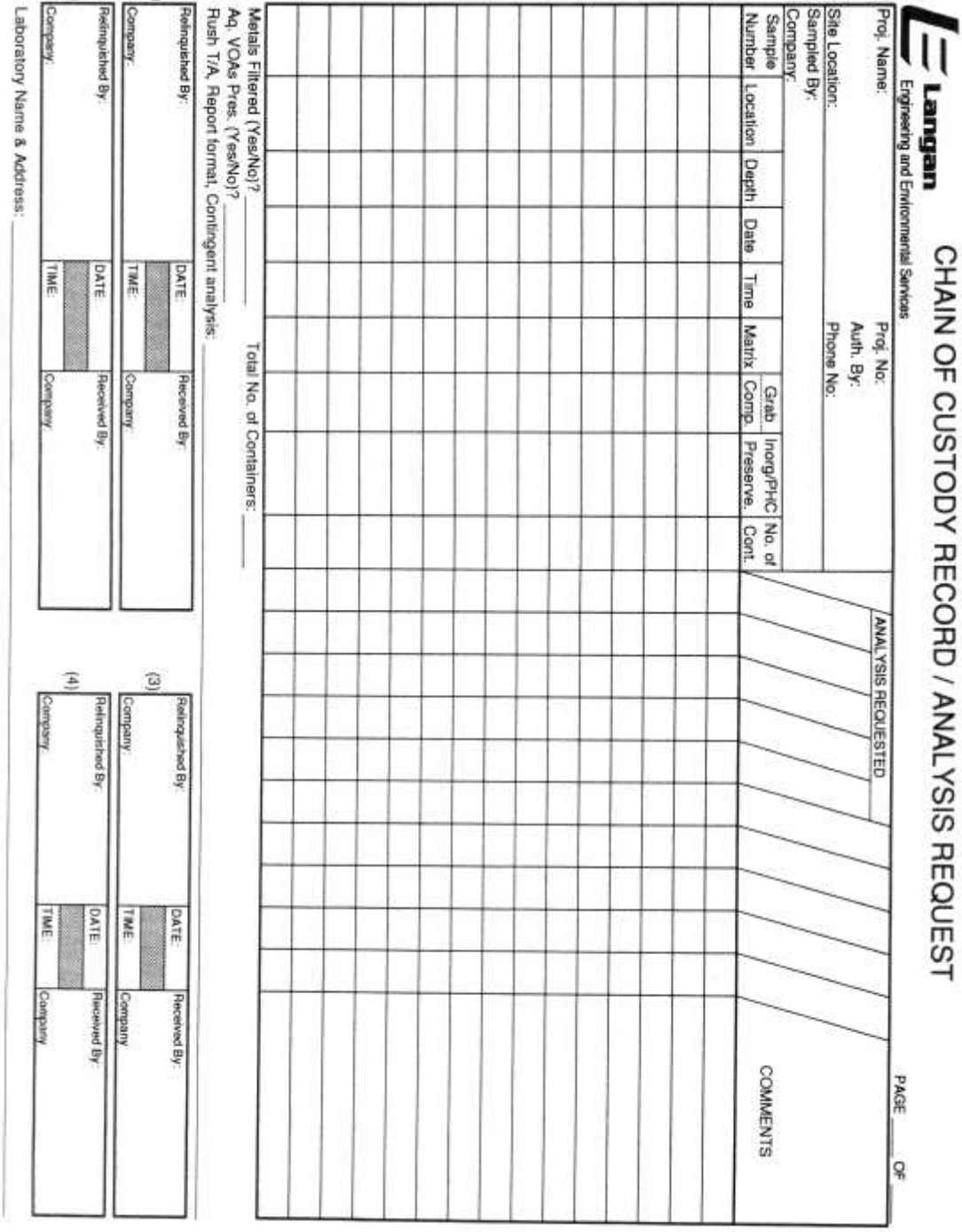
The REMARKS space on the COC is used to indicate if the sample is a matrix spike, matrix spike duplicate, or any other sample information for the laboratory. Since they are not specific to any one sample point, trip and field blanks are indicated on separate rows. Once all bottles are properly accounted for on the form, a sampler will write his or her signature and the date and time on the first RELINQUISHED BY space. The sampler will also write the method of shipment, the shipping cooler identification number, and the shipper airbill number on the top of the COC.

Figure 5.1 Sample Custody



* REQUIRES SIGN-OFF ON CHAIN-OF-CUSTODY FORM

Figure 5.2 Sample Chain-of-Custody Form



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Engineering and Environmental Services

CHAIN OF CUSTODY RECORD / ANALYSIS REQUEST

PAGE ____ OF ____

Proj. Name: Proj. No:
Auth. By:
Site Location: Phone No:
Sampled By:
Company:

Sample Number	Location	Depth	Date	Time	Matrix	Grab Comp.	Inorg/PHC Preserve.	No. of Cont.	ANALYSIS REQUESTED	COMMENTS

Metals Filtered (Yes/No)? _____ Total No. of Containers: ____
Aq. VOAs Pres. (Yes/No)? _____
Rush T/A, Report format, Contingent analysis: _____

	Relinquished By:	DATE:	Received By:
(1)	Company:	TIME:	Company:
(2)	Relinquished By:	DATE:	Received By:
	Company:	TIME:	Company:
(3)	Relinquished By:	DATE:	Received By:
	Company:	TIME:	Company:
(4)	Relinquished By:	DATE:	Received By:
	Company:	TIME:	Company:

Laboratory Name & Address: _____

Mistakes will be crossed out with a single line in ink and initialed by the author.

One copy of the COC is retained by sampling personnel (notations identifying blind duplicate samples will be added to this copy of the COC but not the others that will go to the laboratory) and the other two copies are put into a sealable plastic bag and taped inside the lid of the shipping cooler. The cooler lid is closed, custody seals provided by the laboratory are affixed to the latch and across the back and front lids of the cooler, and the person relinquishing the samples signs their name across the seal. The seal is taped, and the cooler is wrapped tightly with clear packing tape. It is then relinquished by field personnel to personnel responsible for shipment, typically an overnight carrier. The COC seal must be broken to open the container. Breakage of the seals before receipt at the laboratory may indicate tampering. If tampering is apparent, the laboratory will contact the Project Manager, and the sample will not be analyzed.

5.3 LABORATORY SAMPLE CUSTODY

The Project Manager or Field Team Leader will notify the laboratory of upcoming field sampling activities, and the subsequent shipment of samples to the laboratory. This notification will include information concerning the number and type of samples to be shipped as well as the anticipated date of arrival.

The following laboratory sample custody procedures will be used:

- The laboratory will designate a sample custodian who will be responsible for maintaining custody of the samples, and for maintaining all associated records documenting that custody.
- Upon receipt of the samples, the custodian will check cooler temperature, and check the original COC documents and compare them with the labeled contents of each sample container for correctness and traceability. The sample custodian will sign the COC record and record the date and time received.
- Care will be exercised to annotate any labeling or descriptive errors. In the event of discrepant documentation, the laboratory will immediately contact the Project Manager or Field Team Leader as part of the corrective action process. A qualitative assessment of each sample container will be performed to note any anomalies, such as broken or leaking bottles. This assessment will be recorded as part of the incoming chain-of-custody procedure.
- The samples will be stored in a secured area at a temperature of approximately 4°C until analyses commence.
- A laboratory tracking record will accompany the sample or sample fraction through final analysis for control.

- A copy of the tracking record will accompany the laboratory report and will become a permanent part of the project records.

6.0 CALIBRATION PROCEDURES

6.1 FIELD INSTRUMENTS

All field analytical equipment will be calibrated immediately prior to each day's use. The calibration procedures will conform to manufacturer's standard instructions. This calibration will ensure that the equipment is functioning within the allowable tolerances established by the manufacturer and required by the project. Records of all instrument calibration will be maintained by the Field Team Leader. Copies of all the instrument manuals will be maintained on-site by the Field Team Leader.

Calibration procedures for instruments used for monitoring health and safety hazards (e.g., photoionization detector and explosimeter) are provided in the Health and Safety Plan.

6.2 LABORATORY INSTRUMENTS

The laboratory will follow all calibration procedures and schedules as specified in the sections of the USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods given in Section 7.

7.0 ANALYTICAL PROCEDURES

7.1 INTRODUCTION

Samples will be analyzed according to the USEPA SW-846 "Test Methods for Evaluating Solid Waste," November 1986, 3rd edition and subsequent updates. The methods to be used for the laboratory analysis of water and soil samples are presented in Table 7.1. These methods were selected because they attain the desired quantitation limits, which are compiled on Table 7.1.

TABLE 7.1				
PROJECT QUANTITATION LIMITS				
			Estimated Quantitation Limits	
	Analysis/Compound	**Method**	**RL (mg/L)**	**MDL(mg/kg)**
	Volatile Organics			
1	Methylene Chloride	SW8260B	0.034	0.0028
2	1,1-Dichloroethane	SW8260B	0.0051	0.001
3	Chloroform	SW8260B	0.0051	0.0011
4	Carbon Tetrachloride	SW8260B	0.0034	0.00072
5	1,2-Dichloropropane	SW8260B	0.012	0.00087
6	Dibromochloromethane	SW8260B	0.0034	0.001
7	1,1,2-Trichloroethane	SW8260B	0.0051	0.0013
8	Tetrachloroethene	SW8260B	0.0034	0.001
9	Chlorobenzene	SW8260B	0.0034	0.00064
10	Trichloroflouromethane	SW8260B	0.017	0.0013
11	1,2-Dichloroethane	SW8260B	0.0034	0.00078
12	1,1,1-Trichloroethane	SW8260B	0.0034	0.00092
13	Bromodichloromethane	SW8260B	0.0034	0.0016
14	Trans-1,3-Dichloropropene	SW8260B	0.0034	0.0017
15	Cis-1,3-Dichloropropene	SW8260B	0.0034	0.00082
16	1,1-Dichloropropene	SW8260B	0.017	0.001
17	Bromoform	SW8260B	0.014	0.00083
18	1,1,2,2-Tetrachloroethane	SW8260B	0.0034	0.00076
19	Benzene	SW8260B	0.0034	0.0027
20	Toluene	SW8260B	0.0051	0.0022
21	Ethylbenzene	SW8260B	0.0034	0.0026
f22	Chloromethane	SW8260B	0.017	0.0015
23	Bromomethane	SW8260B	0.0068	0.00089
24	Vinyl Chloride	SW8260B	0.0068	0.0013
25	Chloromethane	SW8260B	0.0068	0.00077
26	1,1-Dichloroethene	SW8260B	0.0034	0.0012
27	Trans-1,2-Dichloroethene	SW8260B	0.0051	0.0014
28	Trichloroethene	SW8260B	0.0034	0.0014
29	1,2-Dichlorobenzene	SW8260B	0.017	0.0017
30	1,3-Dichlorobenzene	SW8260B	0.017	0.0015
31	1,4-Dichlorobenzene	SW8260B	0.017	0.0014

32	Methyl tert butyl ether	SW8260B	0.0068	0.001	
33	p/m-Xylene	SW8260B	0.0068	0.0015	

TABLE 7.1 (Continued)

PROJECT QUANTITATION LIMITS PROJECT QUANTITATION LIMITS

			Estimated Quantitation		
	Analysis/Compound	**Method**	**Water (mg/L)**	**Soil (mg/kg)**	
	Volatile Organics (cont.)				
34	o-xylene	SW8260B	0.0068	0.0014	
35	Cis-1,2-Dichloroethene	SW8260B	0.0034	0.001	
36	Dibromomethane	SW8260B	0.034	0.0015	
37	Styrene	SW8260B	0.0068	0.0025	
38	Dichlorodiflouromethane	SW8260B	0.034	0.0013	
39	Acetone	SW8260B	0.034	0.011	
40	Carbon disulfide	SW8260B	0.034	0.0013	
41	2-Butanone	SW8260B	0.034	0.013	
42	Vinyl acetate	SW8260B	0.034	0.0026	
43	4-Methyl-2pentanone	SW8260B	0.034	0.0028	
44	1,2,3-Trichloropropane	SW8260B	0.034	0.0013	
45	2-Hexanone	SW8260B	0.034	0.0014	
46	Bromochloromethane	SW8260B	0.017	0.001	
47	2,2-Dichloropropane	SW8260B	0.017	0.0027	
48	1,2-Dibromoethane	SW8260B	0.014	0.0014	
49	1,3-Dichloropropane	SW8260B	0.017	0.0019	
50	1,1,1,2-Tetrachloroethane	SW8260B	0.0034	0.0011	
51	Bromobenzene	SW8260B	0.017	0.00075	
52	n-Butylbenzene	SW8260B	0.0034	0.0011	
53	Sec-Butylbenzene	SW8260B	0.0034	0.00094	
54	Tert-Butylbenzene	SW8260B	0.017	0.0021	
55	0-chlorotoluene	SW8260B	0.017	0.0011	
56	p-chlorotoluene	SW8260B	0.017	0.0012	
57	1,2-Dibromo-3-chloropropane	SW8260B	0.017	0.0029	
58	Hexachlorobutadiene	SW8260B	0.017	0.0016	
59	Isopropylbenzene	SW8260B	0.0034	0.00061	
60	p-Isopropylbenzene	SW8260B	0.0034	0.00094	
61	Naphthalene	SW8260B	0.017	0.0026	
62	Acrylonitrile	SW8260B	0.034	0.0013	
63	n-Propylbenzene	SW8260B	0.0034	0.00097	
64	1,2,3-Trichlorobenzene	SW8260B	0.017	0.0014	

65	1,2,4-Trimethylbenzene	SW8260B	0.017	0.0027
66	1,3,5-Trimethylbenzene	SW8260B	0.017	0.0021
67	1,2,4-Trimethylbenzene	SW8260B	0.017	0.002

TABLE 7.1 (Continued)

PROJECT QUANTITATION LIMITS

			Estimated Quantitation Limits	
	Analysis/Compound	**Method**	**RL (ug/L)**	**MDL (ug/kg)**
	Volatile Organics (cont.)			
68	1,4-Diethylbenzene	SW8260B	0.014	0.00068
69	4-Ethyltoulene	SW8260B	0.014	0.00033
70	1,2,4,5-Tetramethylbenzene	SW8260B	0.014	0.00062
71	Ethyl ether	SW8260B	0.017	0.0013
72	Trans-1,4-Dichloro-2-butene	SW8260B	0.017	0.0051
	Semivolatile Organics			
1	Acenahpthalene	SW8270C	0.18	0.042
2	1,2,4-Trichlorobenzene	SW8270C	0.22	0.037
3	Hexachlorobenzene	SW8270C	0.14	0.035
4	Bis(2-chloroethyl)ether	SW8270C	0.2	0.043
5	2-Chloronaphthalene	SW8270C	0.22	0.068
6	1,2-Dichlorobenzene	SW8270C	0.22	0.066
7	1,3-Dichlorobenzene	SW8270C	0.22	0.07
8	1,4-Dichlorobenzene	SW8270C	0.22	0.064
9	3,3'-Dichlorobenzidine	SW8270C	0.22	0.081
10	2,4-Dinitrotoluene	SW8270C	0.22	0.06
11	2,6-Dinitrotoluene	SW8270C	0.22	0.074
12	Fluoranthene	SW8270C	0.14	0.029
13	4-Chlorophenyl phenyl ether	SW8270C	0.22	0.031
14	4-Bromophenyl phenyl ether	SW8270C	0.22	0.036
15	Bis(2-chloroisopropyl)ether	SW8270C	0.27	0.072
16	Bis(2-chloroethoxy)methane	SW8270C	0.24	0.051
17	Hexachlorobutadiene	SW8270C	0.22	0.042
18	Hexachlorocyclopentadiene	SW8270C	0.65	0.18
19	Hexachloroethane	SW8270C	0.18	0.032

20	Isophorone	SW8270C	0.2	0.036
21	Naphthalene	SW8270C	0.22	0.072
22	Nitrobenzene	SW8270C	0.2	0.066
23	NitrosoDiPhenylAmine(NDPA/DPA)	SW8270C	0.18	0.056
24	n-Nitrosodi-n-propylamine	SW8270C	0.22	0.063
25	Bis(2-Ethylhexyl)phthalate	SW8270C	0.22	0.047

TABLE 7.1 (Continued)

PROJECT QUANTITATION LIMITS

			Estimated Quantitation Limits	
	Analysis/Compound	**Method**	**RL (mg/L)**	**MDL (mg/kg)**
	Semivolatile Organics (cont.)			
26	Butyl benzyl phthalate	SW8270C	0.22	0.063
27	Di-n-butylphthalate	SW8270C	0.22	0.038
28	Di-n-octylphthalate	SW8270C	0.22	0.061
29	Diethyl phthalate	SW8270C	0.22	0.039
30	Dimethyl phthalate	SW8270C	0.22	0.037
31	Benzo(a)anthracene	SW8270C	0.14	0.045
32	Benzo(a)pyrene	SW8270C	0.18	0.054
33	Benzo(b)fluoranthene	SW8270C	0.14	0.036
34	Benzo(k)fluoranthene	SW8270C	0.14	0.035
35	Chrysene	SW8270C	0.14	0.029
36	Acenaphthylene	SW8270C	0.18	0.058
37	Anthracene	SW8270C	0.14	0.03
38	Benzo(ghi)perylene	SW8270C	0.18	0.057
39	Fluorene	SW8270C	0.22	0.041
40	Phananthrene	SW8270C	0.14	0.038
41	Dibenzo(a,h)anthracene	SW8270C	0.14	0.042
42	Indeno(1,2,3-cd)Pyrene	SW8270C	0.18	0.055
43	Pyrene	SW8270C	0.14	0.037
44	Biphenyl	SW8270C	0.51	0.016
45	4-Chloroaniline	SW8270C	0.22	0.024
46	2-Nitroaniline	SW8270C	0.22	0.041
47	3-Nitroaniline	SW8270C	0.22	0.023
48	4-Nitroaniline	SW8270C	0.22	0.051

49	Dibenzofuran	SW8270C	0.22	0.036
50	2-Methylnaphthalene	SW8270C	0.27	0.089
51	1,2,4-Tetrachlorobenzene	SW8270C	0.22	0.066
52	Acetophenone	SW8270C	0.22	0.072
53	2,4,6-Trichlorophenol	SW8270C	0.14	0.041
54	P-chloro-M-Cresol	SW8270C	0.22	0.046
55	2-Chlorophenol	SW8270C	0.22	0.07

TABLE 7.1 (Continued)

PROJECT QUANTITATION LIMITS

			Estimated Quantitation Limits	
	Analysis/Compound	**Method**	**RL (mg/L)**	**MDL (mg/kg)**
	Semivolatile Organics (cont.)			
56	2,4-Dinitrophenol	SW8270C	0.2	0.066
57	2,4-Dimethylphenol	SW8270C	0.22	0.034
58	2-Nitrophenol	SW8270C	0.2	0.16
59	4-Nitrophenol	SW8270C	0.49	0.096
60	2,4-Dinitro	SW8270C	0.32	0.35
61	4,6-Dinitro-o-cresol	SW8270C	1.1	0.21
62	Pentachlorophenol	SW8270C	0.59	0.053
63	Phenol	SW8270C	0.18	0.066
64	2-Methylphenol	SW8270C	0.22	0.056
65	3-Methylphenol/4-Methylphenol	SW8270C	0.22	0.097
66	2,4,5-Trichlorophenol	SW8270C	0.32	0.052
67	Benzoic Acid	SW8270C	0.22	0.19
68	Benzyl Alcohol	SW8270C	0.73	0.052
69	Carbazole	SW8270C	0.22	0.032
	PCBs			
1	Aroclor-1016	SW8082	0.0469	0.009
2	Aroclor-1221	SW8082	0.0469	0.014
3	Aroclor-1232	SW8082	0.0469	0.01
4	Aroclor-1242	SW8082	0.0469	0.009
5	Aroclor-1248	SW8082	0.0469	0.006
6	Aroclor-1254	SW8082	0.0469	0.007

7	Aroclor-1260	SW8082	0.0469	0.008	
	Metals				
1	Aluminum	SW6010B	10	2.3	
2	Antimony	SW6010B	5.2	1	
3	Arsenic	SW6010B	1	0.36	
4	Barium	SW6010B	1	0.09	
5	Beryllium	SW6010B	0.52	0.04	
6	Cadmium	SW6010B	1	0.07	

TABLE 7.1 (Continued)
PROJECT QUANTITATION LIMITS

	Analysis/Compound	Method	Estimated Quantitation Limits RL (mg/L)	MDL (mg/kg)
	Metals (cont.)			
7	Calcium	SW6010B	10	2.3
8	Chromium	SW6010B	1	0.21
9	Cobalt	SW6010B	2.1	0.22
10	Copper	SW6010B	1	1
11	Iron	SW6010B	5.2	1.8
12	Lead	SW6010B	5.2	0.29
13	Magnesium	SW6010B	10	4.7
14	Manganese	SW6010B	1	0.11
15	Mercury	SW7471A	0.1	0.02
16	Nickel	SW6010B	2.6	0.29
17	Potassium	SW6010B	260	84
18	Selenium	SW6010B	2.1	0.34
19	Silver	SW6010B	1	0.17
20	Sodium	SW6010B	210	83
21	Thallium	SW6010B	2.1	0.65
22	Vanadium	SW6010B	1	0.23
23	Zinc	SW6010B	5.2	0.57

TABLE 7.1 (Continued)
PROJECT QUANTITATION LIMITS

	Analysis/Compound	Method	Estimated Quantitation Limits RL (mg/L)	MDL (mg/kg)
	Pesticides			
1	Delta-BHC	SW8081A	0.0029	0.000448
2	Lindane	SW8081A	0.000954	0.000426
3	Alpha-BHC	SW8081A	0.000954	0.000271
4	Beta-BHC	SW8081A	0.00229	0.000868
5	Heptachlor	SW8081A	0.00114	0.000513
6	Aldrin	SW8081A	0.00429	0.000806
7	Heptachlor epoxide	SW8081A	0.00429	0.00129
8	Endrin	SW8081A	0.000954	0.000391
9	Endrin Ketone	SW8081A	0.00229	0.00059
10	Dieldrin	SW8081A	0.00143	0.000715
11	4,4'-DDE	SW8081A	0.00229	0.000529
12	4,4'-DDD	SW8081A	0.00229	0.000816
13	4,4'-DDT	SW8081A	0.0033	0.00184
14	Endosulfan I	SW8081A	0.00229	0.000541
15	Endosulfan II	SW8081A	0.00229	0.000765
16	Endosulfan sulfate	SW8081A	0.000954	0.000436
17	Methoxychlor	SW8081A	0.00429	0.00134
18	Toxaphene	SW8081A	0.0429	0.012
19	Trans-Chlordane	SW8081A	0.00286	0.000756
20	Chlordane	SW8081A	0.0186	0.00758

Notes:

(1) - = No Standard
(2) RL = Reporting Limit
(3) MDL = Minimum Detection Limit
(4) RL and MDL values are taken from representative laboratory reports issued by Alpha Analytical Laboratories
(5) RL and MDL values are estimated and may vary depending on instruments

8.0 DATA REDUCTION, VALIDATION, AND REPORTING

8.1 INTRODUCTION

Data collected during the field investigation will be reduced and reviewed by the laboratory QA personnel, and a report on the findings will be tabulated in a standard format. The criteria used to identify and quantify the analytes will be those specified for the applicable methods in the USEPA SW-846 and subsequent updates. The data package provided by the laboratory will contain all items specified in the USEPA SW-846 appropriate for the analyses to be performed, and be reported in standard format.

The completed copies of the chain-of-custody records (both external and internal) accompanying each sample from time of initial bottle preparation to completion of analysis shall be attached to the analytical reports.

8.2 DATA REDUCTION

The Analytical Services Protocol (ASP) Category B data packages and an electronic data deliverable (EDD) will be provided by the laboratory after receipt of a complete sample delivery group. The Project Manager will immediately arrange for archiving the results and preparation of result tables. These tables will form the database for assessment of the site contamination condition.

Each EDD deliverable must be formatted using a Microsoft Windows operating system and the NYSDEC data deliverable format for EQuIS. To avoid transcription errors, data will be loaded directly into the ASCII format from the laboratory information management system (LIMS). If this cannot be accomplished, the consultant should be notified via letter of transmittal indicating that manual entry of data is required for a particular method of analysis. All EDDs must also undergo a QC check by the laboratory before delivery. The original data, tabulations, and electronic media are stored in a secure and retrievable fashion.

The Project Manager or Task Manager will maintain close contact with the QA reviewer to ensure all non-conformance issues are acted upon prior to data manipulation and assessment routines. Once the QA review has been completed, the Project Manager may direct the Team Leaders or others to initiate and finalize the analytical data assessment.

8.3 DATA VALIDATION

Data validation will be performed in accordance with the USEPA validation guidelines for organic and inorganic data review. Validation will include the following:

- Verification of the QC sample results,
- Verification of the identification of sample results (both positive hits and non-detects),
- Recalculation of 10% of all investigative sample results, and
- Preparation of Data Usability Summary Reports (DUSR).

A DUSR will be prepared and reviewed by the QAO before issuance. The DUSR will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and COC procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method. A detailed assessment of each SDG will follow. For each of the organic analytical methods, the following will be assessed:

- Holding times;
- Instrument tuning;
- Instrument calibrations;
- Blank results;
- System monitoring compounds or surrogate recovery compounds (as applicable);
- Internal standard recovery results;
- MS and MSD results;
- Target compound identification;
- Chromatogram quality;
- Pesticide cleanup (if applicable);
- Compound quantitation and reported detection limits;
- System performance; and
- Results verification.

For each of the inorganic compounds, the following will be assessed:

- Holding times;
- Calibrations;
- Blank results;
- Interference check sample;

- Laboratory check samples;
- Duplicates;
- Matrix Spike;
- Furnace atomic absorption analysis QC;
- ICP serial dilutions; and
- Results verification and reported detection limits.

Based on the results of data validation, the validated analytical results reported by the laboratory will be assigned one of the following usability flags:

- "U" - Not detected. The associated number indicates the approximate sample concentration necessary to be detected significantly greater than the level of the highest associated blank;
- "UJ" - Not detected. Quantitation limit may be inaccurate or imprecise;
- "J" - Analyte is present. Reported value may be associated with a higher level of uncertainty than is normally expected with the analytical method
- "N" – Tentative identification. Analyte is considered present in the sample;
- "R" – Unreliable result; data is rejected or unusable. Analyte may or may not be present in the sample; and
- No Flag - Result accepted without qualification.

9.0 INTERNAL QUALITY CONTROL CHECKS AND FREQUENCY

9.1 QUALITY ASSURANCE BATCHING

Each set of samples will be analyzed concurrently with calibration standards, method blanks, matrix spikes (MS), matrix spike duplicates (MSD) or laboratory duplicates, and QC check samples (if required by the protocol). The MS/MSD samples will be designated by the field personnel. If no MS/MSD samples have been designated, the laboratory will contact the Langan Project Manager for corrective action.

9.2 CALIBRATION STANDARDS AND SURROGATES

All organic standard and surrogate compounds are checked by the method of mass spectrometry for correct identification and gas chromatography for degree of purity and concentration. All standards are traceable to a source of known quality certified by the USEPA or NIST, or other similar program. When the compounds pass the identity and purity tests, they are certified for use in standard and surrogate solutions. Concentrations of the solutions are checked for accuracy before release for laboratory use. Standard solutions are replaced monthly or more frequently, based upon data indicating deterioration.

9.3 ORGANIC BLANKS AND MATRIX SPIKE

Analysis of blank samples verifies that the analytical method does not introduce contaminants or detect "false positives". The blank water can be generated by reverse osmosis and Super-Q filtration systems, or distillation of water containing $KMnO_4$. The matrix spike is generated by addition of surrogate standard to each sample.

9.4 TRIP AND FIELD BLANKS

Trip blanks and field blanks will be utilized in accordance with the specifications in Section 4. These blanks will be analyzed to provide a check on sample bottle preparation and to evaluate the possibility of atmospheric or cross contamination of the samples.

10.0 QUALITY ASSURANCE PERFORMANCE AUDITS AND SYSTEM AUDITS

10.1 INTRODUCTION

Quality assurance audits may be performed by the project quality assurance group under the direction and approval of the QAO. These audits will be implemented to evaluate the capability and performance of project and subcontractor personnel, items, activities, and documentation of the measurement system(s). Functioning as an independent body and reporting directly to corporate quality assurance management, the QAO may plan, schedule, and approve system and performance audits based upon procedures customized to the project requirements. At times, the QAO may request additional personnel with specific expertise from company and/or project groups to assist in conducting performance audits. However, these personnel will not have responsibility for the project work associated with the performance audit.

10.2 SYSTEM AUDITS

System audits may be performed by the QAO or designated auditors, and encompass a qualitative evaluation of measurement system components to ascertain their appropriate selection and application. In addition, field and laboratory quality control procedures and associated documentation may be system audited. These audits may be performed once during the performance of the project. However, if conditions adverse to quality are detected or if the Project Manager requests, additional audits may occur.

10.3 PERFORMANCE AUDITS

The laboratory may be required to conduct an analysis of Performance Evaluation samples or provide proof that Performance Evaluation samples submitted by USEPA or a state agency have been analyzed within the past twelve months.

10.4 FORMAL AUDITS

Formal audits refer to any system or performance audit that is documented and implemented by the QA group. These audits encompass documented activities performed by qualified lead auditors to a written procedure or checklists to objectively verify that quality assurance requirements have been developed, documented, and instituted in accordance with contractual and project criteria. Formal audits may be performed on project and subcontractor work at various locations.

Audit reports will be written by auditors who have performed the site audit after gathering and evaluating all data. Items, activities, and documents determined by lead auditors to be in noncompliance shall be identified at exit interviews conducted with the

involved management. Non-compliances will be logged, and documented through audit findings, which are attached to and are a part of the integral audit report. These audit-finding forms are directed to management to satisfactorily resolve the noncompliance in a specified and timely manner.

The Project Manager has overall responsibility to ensure that all corrective actions necessary to resolve audit findings are acted upon promptly and satisfactorily. Audit reports must be submitted to the Project Manager within fifteen days of completion of the audit. Serious deficiencies will be reported to the Project Manager within 24 hours. All audit checklists, audit reports, audit findings, and acceptable resolutions are approved by the QAO prior to issue. Verification of acceptable resolutions may be determined by re-audit or documented surveillance of the item or activity. Upon verification acceptance, the QAO will close out the audit report and findings.

11.0 PREVENTIVE MAINTENANCE PROCEDURES AND SCHEDULES

11.1 PREVENTIVE MAINTENANCE PROCEDURES

Equipment, instruments, tools, gauges, and other items requiring preventive maintenance will be serviced in accordance with the manufacturer's specified recommendations and written procedure developed by the operators.

A list of critical spare parts will be established by the operator. These spare parts will be available for use in order to reduce the downtime. A service contract for rapid instrument repair or backup instruments may be substituted for the spare part inventory.

11.2 SCHEDULES

Written procedures will establish the schedule for servicing critical items in order to minimize the downtime of the measurement system. The laboratory will adhere to the maintenance schedule, and arrange any necessary and prompt service. Required service will be performed by qualified personnel.

11.3 RECORDS

Logs shall be established to record and control maintenance and service procedures and schedules. All maintenance records will be documented and traceable to the specific equipment, instruments, tools, and gauges. Records produced shall be reviewed, maintained, and filed by the operators at the laboratories. The QAO may audit these records to verify complete adherence to these procedures.

12.0 CORRECTIVE ACTION

12.1 INTRODUCTION

The following procedures have been established to ensure that conditions adverse to quality, such as malfunctions, deficiencies, deviations, and errors, are promptly investigated, documented, evaluated, and corrected.

12.2 PROCEDURE DESCRIPTION

When a significant condition adverse to quality is noted at site, laboratory, or subcontractor location, the cause of the condition will be determined and corrective action will be taken to preclude repetition. Condition identification, cause, reference documents, and corrective action planned to be taken will be documented and reported to the QAO, Project Manager, Field Team Leader and involved contractor management, at a minimum. Implementation of corrective action is verified by documented follow-up action.

All project personnel have the responsibility, as part of the normal work duties, to promptly identify, solicit approved correction, and report conditions adverse to quality. Corrective actions will be initiated as follows:

- When predetermined acceptance standards are not attained;
- When procedure or data compiled are determined to be deficient;
- When equipment or instrumentation is found to be faulty;
- When samples and analytical test results are not clearly traceable;
- When quality assurance requirements have been violated;
- When designated approvals have been circumvented;
- As a result of system and performance audits;
- As a result of a management assessment;
- As a result of laboratory/field comparison studies; and
- As required by USEPA SW-846, and subsequent updates, or by the NYSDEC ASP.

Project management and staff, such as field investigation teams, remedial response planning personnel, and laboratory groups, monitor on-going work performance in the normal course of daily responsibilities. Work may be audited at the sites, laboratories, or contractor locations. Activities, or documents ascertained to be noncompliant with quality assurance requirements will be documented. Corrective actions will be mandated through audit finding sheets attached to the audit report. Audit findings are logged, maintained, and controlled by the Task Manager.

Personnel assigned to quality assurance functions will have the responsibility to issue and control Corrective Action Request (CAR) Forms (Figure 12.1 or similar). The CAR identifies the out-of-compliance condition, reference document(s), and recommended corrective action(s) to be administered. The CAR is issued to the personnel responsible for the affected item or activity. A copy is also submitted to the Project Manager. The individual to whom the CAR is addressed returns the requested response promptly to the QA personnel, affixing his/her signature and date to the corrective action block, after stating the cause of the conditions and corrective action to be taken. The QA personnel maintain the log for status of CARs, confirms the adequacy of the intended corrective action, and verifies its implementation. CARs will be retained in the project file for the records.

Any project personnel may identify noncompliance issues; however, the designated QA personnel are responsible for documenting, numbering, logging, and verifying the close out action. The Project Manager will be responsible for ensuring that all recommended corrective actions are implemented, documented, and approved.

FIGURE 12.1

CORRECTIVE ACTION REQUEST

Number: _____ Date: _____

TO: _____

You are hereby requested to take corrective actions indicated below and as otherwise determined by you to (a) resolve the noted condition and (b) to prevent it from recurring. Your written response is to be returned to the project quality assurance manager by _____

CONDITION:

REFERENCE DOCUMENTS:

RECOMMENDED CORRECTIVE ACTIONS:

_____ _____ _____ _____ _____ _____

Originator Date Approval Date Approval Date

RESPONSE

CAUSE OF CONDITION

CORRECTIVE ACTION

(A) RESOLUTION

(B) PREVENTION

(C) AFFECTED DOCUMENTS

C.A. FOLLOWUP:

CORRECTIVE ACTION VERIFIED BY: _____ DATE:_____

13.0 REFERENCES

USEPA, 1986. SW-846 "Test Method for Evaluating Solid Waste," dated November 1986. U.S. Environmental Protection Agency, Washington, D.C.

Taylor, J. K., 1987. Quality Assurance of Chemical Measurements. Lewis Publishers, Inc., Chelsea, Michigan

USEPA, 1987. Data Quality Objectives for Remedial Response Actions Activities: Development Process, EPA/540/G-87/003, OSWER Directive 9355.0-7- U.S. Environmental Protection Agency, Washington, D.C.

USEPA, 1992a. CLP Organics Data Review and Preliminary Review. SOP No. HW-6, Revision #8, dated January 1992. USEPA Region II.

USEPA, 1992b. Evaluation of Metals Data for the Contract Laboratory Program (CLP) based on SOW 3/90. SOP No. HW-2, Revision XI, dated January 1992. USEPA Region II.

Appendix I

Project Personnel Resumes

Joel B. Landes, PE

Senior Associate/ Program Director
Environmental Engineering & Project Management

37 years in the industry

Mr. Landes has over thirty-seven years of diversified experience directing environmental engineering and consulting projects for Fortune 500 manufacturing firms, real estate developers and public utilities. His experience includes management of environmental compliance for a major pharmaceutical company and as an environmental affairs consultant for private clients. He has expertise redeveloping former industrial, chemical, petroleum storage and manufactured gas plant sites into residential and commercial use through the New York State Brownfield Cleanup Program. He has lead environmental studies for acquisitions and divestitures of pharmaceutical and industrial facilities; industrial site selection and permitting.

He currently oversees all Langan environmental services in the New York City Metropolitan area including Phase I and II Environmental Site Assessments, remedial investigations, feasibility studies; remedial measure design and implementation.

Selected Projects

BROWNFIELD CLEANUP PROGRAM

The Shops at Atlas Park, Glendale, Queens, NY
The Shops at Atlas Park, Parcel C, Remedial Investigation Work Plan, Glendale, Queens, NY
Gateway at Bronx Terminal Market, Bronx, NY
536 West 41st Street, New York, NY
539 Smith Street Bulkhead, Brooklyn, NY

INDUSTRIAL

595-647 Smith Street, Brooklyn, NY
Consolidated Edison of New York, Multiple Former MGP Facilities, Various Locations, New York, NY
Con Ed, Governors Island, NY
711 Stewart Avenue, Garden City, NY
Acme/Whitehead, Brooklyn, NY
Waterside Generating Plan and Office Building, New York, NY
FSM Partners, New York, NY
Sterling Drug, Inc., Rensselaer, NY
Fresh Kills Landfill, New York City Department of Sanitation, Staten Island, NY

Education

Graduate Studies in Business Management
Union College

M.E., Environmental Planning and Management
The Cooper Union

B.S., Chemical Engineering
Polytechnic Institute of Brooklyn

Professional Registration

Professional Engineer (PE) in NY, NJ

Affiliations

New York Building Congress

NYC Partnerships of Brownfield Professionals

Business Council of New York State

Environmental Business Association

National Brownfield Association – NYS Chapter

LANGAN

Property Investigation for Village of Sleepy Hollow, Tarrytown, NY
Vehicle Service Facility, City of Yonkers, NY
Crane Company, Roseland, NJ
Confidential Industrial Client, Environmental Risk Management, Bound Brook, NJ
Confidential Client, Superfund Site Remediation, Bound Brook, NJ
Elizabethtown Gas Company, Elizabeth, NJ
Ethicon, Somerville, NJ
Indiana General, Keasbey, NJ
Sumitomo Machinery, Teterboro, NJ
Schmid Labs, West Patterson, NJ
L&F Products, ISRA/ECRA Cleanup, Belle Mead, NJ
CPC International, Various Locations, NY and IL
Pnemo Abex, Cleveland, OH
NL Chemicals, Various Locations, NJ and MI
Copper Processing Plant, Sofia, Bulgaria
Steel Processing Plant, Environmental Assessment, Pernik, Bulgaria
American Home Products, Mexico
Confidential Pharmaceutical Acquisition, Europe, Caribbean, and Africa
Colgate-Palmolive, Paris, France, Mexico City, Mexico, Brazil, Argentina and South America
Pfizer Pharmaceutical Company, PA and Europe
Riverwood Capital, US, Mexico, Central and South America
Sterling Drug, Puerto Rico
Laport, Ltd., Chile, South America

POWER

ConEdison East 74th Street, Sediment Investigation, New York, NY
Sithe Energy, Kenilworth, NJ
Confidential Independent Power Producer Siting Analysis, Midwest, Mid-Atlantic and Southern, United States
Confidential IPP, Various Locations, VA
Florida Power and Light (FPL), Miami, FL
TXU Energy, Dallas, TX
Confidential Independent Power Producer, Midwest, Mid-Atlantic and Southern United States

AIRPORTS

American Airlines Terminals, Environmental Assessments, Queens, NY
JFK International Airport, International Arrivals Building, Jamaica, Queens, NY
Nippon Cargo, Jamaica, Queens, NY
JFK International Airport, Eastern Airlines Hangar, Jamaica, Queens, NY
First Aviation Services Hangar and Terminal at Teterboro Airport, Teterboro, NJ

TRANSPORTATION

New Jersey Turnpike Authority, East Brunswick, NJ

HOSPITAL

Memorial Sloan-Kettering Cancer Center, New York, NY
Memorial Sloan-Kettering Cancer Center, 1133 York Avenue, New York, NY
Memorial Sloan-Kettering Cancer Center, 64th Street, New York, NY

Memorial Sloan-Kettering Cancer Center, 74th Street, New York, NY
Memorial Sloan-Kettering Cancer Center, West Harrison, NY
Memorial Sloan-Kettering Cancer Center, Cabrini Medical Center, New York, NY

COMMERCIAL

Fashion Outlets of Niagara Falls, Expatiated Brownfield Cleanup Program, Niagara Falls, NY
Urban Health Plan, 1095 Southern Boulevard, Bronx, NY
Jacob K. Javits Convention Center Expansion, New York, NY
7 World Trade Center, New York, NY
Atlantic Avenue Service Center, Brooklyn, NY
Yamato Transport, Tuckahoe, NY and Leonia, NJ

HIGHER EDUCATION

Marymount Manhattan College, HazMat Audit, New York, NY
Columbia University, Manhattanville Development Project, New York, NY
Columbia University Real Estate Group, 220 East 138th Street, Bronx, NY
Columbia University Real Estate Group, 1734 Bathgate Avenue, Bronx, NY
Columbia University Real Estate Group, 1745 Bathgate Avenue, Bronx, NY
Columbia University, The Studebaker Building Renovation, New York, NY
City University of New York (CUNY) John Jay College Expansion, New York, NY

K-12 EDUCATION

PS 192, New York, NY
173 Harrison Avenue, School Development, Brooklyn, NY

RESIDENTIAL AND MIXED-USE

Queens West, Phase 2, Long Island City, NY
Riverside Building 5, New York, NY
55 Hope Street, E-Designation, Brooklyn, NY
909 Half Street, Environmental Review, Washington DC
Peter Cooper Village/Stuyvesant Town, New Management Offices, New York, NY
Greenpoint Landing, Brooklyn, NY
546 West 44th Street, New York, NY
Sullivan Street Residential, New York, NY
475 Ninth Avenue, New York, NY
River Place I and II, New York, NY
10 Chelsea, New York, NY
Silvercup West, Long Island City, NY
Superior Ink, New York, NY
Peter Cooper Village/Stuyvesant Town, MGP Consultations, New York, NY
Duane Street Condominium, New York, NY
Archstone Clinton, New York, NY

PARKS AND RECREATION

Kingsbridge Ice Center, Bronx, NY
Highline Park, New York, NY
Yankee Stadium Redevelopment Project, Bronx, NY
Proposed New York Jets Stadium, New York, NY
AMF Bowling Centers, Phase I ESA's, 285 Locations, United States

EXPERT WITNESS

Confidential Client, Expert Affidavit, New York, NY
Confidential Client, Four New York Properties, New York, NY
Confidential Client, Expert Review and Remediation, Yonkers, NY
Confidential Client, Senior Environmental Consulting, Brooklyn, NY
Expert Affidavit, Confidential Client, New York, NY
Underground Storage Tank Removals, New York, NY

Jamie P. Barr, LEP

Senior Associate/Vice President
Geological Engineer

15 years in the industry ~ 9 years with Langan

Mr. Barr is a Geological Engineer with over 15 years of diversified experience that includes remedial system design, feasibility studies, Phase I and Phase II environmental site assessments, construction oversight, geotechnical investigations, residential subdivision design, stormwater management, site surveying, mining exploration, and aquatic toxicology. Mr. Barr has experience coordinating and negotiating with the USEPA and regulatory agencies in the following states: New York, New Jersey, Connecticut, Massachusetts, Indiana, California, Illinois, and Pennsylvania. Mr. Barr has extensive experience with projects in the New York State Brownfield Cleanup Program, Connecticut Property Transfer Act, Indiana VRP, as well as the USEPA Superfund Program. Mr. Barr has been involved with numerous environmental due diligence, investigation, and remediation projects ranging from small residential/commercial buildings to large industrial facilities. Mr. Barr has also overseen geotechnical and environmental construction activities such as soil, groundwater, vapor remediation system installation, pile load testing, sheeting and shoring, landfill construction and closure, and numerous environmental investigations. Mr. Barr is Licensed Environmental Professional (LEP) in the State of Connecticut, serves as an Officer on the New Haven Manufacturers Association Board of Directors, and is active in many other professional organizations within Connecticut.

Selected Projects

United Nations Capital Master Plan, Manhattan, NY
The Shops at Atlas Park, Glendale, NY
1 Hudson Plaza, Extell Development, New York, NY
Myrtle Avenue, Brooklyn, NY
Gasser Building, New York, NY
1 Hudson Plaza, Extell Development, New York, NY
John Jay College Expansion, Manhattan, NY
Metro Terminal, Brooklyn, NY
Greenville Landfill, Greenville, NY
Bronx Criminal Court Complex, Bronx, NY
UNISYS: Former Remington Rand, Middletown, CT
Unilever Plant, Clinton, CT
The Hershey Company, Naugatuck, CT
Ryder Systems Inc., Various Locations, CT
RBS GBM Building, Stamford, CT
Waterside Power Plant, Stamford, CT

Education

University of New Brunswick, Bachelor of Science: Geological Engineering

Professional Registration

Licensed Environmental Professional – CT

Affiliations

National Brownfield Association of NY

New Haven Manufacturers Association

Connecticut Building Congress

Environmental Professionals of CT

Brownfield Coalition of the Northeast

Association of Professional Engineers and Geoscientists of New Brunswick

LANGAN

Ryan J. Wohlstrom, EIT

Project Engineer

Environmental Engineering & Project Management

6 years in the industry ~ 4 years with Langan

Mr. Wohlstrom is an environmental engineer whose practice involves site investigation and remediation, environmental site assessments, in-situ remedial technology, sub-slab depressurization system design, emergency response, environmental and geotechnical site investigations, and health and safety monitoring. He has experience with projects in the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup, Voluntary Cleanup and Spill Programs and New York City Department of Environmental Protection (NYCDEP) "E" Designated and New York City Brownfield Cleanup Program sites. He has extensive experience in soil and groundwater investigation and remediation, design of in-situ chemical oxidation and enhanced bioremediation strategies, Phase I Site Assessments, Phase II site investigations, UST Closures, NYSDEC spill closure, remedial excavation oversight and excavation and off-site treatment and/or disposal of contaminated soils.

Selected Projects

Columbia University, Manhattanville Development, New York, NY
Brooklyn Bridge Park Development, Brooklyn, NY
Collegiate School Development Project, Manhattan, NY
New York City School Construction Authority, Boroughs of New York City, NY
Sheepshead Bay Development, Brooklyn, NY
Fashion Outlets of Niagara Falls, Town of Niagara, NY
Goethals Bridge Development, New York, NY
Gateway Estates Phase II, Brooklyn, NY
Hudson Yards, Terra Firma Development, New York, NY
29 Flatbush Avenue, Brooklyn, NY
Soil Vapor Remediation System Design & Operation, Various Sites, CA
Former Artistic Brass Facility, South Gate, CA
Hassayampa Superfund Site, Maricopa County, AZ
Former Calstyle Manufacturing Facility, Compton, CA
Irvine Ranch Water District Cienega Filtration Project, Irvine, CA
Bolsa Chica Lowlands Assessment and Remediation, Orange County, CA
Post-Fire Emergency Response 2007 Santiago Fire, Orange County, CA
Lehigh Cement Company Cement Kiln Dust Pile, Metaline Falls, WA
Trident Plating, Santa Fe Springs, CA
Hi-Shear Corporation, Torrance, CA
Los Angeles Unified School District, San Pedro, CA
Newport Banning Ranch LLC, Newport Beach, CA
Client Confidential, Thousand Oaks, CA
Irvine Ranch Water District Cienega Filtration, Irvine, CA

Education

B.S., Engineering
Roger Williams University

Professional Registration

Engineer-in-Training (EIT)

OSHA 29 CFR 1910.120 Certification (HAZWOPER)

LANGAN

David Granucci

Senior Staff Engineer

4 years in the industry ~ 4 years with Langan

Mr. Granucci has a strong background in environmental engineering and two years of regulatory and consulting experience. During his employment with Langan, Mr. Granucci has worked on numerous environmental and geotechnical projects for industrial, commercial, residential, and public facilities in several states including Connecticut, New York, New Jersey, Massachusetts, and Pennsylvania. He has experience with permitting and compliance tasks associated with projects in several Connecticut regulatory programs.

Mr. Granucci has conducted Phase I Environmental Site Assessments (ESA), Phase II/III Site Investigations (SI) and remedial actions. He has provided oversight for environmental and geotechnical soil boring and test pit excavations. He is familiar with conducting subsurface boring investigations, test pit excavations and possesses field sampling experience including soil, sediment, soil vapor, and groundwater.

Mr. Granucci is responsible for the technical execution of projects and associated report and plan generation. This includes the knowledge and use of several programs such as AutoCAD, GIS, gINT, and Access.

Selected Projects

101 Lincoln Avenue, Bronx, NY
1175 State Street, New Haven, CT
1245 Dixwell Avenue, Hamden, CT
1555 Post Road East-Westport CT
287-291 East Houston Street-New York, NY
32 East 29th Street, New York, NY
350 Riverside Avenue- Riverside, CT
61-63 West 108th Street, New York, NY
841 Enfield Street- Enfield, CT
AutoZone Store #4755- Albany, NY
Bedford Square, Westport, CT
Black Rock School, Bridgeport, CT
Ceruzzi Milford 1777 Boston Post Road-Milford, CT
Collegiate School New Building Project, New York, NY
Common Ground HS – New Haven, CT
Cushman-Webster, TX
Deptford Mall Refinancing- Deptford, CT
Enclave on 241st – Bronx, NY
ESUMS- West Haven, CT
Gallery Mall Redevelopment- Philadelphia, PA

Education

University of Connecticut, Bachelor of Science: Civil Engineering
University of Connecticut, Master of Science: Environmental Engineering

LANGAN

David Granucci

GMAC Construction - Amazon Windsor, CT
Hess Terminal – Edgewater, NJ
Lowe's-Norwalk, CT
New Lebanon School – Greenwich, CT
Newton Wellesley – Wellesley, MA
Pearl Management-165 Front Street- Chicopee, MA
Project Wrench – Granby, Canada
Promenade, Orange, CT
Proposed 363 Bond Street Development, Brooklyn, NY
Ronald McDonald House – New Haven, CT
Ryder Systems Inc., Various Locations, CT
Sabre Park – Niagara Falls, NY
Samsondale Plaza-West Haverstraw, NY
Seymour Housing – Seymour, CT
Sheepshead Bay Development- Brooklyn, NY
SNET New Haven-Fusco-New Haven, CT
Sunrise Cinemas- Valley Stream, NY
The Boathouse at Canal Dock, New Haven, CT
The Shops at Atlas Park, Glendale, N.Y.
The Stop & Shop Supermarket Company, LLC, Various Sites in Connecticut
Torrington Commons- Torrington, CT
Tri-City Plaza, Vernon, CT
Unilever – Clinton, CT
UNISYS: Former Remington Rand Site, Middletown, CT
Universal Pictures: R.I.P.D., Boston, MA
Washington & Front Street, Hempstead, NY
Wilton Town Center – Wilton, CT

Justin Hall

Staff Scientist
Environmental Scientist

7 years in the industry ~ 3 years with Langan

Mr. Hall has a strong background in environmental science and construction and geotechnical inspection. Mr. Hall has four years of construction and geotechnical experience and two years of regulatory and consulting experience. During his employment as a construction materials inspector Mr. Hall worked on numerous jobs including the construction of multiple elementary schools and colleges across Massachusetts and Connecticut; the construction of nuclear waste holding cells at Vermont's Yanke Rowe Nuclear Power Station, and the construction of sub-stations and high voltage power lines across Connecticut and Massachusetts. During his employment with Langan, Mr. Hall has worked on numerous environmental and geotechnical projects for industrial, commercial, residential, and public facilities in several states including New York, New Jersey, and Connecticut. He has experience with permitting, compliance, design, and remediation tasks associated with projects in several New York and Connecticut regulatory programs.

Mr. Hall has conducted Phase I Environmental Site Assessments (ESA), Phase II/III Site Investigations (SI) and various remedial actions. He has inspected, tested, and provided provided oversight for the implementation of contruction materials. He has provided oversight during environmental investigations as well as remediations. He has conducted subsurface boring investigations, test pit excavations and possesses field sampling experience including soil, sediment, soil vapor and groundwater. Mr. Hall has managed field personnel and provided oversight during the remediation and redevelopment of a large New York State Brownfield Cleanup Site.

Education

University of Massachusetts Amherst: B.S. Environmental Science

Selected Projects

1141 Wolcott Street- Waterbury, CT
1245 Dixwell Avenue, Hamden, CT
165 Huguenot, New Rochelle, NY
1681-1693 Third Avenue Development, New York, NY
182 E. Aurora St, Waterbury, CT
200 Route 17 North – Upper Saddle River, NJ
2401 Third Avenue, Bronx, NY
32 East 29th Street, New York, NY
AA Boston Logan - Terminal B Remediation, New York, NY
Black Rock School, Bridgeport, CT
Collegiate School, New York, NY
Enclave on 241st – Bronx, NY
ESUMS, West Haven, CT
Lowes-Yonkers, NY

LANGAN

New Lebanon School – Greenwich, CT
Peoples Bank, Baltic, CT
Ryder Systems Inc., Various Locations, CT
Sabre Park – Niagara Falls, NY
The Fashion Outlets of Niagara Falls Expansion, Niagara Falls, NY
The Stop & Shop Supermarket Company, LLC, Various Sites, CT & NY
Torrington Commons, Torrington, CT
Unilever: RCRA Hazardous Waste Storage Room Closure, Clinton, CT

TRAINING AND CERTIFICATIONS

40 Hour OSHA – HAZWOPER Certification
Nuclear Gauge Safety Certification
HAZMAT Certification
Confined Space Entrant, Supervisor, and Manager Trained
Level 1 American Concrete Institute Field Technician Certified

Appendix J

Citizen Participation Plan

New York State Department of Environmental Conservation

Brownfield Cleanup Program

Citizen Participation Plan

for

Enclave on 241St Street Development (Site No. C203077)

714 East 241st Street
Bronx, NY 10470

May 2015

Contents

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Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site's investigation and cleanup process.

Applicant: **Enclave on 241 Street LLC ("Applicant")**
Site Name: **Enclave on 241st Street Development ("Site")**
Site Address: **714 East 241st Street, Bronx, NY 10470**
Site County: **Bronx County**
Site Number: **C203077**

1. What is New York's Brownfield Cleanup Program?

New York's Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and developed. These uses include recreation, housing, and business.

A brownfield is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants that conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at: http://www.dec.ny.gov/chemical/8450.html.

2. Citizen Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well being. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision-makers form or adopt final positions.

Involving citizens affected and interest in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment;

- Improving public access to, and understanding of, issues and information related to a particular site and that site's investigation and cleanup process;

- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process;

- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community; and

- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision-making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the Site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the Site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the Site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the Site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC web-site. If this occurs, NYSDEC will inform the public in fact sheets distributed about the Site and by other means, as appropriate.

Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the Site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the Site (such as fieldwork), as well as availability of project documents and announcements about public comment periods.

The site contact list includes, at a minimum:

- Chief executive officer and planning board chairperson of each county, city, town and village in which the Site is located;
- Residents, owners, and occupants of the Site and properties adjacent to the Site;
- The public water supplier which services the area in which the Site is located;
- Any person who has requested to be placed on the site contact list;
- The administrator of any school or day care facility located on or near the Site for purposes of posting and/or dissemination of information at the facility; and
- Location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the Site's investigation and cleanup program. The flowchart in Appendix D shows how these CP activities integrate with the Site investigation and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program.

Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.

- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a Site's investigation and cleanup.

Digital reports for the Site are shared at the Wakefield Branch Library web page, available here: http://www.nypl.org/about/locations/wakefield

The public is encouraged to contact project staff at any time during the Site's investigation and cleanup process with questions, comments, or requests for information.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

NYSDEC must determine if the Site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the Site, as described in Section 5.

If the Site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the Site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the Site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the Site.

For more information about TAGs, go online at http://www.dec.ny.gov/regulations/2590.html.

Note: The table identifying the citizen participation activities related to the site's investigation and cleanup program follows on the next page:

Citizen Participation Requirements (Activities)	Timing of CP Activity(ies)
Application Process:	
• Prepare site contact list • Establish document repositories	At time of preparation of application to participate in the BCP.
• Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period	When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement:	
• Prepare Citizen Participation (CP) Plan	Before start of Remedial Investigation
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
• Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes Remedial Investigation:	
• Distribute fact sheet to site contact list that describes RI results	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
• Distribute fact sheet to site contact list about proposed RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period	Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action:	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.

After Applicant Completes Cleanup Action:	
• Distribute fact sheet to site contact list that announces that cleanup action has been completed and that summarizes the Final Engineering Report • Distribute fact sheet to site contact list announcing issuance of Certificate of Completion (COC)	At the time NYSDEC approves Final Engineering Report. These two fact sheets are combined if possible if there is not a delay in issuing the COC.

3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the Site. Additional major issues of public concern may be identified during the course of the Site's investigation and cleanup process.

The Site is located in an Environmental Justice Area. Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Environmental justice efforts focus on improving the environment in communities, specifically minority and low-income communities, and addressing disproportionate adverse environmental impacts that may exist in those communities.

The Site is located in an area with a large African-American presence, along with a sizable Hispanic-American community. Therefore, all future fact sheets will in addition, be translated into Spanish.

The following major issues of public concern were identified: air quality, health of workers and community, nuisance odors, and noise. These issues are of the most concern to adjacent property businesses and residents. These issues will be addressed in the Remedial Investigation Work Plan (RIWP), Remedial Action Work Plan (RAWP), a Community Air Monitoring Program (CAMP) and/or a site-specific Health and Safety Plan (HASP) for the project to be approved by the NYSDEC prior to work.

North and northwestern portions of the Site have been used for gasoline filling stations and automobile repair since at least 1935. Petroleum releases during historical gasoline filling station operations have adversely impacted soil and groundwater, and likely soil vapor at the Site. Additionally, previous investigations at the Site have identified the following:

- A 3 to 4-foot thick layer of historic fill material consisting of varying amounts of sand and gravel with brick and coal ash. This fill layer contains NYSDEC Part 375-6.8(a) Restricted Use Restricted-Residential Soil Cleanup Objective (SCO) exceedances (SVOCs and metals) throughout the Site.
- Petroleum-impacted soil at depths ranging from approximately 1 to 16 feet below grade surface.
- Known and suspect presence of historical petroleum storage tanks.

- Elevated concentrations of petroleum contaminants in soil and groundwater.

Contaminants of concern include Volatile Organic Compounds (VOCs), Polynuclear aromatic Hydrocarbons (PAHs), Semi-Volatile Organic Compounds (SVOCs), and metals. Contaminants are discussed in further detail in Section 4 below. The identified contaminants will be monitored and remediated to support the redevelopment of the Site for industrial use using a NYSDEC-approved work plan.

Information regarding the Site is available through Project Contacts mentioned in Section 2 and Appendix A. Project Contacts may be utilized so that the public may be kept informed and involved during the site remedial process. The BCP Application, which includes the previous investigations at the Site, the RIWP, and future reports prepared for the NYSDEC, are (or will) be available in the document repository discussed above in Section 2 and in Appendix A. RIWP and RAWP documents will include schedules for the planned work.

To make Citizen Participation Plans (CPPs) as consistent as possible with DER's CP Handbook, Region 2 Public Affairs asks that the Handbook's "Scoping Sheet for Major Issues of Public Concern" be used by applicants/responsible parties to inform their completion of this section of the plan. Because of the high percentage of Environmental Justice Areas in New York City, the Scoping Sheet is a particularly valuable tool in this region. The NYSDEC Scoping Sheet for Major Issues of Public Concern was used to complete this section and is included as Appendix C.

4. Site Information

Site Description

The Site consists of an approximate 24,060-square-foot irregularly shaped lot and includes approximately 100 feet of frontage along White Plains Road, 185 feet of frontage along 241st Street, and 135 feet of frontage along Furman Avenue. The New York City Transit Authority (NYCTA) #2 rail corridor and station platform are allocated above grade along the northwestern property line. The Site is comprised of lots 1, 3, 6, 59, 62, and p/o 65; however, on 22 December 2014, the Applicant submitted an Application for Merger to the NYC Department of Finance Division of Land Records in order to combine the six lots into one. The tentative lot merger was approved on 8 January 2015 and the final lot merger approval is anticipated by 20 February 2015. The Site is comprised of the following addresses and lots:

- 714 East 241st Street (lot 1) – Developed with a vacant one-story office building with a basement.
- 4643 Furman Avenue (lot 3) – Developed with an asphalt-paved parking lot.
- 4641 Furman Avenue (lot 6) – Undeveloped dirt and grass lot.
- 4644 White Plains Road (lot 59) – Developed with a vacant one-story former gasoline station and auto body shop (since circa 1950)
- 700 East 241st Street (lot 62) – Developed with a vacant one-story former gasoline station and auto body shop (since circa 1935)
- 704 East 241st Street (p/o lot 65) – Undeveloped dirt and grass lot.

The Site contains three on-site buildings including an approximate 1,086-square-foot one-story office building with basement (lot 1), an approximate 3,375-square foot one-story former auto body shop building (lot 59), and an approximate 1,500-square foot one-story former auto body shop building (lot 62). The Site also contains asphalt- and concrete-paved exterior driving/parking areas and sparsely vegetated undeveloped area. The Site is bordered to the northwest by White Plains Road and an overhead NYCTA rail line, to the northeast by East 241st Street, to the southeast by Furman Avenue, and to the southwest by residential and commercial properties. The Site is subject to NYSDEC review under the Spills Program (Spill No. 12-14956).A Site Location Map is included as Appendix C.

Previous Reports

Prior to entry into the NYSDEC BCP, the Site was the subject of a number of investigations, which are documented in the following reports:

- Phase I Environmental Site Assessment (ESA) Report, dated 12 February 2008, prepared by Giorgio Engineering International, P.C.
- Phase II Subsurface Investigation Report for 700 East 241st Street, Bronx, New York, dated 31 January 2013, prepared by Environmental Business Consultants
- Phase I ESA Report for 714 East 241st Street, Bronx, New York, dated 9 January 2015, prepared by Langan
- Limited Phase II Environmental Site Investigation (ESI) Report, dated 3 February 2015, prepared by Langan

Phase I ESA, February 2008

The February 2008 Phase I ESA review of regulatory databases, prior site ownership and land use, Freedom of Information Law (FOIL) requests, an environmental lien search, user questionnaire; an interview with the current property owner; and site and surrounding property reconnaissance. The Phase I ESA identified two Recognized Environmental Conditions (RECs), including a lack of waste oil disposal manifests, and the presence of a 55-gallon waste oil drum located on the Site.

Phase II Subsurface Investigation, January 2013

The Phase II subsurface investigation at the Site included the completion of a geophysical investigation, the completion of nine soil borings and collection of 10 soil samples, and the installation and sampling of six temporary monitoring wells. The Phase II report concluded the following:

- The geophysical survey identified three major anomalies areas along the northern corner of the Site. Based on their reflection rates and their proximities, these anomalies are indicative of the two known Underground Storage Tanks (USTs) located approximately 2 to 3 ft bgs and a third UST approximately 2 to 3 ft bgs closed in place UST.
- A historic fill layer with thickness ranging from 1 to 3 feet was identified throughout the Site.
- Odors were observed in one soil boring at a depth of approximately 5 to 7 feet below ground surface (bgs).
- Soil analytical results confirmed the presence of petroleum impacts with exceedances of the Restricted Residential Cleanup Objectives (RRCOs) for petroleum related VOCs and SVOCs.
- Groundwater analytical results confirmed the presence of a petroleum release and Spill Case No. 12-14956 was opened by NYSDEC on 25 January 2013.

Phase I ESA, January 2015

The Phase I ESA identified several RECs, including: historical Site auto repair and gasoline fueling purposes since at least 1935; on-site petroleum bulk storage including one 4,000-gallon gasoline UST (temporary closed in-place), one 550-gallon gasoline UST (closed in-place), one 550-gallon gasoline UST (closed-removed) that had been present on the Site since at least 1935, a 275-gallon heating oil aboveground storage tank (AST) located above a brick-lined floor sump with a dirt base within the basement of former lot 1, and historical Sanborn Fire Insurance Maps and New York State Department of Buildings records that indicate a portion (former lot 59) of the Site was historically occupied by a gasoline service station; an open NYSDEC spill case (no. 1214956) which was reported during the January 2013 Phase II subsurface investigation when elevated concentrations of petroleum VOCs were identified in soil and groundwater in the vicinity of the gasoline USTs at the Site; and current and

historical use of surrounding properties including four dry cleaners, nine auto repair facilities, two gasoline filling stations, and the New York City Transit System Rail Yard.

Limited Phase II ESI, February 2015

The Limited Phase II ESI at the Site included the completion of a geophysical survey, installation of six soil borings and collection of 12 soil samples, and the installation and sampling of four temporary groundwater monitoring wells. The Limited Phase II report concluded the following:

- The geophysical survey identified a large subsurface anomaly, approximately 20 feet long and 8 feet wide, located on the northwestern edge of the Site along the sidewalk of White Plains Road. The anomaly was observed at approximately 4 feet below grade and is indicative of a UST. The locations of three previously known USTs were identified on the northern portion of the Site.
- A layer of historic fill consisted of varying amounts of sand and gravel, and fragments of brick, glass, wood, and coal ash was identified throughout the Site. The fill ranged in thickness from 3 to 4 feet, and contained concentrations of SVOCs, metals, and pesticides at concentrations exceeding the NYSDEC Part 375 Unrestricted and Restricted Use Restricted-Residential SCOs.
- Evidence of petroleum-like odors was observed in borings SB-1 through SB-3. At soil boring SB-3, which was installed next to the suspected UST along White Plains Road, petroleum-like odors and PID readings (up to 1,095 parts per million) were observed at depths ranging approximately 10 to 16 feet. Analytical results from a groundwater sample collected at this location confirmed the presence of petroleum contamination.
- Site groundwater exists at approximately 9 to 11 feet below grade, and based on local topography is expected to flow to the south-southwest. No free product was observed during the Phase II; however, a petroleum-like odor was observed during purging of temporary well SB-3 (MW), and laboratory analysis of groundwater samples from this location confirmed the presence of petroleum contamination.

5. Investigation and Cleanup Process

Note: See Appendix D for a flowchart of the brownfield site remedial process.

Application

The Applicant has applied for acceptance into New York's Brownfield Cleanup Program as a Volunteer. This means that the Applicant was not responsible for the disposal or discharge of the contaminants or whose ownership or operation of the Site took place after the discharge or disposal of contaminants. The Volunteer must fully characterize the nature and extent of contamination on-site, and must conduct a qualitative exposure assessment, a process that characterizes the actual or potential exposures of people, fish and wildlife to contaminants on the Site and to contamination that has migrated from the Site.

The Applicant in its Application proposes that the Site will be used for restricted residential purposes.

To achieve this goal, the Applicant will conduct investigation and cleanup activities at the Site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement executed by NYSDEC and the Applicant sets forth the responsibilities of each party in conducting these activities at the Site.

Investigation

The Applicant will conduct an investigation of the Site officially called a "remedial investigation" (RI). This investigation will be performed with NYSDEC oversight. The Applicant has developed a remedial investigation work plan, which will be available to public for comments.

The site investigation has several goals:

1) Define the nature and extent of contamination in soil, surface water, groundwater and any other parts of the environment that may be affected;
2) Identify the source(s) of the contamination;
3) Assess the impact of the contamination on public health and the environment; and
4) Provide information to support the development of a proposed remedy to address the contamination or the determination that cleanup is not necessary.

When the investigation is complete, the Applicant will prepare and submit a report that summarizes the results. This report also will recommend whether cleanup action is needed to address site-related contamination. The investigation report is subject to review and approval by NYSDEC.

NYSDEC will use the information in the investigation report to determine if the Site poses a significant threat to public health or the environment. If the Site is a significant threat, it must be cleaned up using a remedy selected by NYSDEC from an analysis of alternatives prepared by the Applicant and approved by NYSDEC. If the Site does not pose a significant threat, the Applicant may select the remedy from the approved analysis of alternatives.

Remedy Selection

After NYSDEC approves the Remedial Investigation (RI) Report, the Applicant recommends in its investigation report that action needs to be taken to address site contamination. After NYSDEC approves the investigation report, the Applicant may then develop a cleanup plan, officially called a Remedial Work Plan. The Remedial Work Plan describes the Applicant's proposed remedy for addressing contamination related to the Site.

When the Applicant submits a proposed Remedial Work Plan for approval, NYSDEC would announce the availability of the proposed plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy.

The Applicant may then design and perform the cleanup action to address the site contamination. NYSDEC and NYSDOH oversee the activities. When the Applicant completes cleanup activities, it will prepare a Final Engineering Report (FER) that certifies that cleanup requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the Site. The site contact list will receive a fact sheet that announces the completion of remedial activities and the review of the FER.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the Site, it will approve the FER. NYSDEC then will issue a Certificate of Completion (COC) to the Applicant. The COC states that cleanup goals have been achieved, and relieves the Applicant from future liability for site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the Site after it receives a COC.

Site Management

Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. Site management may be conducted by the Applicant under NYSDEC oversight, if contamination will remain in place. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the Site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

An institutional control is a non-physical restriction on use of the brownfield site, such as a deed restriction that would prevent or restrict certain uses of the remediated Site. An institutional control may be used when the remedial action leaves some contamination that makes the Site suitable for some, but not all, uses.

An engineering control is a physical barrier or method to manage contamination, such as a cap or vapor barrier.

Site management will be conducted by the Applicant as required. NYSDEC will provide appropriate oversight. Site management involves the institutional and engineering controls required for the brownfield site. Examples include: operation of a water treatment plant, maintenance of a cap or cover, and monitoring of groundwater quality. Site management continues until NYSDEC determines that it is no longer needed.

Appendix A – Project Contacts and Locations of Reports and Information

Project Contacts and Locations of Reports and Information

Project Contacts

For information about the site's remedial program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

Ruth Curley, P.E.
Project Manager
NYSDEC
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, NY 12233
Phone: 518-402-9767
Email: ruth.curley@dec.ny.gov

Thomas V. Panzone
Regional Citizen Participation Specialist
NYSDEC Region 2
Office of Communications Services
1 Hunters Point Plaza
47-40 21st Street
Long Island City, New York 11101
Phone 718-482-4953

New York State Department of Health (NYSDOH):

Brad Wenskoski
Public Health Specialist
NYSDOH
Empire State Plaza
Corning Tower, Room 1787
Albany, NY 12237
Phone: 518-402-7860
Email: beei@health.state.ny.us

Document Repository

The document repositories identified below have been established to provide the public with convenient access to important project documents:

Wakefield Library
4100 Lowerre Place
Bronx, NY 10466
Phone: 718-652-4663
Hours (Call to verify):

Monday, Wednesday	11:00 a.m. to 7:00 p.m.
Tuesday, Thursday:	1:00 p.m. to 7:00 p.m.
Friday & Saturday:	10:00 a.m. to 5:00 p.m.
Sunday:	Closed

Appendix B – Site Contact List

Site Contact List

Site #: C203077

Site Name: Enclave on 241st Street Development

List Last Updated: 4/28/2015

Current Occupant	Name, Title	Address 1	Address 2	City	State	Zip
Chief Executive Office/ City Hall	Bill de Blasio, Mayor	City Hall		New York	NY	10007
New York City Department of City Planning	Carl Weisbrod, Commissioner, Department of City Planning, Chairperson City Planning Commission	22 Reade Street		New York	NY	10007-1216
NYC Department of City Planning (Bronx Office)	NYC Department of City Planning	1 Fordham Plaza - 5th Floor		Bronx	NY	10458-5891
Bronx Borough Office	Ruben Diaz Jr., Bronx Borough President	851 Grand Concourse - 3rd Floor		Bronx	NY	10451
	Paul J. Del Duca, Bronx Borough Chief of Staff & Senior Strategic Advisor	851 Grand Concourse - 3rd Floor		Bronx	NY	10451
	Prisca Salazar-Rodriguez, Bronx Borough Deputy Chief of Staff	851 Grand Concourse - 3rd Floor		Bronx	NY	10451
	Thomas Lucania, Bronx Borough Director of Community Board Unit and Legislative Affairs	851 Grand Concourse - 3rd Floor		Bronx	NY	10451
	Tracy McDermott, Bronx Borough Director of Community Services	851 Grand Concourse - 3rd Floor		Bronx	NY	10451
	Bassal Omar, Bronx Borough Director of Operations	851 Grand Concourse - 3rd Floor		Bronx	NY	10451
	Wilhelm Ronda, Bronx Borough Director of Planning & Development	851 Grand Concourse - 3rd Floor		Bronx	NY	10451
New York City Department of Environmental Protection	Emily Lloyd, Commissioner	59-17 Junction Boulevard		Flushing	NY	11373
Hon. Scott Stringer	NYC Comptroller	1 Centre Street		New York	NY	10007
Hon. Letitia James	Public Advocate	1 Centre Street		New York	NY	10007
Hon. Andrew Cohen	NYC Councilmember	3636 Waldo Avenue		Bronx	NY	10463
Hon. Ruth Hassell-Thompson	NYS Senator	959 E. 233 Street		Bronx	NY	10466
Hon. Jeffrey Dinowitz	NYS Assemblymember	3107 Kingsbridge Avenue		Bronx	NY	10463
Hon. Charles Schumer	U.S. Senator	780 Third Avenue, Suite 2301		New York	NY	10017
Hon. Kirsten Gillibrand	U.S. Senator	780 Third Avenue, Suite 2601		New York	NY	10017
Hon. Eliot L. Engel	U.S. House of Representatives	3655 Johnson Avenue		Bronx	NY	10463
Bronx Community Board # 12	Fr. Richard Gorman, Chair	4101 White Plains Road		Bronx	NY	10466
Bronx Community Board # 12	District Manager	4101 White Plains Road		Bronx	NY	10466
Bronx Community Board # 12	Carla Borsotti, Environmental Committee Chairman	4101 White Plains Road		Bronx	NY	10466
New York City Department of Environmental Protection	Director, Planning and Capital Projects	Bureau of Public Affairs	59-17 Junction Blvd.	Flushing	NY	11373
New York City Department of Environmental Protection	John Wuthenow	Office of Environmental Assessment & Planning	96-05 Horace Harding Expressway	Flushing	NY	11373
Ruth Curley	NYSDEC Project Manager	625 Broadway		Albany	NY	12233
Larry Ennist	NYSDEC	625 Broadway		Albany	NY	12233
Thomas V. Panzone	Regional Citizen Participation Specialist, NYSDEC Region 2	47-40 21st Street		Long Island City	NY	11101
Brad Wenskoski	NYSDOH Public Health Specialist	Empire State Plaza	Corning Tower, Room 1787	Albany	NY	12237
NYC Office of Environmental Sustainability	Nilda Mesa	100 Gold Street - 2nd Floor		New York	NY	10038
Bronx Chamber of Commerce	Attn: Joe Kelleher, Chairman	1200 Waters Place	Suite 106	Bronx	NY	10461
Bronx Times		3604 East Tremont Street		Bronx	NY	10465
Bronx Times Reporter		900 East 132nd Street		Bronx	NY	10454
NY 1 News		75 Ninth Avenue		New York	NY	10011
Bronx County Clerk's Office	Luis M. Diaz, Bronx County Clerk	851 Grand Concourse	Room 118	Bronx	NY	10451
Public School 016 Wakefield	Yvonne Williams, Principal	4550 Carpenter Avenue		Bronx	NY	10470
All Seasons Day Care	Annie Longo, Owner	1701 Nereid Avenue		Bronx	NY	10466
Wakefield Library		4100 Lowerre Place		Bronx	NY	10466
Peppinos Pizza		4703 White Plains Road		Bronx	NY	10470
Café Restaurant		4711 White Plains Road		Bronx	NY	10470
Payless Wine and Liquor		4700A White Plains Road		Bronx	NY	10470
Uptown Candy Store		4700B White Plains Road		Bronx	NY	10470
Better World Real Estate		4702 White Plains Road		Bronx	NY	10470
City Line Pharmacy		4704 White Plains Road		Bronx	NY	10470
Jatown Deli		4655 White Plains Road		Bronx	NY	10470
Physical Therapy and Rehab		4645 White Plains Road		Bronx	NY	10470
City Candy Inc.		4643 White Plains Road		Bronx	NY	10470
Island Taste Cuisine		4641 White Plains Road		Bronx	NY	10470
Doris on Demand Hair Style Inc.		4565 White Plains Road		Bronx	NY	10470
Wakefield Private Car Service		711 East 241 Street		Bronx	NY	10470
McDonald's Restaurant		724 East 241 Street		Bronx	NY	10470
Bakker Services		4640 Furman Avenue		Bronx	NY	10470
New York City Transit Authority		4570 Furman Avenue		Bronx	NY	10470
John Marciano Tire and Rims		4619 Furman Avenue		Bronx	NY	10470
DB Trucking		4609 Furman Avenue		Bronx	NY	10470
Seven Eleven Halal Live Poultry		711 East 240 Street		Bronx	NY	10470
239 Street Realty Corp		4600 White Plains Road		Bronx	NY	10470
Balm of Gilead Medical Office		4626 White Plains Road		Bronx	NY	10470
Optima Physical Therapy		4626 White Plains Road		Bronx	NY	10470
Shokeye Realty		4632 White Plains Road		Bronx	NY	10470
Mbamali & Mbamali Attorneys		4634 White Plains Road		Bronx	NY	10470
Annco Consulting LLC		4634 White Plains Road		Bronx	NY	10470
Comfort Zone		4636 White Plains Road		Bronx	NY	10470
2nd Star Barbershop		4640 White Plains Road		Bronx	NY	10470
Wakefield Seventh Day Adventist	Attn: Pastor	729 Cranford Avenue		Bronx	NY	10470
Wakefield Grace United Methodist	Attn: Pastor	4750 White Plains Road		Bronx	NY	10470
El Shaddai World Harvest Church	Attn: Pastor	4617 White Plains Road		Bronx	NY	10470
RESIDENT/BUSINESS OWNER		659	EAST 240 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		657	EAST 240 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		655	EAST 240 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		653	EAST 240 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		651	EAST 240 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4610	MATILDA AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4616	MATILDA AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4620	MATILDA AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4626	MATILDA AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4628	MATILDA AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4630	MATILDA AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4632	MATILDA AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4638	MATILDA AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4642	MATILDA AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		646	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		648	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		650	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		652	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		654	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		656	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		660	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		662	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		664	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4641	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4639	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4633	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4631	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4629	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4621	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4619	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4611	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4609	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		685	EAST 240 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		683	EAST 240 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		681	EAST 240 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		679	EAST 240 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4606	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4612	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4616	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4618	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4620	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4626	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4630	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4634	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4636	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4640	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		674	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		678	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		680	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		682	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4653	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4651	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4639	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4635	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4633	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4617	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4615	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4611	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4609	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4601	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		687	EAST 240 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		714	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4641	FURMAN AVENUE	BRONX	NY	10470

Current Occupant	Name, Title	Address 1	Address 2	City	State	Zip
RESIDENT/BUSINESS OWNER		4637	FURMAN AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4629	FURMAN AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4627	FURMAN AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4625	FURMAN AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4621	FURMAN AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4619	FURMAN AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4615	FURMAN AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4611	FURMAN AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4609	FURMAN AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4601	FURMAN AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		713	EAST 240 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		711	EAST 240 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4600	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4626	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4632	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4634	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4640	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4644	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		700	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		704	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		661	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		657	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		655	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		653	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		651	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		649	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		647	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4714	MATILDA AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4716	MATILDA AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4718	MATILDA AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4722	MATILDA AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4732	MATILDA AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4736	MATILDA AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4737	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4731	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4729	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4727	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4723	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4721	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4719	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4715	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4735	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4733	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4729	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4727	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4725	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4711	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4709	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		681	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		679	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		677	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		675	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4714	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4716	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4718	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4720	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4722	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4726	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4730	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4736	RICHARDSON AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		740	CRANFORD AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		726	CRANFORD AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		711	EAST 241 STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		734	CRANFORD AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		739	CRANFORD AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		737	CRANFORD AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		735	CRANFORD AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		733	CRANFORD AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		731A	CRANFORD AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		731	CRANFORD AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		729	CRANFORD AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		715	CRANFORD AVENUE	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4700	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4702	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4704	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4710	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		4712	WHITE PLAINS ROAD	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		708	ST OUEN STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		710	ST OUEN STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		712	ST OUEN STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		714	ST OUEN STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		716	ST OUEN STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		718	ST OUEN STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		720	ST OUEN STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		722	ST OUEN STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		728	ST OUEN STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		730	ST OUEN STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		732	ST OUEN STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		734	ST OUEN STREET	BRONX	NY	10470
RESIDENT/BUSINESS OWNER		750	ST OUEN STREET	BRONX	NY	10470

Appendix C – Site Location Map

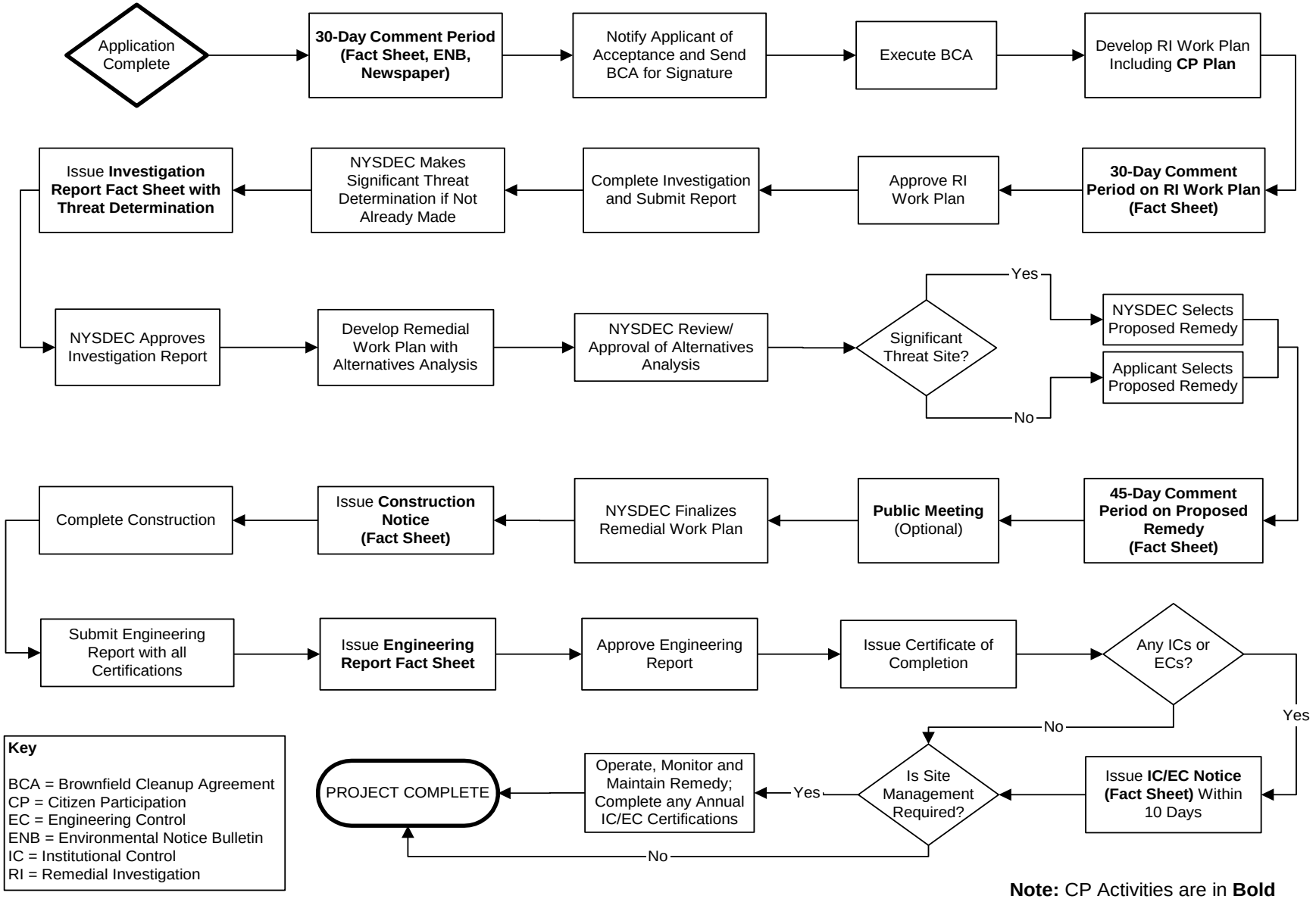
SITE LOCATION MAP

C203077

ENCLAVE ON 241ST STREET DEVELOPMENT

Appendix D – Brownfield Cleanup Program Process

Brownfield Cleanup Program Process



Note: CP Activities are in **Bold**

Appendix E – Remedial Programs Scoping Sheet

Remedial Programs

Scoping Sheet for Major Issues of Public Concern

Instructions

This Scoping Sheet assesses: major issues of public concern; impacts of the site and its remedial program on the community; community interest in the site; information the public needs; and information needed from the public, if applicable.

The information generated helps to plan and conduct required citizen participation (CP) activities, and to choose and conduct additional CP activities, if appropriate. The scoping sheet can be revisited and updated as appropriate during the site's remedial process to more effectively implement the site's CP program.

Note: Use the information as an aid to prepare and update the Major Issues of Public Concern section of the site CP Plan.

General Instructions

- When to prepare: During preparation of the CP Plan for the site. It can be revisited and updated anytime during the site remedial process.
- Fill in site name and other information as appropriate.

Instructions for Numbered Parts

Consider the bulleted issues and questions below and any others that may be appropriate to the site and the community to help complete the five Parts of this Scoping Sheet. Include the issue stakeholders in Parts 1 through 3 and adjust the site's contact list accordingly.

Part 1. List Major Issues of Public Concern and Information the Community Wants.

- Is our health being impacted? (e.g. Are there problems with our drinking water or air? Are you going to test our water, yards, sumps, basements? Have health studies been done?)
- There are odors in the neighborhood. Do they come from the site and are they hazardous?
- Are there restrictions on what we may do (e.g. Can our children play outside? Can we garden? Must we avoid certain areas? Can we continue to recreate (fish, hunt, hike, etc. on/around the site?)
- How and when were the site's contamination problems created?
- What contaminants are of concern and why? How will you look for contamination and find out where it is going? What is the schedule for doing that?
- The site is affecting our property values!
- How can we get more information (e.g. who are the project contacts?)
- How will we be kept informed and involved during the site remedial process?
- Who has been contacted in the community about site remedial activities?
- What has been done to this point? What happens next and when?
- The site is going to be cleaned up for restricted use. What does that mean? We don't want redevelopment on a "dirty" site.

Part 2. List Important Information Needed From the Community, if Applicable.

- Can the community supplement knowledge about past/current uses of the site?
- Does the community have knowledge that the site may be significantly impacting nearby properties, natural resources, etc.?

- Are there activities currently taking place at the site or at nearby properties that may need to be restricted?
- Who may be interested or affected by the site that has not yet been identified?
- Are there unique community characteristics that could affect how information is exchanged?
- Do the community and/or individuals have any concerns they want monitored?
- Does the community have information about other sources in the area for the contamination?

Part 3. List Major Issues and Information That Need to be Communicated <u>to</u> the Community.

- The process and general schedule to investigate, remediate and, if applicable, redevelop the site.
- Current understanding about the site contamination and effects, if any, on public health and the environment.
- Site impacts on the community and any restrictions on the public's use of the site and/or nearby properties.
- Planned CP activities, their schedule, and how they relate to the site's remedial process.
- Ways for the community to obtain/provide information (document repositories, contacts, etc.).

Part 4. Community Characteristics

a. - e. Obtain information from local officials, property owners and residents, site reports, site visits, "windshield surveys," other staff, etc.

f. Has the affected community experienced other **significant** present or past environmental problems unrelated to this site? Such experiences could significantly affect public concerns and perspectives about the site; how the community will relate to project staff; the image and credibility of project staff within the community; and the ways in which project staff communicate with the community.

g. Consider factors such as:

- Is English the primary language of the affected community? If not, provisions should be considered regarding public outreach activities such as fact sheets, meetings, door-to-door visits and other activities to ensure their effectiveness.

- The age demographics of the community. For example, is there a significant number of senior citizens in the community? It may be difficult for some to attend public meetings and use document repositories. This may suggest adopting more direct interaction with the community with activities such as door-to-door visits, additional fact sheets, visits to community and church centers, nursing homes, etc.

- How do people travel about the community? Would most people drive to a public meeting or document repository? Is there adequate public transportation?

Part 5. Affected/Interested Public. Individuals and organizations who need or want information and input can change during the site's remedial process. This need is influenced by real, potential or perceived impacts of the site or the remedial process. Some people may want information and input throughout the remedial process. Others may participate only during specific remedial stages, or may only be interested in particular issues. It is important to revisit this question when reviewing this scoping sheet. Knowing who is interested in the site – and the issues that are important to them – will help in the selection and conduct of appropriate outreach activities, and to identify their timing and the information to be exchanged.

Check all affected/interested parties that apply to the site. **Note: Adjust the site's contact list appropriately.** The following are some ways to identify affected/interested parties:

- Tax maps of adjacent property owners
- Attendees at public meetings
- Telephone discussions
- Letters and e-mails to DER, the remedial party, and other agencies
- Political jurisdictions and boundaries
- Media coverage
- Current/proposed uses of site and/or nearby properties (recreational, commercial, industrial)
- Discussions with community organizations: grass roots organizations, local environmental groups, environmental justice groups, churches, and neighborhood advisory groups

New York State Department of Environmental Conservation
Division of Environmental Remediation

Remedial Programs
Scoping Sheet for Major Issues of Public Concern (see instructions)

Remedial Party: Enclave on 241 Street LLC

Site Name: Enclave on 241st Street Development

Site Number: C203077

Site County: Bronx County

Note: For Parts 1. – 3., the individuals, groups, organizations, businesses, and units of government identified should be added to the site contact list as appropriate.

Part 1. List major issues of public concern and information the community wants. Identify individuals, groups, organizations, businesses, and/or units of government related to the issue(s) and/or information. **Use this information as an aid to prepare or update the Major Issues of Public Concern section of the site Citizen Participation Plan.**
The Site is located in an Environmental Justice Area. The Site is located in an area with a large African-American presence, along with a sizable Hispanic-American community. Therefore, all future fact sheets will in addition, be translated into Spanish.

Petroleum releases during historical gasoline filling station operations have adversely impacted soil and groundwater, and likely soil vapor at the Site. The following major issues of public concern were identified: health of workers and community, nuisance odors, and noise. These issues are of the most concern to adjacent property businesses and residents. These issues will be addressed in the Remedial Investigation Work Plan (RIWP), Remedial Action Work Plan (RAWP), a Community Air Monitoring Program (CAMP) and/or a site-specific Health and Safety Plan (HASP) for the project to be approved by the NYSDEC prior to work.

How were these issues and/or information identified?
Previous investigation reports identified contaminated soil and groundwater, and likely soil vapor. Potetntial impacts are typical for remedaion projects.

Part 2. List important information needed **from** the community, if applicable. Identify individuals, groups, organizations, businesses, and/or units of government related to the needed information.
No additional information is required from the community at this time.

How were these information needs identified?
Not applicable

Part 3. List major issues and information that need to be communicated **to** the community. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and/or information.
Major issues and information is identified in Part 1. Information was communicated to the public in the Citizen Participate (CP) Plam. NYSDEC contacts are included in the CP Plan. A repository is established for the public to review site documents (see CP Plan for details).

How were these issues and/or information identified?
Issue identification is the same as the Part 1 response. Information communication was established by NYSDED as part of the NYS Brownfield Cleanup Program remediation.

Part 4. Identify the following characteristics of the affected/interested community. This knowledge will help to identify and understand issues and information important to the community, and ways to effectively develop and implement the site citizen participation plan (mark all that apply):

a. Land use/zoning around site:

☒ **Residential** ☐ **Agricultural** ☐ **Recreational** ☒ **Commercial** ☒ **Industrial**

☐ **Yes** ☒ **No**

b. Residential type around site:

☒ **Urban** ☐ **Suburban** ☐ **Rural**

c. Population density around site:

☒ **High** ☒ **Medium** ☐ **Low**

d. Community economic status:

☐ **High** ☒ **Medium** ☒ **Low**

e. Water supply of nearby residences:

☒ **Public** ☐ **Private Wells** ☐ **Mixed**

f. Other environmental issues significantly impacting affected community?

Provide details if appropriate:
Click here to enter text.

g. Special considerations:

☒ **Language** ☐ **Age** ☐ **Transportation** ☐ **Other**

Explain marked categories in **g.**:
The Site is located in an area with a large African-American presence, along with a sizable Hispanic-American community. Therefore, all future fact sheets will in addition, be translated into Spanish.

Part 5. The site contact list must include, at a minimum, the individuals, groups, and organizations identified in the instructions for **Part 5.** Are other individuals, groups, organizations, and units of government affected by, or interested in, the site, or its remedial program? (Mark and identify all that apply, then adjust the site contact list as appropriate.)

☒ **Non-Adjacent Residents/Property Owners:** Please see Contact List

☒ **Local Officials:** Please see Contact List

☒ **Media:** Please see Contact List

☒ **Business/Commercial Interests:** Please see Contact List

☒ **Labor Group(s)/Employees:** Please see Contact List

☐ **Indian Nation:** Click here to enter text.

☒ **Citizens/Community Group(s):** Please see Contact List

☒ **Environmental Justice Group(s):** Please see Contact List

☒ **Environmental Group(s):** Please see Contact List

☒ **Civic Group(s):** Please see Contact List

☒ **Recreational Group(s):** Please see Contact List

☒ **Other(s):** Please see Contact List

Date Completed: Jyne 5, 2015

Prepared By: Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.

Reviewed By: Click here to enter text.

Appendix K

Remediation Schedule

Appendix K- Remediation Schedule
714 East 241st Street
Bronx, New York
Langan Project No. 140115301

No.	Task Name	2016											2017								
		Q1		Q2			Q3			Q4			Q1			Q2			Q3		
		FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	NYSDEC Initial Review of RAWP																				
2	Revise RAWP per DEC Comments																				
3	45-day Public Commment Period for RAWP																				
4	DEC Approves RAWP and Issues Decision Document																				
5	Construction Notice Fact Sheet																				
6	Design, Permitting, NYC DCP Approval, Bid Support, and Constuction Documents																				
7	Building Abatement and Demolition																				
8	RAWP Implementation																				
9	Final Engineering Report (FER) & Site Management Plan																				
10	Environmental Easement Development/Filing																				
11	FER Fact Sheet																				
12	DEC Review and Approve FER and SMP																				
13	Certificate of Completion																				
14	IC/EC Notice Fact Sheet																				
15	Implement SMP (Operations, Maintenance and Annual Inspections)																				

Appendix L

Site Signage Requirements

Site Signage Requirements

The NYSDEC Department has specific requirements for a 4 foot by 8 foot sign to be posted to inform the public about the RA. The detailed NYSDEC requirements for Site signage are provided below.

Signage Instructions

Signs are required at sites where remedial actions are being performed under one of the following remedial programs: State Superfund, VCP, BCP, and Environmental Restoration Program (ERP). They will not be required during the investigation and design phases. The cost of the sign will be borne by the parties performing the remedial action based on the legal document the activities are being performed under (i.e. volunteers/participants would pay 100% of the cost under the BCP; municipalities would pay 100% and then would be reimbursed for the cost under the ERP).

Sign Requirements

Size:	Horizontal format - 96" wide by 48" high	
Construction Materials:	Aluminum or wood blank sign boards with vinyl sheeting.	
Inserts:	"Site Name", "Site Number", "Name of Party Performing Remedial Activities" and "Municipal Executive". Indicate position, size and topography for specific inserts.	
Color Scheme:	Copy surrounding DEC logo - "NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION"	PMS 355
DEC logo:	PMS 301 Blue, PMS 355 Green	
Text:	Program:	PMS 301
	Brownfield Cleanup Program	
	Site Name, Site Number, Party Performing Remedial Activities	PMS 355
	Names of Governor, Commissioner, Municipal Executive	PMS 301
	Transform the Past…..Build for the Future	PMS 355
Type Specifications:	All type is Caslon 540, with the exception of the logotype. Format is: center each line of copy with small caps and initial caps.	
Production Notes:	96" wide x 48" high aluminum blanks will be covered with vinyl sheeting to achieve background color. Copy and logo will be silk screened on this surface.	

Program Name

Site Name
Site Number
Name of Party Performing Remedial Activities

Governor
Commissioner
Municipal Executive

Transform the Past…. Build for the Future